

Smoking: Its Health Effects and Cessation

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Citation

A Oni, A Eweka, P Otuaga. *Smoking: Its Health Effects and Cessation*. The Internet Journal of Nutrition and Wellness. 2007 Volume 6 Number 1.

Abstract

Cigarette smoke is linked to increased frequency of pulmonary infection, airway hyper-reactivity and chronic inflammation. It is a cause of death which can be prevented. Smoking prevention and cessation are the vital intervention which health care workers especially Doctors can achieve in improving the health of their patients.

Worldwide about 4million people die annually from tobacco related illnesses and by 2030 it is estimated that this value will rise to 10million deaths each year and that 70% of these deaths will be in the developing world due to its increasing rate of smoking. Smoking cessation reduces mortality and morbidity. Its benefit starts from the time a smoker stops smoking and this depends on the duration of cessation. Outright cigarette prohibition may not be feasible but the examples of parents, teachers, sports men and women, politicians and the general public is vital in the cessation of smoking.

The epidemics of smoking related mortality and morbidity should therefore be the concern of all levels of the society. We hereby advocate that health care workers should play a leading role in providing and creating a tobacco free society.

INTRODUCTION

Cigarette smoke is linked to increased frequency of pulmonary infection, airway hyper-reactivity and chronic inflammations ¹. It is also a cause of death which can be prevented. Smoking prevention and cessation are the vital intervention which health care workers especially Doctors can achieve in improving the health of their patients.

The history of Tobacco dates back to Europe in the 15th century when it was sold as pipes, cigars, chewing gum and snuff ². By the 16th century, it became so popular and rampant among men during the first world war and among women during the second world war ². The health effects were not known then until 1950 when Lung cancer became apparent that Doll and Hill from their research, establish the link between Tobacco smoking and Lung cancer ³. The relationship between cigarette smoking and Lung cancer was further strengthened by the work of the surgeon general of the United States of America ⁴. This relationship will continue until specific public health actions are taken.

The prevalence of tobacco smoking among men and women are 25% and 23% respectively ⁵. This prevalence is normally 0% till the age of 10-11years. It then rises through adolescence to a peak in the early twenties and gradually falls with age ⁵. It also varies by social class as more people smoke in the lower socioeconomic group ^{6,7}. Active and

passive smoking have been demonstrated to have same biological effects. However the risk is lower in passive smoking. Doll et- al demonstrated strong evidence that stopping smoking, however late in life reduces the risk of premature death and improve current and future health ⁷. He emphasised that the benefits of cessation begins immediately after stopping smoking and extends for years ⁷.

Nicholas et al established the fact that smoking cessation has a substantial effect on subsequent mortality ⁸.

COMPOSITION OF SMOKE

Active smoking involves deeply inhaling the midstream smoke while passive smoking involves inhaling other people's smoke. Cigarette smoke contains complex composition of gas and particulate phase components. Environmental tobacco smoke (ETS) contains side stream smoke (SSS) released from the burning cigarette which is the part that emerges directly into the environment and the main stream smoke (MSS) is the part inhaled by the smoker. Passive smokers therefore inhale the side stream smoke which contains many toxic constituents like the main stream smoke. The first constituent of smoke is Tar, which is a mixture of aromatic hydrocarbons including carcinogens such as nitrosamines, aromatic amines, and benzopyrenes. Tar is the component of tobacco smoke linked to the development of Lung cancer ^{9,12}. The second component is

Carbon monoxide which is associated with cardiovascular risk of smoking and Nicotine is the third component with addictive property ^{9,12}. Both particulate and gas components of cigarette smoke are implicated in the development of chronic obstructive airway disease ⁹.

As filtered cigarettes replaced unfiltered cigarettes by 1950s onward, the tar content of filtered cigarettes reduced by 50% and Nicotine content reduced by 33.3% ⁹. However, carbon monoxide content remained the same in both types of cigarette. Its health effects are still very much prevalent. This has demonstrated on the long run that it is not possible to produce a safe cigarette because smoking involves the burning of complex hydrocarbons that always produce toxic products. As a result, it is better to avoid or stop smoking than seeking for the treatment or cure of smoking consequences.

HEALTH EFFECTS OF SMOKING

Worldwide about 4million people die annually from tobacco related illnesses and by 2030 it is estimated that this value will rise to 10million deaths each year and that 70% of these deaths will be in the developing world due to its increasing rate of smoking ⁴.

The health effects of smoking includes, wrinkling of the skin, bad breath, smelling cloths and hair, yellowish fingers and finger nails, increased risk of macular degeneration(causes blindness in the elderly due to vascular degeneration),stained teeth, erectile dysfunction(through vascular disease) ⁴.

Tobacco smoke is a transient respiratory irritant that has been associated with lung cancer, chronic obstructive pulmonary disease (chronic bronchitis and emphysema), increased airway reactivity ¹⁰, exacerbation of asthma ¹¹, and increased frequency of pulmonary infections ¹². Cancer of the lungs, mouth, larynx, pharynx, oesophagus, stomach, pancreas, kidneys, cervix, urinary bladder and myeloid leukaemia has been associated with tobacco smoke ⁴. About 50% and 90% of cases of coronary heart disease and peripheral vascular disease are attributed to smoking respectively ⁴. In the brain smoking increases the risk of stroke by up to three fold ⁴. Furthermore, obstetric complications cannot be overemphasized. Smoking tobacco during pregnancy doubles the risk of having a low birth weight baby and also increases the risk of having premature labour, miscarriages and stillbirths ⁴.

