

SECOND CARNEGIE INQUIRY INTO POVERTY
AND DEVELOPMENT IN SOUTHERN AFRICA

The impact of smoking in
underdeveloped countries.

by

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1. INTRODUCTION

The World Health Organization (WHO) regards smoking as the greatest single preventable cause of disease, disability and death with up to one million premature deaths occurring annually because of the habit. This paper traces the growth of the tobacco industry in developed countries. It then shows that the industry's response to restrictive smoking legislation in developed countries has led to greater penetration of underdeveloped areas. The health and agricultural impact of smoking in these countries is discussed with particular reference to the poorer sectors of underdeveloped countries. The paper concludes by reviewing approaches suggested or taken by countries to prevent smoking.

Information about smoking rates and smoking-related diseases among underdeveloped countries in Africa is scanty. Where available, such data has been used; otherwise reports from other underdeveloped countries are cited. With regard to South Africa, race classifications have been used as the best available proxy of socio-economic class.

11. Smoking in Developed Countries(a) Introduction

The conquests of the New World following Columbus's explorations brought about the introduction of many new crops and diseases to Western Europe. Sir Walter Raleigh's (1) importation of tobacco must surely rank as important as the concurrent introduction of syphilis (2) to the British! It was only after the Crimean War that commercial production of cigarettes began. From then, there was a steady rise in male cigarette consumption in the United Kingdom that peaked after the 2nd World War. Female consumption followed a similar trend except that it occurred thirty years later (figure 1). Opposition to cigarettes was initially based on religious, moral and aesthetic principles with little emphasis on the health consequences. In fact, between 1895 and 1909, twelve American States banned cigarette sales - this was repealed in 1927.

(b) Health effects

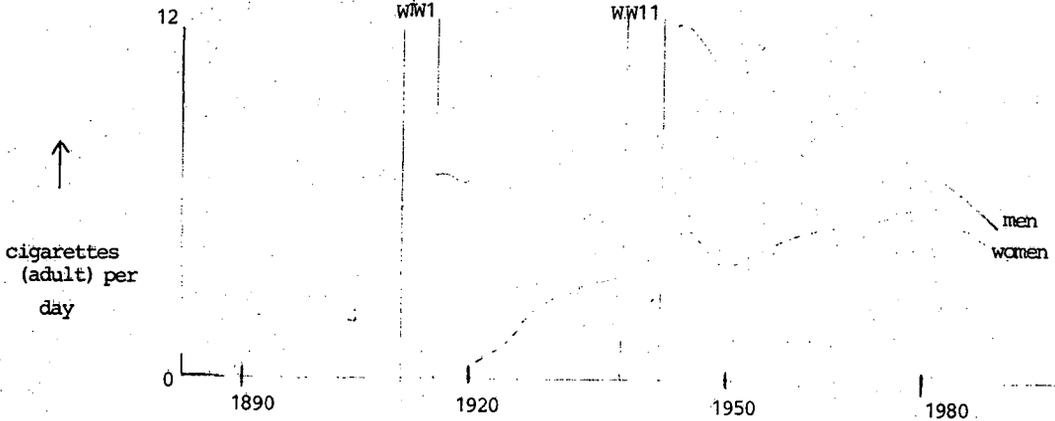
"...lothesome to the eye, hateful to the nose, harmful to the brain, dangerous to the lungs, and in the black stinking fume thereof nearest resembling the horrible stigmatic smoke of the pit that is bottomlesse."

King James 1 of England. 1566-1626 (1)

First evidence that smoking effected health was provided in 1938 when Professor Pearl of Johns Hopkins University showed in a study of smoking and longevity, that 46% of smokers lived longer than 60 years, compared to 67% of non-smokers (2). In the 1950's, Doll, Hill, Hammond and Horn, showed in prospective studies that smokers had increased cancer and overall death rates (3). Since then, it has been estimated that smoking accounts for 15-20% of all British deaths, a quarter of all United States cancer deaths and at least one million premature deaths each year in the world.

Recent major reports (1,4) have summarised the health effects of smoking in developed countries. They clearly show that smoking results in an increased risk of early death from all causes; that it in particular increases the smokers risk of dying of lung cancer, chronic obstructive lung disease and coronary heart disease and that it results in increased prevalences of chronic bronchitis, emphysema, chronic sinusitis, peptic ulcer disease, arteriosclerotic heart disease and

FIGURE 1

CIGARETTE CONSUMPTION IN THE UNITED KINGDOM

Source: Royal College of Physicians, 1983. (1).

TABLE 1

MAJOR TOXIC AGENTS IN THE GAS PHASE OF CIGARETTE SMOKE (UNAGED)

	Biologic Activity
Dimethylnitrosamine	C
Ethylemethylnitrosamine	C
Dicthylnitrosamine	C
Nitrosopyrrolidine	C
Other nitrosamines (4 compounds)	C
Hydrazine	C
Vinyl chloride	C
Urethane	T1
Formaldehyde	CT,CoC
Hydrogyn cyanide	CT,T
Acetaldehyde	CT
Nitrogen oxides	T
Ammonia	T?
Pyridine	T?
Carbon monoxide	T

Source: Wynder, 1979 (55)

TABLE 2

MAJOR TOXIC AGENTS IN THE PARTICULATE MATTER OF CIGARETTE SMOKE (UNAGED)

Benzo(a)pyrene	T1
5-Methylchrysene	T1
Benzo(j)fluoranthene	T1
Benzo(a)anthracene	T1
Other polynuclear aromatic hydrocarbons (20 compounds)	T1
Dibenz(a,j)acridine	T1
Dibenz(a,h)acridine	T1
Dibenzo(c,g)carbazole	T1
Pyrene	CoC
Fluroanthene	CoC
Benzo(g,h,i)perylene	CoC
Other polynuclear aromatic hydrocarbons (10 compounds)	CoC
Naphthalenes	CoC
1-Methylindoles	CoC
9-Methylcarbazoles	CoC
Other neutral compounds	CoC
Catechol	CoC
3- & 4-Methylcatechols	CoC
Other catechols (4 compounds)	CoC
Unknown phenols & Acids	CoC

C denotes carcinogen, T1 tumor initiator, CoC cocarcinogen
CT cilia toxic agent and T toxic agent.

