



Computer
Assisted
Telephone
Interviewing
Technical
Reference
Group

Population Health Monitoring and Surveillance:
Question Development Background Paper

Tobacco Consumption in Australia

May 2003

CATI Technical Reference Group
National Public Health Partnership

Computer Assisted Telephone Interviewing (CATI) is a methodology widely used for surveillance of health behaviours and health outcomes in populations in Australia. The National CATI Health Survey Technical Reference Group (CATI TRG) is an advisory committee to the National Public Health Information Working Group under the National Public Health Partnership. Members of the CATI TRG include representatives from State/Territory Health Departments, the Commonwealth Department of Health and Ageing (DoHA), the Australian Bureau of the Statistics, the Australian Institute of Health and Welfare and the Public Health Information Development Unit at the University of Adelaide. Since its inception in 1999, the CATI TRG has been a forum for the development and promotion of national standards, valid methods and capacity for CATI health surveys and health surveillance.

To embark in the efforts towards 'harmonisation' of CATI health surveys in Australia, the CATI TRG has identified the need to develop question modules for behavioural risk factor and chronic disease topics based on well-developed conceptual frameworks that underpin the data requirements for health surveillance. The proposed question modules are set to undergo a rigorous process of cognitive and field-testing under the guidance of the CATI TRG and the results will be published in a question module manual as a key reference to those interested in CATI health surveys in Australia.

This paper has been prepared by the CATI TRG as part of a series, with funding predominantly from the DoHA. Its preparation has involved input from all State and Territory jurisdictions, DoHA, the Australian Bureau of Statistics, the Australian Institute of Health and Welfare and the Public Health Information Development Unit at the University of Adelaide as well as recognised content experts.

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Tobacco Consumption in Australia

1 Introduction

The purpose of this background paper is to present the conceptual framework that underpins the concepts and data requirements for the ongoing monitoring and surveillance of tobacco in Australia. This will assist in the development of nationally agreed computer assisted telephone interview (CATI) survey questions to monitor the prevalence of tobacco and its associated impact on individuals.

Tobacco use is the single largest cause of premature death and disease in Australia today. There were 19,019 deaths attributable to smoking in 1998 and 142,525 tobacco related hospital episodes in 1997-98 (AIHW 2001a). Tobacco smoking is the risk factor responsible for the largest burden of disease in Australia, responsible for the loss of around 227,000 disability adjusted life years in 1996, or 12% of the total burden of disease and injury in males, 7% in females and 10% overall (AIHW 1999).

Tobacco use poses a serious risk to an individual's health. This includes tobacco consumption in any form, including smoking products and smokeless tobacco products. In Australia, the overwhelming majority of mortality and morbidity due to tobacco consumption is due to cigarette smoking (AIHW 2001b). A proportion of this harm is attributable to environmental tobacco smoke.

This paper is divided into the following five sections. Section 2 provides a summary of the harms associated with tobacco use. Section 3 describes the risk factors to health from tobacco consumption. Section 4 identifies the data requirements that need to be measured for the ongoing monitoring and surveillance of tobacco use. Section 5 outlines a number of issues and methodologies applicable to monitoring tobacco consumption.

This paper will provide a valuable resource to those interested in the monitoring and surveillance of tobacco consumption.

2 Harms and consequences of tobacco consumption

The adverse health effects of tobacco use have been well documented since the 1940s-50s. Among the 4,000 chemicals contained in cigarette smoke including carbon monoxide, nicotine, formaldehyde and ammonia, there are 43 chemicals known to be human carcinogens. English et al. (1995 reported in AIHW 1996) conducted an extensive review of studies examining the health effects of smoking, and identified a causal relationship between active smoking of cigarettes and 32 medical conditions (DHAC 1999).

Laboratory, clinical and epidemiological studies have demonstrated that tobacco in all its forms greatly increases the risk of premature death from the following chronic diseases (WHO 1998).

Cardiovascular diseases and conditions

Coronary or ischaemic heart disease; stroke; peripheral vascular disease; and atherosclerosis.