Passive smoking that involves inhaling other people's tobacco smoke (side stream smoke) has been shown to cause

increased blood leukocytes count and release of oxidants from neutrophils and elevated urinary cotinine (a metabolite of nicotine) ^{4,9}. Irritant effects involves eyes, nose and throat symptoms. There could also be an increased risk of bronchitis, lower respiratory tract infections and exacerbation of asthma ^{4,9}. These constitute a nuisance therefore to those exposed to environmental tobacco smoke. In conclusion, passive smoking could cause any of the health hazards associated with active smoking but at a level of risk less than that of active smoking. Therefore considering the health hazards of smoking, the need for smoking cessation is undisputable.

SMOKING CESSATION

In view of the prevailing health hazards of tobacco smoking, it is important to emphasize smoking cessation. It is also not out of place to emphasize that smokers need help and not hostility from health care providers and counsellors. Therefore there is need to develop a therapeutic partnership which provides practical advice and support in order to surmount smoking and prevents its hazards. Physicians should routinely ask patients about their smoking status and render advice on the need to contemplate the health risk of smoking, benefit of cessation of smoking and assess their attitude towards smoking cessation. Such advice should be individualised to their current health status like asthma, pregnancy etc. Sometimes shock tactics may help them contemplate the future. For example when your son is getting married in 25-30 years time who will sign his marriage register if you have lung cancer? They must be assured that it is never too late to stop smoking and that they should never stop trying to stop. They should not rely on will power, but, to consider the use of nicotine replacement therapy. The support of close associates should be involved and follow up visits are arranged where success is applauded and encouraged to avoid relapse. Group sessions with smokers can also provide additional support ¹³.

Smoking cessation guidelines involves five stages.

- **PRE CONTEMPLATION-** In this stage, the smoker is contented and he is not considering stopping smoking. It is the duty of the counsellors to make him contemplate smoking cessation.
- **CONTEMPLATION-**The concerned smoker is concerned about the health hazards of smoking and he is contemplating cessation of smoking.
- **PREPARATION-** In this stage, the concerned

smoker plans practical ways of stopping smoking with the help of counsellors.

- ACTION-This is the stage where a concerned smoker set a quit date.
- MAINTENANCE-Health providers and counsellors support smoking cessation and help the patient to prevent relapse 13 .

Figure 1

Table 1: Clinical features of nicotine withdrawal

Dizziness	Depression	Nightmares
Headache	Increased appetite	Fatigue
Anger	Frustration	Irritability
Restlessness	anxiety	Insomnia
Craving for cigarette		

TREATMENT OF NICOTINE WITHDRAWAL

To prevent these features of nicotine withdrawal, nicotine replacement therapy is introduced. This involves transdermal nicotine patch, chewing gum, lozenges, inhalator, nasal spray and bupropion (amfebutamone), an antidepressant.

Transdermal Nicotine Patch:

21mg per day for 4weeks.
Then 14mg per day for 2weeks;
Then 7mg per day for 2weeks

This is given for a total of 8weeks during which time most withdrawal symptoms would have resolved. The patch is applied to the skin every morning and delivers a constant dose over 16-24 hours. However the onset of action is slow

14 .

Chewing gum, lozenges, inhalator or nasal spray provides more rapid peak blood level from absorption of the nicotine through the buccal or nasal mucosa. Nicotine replacement therapy is not recommended in pregnancy. Addiction to nicotine may occur but most patients can be weaned off treatment over a few weeks 14 .

Bupropion (amfebutamone): is a new anti depressant drug that improves the success attempts at smoking cessation. Its side effects include 1 in 1000 risk of epileptic seizures. Hence the drug is contraindicated in patients with convulsive disorders, central nervous system disease, anorexia bulima and anorexia nervosa and in patients having withdrawal

symptoms from alcohol or benzodiazepines 14,15 .

Benefits of smoking cessation

Smoking cessation reduces mortality and morbidity. Its benefit starts from the time a smoker stops smoking and this depends on the duration of cessation as outlined below.

- 20 minutes after quitting smoking, the blood pressure and heart rate drops 16 .
- 12 hours after quitting smoking, carbon dioxide in the blood drops to normal 17 .
- 2 weeks to 3 months after quitting smoking, circulation improves and lung function increases 18 .
- 1 to 9 months after quitting, cough and shortness of breathe decreases. Ciliars regain normal function in the lungs 17 .
- 1 year after quitting, the excess risk of coronary heart disease is halved that of a smoker 17 .
- 5 years after quitting, stroke risk is reduced to that of a non smoker, 5 to 15years after quitting 17 .
- 10 years after quitting, lung cancer death rate is about half that of a smoker who continued to smoke. The risks of other tobacco-dependent cancers will also decrease 17 .
- 15 years after quitting, the risk of coronary heart disease is that of a non smoker 17 .

PRIMARY PREVENTION

Primary prevention involves planning strategies to discourage non smokers from smoking tobacco. This should involve teenagers who are vulnerable to cigarette advertisement and peer group influence. Teenagers have the rebellious attitude of feeling healthy, young and immortal without considering the concepts of ageing and disease. It is important to emphasize the promotion of a healthy life style and the unattractiveness of the smokers whose clothes, hands, teeth and breath smells tobacco.

Sports seem to promote self confidence, encourage a healthy life style and reduce peer influence of smoking. Mass media intervention that advertises and promote the anti-smoking message will be very effective. In conclusion, outright cigarette prohibition may not be feasible but the examples of

parents, teachers, sports men and women, politicians and the general public is vital. The epidemic of smoking related mortality and morbidity should therefore be the concern of all levels of the society. We hereby advocate that health care workers should play a leading role in providing and creating a tobacco free society.

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