---- /over

TABLE 2. (CONTINUED)

	Biologic Activity
N'-Nitrosornicotine	C
Other nonvolatile nitrosamines	C
g -Naphthylamine	BC
Other aromatic amines	BC
Unknown nitro compounds	BC
Polonium-210	C
Nickel compounds	C
Cadmium compounds	C
Arsenic	C
Nicotine	T
Minor tobacco alkaloids	T
Phenol	CT
Cresols (3 compounds)	CT

Source: Wynder, 1979 (5)

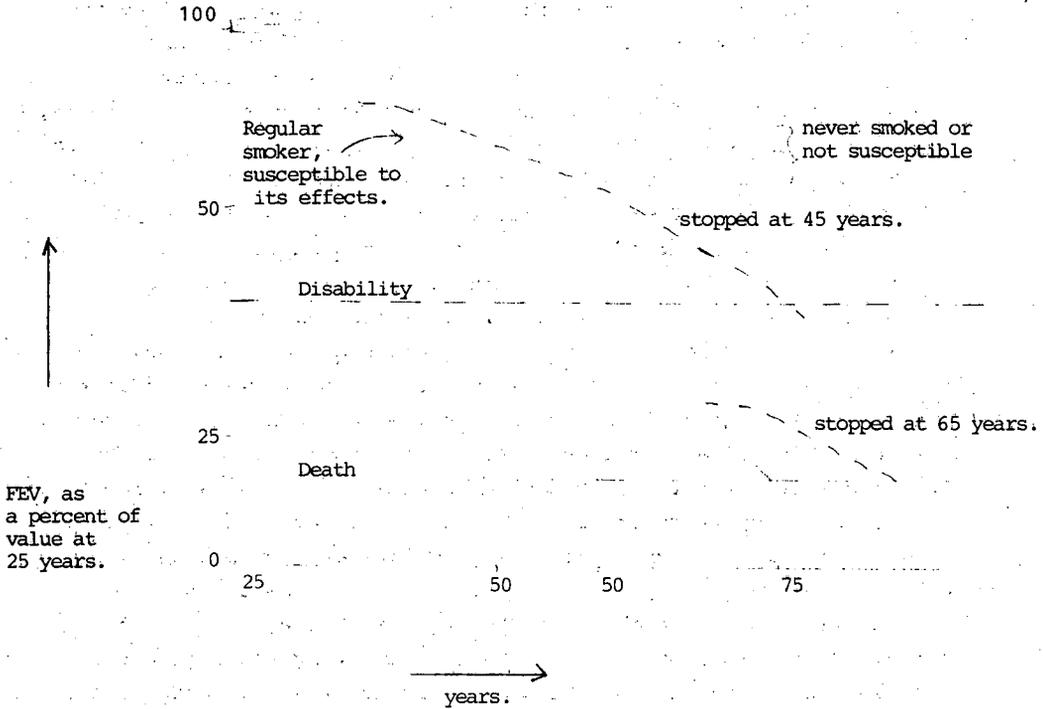
acute conditions like influenza. The positive effects of stopping the habit at any age are also well shown. For example, smokers rate of decline in their lung function slows down to that of a non-smoker once they stop (figure 2). These effects are caused or related to innumerable toxic agents present in either the gas or particular phase of cigarette smoke (table 1 and 2).

The effect of smoking on the developing foetus and growing child have been extensively documented. Smoking results in an increased risk of infertility, earlier menopause, increase in spontaneous abortions and the birth of offspring 200 grams lighter than non-smoking mother's offspring. Overall, the risk of a smoking mother having a low-birth weight infant (less than 2,5 kg) is twice that of a non-smoking mother. Furthermore, passive exposure to maternal cigarette smoke may have important effects on the development of pulmonary function in children (5). Women on the pill who smoke are more likely to develop ischaemic heart disease and suffer strokes.

Work over the past five years has shown that sidestream smoke contains higher concentrations of some hazardous substances than mainstream. For example, sidestream smoke has 2,7x more nicotine, 2,5x more carbon monoxide and 3,4x more benzo-a-pyrene (a potent carcinogen) than mainstream smoke. It is these agents that are responsible for the observed effects of passive smoking. They include increased cancer rates in non-smoking husbands, increased ischaemic heart disease rates, decrease psychomotor function and effort tolerance (due to carbon monoxide) and increased prevalences of acute illnesses (colds, influenza, bronchitis) in children (6).

FIGURE 2

LUNG FUNCTION (FEV₁) CHANGE WITH AGE



Source: Royal College of Physicians, 1983 (1).

"Many eminent scientists hold the view that no case against smoking has been proved."

