

## A review of tobacco-related diseases in Africa

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### Abstract

**Objective:** *To highlight the problem of tobacco and tobacco-related disease which has reached alarming proportions on the African continent.*

**Methods:** *A literature search on tobacco and tobacco-related disease in Africa was carried out through the internet (Medline) and locally. Data synthesis was carried out and synchronized under the headings: introduction, tobacco-related disease, and recommendations.*

**Conclusion:** *Diseases such as chronic obstructive lung disease, lung cancer, chest infections, hypertension, atherosclerosis, stroke and ischaemic heart disease (among others) have been on the increase due to the increasing smoking rate on the continent. Smoking also worsens the degree of poverty of the individual smoker in an already impoverished African setting. But tobacco-related diseases are eminently preventable, hence African governments, legislators, health-care providers, sociologists, teachers, community and religious leaders need to work together with strong determination to prevent and control this man-made killer.*

**Keywords:** Tobacco-related disease, Africa, review

### Introduction

Tobacco (*Nicotiana tobacum*) has been grown in Africa for over three centuries after its introduction to the continent by white explorers, and by the year 1993, about half of a million tons of tobacco were grown in 33 African countries with only 2 countries exporting more than they import<sup>1</sup>. It is used by people either as raw tobacco (licking chewing or smoking) or the processed tobacco in the form of cigarettes, cigars, pipes and snuff.

The most common form of tobacco use is cigarette smoking. Cigarette smoke contains over 4000 chemical compounds comprising both gaseous and particulate phases<sup>2</sup>. The gaseous phase includes carbon monoxide (CO), ammonia, dimethylnitrosamine, formaldehyde, hydrogen cyanide and acrolein, while the particulate phase includes the additive drug nicotine, tar, the sticky brown substance condensing out of tobacco, and many chemicals including benzene and benzo(a) pyrene<sup>2</sup>. While nicotine, tar and CO are the most outstanding in causing disease, about sixty other substances present mainly in tar (including benzo(a) pyrene and dimethylnitrosamine) have been shown to be carcinogenic<sup>2</sup>.

While the high prevalence of cigarette smoking is on the decline in the more technologically advanced parts of the world, the relatively low prevalence in the developing countries is on the increase. For example, in the United States of America, smoking rate declined from a peak of 53% in men and 34% in women to 33% and 28% respectively in 1985<sup>4</sup>, while a survey in Nigeria (the most populous country in Africa) found a prevalence rate of 24.4% in males and 6.7% in females.<sup>3</sup> In 1976, a study at the University of Lagos, Nigeria showed that about three quarters of male and one quarter of female medical students were tobacco users<sup>5</sup>. More recent studies (2003) in the general Nigerian population have revealed smoking rates of 17.6% among rural dwellers in South West Nigeria, and 7.7% among young female secondary school students in South Eastern Nigeria<sup>6</sup>.

Among patients attending the chest clinic of Ladoke Akintola University of Technology Teaching Hospital, Osogbo, also in Nigeria, Tanimowo found that 19.2% of them were ex-smokers<sup>7</sup>. Studies from Zambia also show that

tobacco and alcohol are the most commonly abused substances by students<sup>8</sup>. Environmental tobacco smoke (passive smoking) also constitutes an important health hazard in Africa, and this has necessitated legislation against smoking in public places in some countries, e.g. Nigeria<sup>9</sup>.

#### Methods

A literature search on tobacco and tobacco-related disease in Africa was carried out through the internet (Medline) and locally. Data synthesis was carried out and synchronized under the headings: introduction, tobacco-related disease and recommendations

#### Tobacco-related diseases

Tobacco can adversely affect virtually all the systems of the body (Table 1). It is now the most important preventable cause of premature death, and it has been estimated that it kills more people than AIDS, alcohol, drug abuse, car crashes, murders, suicides and fires (all combined) in the USA<sup>5,7</sup>.

**Lung diseases:**  
**Chronic Obstructive Pulmonary Disease (COPD):** Cigarette smoking is the most important (and preventable) aetiological / risk factor for COPD<sup>10</sup>, a condition that is fairly common on medical wards in Africa<sup>11</sup>. At our center, 76.5% of the patients with COPD had smoked cigarettes before presentation at the chest clinic<sup>12</sup>. At the moment, COPD is the sixth leading cause of death and the 12th leading cause of morbidity worldwide<sup>10</sup>. It has been projected that COPD will be the 3rd leading cause of death and the 5th leading cause of morbidity by the year 2020<sup>10</sup>. Increased prevalence of smoking worldwide corresponds with the observed global increase in the prevalence of COPD.