Cancers

Lung; larynx; mouth; oesophagus; pharynx; pancreas; bladder; kidney; and cervix.

Respiratory diseases

Chronic obstructive pulmonary disease; emphysema; asthma; acute bronchitis; and pneumonia.

Other

Peptic ulcer and male infertility.

Adverse effects of smoking during pregnancy and childhood

The adverse effects of smoking while pregnant range from low birth weight to increased incidence of spontaneous abortion, prematurity, stillbirth, and sudden infant death syndrome. Parental smoking is also associated with higher rates of respiratory illnesses, including bronchitis, colds and pneumonia in children.

Exposure to environmental tobacco smoke (passive smoking)

Exposure to environmental tobacco smoke is a cause of disease and death for many of the aforementioned diseases. Other people's tobacco smoke contains essentially all of the same carcinogens and toxic agents that are inhaled by the smoker. However, there are a number of factors that may contribute to an individual's exposure to environmental tobacco smoke, such as the number of people smoking in the room, ventilation in the room, whether the cigarette is lying in the ash tray or being smoked and smoke being exhaled into a room.

Children of parents who smoke have a greater risk of lower respiratory tract infections such as bronchitis and pneumonia than do children of non-smoking parents. The incidence and severity of asthma in children is also aggravated by passive smoking.

Additional adverse health outcomes are associated with exposure to environmental tobacco smoke (WHO 1998). These include heart disease, lung cancer, angina; respiratory allergy, nasal symptoms, coughs, irritation and allergic reactions, headaches, exacerbation of asthma, chronic ear infections in children and growth retardation in children.

3 Risks to health from consuming tobacco

Tobacco consumption is the major preventable risk factor for many chronic diseases. The risks to health from tobacco use occur either through direct consumption or indirectly via environmental tobacco smoke.

There is no safe level of tobacco consumption. Abstinence from tobacco products and zero exposure to environmental tobacco smoke is necessary for maximising health and minimising risk. The adverse health effects from tobacco use are generally characterised by a long delay between continual use and detrimental health effects. The risk of lung cancer for example, depends on the duration of smoking (WHO 1998). As a result, current lung cancer rates are largely determined by smoking patterns two, three or more decades ago.

3.1 Tobacco use and cardiovascular disease

Cigarette smoking is one of the major preventable risk factors for cardiovascular disease. Smoking is a contributory factor for coronary heart disease, peripheral vascular disease and stroke (AIHW 1996). Smoking reduces the capacity of the blood to deliver oxygen and increases myocardial oxygen demand. Nicotine and carbon monoxide are implicated in this process.

Studies have demonstrated the increased risk of coronary heart disease from smoking for both males and females (AIHW 1996). The risk of sudden cardiac death is two to four times greater for smokers than non-smokers. For heavier smokers, the risk is higher.

Tobacco use is accountable for a large proportion of heart attacks among young cigarette smokers. For example, in a study by Parish et al, 1995 (reported in AIHW 1996), it was found that 80% of myocardial infarctions for people aged 30 to 49 years were caused by tobacco. At ages 50 to 59 years the proportion was 66% and for those aged 60 to 69 years it was 50%.

There is also a greater risk of stroke among cigarette smokers (Robbins et al. 1994, reported in AIHW 1996), of around one and half times the rate for non-smokers. The risk for smokers increased with the volume of cigarettes smoked per day.

The link between cigarette smoking and other cardiovascular diseases such as, atherosclerotic peripheral vascular disease and aortic aneurism has also been established (Krupski 1991, reported in AIHW 1996). These studies have shown an eight to nine fold increase in the risk of these diseases for smokers who smoked more than 15 cigarettes a day when compared to non-smokers.

The beneficial effects of smoking cessation have also been demonstrated (US Department of Health and Human Services 1990, reported in AIHW 1996). These include a decrease in the risk of myocardial infarction, coronary death, stroke, peripheral vascular disease and stroke (as well as reducing the risk of cancer and respiratory disease). Substantial health benefits related to many of these conditions were found to accrue as early as one to two years after smoking cessation.