Cigarette Manufacturing Industry, 1980 (2)

(c) Declining consumption

The mass of evidence linking smoking and disease, despite the tobacco industries' persistent denial of such a link, has brought about a significant reduction in the habit in the USA, England and other developed countries. There has also been a significant decline in the average tar and nicotine contents of cigarettes smoked in developed countries that, taken with reduced daily intake, may explain the trend for the coronary heart disease deaths rate to be on the decline in the USA. Many researchers however, feel that a safe cigarette will never be developed because smokers compensate for low levels by increasing the frequency and amount inhaled (7). A large part of this reduction in the overall rate is due to the increasing effect of anti-smoking legislation that has caused a significant reduction in cigarette promotion and an increased awareness of the hazards. Unlike in the developing world, countries like Australia and England have actively exposed misleading adverts. A recent example was a Thames TV production that showed 5 of the 6 rugged cowboys used in the Marlboro adverts dying in real life of lung cancer, emphysema or heart disease (8). Despite this, millions still smoke in these countries. The decline in the smoking rate has occurred mainly among people from upper social classes while the poor still smoked as much in the UK in 1978 as they did in 1958 (figure 3). This is well reflected in the strong associations between a smoking-related disease like bronchitis and social class (table 3) clearly, more than educational campaigns are required to break the bonds of nicotine dependence that bind most smokers to their cigarettes.

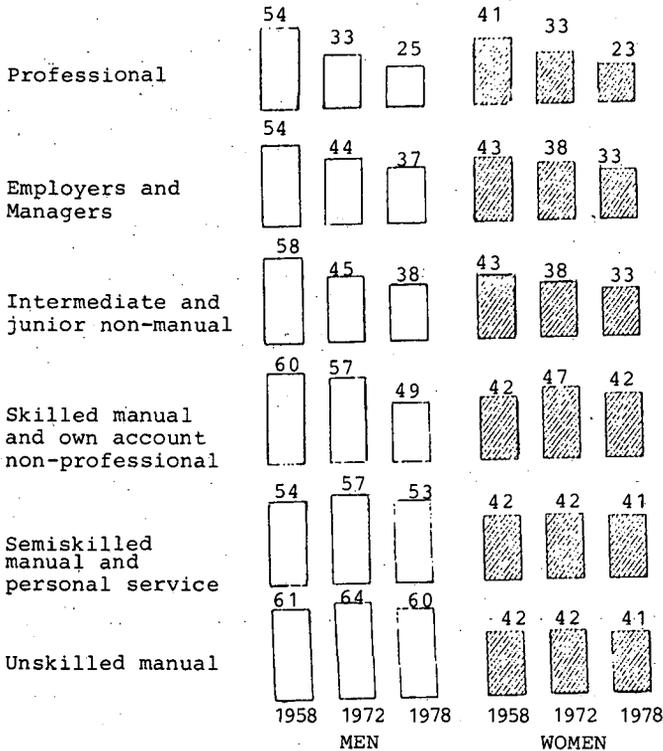
111. Smoking and its effects in underdeveloped countries

(a) Increase in tobacco production in Africa

Tobacco found its way to Africa along with maize and groundnuts (9) via the increased trading activities of the Portuguese and Spanish in the 1600's. Cultivation of tobacco rapidly spread throughout the continent and to Asia. All commercial plants being variants of one species, *Nicotiana Tabacum*. Commercial production of tobacco in the Third World has increased sharply since the 1950's and has been firmly controlled by the Tobacco Transnational Corporations (TTC). Over the past few years, TTC's have offered inducements to developing countries. In fact tobacco is now the most widely grown non-food

FIGURE 3.

SMOKING AND SOCIAL CLASS



Percentage cigarette smokers in the United Kingdom by sex and social class in 1958, 1972 and 1978. Note the much greater fall in the higher socio-economic groups and proportionately greater fall in men than in women.

Source: 1958 figures from Chief Medical Officer, England and Wales (6), remainder from Office of Population Censuses and Statistics (16). The 1958 figures were not subdivided in Social Class 1 between professional and employers and managers, so the same figure has been used for both.

TABLE 3BRONCHITIS RATES (S.M.R.) IN 15 - 64 YEAR OLDS

SOCIAL CLASS	MALES	MARRIED FEMALES BY HUSBANDS' OCCUPATION
1	28	33
11	50	51
111	97	102
1V	116	118
V	194	196

Source: Royal College of Physicians, 1983 (1)

crop in the 120 countries. 72% of the total land area under tobacco cultivation (4,3 million hectares) is in developing countries. This area in 1979-81 produced 63% of world tobacco compared to 50% in 1961-3 (10). Several developing countries now receive significant foreign exchange currency from the export of tobacco. India for example, is now the third largest tobacco producer behind USA and China (11), while in Africa; Malawi, Tanzania, Zimbabwe, Kenya, South Africa and Nigeria all export substantial amounts of tobacco.

(b) Export earnings.

An indication of the value of these exports can be seen by examining each country separately. Zimbabwe's 1982 export earnings from tobacco were R250 m. (i.e. more than that earned from gold) and major importers of Zimbabwean tobacco included the EEC, Iraq, Israel and RSA (12). Tobacco is thus the principle export earner and largest employer of labour. In Tanzania, tobacco production is fostered by the Tanzanian Rural Development Bank which in 1978/9 gave 61% of its agricultural loans to tobacco farmers compared to only 19% to maize farmers (13). Malawi's exports of tobacco have increased from 17000 tons in 1965 to 44500 in 1977, thus accounting for 56% of Malawi's total export earnings (14). Finally, back home in South Africa tobacco earned R14 m. in exports in 1979. (15).

