

# **The Surveillance and Monitoring of Tobacco Control in South Africa**

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## Introduction

South Africa is situated at the southernmost tip of Africa and is divided into nine provinces: Western Cape, Eastern Cape, Northern Cape, KwaZulu-Natal, Free State, Gauteng, Mpumalanga, Limpopo Province and North West Province. It has a population of approximately 43 million, half of whom are under 19 years of age.<sup>(1)</sup> South Africa is considered a middle-income, developing country and has extremes of wealth and poverty due to 350 years of colonialism and apartheid<sup>1</sup>. Almost 78% of the population are “Black/African” (1) and they represent the majority of those living in poverty.<sup>(2)</sup> About 72% of the poor live in rural areas. (2) There are 11 official languages in South Africa.

The history of tobacco control in SA dates back to the 1970s when tobacco use was banned in cinemas, followed by a ban on smoking on domestic flights.<sup>(3)</sup> In 1993 the first Tobacco Products Control Act (4) was passed and was implemented in 1995. It regulated smoking in public places, prohibited tobacco sales to minors under the age of 16 and regulated some aspects of advertising of tobacco products such as labelling. It was not a comprehensive act in that it had the following shortcomings: radio advertising was still allowed; smoking in public places was not banned completely; the definition of a public place was not specified, and no enforcement mechanism was built into the act. In 1995, health warnings were introduced for all tobacco packaging and tobacco advertising on billboards. Due to the shortfalls of the 1993 Act, the Tobacco Products Control Amendment Act was passed in 1999.<sup>(5)</sup> It primarily bans all advertising and promotion of tobacco products, including sponsorship and free distribution of tobacco products; it restricts smoking in public places, including the workplace and public transport; it stipulates penalties for transgressors of the law, and specifies the

maximum permissible levels of tar and nicotine. The regulations were implemented in 2001.<sup>(6)</sup>

During the 1990s, there was a concerted effort by the research community to alleviate the risks associated with tobacco-use by collecting data on the extent of its use. Reddy and associates (7), in a study carried out in February 1995, reported that 34% of adult South Africans, or a total of seven million adults, smoked.

A household survey in 1996 showed that the overall smoking prevalence among adults remained at 34%. However, there had been an increase in the prevalence of smoking among adults in five provinces when compared to the prevalence rates of the February 1995 survey.<sup>(8)</sup> The smoking prevalence analysed by “race” and gender showed that the rate had increased for “Coloured”, “Indian” and “White” males; and for “Black/African” “Indian” and “White” females. From February 1995 to October 1996, smoking prevalence in the 18-24 age group increased from 31% to 36%.

By 1998, Meyer-Weitz *et. al* (9) reported that the smoking prevalence rate for adults had dropped to 25%. This is consistent with the smoking rate of 24.6% obtained from the South African Demographic and Health Survey (SADHS).<sup>(10, 11)</sup> According to the All Media and Product Survey (AMPS), smoking prevalence decreased from 32.6% in 1993 to 27.1% in 2000.<sup>(12)</sup> The dramatic decrease in smoking prevalence from 34% in 1996 to 24.6% in 1998 registered by SADHS could possibly be attributed to the introduction of health warnings on cigarette packages and all tobacco advertisements, together with the extensive media coverage that the impending tobacco control legislation received during that period. Media coverage in particular revolved around debates concerning the pros and cons of the intended legislation. Strong arguments were put forward by government, NGOs, and researchers via the media as to the health, economic and social benefits of comprehensive tobacco control legislation. In addition, the consistent increase in tobacco excise tax may also have had an impact on the prevalence of smoking.

In 1999, the Global Youth Tobacco Survey (13), the first nationally representative study on tobacco use among adolescents was conducted in SA. About 23% of the sample reported being current smokers (smoked cigarettes at least one day in the 30 days preceding the survey). Some 18.5% of students reported first smoking cigarettes before the age of 10. Almost a fifth of the sample (18.2%) had

<sup>1</sup> During the apartheid years, all South Africans were classified in accordance with the Population Registration Act of 1950 into “racial groups” namely “Black/African”(people mainly of African descent), “Coloured” (people of mixed descent), “White” (people mainly of European descent) or “Indian” (people mainly of Indian descent). The provision of services occurred along these “racially” segregated lines. The disproportionate provision of services to different “race groups” led to inequities. Information is still collected along these “racial” divisions in order to redress these inequities. In no way do the authors subscribe to this classification.



used tobacco products other than cigarettes such as chewing tobacco and snuff.