3.2 Tobacco use and cancer

The carcinogenic properties of tobacco smoke have been demonstrated in a number of studies (AIHW 1996). The risk of cancer occurs through the release of carcinogenic chemicals

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in the combustion of tobacco. The International Agency for Research on Cancer's working group on tobacco smoking has reported that cancer of the respiratory tract, upper digestive tract, bladder, renal pelvis and pancreas are causally related to cigarette smoking. A number of other cancers were also identified where the evidence for smoking as their cause was insufficient, but smokers were still at an increased risk of developing the cancer.

English et al, 1995 (reported in AIHW 1996) reported that the following excess risk of smokers over non-smokers for selected cancers.

Table 1: The excess risk of smokers over non-smokers for selected cancers.

Cancer site	Excess risk of smokers	(95% confidence interval)
Oropharynx	4.6	(4.0-5.2)
Oesophagus	4.0	(3.4-4.8)
Stomach	1.4	(1.3-1.6)
Anus	3.2	(2.5-4.1)
Pancreas	1.9	(1.7-2.0)
Larynx	7.5	(4.8-11.7)
Lung —males	13.0	(12.2-13.7)
—females	11.4	(10.5-12.3)
Cervix	1.8	(1.7-1.9)
Vulva	3.4	(3.0-3.9)
Penis	1.8	(1.4-2.4)
Bladder	2.7	(2.6-2.9)
Renal parenchymal	1.6	(1.5-1.8)
Renal pelvis	4.0	(2.9-5.4)

Source: English et al (1995) reported in AIHW (1996)

In Table 1 above it can be seen that smoking exacerbates the risk of cancer in many body sites. What is not clear from this data is whether there are differentials in the impact of these cancers among population groups, based on sex, race or other demographic characteristics.

Also note that a study by Phillips & Smith 1994 (reported in AIHW 2001b) found that there is no causal relationship between smoking and cervical cancer. There is some evidence that the risk of cancer is reduced by permanent smoking cessation (Richardson et al. 1993, reported in AIHW 1996).

3.3 Exposure to environmental tobacco smoke

The National Health and Medical Research Council published a second review in 1997 of the scientific evidence linking environmental tobacco smoke to adverse health effects (NHMRC 1997). The results were an increased risk of tobacco-related disease for children and adults, including, asthma, lower respiratory illness, lung cancer and major coronary events. In 1998, 128 deaths in Australia were attributed to environmental tobacco smoke (AIHW 2001b). This is likely to be a conservative estimate of mortality associated with passive smoking in Australia.

3.3.1 Asthma in children

Children exposed to environmental tobacco smoke are 1.4 times more likely to suffer from asthma symptoms than children who are not exposed (NHMRC 1997). Passive smoking also aggravates pre-existing asthma in children. It is estimated that about 8% of childhood asthma in Australia is attributable to passive smoking.

3.3.2 Lower respiratory illness

It is estimated that the risk of lower respiratory illnesses (eg. croup, bronchitis, bronchiolitis and pneumonia) is about 60% higher in children exposed to environmental tobacco smoke during the first 18 months of life when compared to unexposed children (NHMRC 1997). Some studies show an association between passive smoking and lower respiratory illnesses in older children. It is estimated that 13% of lower respiratory illness in Australian children less than 18 months of age is due to passive smoking.

3.3.3 Lung cancer

Estimates of lung cancer caused by environmental tobacco smoke in Australia imply an increased risk of 30% for never-smokers who live with a smoker compared to never-smokers who live with a non-smoker. This finding is limited to the home and does not include the adverse effect of passive smoking outside the home, for example in public places, or the effects of passive smoking on ex-smokers and current smokers (NHRMC 1997).

3.3.4 Major coronary events

It is estimated that the risk of heart attack or death from coronary heart disease is about 24% higher in never-smokers who live with a smoker compared to unexposed never-smokers (NHMRC 1997).