As will be shown, these export earnings are increasingly collected at a higher cost. Throughout Africa and the developing world, these costs are beginning to be measured in terms of changing and new patterns of disease, loss of valuable land for food production, deforestation, Transnational dependency and national addiction to a single industry. Before discussing these points, it is important to understand the methods used by TTC's to penetrate the new Third World markets.

(c) Tobacco Transnational Corporation in Africa.

In Africa, all of the major TTC's are represented i.e. BAT, RJ Reynolds, Phillip Morris, Imperial Group, Rothmans,

Rembrandt and American Brands (13). Together they control 89-95% of world leaf tobacco. Their control extends to the supply of fertilizer, pesticides and machinery, the growing of crops; processing, production, marketing and selling of the final product and obviously to the pricing of tobacco. BAT alone, with the largest share of the total world cigarette market produces some 300 brands in 180 countries (16), while our own little giant, which is in poor taste named after a famous non-smoking 17th century artist, i.e. Rembrandt, is the 4th largest cigarette maker in the 'Free World' producing 1 in every 12 cigarettes smoked and marketing products in 180 countries (17).

(d) TTC penetration into new markets.

(i) Introduction

The TTC's, despite their size and power depend on the smoker for their wealth. With the decline in consumption in the developed world and the increased promotional restrictions placed on TTC's in these countries, it has become critical to their survival to seek out new areas. As Rupert said last year (18), "For the industrialist, the dilemma is, therefore, either a growing potential market in the developing world where money is unstable, or a shrinking market in the developed world where currency is stable." Evidence that the former approach has been adopted both locally (increased emphasis on the Black market) and internationally, is contained in an International Tobacco Industry memo produced after the 4th World Conference on smoking and health in 1979 (1).

"We must try to stop the development towards a Third World commitment against tobacco. We must try to get all or at least a substantial part of Third World countries committed to our cause."

International Tobacco Board (1).

Their methods used, included selecting specific countries and persuading them (with bribes and payoffs) to spread the tobacco gospel. Even in the USA such payoffs have been used. R.J. Reynolds was found to have used corporate funds to promote US Congressional and Presidential candidates (19). In Malawi, President Banda owns several tobacco plantations and is known to have usurped aid from Britain's Ministry of Overseas Development for private profits (14). Claims that the TTC's are simply providing what consumers want are not able to be substantiated. Companies sell what is profitable for them. By first teaching people to want, then efficiently providing them, they can prosper. Fanta Orange sold in fruit growing areas and baby foods sold where breast-feeding was the norm, are examples as with cigarettes of how scarce resources are misused to supply wants not needs.

(ii) Advertising in underdeveloped countries

"Individuals should retain the freedom of choice to decide for themselves whether or not to smoke."

Tobacco Board. (20)

Besides using underhand methods, the TTC's are able to exploit the fact that in most developing countries, they are not hindered by media restrictions, the need for health warnings on cigarette packets and any anti-smoking lobby. The two billion Rands spent annually around the world on cigarette promotion, severely restricts 'consumer sovereignty' especially in the developing world where people are more vulnerable to the unopposed encroachments of value systems inherent in promoting consumption. (19) In most cases, the TTC's use extensive use of unrestricted mass advertising. From mobile cinemas in Kenya, (16) sponsorships of national games or sports festivals in Pakistan (11), free sampling at fairs in India, or sponsorship of art in

RSA, (18) few advertising media are closed to the TTC's. In Pakistan between 1976 and 1981, there has been a 6-fold increase in revenue from cigarette adverts on TV and radio, in Kenya cigarettes with brand names like Life (Ugandan equivalent is Champion) and Sportsman (65% of the market) are promoted as the passport to successful, healthy and glamorous living. The fact that most users are unaware of the risks of smoking and once they start and are addicted, is exploited by the TTC's (21) Their claims that advertising causes brand switching and does not increase the pool of new smokers (22,23) are shallow and based on studies in the United Kingdom where the market is saturated, (i.e. not growing) and hazards of smoking are widely known compared to the developing world where knowledge of hazards is limited. Their arguments are used simply to divert criticism while messages like "You're smart to smoke" or "That very special taste of success" are repeated on radio, TV and in every imaginable reading source (14).

The TTC's know that in the developing countries, increasing advertising will increase the amount of smokers until the cigarette habit is able to take hold and be perpetuated as a social norm. Only three countries have severely restricted advertising of cigarettes in Africa (Mocambique, Sudan and Senegal). For the rest, advertising increasingly urges populations to smoke.

(iii) Increased cigarette consumption

The success of the TTC's strategies can be gauged by the recent increase in both importation and consumption of cigarettes in the underdeveloped countries. Table 4 illustrates clearly how growth rates have slowed or declined in developed countries, but are extremely high in underdeveloped countries. Predicted consumption forecasts for 1980-84 estimate that cigarette use will increase three times as fast in underdeveloped countries, compared to developed areas, i.e. 3.9% versus

TABLE 4GROWTH RATES IN CIGARETTE MARKETS 1975 - 80

<u>Developed</u>		<u>Developing</u>	
Austria	+1,8%	Brazil	+4,1%
Germany	+0,5%	Malaysia	+4,7%
USA	+0,5%	India	+5,6%
UK	-1,8%	Venezuala	+5,6%
Belgium	-5,3%	Pakistan	+6,1%

Source: Royal College of Physicians, 1983 (1)

1,2% (24). In Pakistan, cigarette consumption has doubled in a ten year period from 24 billion in 1970 to 39 billion cigarettes consumed in 1980 (11). In India, consumption rose 400% in the same period while in remoter Papua, New Guinea, annual consumption trebled from 1960-80. Data for Africa is scanty but the few available statistics show a similar pattern. Libya and Egyptian cigarette consumption has doubled in ten years, while the current Kenyan annual rate of increased consumption is 8%. Proof of this massive increased consumption are reports that the world's largest daily airlift of cigarettes now takes place between Britain and East Africa. 210 metric tons of cigarettes per month are airfreighted to the region - this amount represents 10% of all BAT exports from the UK and continues in the face of increasing British opposition (25).