Tobacco-related morbidity and mortality is monitored by using the data from the National Cancer Registry. Data collected for 1993-1995 showed that lung cancer among "White" women was not in the top five types of cancer before 1992 but, by 1995, it was fourth. (14) With regard to "Black" women, lung cancer featured fifth in 1995 but previously had not been one of the major forms of cancer among them. (14) Lung cancer among "Coloured" women was ranked second, and fifth among "Indian" women. (14) Between 1993 and 1995, lung cancer was the third most common cancer in "Black" males and the second most common in "Coloured" males. (14) It was the fourth most common in "White" males and the third most common in "Indian" males. (14) However, by 2000, trends showed a stabilisation of tobacco-related cancers. (15)

Tobacco-related mortality is also monitored by the new death notification system. This new system was implemented in 1998 and records the smoking history of the deceased. A 5% sample of 13 000 forms was used to conduct a case control study. (16) It showed significantly increased relative risk of death due to lung (RR=3.3), oesophageal (RR=4.1), stomach (RR=2.2) and digestive diseases (RR=1.6), tuberculosis (RR=2.5) and other lung diseases (RR=1.6) among the deceased who had smoked 5 years prior to their death. (16)

## Surveillance of Tobacco in South Africa

South Africa has a short history with regard to the establishment of surveillance systems and mechanisms for monitoring tobacco use. Even though policy development in South Africa preceded the establishment of surveillance systems, continuous monitoring and evaluation systems must be in place so that scientific data can be used to justify amendments to the policy and programmes. However, in the absence of these systems, tobacco was included as part of other surveillance mechanisms. In this way trends in tobacco use and tobacco-related morbidity and mortality were measured over time.

### The Cancer Registry

The National Cancer Registry, which was established in 1986, is a co-operative venture of the Department of Health, the Medical Research Council, the Cancer Association of South Africa, the National Health

Laboratory Services and the University of Witwatersrand; it is also funded by these institutions. (14) The National Cancer Registry was set up in the absence of a Population Based Cancer Registry. It collects information from approximately 70 private and public histology, haematology and cytology laboratories. The information is based on histologically verified cancers including those caused by tobacco use. This information is sent on a voluntary basis and thus at irregular intervals. (17) The data are extracted from the pathology report. This report is not standardized and varies from laboratory to laboratory. Data collection covers cases from all age groups. The essential items of information collected are: name, date of birth, age, date of diagnosis, method of diagnosis, primary site of cancer, morphology, extent, gender and ethnic/population group, and usual home address.

### The Household Surveys

The inclusion of tobacco-related questions in the Household Survey dates back to 1994. These questions were included to gather information on tobacco use among South African adults between 1994 and 1998. The questionnaire was put by the interviewer to adults aged 18 and older at the respondents' home. The survey was conducted twice a year, in February and October. Smokers were defined as those who smoked one or more cigarettes, pipes or cigars per day; ex-smokers were defined as those who had smoked at least once a day and stopped for a period of six months and non-smokers were defined as those who never smoked or smoked less than one cigarette a day. In the February 1996 survey, the definition of smoking status used was worded slightly differently but it also categorised participants as smokers, ex-smokers and non-smokers. (9) This survey has been discontinued.

### All Media and Product Survey (AMPS)

The All Media and Product Survey (AMPS) is conducted by the South African Advertising Research Foundation in order to generate data about consumer trends in advertising and the mass media as well as in product usage. (18) The AMPS survey is carried out in the adult population of South Africa aged 16 and over. The questionnaire is administered by interviewers in the participants' home. The study is conducted at least once a year using the same questions. Those are limited to tobacco usage (they do not investigate attitudes towards tobacco use), to tobacco control policies, smoking initiation and exposure to second hand smoke. Smokers are defined as those individuals who spend money on cigarettes. (19) The tobacco-related



questions are not standardized but are repeated without changes each year. The study is funded by the South African Research Foundation, which receives an annual endowment from the Marketing Industry Trust (MIT). MIT is in turn financed through an industry levy on advertising expenditure that is collected by media owners.(18)

### Death Notification

As part of the Vital Registration Infrastructure Initiative, a new death notification form was approved by the government in July 1998 and adopted in September 1998.(20) A question on the smoking status of the deceased, "Was the deceased a smoker five years ago?", was included in the form. This question was added in order to collect information on tobacco-related mortality. The tobacco-related information was evaluated in a case-control study that involved a 5% sample of death notification forms.(16) A 15% sample of death notification forms will be analysed in 2003.(17) It is envisaged that the data collected will be analysed on a 2-3 year cycle.(17)