**Lung cancer:** Cigarette smoking is the most important (and preventable) aetiological / risk factor for the development of lung cancer

worldwide. Lung cancer, with its attendant poor prognosis also affects Africans<sup>13</sup>, and the incidence will increase with the rise in smoking rate.

**Chest infections:** Pneumonia already constitutes a very significant proportion of the respiratory diseases for which patients attend hospitals in Africa<sup>14,15</sup>, and cigarette smoking can contribute to the lowering of the body immunity, thereby resulting in increased susceptibility to infection. Legionnaire's disease has been found to occur more commonly in smokers than non-smokers<sup>16</sup>. Increased susceptibility to pulmonary tuberculosis (a disease already in epidemic proportions in Africa due to the HIV pandemic is also a possibility<sup>17,18,19</sup>.

The synergistic effect of both HIV infection and smoking on the development of more severe respiratory diseases<sup>20</sup> portends a gloomy picture for Africans. Other forms of interstitial pneumonias associated with cigarette smoking include desquamative interstitial pneumonia, respiratory bronchiolitis - associated interstitial lung disease and pulmonary Langerhans cell histiocytosis (eosinophilic granuloma or pulmonary histiocytosis).

#### Cardiovascular diseases

**Hypertension:** This is the most common non-communicable disease seen in most African countries. It is the commonest cause of heart failure in Nigeria<sup>21</sup>, and it is also one the commonest risk factors for stroke<sup>22</sup>. Its prevalence in the adult in Nigeria is about 20 percent<sup>23</sup> and in Ghana up to 34.4% has been reported<sup>24</sup>.

Smoking is one of the major risk factors for cardio-vascular disease (CVD) used for risk stratification and consequently one of the factors influencing prognosis in hypertension<sup>25</sup>. Both cigarette smoking and hypertension are

Table 1: Tobacco-related diseases according to body system

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<b>Body System</b>	<b>Tobacco-related disease</b>
Respiratory System	<ul style="list-style-type: none"> <li>- Chronic Obstructive Pulmonary Disease</li> <li>- Lung Cancer</li> <li>- Cancer of the pharynx</li> <li>- Pneumonia (Infective)</li> <li>- Tuberculosis</li> <li>- Desquamative Interstitial Pneumonia (DIP)</li> <li>- Respiratory bronchiolitis-associated interstitial lung disease (RB-ILD)</li> <li>- Pulmonary Langerhans Cell histiocytosis (PLCH) or eosinophilic granuloma or pulmonary histiocytosis.</li> </ul>
Cardiovascular System	<ul style="list-style-type: none"> <li>- Hypertension</li> <li>- Atherosclerosis</li> <li>- Ischaemic heart disease (angina pectoris and myocardial infarction)</li> <li>- Peripheral vascular disease</li> <li>- Aneurysms</li> </ul>
Gastro-intestinal System	<ul style="list-style-type: none"> <li>- Peptic ulcer disease</li> <li>- Cancer of lip, oral cavity, oesophagus, pancreas</li> <li>- Gall stones</li> <li>- Cholecystitis</li> </ul>
Central Nervous System	<ul style="list-style-type: none"> <li>- Stroke</li> </ul>
Renal System	<ul style="list-style-type: none"> <li>- Renal cell carcinoma</li> <li>- Bladder Cancer</li> </ul>
Reproductive System (Female)	<ul style="list-style-type: none"> <li>- Premature labour</li> <li>- Small for age babies</li> <li>- Premature rupture of membranes</li> <li>- Abruptio Placentae</li> <li>- Spontaneous abortion</li> <li>- Cervical cancer</li> </ul>
Reproductive System (Male)	<ul style="list-style-type: none"> <li>- Impotence</li> </ul>
Eyes	<ul style="list-style-type: none"> <li>- Senile Cataracts</li> <li>- Macular degeneration</li> </ul>
Bones	<ul style="list-style-type: none"> <li>- Osteoporosis</li> </ul>
Skin	<ul style="list-style-type: none"> <li>- Wrinkling</li> </ul>
Blood	<ul style="list-style-type: none"> <li>- Platelet aggregation</li> </ul>

major independent cardiovascular risk factors<sup>26</sup>. The relationship between blood pressure and risk of cardiovascular disease (CVD) events is continuous and consistent. The higher the blood pressure, the greater the chance of myocardial infarction, heart failure, stroke and kidney disease<sup>26</sup>.