(iv) Smoking and social class

In many of the underdeveloped countries, it has been shown that the poor contribute significantly to the increased smoking rates. Seventy percent of males and twenty percent of females from the lowest socio-economic groups smoke in Pakistan. In India (11) (table 5) more blue collar workers than white collar workers smoke. Back home (26, 27) (table 6) smoking rates at present are roughly inversely proportional to socio-economic class with white males for example, smoking less than their black or coloured counterparts. The black figures are calculated over the country. Higher figures, nearer 90% have been obtained in urban industrial workers. The lag in the female rates is similar to that observed in the UK in the 1920's.

(v) Smoking in children

An increasing concern for public health officials in underdeveloped countries is the high prevalence of smoking among children. A 1979 study in China showed

TABLE 5SMOKING BY SOCIO-ECONOMIC CLASS IN INDIA

	<u>White Collar worker</u>			<u>Blue collar worker</u>		
Age (yr)	40	40-49	50+	40	40-49	50+
% smokers	66	62	55	78	78	80
Total Number	498	4253	1985	2004	2761	1192

Source: World Health Org. (11)
1981

TABLE 6PERCENTAGE OF POPULATION 16 YEARS WHO SMOKE (1976)

	<u>VAN DER BURGH</u>		<u>REMBRANDT</u>	
	<u>Males</u>	<u>Females</u>	<u>Males</u>	<u>Females</u>
Whites	58	31	52	40
Coloureds	79	52	58	17
Blacks	70	20	58	17
Indians	68	5	62	-

Source: Van der Burgh, 1979 (26)
Malherbe 1981 (27)

that 46% of middle school males smoked. (1) Despite the cigarette manufacturing industry's belief that smoking is for adults and not children (27), neither the industry nor a single government in Africa have taken any steps to restrict sales to minors. In fact, studies in several African countries (figure 4) have clearly shown that significant numbers of children smoke. Prout (28) demonstrated that the habit begins before the teens. Factors playing a role in childhood smoking are peer pressure, lack of awareness of the dangers, the selling of cigarettes by the "stick" (occurs extensively in Africa from Nairobi (1) to Crossroads (29)) and the overall impression of smoking as a desirable and necessary habit that advertisements portray.

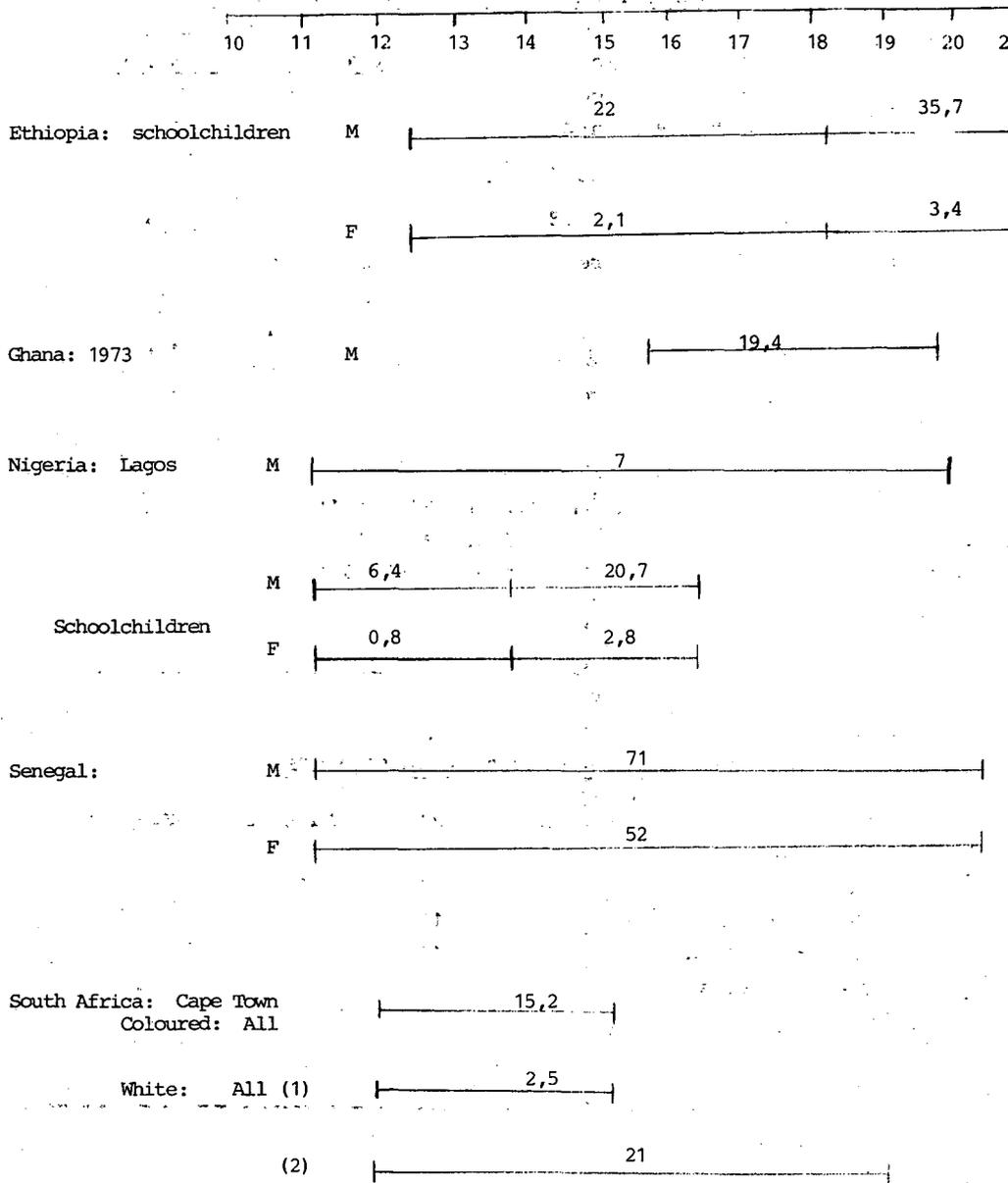
(vi) Tar and nicotine levels in underdeveloped areas