### South African Demographic and Health Survey (SADHS)

The first nationally representative South African Demographic and Health Survey was conducted in 1998 to provide accurate baseline data on a range of demographic and health indicators including chronic health conditions and lifestyles that affects health status.(10) The study was primarily funded by the National Department of Health, with contributions from Macro-International and USAID. It is envisaged that this survey with interviewer-administered household questionnaire will be repeated in South Africa every five years.(21, 22) The tobacco-related questions were derived from the 1998 WHO Guidelines for controlling and monitoring the tobacco epidemic.(10, 23) The questions covered adult smoking patterns, their opinions on the health effects of tobacco use and their exposure to environmental tobacco smoke in the home and at the workplace.(10, 11) Participants were also asked about their exposure to smoke, dust, fumes or strong smells at their workplace. Data on tobacco-related morbidity was also collected: the symptomatology of chronic bronchitis, which was based on four standardized questions on chronic productive coughing; airflow limitation (asthma) was measured using four standardized questions on wheezing and chest tightness, and peak expiratory flow rate was also measured for each participant. Questions were asked on other tobacco-related illnesses, including tuberculosis, emphysema and cancers. The questionnaire

was administered to adult household members aged 15-49.

The following definitions of smoker categories were used:

- regular smokers: adults who smoked daily or occasionally;
- daily smokers: adults who smoked daily at the time of the interview;
- light smokers: daily smokers who smoked 1-14 tobacco equivalents per day (one tobacco equivalent was calculated as one manufactured cigarette (1g), one handrolled cigarette (1g), one pipe smoked (1g: conservative estimate of the amount of tobacco smoked in pipes), one cigar, cheroot or cigarillo;
- heavy smokers: daily smokers who smoke 15 or more tobacco equivalents per day;
- ex-smokers or quitters: adults who reported previously smoking daily but did not smoke at all at the time of the survey;
- non-smokers: adults who had never smoked tobacco but who may have used smokeless tobacco products

Due to the large sample size of the study, it was possible to identify socio-economic and socio-demographic characteristics that are related to tobacco-use. This makes it possible to prioritize the provision of programmes to target groups in the population.

The findings of the SADHS were disseminated in the following ways:

- preliminary research report
- final report
- press releases
- journal articles
- dissemination workshops at various levels within the Department of Health.

In 2003, the SADHS will include a more robust questionnaire on tobacco use as it was developed for the Non-communicable Disease Risk Factor Surveillance (STEPS programme) by WHO.(21) This is necessary because of problems experienced with the ordering of questions and with low levels of literacy and numeracy. (21)

### Global Youth Tobacco Survey (GYTS)

The Global Youth Tobacco Survey (13) is a multi-country study that forms the second phase of a 3 phased project initiated by the World Health Organization's Tobacco Free



Initiative to “create a generation of tobacco free children and youth”. The National Departments of Health and Education, in collaboration with the Medical Research Council, deemed it necessary to join this initiative due to a lack of nationally representative data on tobacco use among adolescents. South Africa was one of the first 13 countries to conduct this study. The 1999 study was funded by the National Department of Health, UNICEF and MRC. The research instrument was designed at a workshop convened by WHO and the CDC. It consists of a “core” set of questions to be used by all countries. The core questions included an investigation of the prevalence of tobacco use, including cigarette smoking, and current use of smokeless tobacco, cigars or pipes. The questionnaire was also meant to assess students’ attitudes, knowledge and behavior related to tobacco use and its health impact, including cessation, environmental tobacco smoke (ETS), media and advertising, minors’ access, and school curriculum. In addition, the questionnaire was designed to be flexible enough to include specific issues and individual needs of each of the participating countries (i.e. optional questions could be added). The GYTS is a school-based, self-administered tobacco specific survey which focuses on adolescents aged 13-15 (Grades 8-10). The study was repeated 3 years later in 2002 and was funded by WHO and MRC. The main definitions of smokers used were:

- ever smokers: those who had smoked a cigarette, even one or two puffs;
- current smokers: those who had smoked cigarettes on at least one day in the 30 days preceding the survey.

The results of the GYTS 1999 were disseminated in the following ways:

- report of research findings;
- fact sheet with summary of national and provincial results;
- posters at the national launch;
- poster presentation at the eleventh World Conference on Tobacco or Health;
- national launch held at one of the participating schools;
- press release;
- presentations to provincial and national Ministers of Health and Education;
- presentation to the National Department of Health, Occupational Health, Health Promotion and Environmental Health Cluster.

The findings of the GYTS were presented to the national and provincial Ministers of Education. This resulted in the National Department of Education declaring nicotine an addictive drug and including tobacco use in its drug policy for schools.