A multiplicative interaction exists between cigarette smoking and other CVD risk factors such that the increment in risk produced by smoking among patients with hypertension or elevated serum lipids is substantially greater than the increment in risk produced by smoking for individuals without these risk factors<sup>2</sup>.

**Stroke and ischaemic heart disease:** Cigarette smoking predisposes people to atherosclerosis, and platelet aggregation with vascular occlusion, which in turn are common risk factors for stroke and ischaemic heart disease<sup>22</sup>. The incidence of stroke and ischaemic heart disease will rise with increased smoking rate. Other vascular diseases related to smoking are peripheral vascular disease<sup>27</sup> and aneurysms<sup>2</sup>.

#### **Others**

Smoking is associated with many other diseases including: renal cell carcinoma, bladder cancer, peptic ulcer disease, cancers of lip, oral cavity, pharynx, oesophagus, pancreas, liver and stomach, gallstones and cholecystitis in women. Others are: reproductive abnormalities (e.g premature labour with attendant high perinatal mortality, small for age babies, premature rupture of membranes, abruptio placentae, placenta praevia, spontaneous abortion, cervical cancer, and male impotence), senile cataracts, macular degeneration, osteoporosis and wrinkling of skin<sup>2</sup>.

Cigarette smoking also worsens the poverty of individual smoker in an already impoverished African setting. The little money available (very low per capita income) which should be used to improve nutrition, education and general well-being is burnt out in cigarettes, thereby enhancing the vicious circle of ignorance, poverty, and disease<sup>28</sup>. Smoking is generally

commoner among the low socio-economic class<sup>28,29</sup>.

Most developing countries are already under the yoke of malnutrition, poverty, ignorance, and infectious diseases, especially malaria, tuberculosis and more recently the HIV/AIDS pandemic. Tobacco-related diseases are eminently preventable, and this can be achieved by discouraging smoking i.e. not starting the habit at all or smoking cessation.

#### **Recommendations**

The numerous tobacco-related diseases affecting Africans is a clarion call for a serious and urgent action to avert possible epidemic of such diseases. The following steps are hereby recommended:

- I. Government political will is very important in African countries where a huge tax is realized from cigarette-manufacturing companies. It must be realized that the huge tax will eventually be mopped up by labour loss and huge health costs which will accompany an epidemic of tobacco-related disease.
- II. The tax on tobacco products can be increased thereby automatically increasing the retail price.
- III. Advertising of tobacco products should be discouraged on both print and electronic media. If it must be done on the electronic media, let it be after children have gone to bed at night, and it should carry a warning that tobacco is injurious to health.
- IV. Legislation should be made and enforced against smoking in public offices to prevent passive smoking and also against child smoking and selling cigarettes to children.
- V. Tobacco cessation clinics should be set up in African countries, so that people who are already indulging in the habit can stop.
- VI. Health education of the community through the use of the print and electronic media, bill boards, posters, lectures and cinemas in schools, churches, mosques and market places on the harmful effects of smoking should be embarked upon.

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- VII. Since about 90% of individuals who will become cigarette smokers usually start the habit during adolescence (<18 years of age), and the habit is also commoner among manual workers and the low socio-economic class<sup>26</sup>, preventive strategies should have them in focus,
- VIII. Health-care providers, parents and guardians should set the example by not smoking.
- IX. A multidisciplinary specialist approach towards the prevention and control of cigarette smoking is likely to yield highly satisfactory results. Teachers, sociologists, physicians, obstetricians, paediatricians, community health physicians, psychologists, psychiatrists and general practitioners should be involved.