While R150 million was recently spent in the USA to launch Barclay* cigarette, the new ultra-light brand with a tar level of 1 mg (30) and low tar/nicotine cigarettes are increasingly being promoted and sold in developed countries, high tar/nicotine cigarettes are being offloaded in the underdeveloped countries. Table 7 shows how average tar/nicotine levels in underdeveloped countries are currently similar to levels that prevailed in developed countries 20 to 25 years ago. Table 8 shows that several of the same brands marketed in Europe contain higher nicotine/tar levels when exported to Africa or Asia. Within underdeveloped countries, there is evidence that the highest tar/nicotine cigarettes are smoked by people from the lowest social classes. In Nigeria for example, people with the lowest incomes smoked mainly high tar cigarettes, while those with the highest incomes smoked mainly medium tar cigarettes, low tar cigarettes not being available at all. (31) In a study in the Transkei

*Footnote: All Barclay advertising was subsequently banned in the USA because of misleading claims of safety (33).

FIGURE 4.

PERCENTAGE CHILDREN AT DIFFERENT AGES WHO SMOKE



Sources: WHO, 1983 (45); Benatar, 1979 (46); Prout, 1983 (28)

TABLE 7AVERAGE TAR AND NICOTINE YIELDS OF CIGARETTES

		<u>TAR</u>	<u>NICOTINE</u>
United Kingdom	1965	31	2,1
	1981	15	1
USA	1958	35	2,4
	1976	18	1,2
RSA	1978	29	1,6
Nigeria	1978	23	1,6
China	1979	27	1,6

Sources: Muller 1978 (14)
 Seftel 1979 (47)
 Awotedu 1983 (31)

TABLE 8BRAND YIELDS OF TAR (MG/CIGARETTE)

Brand	Phillipines	UK	Austria	Kenya
Kent (BAT)	33	13	15	
Marlboro	25	15	14	
Chesterfield	31	16	18	
Benson and Hedges		17		22
State Express		18		31

(32); three brands accounted for 80 percent of all cigarettes smoked. All three brands contained very high tar levels. A pilot study in Cape Town that investigated the relationship between class and brand, showed that Crossroads residents smoked only high tar cigarettes. This contrasted with the smoking habits of whites from higher socio-economic classes who smoked mainly medium and low tar cigarettes. A gradient for socio-economic class was found among whites with the highest tar brands being smoked by the lowest socio-economic group and vice versa. (29)

(e) Health effects of smoking in underdeveloped countries.

"Let us treat the past as a springboard to the future."

Anton Rupert (17)

"The health of the Third World has to be sacrificed for the health of the tobacco industry."

Mike Muller (14)

(i) Introduction

As has already been discussed, increased consumption of cigarettes in developed countries gave rise in the past and still causes many diseases and premature deaths. With the rise in the smoking rate in underdeveloped areas, many health officials are becoming increasingly concerned about the future epidemic of smoking related diseases that is likely to effect these areas. In many countries the so-called future epidemic has already begun. In Pakistan and Bangladesh, lung cancer is now the most common fatal cancer reported. This is in contrast to 10 years ago when oral, metastatic and skin cancer all occurred more frequently than lung cancer (11). In China studies of smoking-related diseases have confirmed similar work done in developed countries. They have found that smokers have 11x increased risk of lung cancer and a 4 x increased risk of heart attacks than non-smokers (11). In

India, the recent 6 fold increase in bronchitis and emphysema mortality was clearly shown to be associated with the increased use of tobacco.

(ii) Lung cancer

Morbidity and mortality data are generally unreliable in most underdeveloped countries. Statistics on specific usually fatal diseases are however available from some African countries. Table 9 shows the changes in lung cancer mortality rate that have occurred in different populations over the last 30 years. The coloured rates are particularly alarming. Their rate of increase is still very high compared to the slowed down rate evident in white males. The latest coloured male lung cancer mortality rate of 68,5 per 100 000 is among the highest reported in the world. The rates among the poor were all initially low and are now all rising steeply. A similar picture emerges from other underdeveloped countries. In Dakar, the cancer rate was 2,5 in 1961 (34), while in Jamaica the rate has doubled from 7 to 14 deaths per 100 000 between 1960 and 1972 (35). Lung cancer has been very strongly linked to smoking and can therefore be reliably used as an indicator of the effects of smoking. Less than 20% of lung cancer sufferers have resectable tumours and of the remaining 80 percent, 95 percent die within one year of diagnosis (35).