The purpose of repeating the GYTS in 2002 was to monitor changes in smoking prevalence within and between gender and “race” groups as well as to monitor provincial and regional trends. Monitoring the trends in underage sales of tobacco products, tobacco advertising and promotion, and exposure to second hand smoke in public places between 1999 and 2002 is particularly pertinent to South Africa. During this period, a new tobacco law that re-emphasises the ban on underage sales, prohibits all tobacco advertising and promotion, and limits smoking in public places, was enacted.

The 1999 GYTS showed a high smoking prevalence among adolescents, high percentages of smokers wanting to quit, and high relapse rates. As a result, the Medical Research Council of South Africa and Emory University, Atlanta, USA made a successful application to the National Institute of Health to fund a study that will test two school-based tobacco prevention and cessation programmes.

### **Measuring compliance levels with the smoke free policy of the Tobacco Products Control Amendment Act of 1999.**

This study was initiated in 2002 as a means to measure compliance levels with the newly implemented Tobacco Products Control Amendment Act of 1999 and its regulations of 2001, namely the restriction on smoking in public places in both formal and informal restaurants and pubs, and in other places of entertainment.(24,25) The study will be conducted in three of the nine provinces. Information will be collected by means of one-to-one interviews and telephone interviews for both the qualitative and quantitative phases of the study. The research instruments have not been standardized against any guidelines. The findings of the study will be used to develop guidelines for the monitoring and enforcement of the smoke free policy as well as to compare compliance levels between provinces.(25) It is intended that the study be repeated nationally on a three year cycle and that its scope will be expanded to include all public places.(25) The study will be conducted among smoking and non-smoking patrons as well as among owners of establishments. The questions will assess the level of compliance, reasons related to the levels





of compliance, and patrons' and owners' attitudes to and perceptions of the tobacco legislation. The tobacco control legislation and regulations in South Africa will be amended during 2003. The follow-up study will also evaluate the implementation of these amendments and compare compliance levels with the 2002 study. The South African government, through the National Department of Health, is funding the study.

### Youth Risk Behaviour Survey

The YRBS is a multi-risk behaviour study that has been conducted over the past 10 years by the CDC in the USA. Due to a lack of nationally representative data on multi-risk behaviour among young people attending schools, the National Department of Health in SA awarded the MRC a grant to conduct the first YRBS in SA during 2002.<sup>(26)</sup> The GYTS and the YRBS were conducted in the same schools but with different classes in the course of 2002. The self-administered questionnaire was completed by grades 8-11 (13-16 years) students. The seven tobacco questions were common to both the GYTS and YRBS questionnaires and were based on the questions developed at the global planning meeting to expand the multi-risk behaviour survey to other countries that was convened by WHO and the CDC in December 2001. Questions were asked on current use of cigarettes and tobacco products other than cigarettes, current use of smokeless tobacco, age of initiation of cigarette use, attempts to quit cigarette use during the past year, exposure to second-hand smoke during the past week, and the smoking status of parents and guardians. The study is intended to be repeated every three years. Current smokers were defined as those students who smoked cigarettes on one or more days in the 30 days preceding the survey. The findings of the study will be disseminated in the following ways:

- research report;
- fact sheets with national and provincial results;
- posters at the national and provincial launches;
- national launch of the findings;
- provincial workshops;
- press releases;
- journal articles;
- conference presentations.

### Surveillance of tar and nicotine content of cigarettes.

The Minister of Health has, in terms of section 3A of the Tobacco Products Control Act of 1993, specified the amount of tar and nicotine that is permissible in tobacco products. According to the Tobacco Products Control Amendment Act of 1999, the tar yield of cigarettes marketed in the Republic of South Africa must not be greater than 15 mg per cigarette, and the nicotine yield not greater than 1.5 mg per cigarette, as from 1 December 2001. As from 1 June 2006, the tar yield of cigarettes must not be greater than 12 mg per cigarette, and the nicotine yield not greater than 1.2 mg per cigarette. The legislation also stipulates that the tar and nicotine content of cigarettes be measured to check that they are within the values prescribed by legislation and that they comply with the values on the pack imprints.<sup>(27)</sup> Test House, a company affiliated to the South African Bureau of Standards (SABS), conducts the tests.<sup>(28)</sup> The cigarette laboratory is part of the Chromatographic Services business unit and consists of 2 staff members. Tests are conducted on all cigarettes that are legally sold on the South African market. Determination of the tar and nicotine content of cigarette smoke is conducted according to ISO 4387<sup>2</sup>: determination in cigarettes of total and nicotine-free dry particulate matter is carried out using a Filtrona, linear type smoking machine, 300 series. There are currently 77 cigarette brands that are sampled every two months by SABS representatives. These test results are reported to the