### References

1. Yach D. Tobacco in Africa. World Health Forum 1996; 17: 29-37.
2. Burn DM. Nicotine addiction. In: Braunwald E, Facuci AS, Kasper DL, Hauser SL, Longo DL, Jameson JL eds. Harrison's Principles of Internal Medicine 15th Ed., New York. Mc GrawHill 2001: 2574-2577.
3. Ayankogbe OO, Inem VA, Bamgbola OA et al. Attitudes and determinants of cigarette smoking among rural dwellers in South-west Nigeria. Nig. Med. Practit. 2003; 44(4) : 70-74.
4. Ernster VL. Trends in smoking, cancer risk and cigarette promotion. Cancer 1988; 62: 1702-1712.
5. World Health Organization. Population Reports. Issues in world health. Series1No1. March 1979.
6. Ibeh CC, Ele PU. Prevalence of cigarette smoking in young Nigerian females. Afr. J. Med. med. Sci. 2003; 32: 335-338.
7. Tanimowo MO. Tobacco use – a topical review. Nig. med. Practit. 2006; 50(5) : 100-105.
8. Haworth A, Ng'andu S, Nyambe B et al. Alcohol and drug use among students in Zambia: a report. Educational Research Bureau, Interim Report, University of Zambia. 1982.
9. Tanimowo MO. Air pollution and respiratory morbidity: The situation in developing countries. Zambian J. Med. Hth Sci.1996; 2(1): 14-17.
10. American College of Chest Physicians. COPD symposium: Into the New Millenium. Chest. May 2002; 121 (5 suppl.)
11. Erhabor GE, Kolawole OA. Chronic Obstructive Pulmonary Disease: A ten-year review of clinical features in OAUTHC, Ile-Ife, Nigeria. Nig. J. Med. 2002; 11(3): 101-104.
12. Tanimowo MO, Onaolapo YA. The pattern of tobacco use among non-pulmonary tuberculosis patients attending a chest clinic in South-western Nigeria. Niger. J. Clin. Pract. Dec. 2007; 10(4): 314-318.
13. Anyanwu CH, Udekwu FAO. Clinical aspects of pulmonary and pleural carcinoma in Nigeria. Med. J. Zambia. 1980; 14(5): 83-88.
14. Pobee JOM. Some aspects of pneumonias in Ghanaian Africans. Nig. med. J. 1983; 13(1): 63-67.
15. Tanimowo MO: The pattern of respiratory disease during the first year of the chest clinic at Ladoke Akintola University of Technology Teaching Hospital, Osogbo, Osun State, Nigeria. Nig. Clinical Rev. 2006; 10(4):23-26.
16. Mavrou I, Michalopoulos A. Legionnaires disease and pneumonia. RT International. Fall 2003. p.22-24.
17. Lowe CR. An association between smoking and respiratory tuberculosis. Brit. Med. J. 1956; 2;1081.
18. Stein M, Cassara EL. Preoperative pulmonary evaluation and therapy for surgery patients. J. Am. Med. Ass. 1970; 211:787.
19. Tanimowo M.O. Pattern of tobacco use among pulmonary tuberculosis patients. Nig. Clin. Rev. J. July 2007; 65;7-10
20. Murin S. Tobacco and HIV infection. Pulmonary Perspectives 2004 December; 21(4) : 1-4.
21. Njoku CH, Monsudi K. Pattern of congestive cardiac failure at Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria. Sahel med. J. 1999; 2(1): 34-38.
22. Osuntokun BO. Stroke in the Africans. Afr. J. Med. med. Sci. 1977; 6:39-53.
23. Oyewo EA, Ajayi AA, Ladipo GOA. A therapeutic audit in the management of hypertension in Nigerians. East Afr. med. J. 1989; 66(7): 458-467.
24. Pobee JOM. The status of cardiovascular diseases in the setting of diseases of environmental sanitation and hygiene and malnutrition: The West African (Ghana) Experience. Childhood Prevention of Atherosclerosis and Hypertension. Lauer RM and Shekelle RB eds. Raven Press, New York. 1980. pp 465-472.
25. Nigerian Hypertension Society. Guidelines for the management of hypertension in Nigeria (2005).
26. Chobanian AV, Bakris GL, Black HR et al. The seventh report of the Joint National Committee on prevention, detection, evaluation and treatment of high blood pressure-The JNC Report. JAMA 2003; 289(19): 2560-2572
27. Ball K. Peripheral vascular disease and smoking. Postgraduate Doctor (Africa). 1992; 14(3): 55-57.
28. Tanimowo M.O. Socio-economic and demographic analysis in relation to smoking habits of patients attending a chest clinic in south-western Nigeria. J. med. Pharmaceut. Sci. 2008; 4(1):48-53
29. Jayanthi V, Probert CSJ, Sher KS et al. Smoking and prevention. Resp. Med. 1991; 85: 179-183.