TABLE 9

LUNG CANCER MORTALITY RATES (PER 100 000)
FOR S.A. MALES (R.S.A.)

	<u>1949</u>	<u>1969</u>	<u>1979</u>
Whites	17	39	45,4
Coloureds	9	42	68,5
Blacks (urban) ?		17	23
-Durban ?		?	24
-All ?		?	18
UK women	4		21

Sources: Stolley, 1983 (48)
Bradshaw 1975 (49)
Bradshaw 1983 (50)

(iii) Smoking, infections and cancer

In South Africa, pulmonary tuberculosis is endemic in the population with 60 000 new cases reported each year. It occurs most frequently among the poor, (incidence rates range from 378/100000 in coloured, to 235/100000 in blacks, to 13/100000 in whites) (37). Exposure to TB or concurrent TB infection has been shown to increase one's risk of contracting lung cancer. (38). Some studies have shown that lung cancer can occur up to 20 x more frequently in TB sufferers than in the general population. Exposure of the poor to both TB and smoking probably explains the particularly high incidence of lung cancer being reported. The poor are at increased risk of esophageal cancer if they smoke and are malnourished. In parts of Southern Africa the esophageal cancer mortality rate for blacks of 246/100000 is the second highest reported in the world (39). Over the period 1968-1976 the male esophageal cancer death rate rose from 38,6 to 48,5 in blacks and from 18,1 to 26 in coloureds (40). Another example of the combined effects of cancer and infection is schistomiasis (or bilharzia) which occurs throughout large parts of Africa. Egyptian studies have documented a higher prevalence of bladder cancer in schistosomiasis patients who smoke than in those who are non-smokers (41). In summary then studies in underdeveloped countries have confirmed the reported health effects of smoking seen in developed countries. The major difference observed is that many diseases occurred at higher frequencies in underdeveloped areas, because of the presence of malnutrition and certain infectious diseases.

(iv) Smoking and occupation

In developed countries the combined effects of smoking and exposure to several agents in the workplace have been clearly shown. For agents like mine dust, grain dust and cotton, the effects of smoking are addictive and the resultant diseases are largely variants of obstructive lung disease (asthma or chronic obstructive

lung disease, for example). Other agents like the radon daughters found in uranium mines and asbestos fibres (table 10) act synergistically with smoking, i.e. they have a multiplicative effect and they cause lung cancers. These associations are partly responsible for the changed approach of UK Trades' Union Congress in 1981 (1). It forbade smoking at Annual Conferences and undertook a programme to educate workers about the dangers of smoking.

Unskilled workers in underdeveloped countries are poorly protected against other known carcinogens (42) such as asbestos fibre. They work in industries where dust levels are never monitored let alone controlled and smoke high tar cigarettes. They face health threats on three fronts; in the workplace (toxic agents), at home (smoking and domestic fuel) and in their communities (TB and malnutrition). All three together contribute to the compromised health status of workers in poor areas. One last effect of smoking among workers is the tendency for employers to blame health effects solely on smoking and thus divert attention away from known occupational exposures. This occurs mainly when workers apply for compensation (43).

(v) Effect of smoking on health services

For many poor countries smoking-related diseases impair the health development process. In the developed countries, these diseases became important after nutritional and infectious diseases had been largely eradicated. However, in most of Africa, health departments are struggling to eliminate these diseases of poverty. At the same time they will now be forced to siphon scarce financial and human resources into dealing with smoking-related diseases which demand the expensive sophisticated diagnostic and therapeutic resources of large hospitals (44). This is in sharp contrast with nutritional and infectious diseases which require a relatively low-cost preventive community approach.

(f) Effects of smoking on agriculture

"Maize and tobacco need about the same amount of rain and maize grows well in places where the demanding tobacco can grow. It is therefore remarkable that the drought of 1973/4 (in Tanzania) caused a drop in the annual amount of maize

TABLE 10LUNG CANCER MORTALITY/100 000 IN ASBESTOS WORKERS

Non smokers; non asbestos workers	11
Smokers ; non asbestos workers	122
Non-smokers; asbestos workers	58
Smokers ; asbestos workers	601

Source: Selikoff, 1981 (51)

marketed by a third, while tobacco output continued to grow".

Michael Von Freyhold (53)

(i) Food imports

In the past, most African countries were self-sufficient in food. This has changed since the onset of cash crop production on the continent. Crops such as tobacco and coffee for example, are usually grown for export. Since the real purchasing power provided by agricultural exports rarely keeps pace with the price of manufactured goods that Africa imports (13) increased exports of produce are demanded to prevent running into a negative trade balance. In the case of tobacco, TTC's control the export price and are thus able to force countries to become dependant on tobacco. The need to produce more tobacco leads to decreased availability of land for food. Since good quality arable lands are at a premium in most African countries, they are forced to use less arid areas for food cultivation. The effect of this has been that tobacco exporters in underdeveloped countries have had to import vast quantities of food. In Bangladesh, 137 000 acres of land are used for tobacco cultivation, yet hundreds of thousands of tons of grain are annually imported. For Pakistan, the cost of having tobacco as its major cash crop has meant that R200 million of edible oils alone had to be imported in 1981 (11). All major exporters of tobacco in Africa have to import large quantities of grain and other foodstuffs (table 11). This includes South Africa.