<sup>2</sup> WHO has made recommendations (see reference 29) regarding the validity of the ISO standard as follows:

- <sup>a</sup> Tar, nicotine, and CO numerical ratings based upon current ISO/FTC methods and presented on cigarette packages and in advertising as single numerical values are misleading and should not be displayed.
- <sup>b</sup> All misleading health and exposure claims should be banned.
- <sup>c</sup> The ban should apply to packaging, brand names, advertising and other promotional activities
- <sup>d</sup> Banned terms should include light, ultra-light, mild and low tar, and may be extended to other misleading terms. The ban should include not only misleading terms and claims but also, names, trademarks, imagery and other means conveying the impression that the product provides a health benefit.



Department of Health. The cigarette laboratory is SANAS (South Africa National Accreditation System) accredited.

## Conclusions

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Even though South Africa has a short history of tobacco control with few dedicated tobacco control researchers and limited resources, several mechanisms have been set up to monitor and evaluate tobacco prevalence as well as tobacco-related morbidity and mortality.

Considering that South Africa is a developing country with limited resources to allocate to tobacco-specific surveillance, the Demographic and Health Survey can fulfil this role adequately. Even though a standardized WHO questionnaire was used to measure tobacco use in this study, problems of literacy and numeracy limited the usefulness of the questions on tobacco. It is therefore recommended that questionnaires be adapted, tested and validated for the local context. The SADHS makes it possible to see the relationship between tobacco use and tobacco related morbidity as well as between co-risk factors such as exposure and occupational hazards such as dust and fumes.

An innovative and cost-effective method was employed in conducting the GYTS and YRBS in the same schools but with different classes. This decreases the amount of time required in the school and is a methodology that suits the needs of both the school community and survey administrators. The tobacco questions were standardized across both studies. This allows for comparison between the studies increasing the sample size from 15 000 in each study to 30 000 across both studies. If both these studies are repeated on a 3 year cycle, then South Africa will have an effective system in place to monitor trends in adolescent behaviour.

The National Department of Health should be applauded for using research as a basis to monitor and evaluate the implementation of the smoke-free policy in formal and informal restaurants and pubs. Other aspects of the legislation that could be monitored include compliance with smoke-free policies in the work place and underage sales of tobacco.

It is unfortunate that the biannual Household Survey that included tobacco-related questions was discontinued as this was an inexpensive surveillance tool to monitor trends in tobacco use on a yearly basis. This survey could have complemented the SADHS by monitoring tobacco use over a shorter period than the 5 year intervals at which the SADHS is conducted. It is recommended that the

tobacco-related questions be included in other studies that are conducted nationally on an annual basis.

One of the strengths of surveillance in SA is the active participation of the government from the inception of the research project. This ensures ownership of the research process and the findings of the study. The SADHS and GYTS provide good examples of the dissemination of research findings to government and other agencies in a user-friendly manner. Both these studies are being used by the government (as a partner and funder in the research process), and by the researchers themselves, to translate the research findings into programmes and policies. However greater emphasis, and perhaps skills as well as resources, are needed to disseminate the research findings to a wider audience and to develop effective programmes. It must be noted that there usually is lack of continuity in the research process after the dissemination stage, as the researchers are not necessarily responsible, capable or funded to develop programmes.

The Cancer Registry has a formidable infrastructure for collecting tobacco-related morbidity information. In order to streamline the process, information needs to be collected on a standardized form that is shaped by international initiatives, at prescribed intervals; it should include data from many more public and private laboratories.

Including a tobacco question on the Death Notification form is an innovative and cost-effective way of measuring tobacco-related mortality. Tapping into existing surveillance structures is particularly useful in countries where financial resources are limited. However, the question needs to be piloted so that it yields useful information. The Cancer Registry and Death Notification System could maximize their usefulness by identifying deaths caused by histologically verified tobacco-induced cancers.

Standardization of questions, including definitions used, is of paramount importance for local and international comparability of studies, particularly when these show shifts in trends of tobacco use.

In South Africa, the tobacco control policy was developed and partially implemented before tobacco-specific research was conducted. Countries lacking tobacco research or research capacity could also follow this route. Ideally, local research findings should be the motivation for policy development. Once the policy is in place, research should continue in order to monitor and evaluate the implementation of the policy and guide amendments to the policy and programmes.





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