It is important to note that the health risks referred to above relate only to exposure at home and include only illnesses in never-smokers (NHMRC 1997). Hence, the risks to health in the population described above are likely to be understated. It is likely that exposure to environmental tobacco smoke outside the home, such as in the workplace or in public places, and exposure in ex-smokers and current smokers exacerbates the health risks in the population.

4 Data requirements and concepts to be measured

The data requirements for the ongoing monitoring and surveillance of tobacco consumption are based on the risks to an individual's health from consuming tobacco products or being exposed to environmental tobacco smoke. The data requirements are based on the concern for three broad risk groups (DHAC 1999):

- smokers, because their health is adversely affected by smoking;
- non-smokers, especially children and adolescents, because they are at risk of taking up smoking behaviour which is harmful to their health; and
- passive smokers because their health is adversely affected by the smoking of others.

The amount of tobacco consumed in a population is one important measure of the magnitude of its tobacco problem (WHO 1998). In Australia, the vast majority of tobacco consumption is through smoking, including manufactured cigarettes, roll your own cigarettes, cigars and pipes. A much smaller amount of tobacco consumption is through its smokeless forms (eg. chew and spit tobacco). A presumed significant quantity of tobacco, colloquially known as 'chop-chop' is being sold untaxed and therefore illegally and vitiates estimates of tobacco consumption based upon excise data. As all forms of tobacco use pose a serious risk to health, it is important to monitor tobacco use in all its forms.

Prevalence of tobacco use in a population is another important measure of the magnitude of the tobacco problem (WHO 1998). Information about the prevalence of tobacco use in different subgroups of the population allows for the identification of high risk groups of tobacco use. Repeated periodic prevalence surveys in the same population group allows for the identification of trends in tobacco use behaviour.

4.1 Data requirements to monitor tobacco consumption

Tobacco can be smoked in various forms and consumed in smokeless forms. Most tobacco consumption in Australia occurs in its smoking forms. For this reason, the definitions in this section concentrate on smoking. However, in every case the definitions can be applied to smokeless tobacco use.

It is important to distinguish between the population that currently consumes tobacco and that which doesn't. For people who currently consume tobacco products, it is desirable to determine the pattern of use, whether daily or less frequently, and the type of tobacco products consumed.

A recent smoking survey in Canada shows that smoking behaviour increases during adolescence and peaks during young adulthood (Health Canada 2000). The same survey finds that within specific age groups, the proportion of smokers who smoke regularly increases with age. The survey also found that the quantity smoked by daily smokers also increases with age.

4.1.1 Consumers of tobacco products

When monitoring tobacco consumption and its risk to health, it is important to identify the population that consumes tobacco products. It is necessary to differentiate between current users and abstainers, namely smokers and non-smokers. It is also useful to identify those

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who used to smoke, but no longer do. Given their former smoking behaviour, this group faces an increased risk to health when compared to those who have never smoked.

The World Health Organisation (1998) recommends definitions similar to the following to identify tobacco smoking status. A population may be characterised by current smoking status and/or lifetime smoking status.

Current smoker

A current smoker is a person who at the time of a survey smokes tobacco products either daily or occasionally.

Non-smoker

A non-smoker is a person who at the time of a survey does not smoke at all.

Ever-smoker

An ever-smoker is a person who has smoked at least 100 cigarettes (or the equivalent amount of tobacco) in his or her lifetime.

Ex-smoker or former smoker

An ex-smoker is a person who was formerly a smoker but does not smoke at the time of a survey. Former smokers may be divided into ex-daily smokers and ex-occasional smokers.

Never-smoker

A never-smoker is a person who either has never smoked at all or has smoked less than 100 cigarettes (or the equivalent amount of tobacco) in his or her lifetime.

4.1.2 Patterns of tobacco use (daily versus occasional)

It is important to monitor the pattern of tobacco consumption based on the risk these patterns have for health. Of those who currently smoke, WHO recommends the distinction between daily smokers and those that smoke less than daily. Daily smokers generally face a greater risk to health than do occasional smokers.