(ii) Deforestation

Much of the tobacco grown in Africa is flue-cured. Tobacco plantations are therefore often located near forests since for one ton of tobacco to be cured, two to three hectares of forest are needed. 12 percent of all trees axed in Tanzania per year are used for tobacco curing (53). In other countries such as Nigeria and Kenya the increased deforestation of large areas has already resulted in serious soil erosion problems.

TABLE 11TOBACCO EXPORTS AND FOOD IMPORTS

	<u>Food Imports</u>	<u>Percent of export earnings from tobacco</u>
Malawi	11% total imports	55
Tanzania	300 000 tons grain (1980)	6
Zimbabwe	300 000 tons grain (1984)	60 (46)

Sources: Hawkins, 1983 (12)
 Dinham, 1983 (13)

(iii) Unemployment

Tobacco production is associated with employment problems in two ways. Firstly, labour is only needed during short seasonal peaks. This is disruptive to the development of a stable labour force. Secondly, the industry is becoming more and more labour intensive. In the USA (1972) capital invested in tobacco manufacturing per production worker was more than twice that invested in the average of all manufacturing industry, outpaced only by the petroleum industry (19,47). The newer technologies will progressively result in large scale unemployment as they are applied in Africa.

(g) Economic implications of smoking

Studies in Canada (12,54), Poland and South Africa (15) have all refuted Tobacco Industry claims that smoking benefits a nation's economy. When the costs of smoking in developed countries are added to the additional costs in terms of agriculture, TTC dependency and the health dangers applicable in poor countries, it becomes apparent that smoking cannot be economically justified. Poor countries are particularly vulnerable both in terms of the already compromised health status of their populations and because of their need for food, to the full costs of smoking. Health care costs are having to be diverted from primary health programmes, larger tracts of land are being lost to food production and economies are becoming more dependent on a single cash crop. Economic short term benefits that may accrue to these countries have already been shown to be longterm national liabilities.

1V. Anti-smoking legislation

In many developed countries, intensive anti-smoking campaigns have helped to reduce the prevalence of smoking. In the USA for example, the annual per capita cigarette use (less than 18 years) declined from 4300 in 1963 to 3845 in 1980, while the proportion of smokers less than 17 years old dropped from 41,7% in 1965 to 32,6% in 1980 (56). It is well recognised that although mass media campaigns have a limited effect in motivating smokers to quit, they are important in reinforcing non-smokers' (and ex

smokers) behaviour (57,58). Anti-smoking legislation that adopts an holistic approach is therefore expected to achieve the greatest success. This approach includes educational measures (school, industry, health warnings on packets etc) smoking control legislation (enforcement of non-smokers rights to clean air), tax increases on cigarettes as well as tobacco control measures. In the developed countries the struggle for strong anti-smoking legislation has been long and only partially successful. A recent success, when San Fransicans voted in a referendum to ban smoking in the workplace despite a R1,2 million campaign by the tobacco industry, demonstrated the lengths to which tobacco industry is willing to go in order to maintain their position (60).

Similar successes have not been reported in underdeveloped countries. With the exception of Mocambique, Senegal and Sudan, no countries in Africa have meaningfully restricted cigarette advertising. In South Africa there is token legislation at national and local level. Health warnings along with the tar and nicotine content of cigarettes were supposed to become mandatory from January 1982. This has been ignored and in February 1983, the Minister of Health stated that there were no plans to introduce legislation restricting cigarette promotion or use. He went on to say that "We have a verbal agreement with the Tobacco Board as far as advertising goes" and intimated that the industry was co-operating (61). International experience is that voluntary codes do not adversely effect sales but merely indicate governments' reluctance to use measures that would significantly change smoking habits, i.e. legislative control (59).

In the few cases where legislation exists, enforcement is rare. For example, despite legislation banning smoking in many areas controlled by the SA Transport Services, no prosecutions have ever been reported (62). In Cape Town there has been only one prosecution under their bye-law that restricts smoking in certain vehicles, premises and open food display areas (63).

V. Conclusions

The growth and influence of Transnational Tobacco Corporations in underdeveloped countries is discussed. Social economic and political pressures are shown to be crucial in creating and maintaining the 'need' for cigarettes. These pressures are generally ignored by those who resort to victim blaming i.e. using the argument that smokers are too weak to stop and therefore responsible for their plight.

This paper has shown that the effects of smoking are already being felt in underdeveloped countries. The poorer people inside developed countries as well as poor countries are increasingly suffering and dying from smoking-related diseases. They have an increased vulnerability to such diseases because of the high prevalence of co-existing infectious and nutritional diseases. Workers are at special risk because of their concomitant exposure to toxic agents at work. The agricultural impacts are shown to include firstly, a decreased ability of underdeveloped countries to attain food-self sufficiency, secondly, increased deforestation of large areas with its risks of soil erosion and flooding and finally disruption to the development of a stable labour force.

Finally, there is an urgent need for legislation in underdeveloped countries similar to that proposed by the Medical Association and to that unsuccessfully tabled in parliament by Alf Widman (14). Legislation must aim to reduce national and individual addiction to tobacco as well as protect the rights of non-smokers, especially infants, the elderly and those exposed to toxic agents on the factory floor. Tobacco manufacturers should not be allowed under the guise of freedom to promote products with known serious health dangers. Governments in underdeveloped countries should recognise that the so-called benefits of tobacco are already becoming major impediments to national development. Developed countries could help their poorer counterparts by banning the sale of high tar cigarettes and tobacco production methods to underdeveloped countries.

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