Daily smoker

A daily smoker is a person who smokes any tobacco product at least once per day.

Occasional smoker

An occasional smoker is a person who smokes less than daily. Occasional smokers can be divided into three categories:

- 'reducers' – people who used to smoke daily but now smoke occasionally;
- 'continuing occasional' – people who have never smoked daily, have smoked 100 or more cigarettes (or the equivalent amount of tobacco) and now smoke less than daily;
- 'experimenters' – people who have smoked less than 100 cigarettes (or the equivalent amount of tobacco) and now smoke less than daily.

It is also desirable to measure change in tobacco behaviour over time, for example, the proportion of former smokers who were previously daily or occasional smokers.

4.1.3 Amount of tobacco consumed

It is desirable to measure the amount of tobacco consumed. Heavy smokers usually face a greater risk to health than do those who smoke lesser amounts.

Daily smokers are generally asked to specify the number of cigarettes (or other tobacco products) smoked per day, while occasional smokers are asked to specify the number of cigarettes (or other tobacco products) smoked per week. From this information, estimates of per capita tobacco consumption can be determined. A more common and more valid method of calculating per capita consumption is based upon the amount of tobacco sold into a population.

4.1.4 Type of tobacco consumed

Tobacco is consumed in a variety of forms. Smoking behaviour may include consumption of manufactured cigarettes, roll your own cigarettes, cigars and pipes. Tobacco consumption may also occur via smokeless forms such as chew or spit tobacco. To determine the risk of specific diseases it is useful to determine the prevalence of the types of tobacco consumed by a population.

4.1.5 Smoking duration

Tobacco-related harm is a function of the length of time a person has smoked on a regular basis. Therefore, it is desirable to measure smoking duration, which is the difference between commencement and cessation of smoking. This may be the duration of daily smoking, of occasional smoking, or both. Smoking behaviour may also be characterised by more than one period of smoking.

4.2 Other related concepts

There are a number of measures that are useful for monitoring the consumption of tobacco products in a population. They include, the age of first experimentation with tobacco, the age at which regular smoking was first commenced, measures of smoking dependence and the characteristics of quitting behaviour.

4.2.1 Initiation to tobacco use

Tobacco use is characterised by experimentation and/or commencement predominantly during adolescence or during early adulthood. Adolescents or young people aged about 12 to 17 years are the population group most at risk from taking up smoking. Young adults or those aged about 18 to 24 years also face a high risk of taking up smoking. Hence it is desirable to measure the age of initiation to tobacco products.

4.2.2 Commencement of smoking behaviour

Occasional and daily smoking causes the greatest risk to health for individuals particularly over prolonged periods of time. To determine length of smoking duration, it is necessary to identify at what age occasional or daily smoking behaviour commenced. There may be several periods of smoking characterised by a number of discrete points of commencement and cessation. It is desirable to identify these periods.

4.2.3 Cessation of smoking behaviour

Smoking cessation may be an indicator of the health benefit in a population since a non-smoker may be expected to have better health outcomes than a current smoker. Health benefits are positively related to decreases in smoking duration. To determine the length of regular smoking duration, it is necessary to identify at what age regular smoking behaviour ceased.

It is useful to identify the intention to quit smoking and the success of quitting behaviour including successful and unsuccessful quitting methods. A measure of quitting success (or failure) is the number of times a person has tried to give up smoking. While not all quitting behaviour results in permanent abstinence, it should not necessarily be seen as unsuccessful. There may be benefits gained from attempts to quit smoking, such as reductions in tobacco consumption.

4.2.4 Exposure to environmental tobacco smoke

Exposure to environmental tobacco smoke (ETS) increases the risk of tobacco-related harm. Passive smoking typically occurs in the home, the workplace and in public places. It is desirable to identify where exposure to ETS occurs, or alternatively, where smokers tend to smoke.

4.2.5 Smoking dependence

Smoking dependence refers to the dependence of smokers on nicotine. One measure of nicotine dependence is the time elapsed after waking up in the morning before a smoker lights up (Health Canada 2000).

4.2.6 Anti-smoking policies

In Australia there are many forms of tobacco control. These include bans on tobacco advertising on television and at sporting events, bans on sales to those under 18 years of age, bans on smoking in many public places workplaces and mandatory health warnings on packaging and other forms of advertising. It is desirable to identify public attitudes and support for these policies. It may also be desirable to identify and measure the effect that these anti-smoking policies have on smoking behaviour. For example, the fact that a smoker cannot smoke in the workplace may result in lower consumption of tobacco products.

In Australia it is illegal to sell cigarettes to young people under 18 years of age. Yet many young people take up smoking at this age. It may be desirable to collect information about how young people acquire their cigarettes and how easy it is for them to do so.

4.2.7 Illicit tobacco

There is a concern that a significant quantity of illicit tobacco is currently being consumed in Australia. The AIHW's 2001 National Drug Strategy Household Survey includes for the first time questions to monitor the availability and consumption of illicit tobacco.

4.3 Populations at most risk of tobacco-related harm

It is important to breakdown population data for particular sub-populations, by demographic characteristics, to identify those at higher risk of tobacco-related harm. The following population groups in Australia warrant special focus (DHAC 1999):

- children and young people, or those aged below 18 years;
- young adults or those aged about 18 to 24 years;
- women of reproductive age and pregnant women;
- Aboriginal and Torres Strait Islander people (47% of whom smoke);
- divorced or separated adults (46% of whom smoke);
- single adults (39% of whom smoke);
- people with a mental illness;
- unemployed people; and
- people of lower socio-economic status.

4.4 Examples of indicators to monitor tobacco use and exposure to environmental tobacco smoke

The following indicators may be derived to monitor tobacco use in a population.

- The proportion of young people (aged 12 to 17 years), and adults (18 years and over), male and female, who have never smoked.
- The proportion of young people (aged 12 to 17 years), and adults (18 years and over), male and female, who smoke daily or occasionally.
- The proportion of Aboriginal and Torres Strait Islander people, male and female, who smoke daily or occasionally.
- The proportion of women who smoke during pregnancy, or who quit during pregnancy and who then resume smoking.
- The proportion of adults, young people and children (aged less than 12 years) exposed to environmental tobacco smoke on a regular basis by location (eg. home, workplace or public places).
- The average number of cigarettes smoked per day by young people and adults.
- The proportion of quit attempts that are successful (eg. no resumption of daily smoking for 12 months or more).

5 General requirements for monitoring tobacco consumption

World Health Organisation (1998) recommends that information on tobacco use be collected for specific population groups. The most important categories of a population for which specific data are required include:

- sex, to capture differences in smoking behaviour between men and women;
- age, to capture differences in smoking behaviour between younger, middle-aged and older persons;
- race and ethnicity, to capture differences between racial and ethnic groups; and
- socio-economic status, to capture the link between smoking prevalence and socio-economic status.

This section describes the general requirements for monitoring tobacco consumption among specific population groups and includes the questions recommended by WHO to be used in population health surveys.

5.1 Measuring the use of tobacco

Smoking is generally the major way in which tobacco is used and is the cause of most of the diseases arising from tobacco consumption. However, tobacco use may include the use of smokeless tobacco and it is desirable to monitor this consumption.

There are generally two ways of measuring smoking levels and patterns of tobacco use:

- population health surveys; and
- per capita consumption based on sales or production data.

Both methods may produce reliable estimates of tobacco consumption in a population, provided that the limitations of either method are taken into account. However, population health surveys are far more informative as information on consumption can be related to the characteristics of individuals.

5.1.1 Smoking prevalence

Prevalence questions in surveys measure individual or group behaviour, such as differences according to sex, age group, socio-economic status, race or ethnicity, immigrant status, educational level or occupation.

Population surveys generally provide valid estimates of the prevalence of cigarette smoking. However, there may be occasions where under-reporting of tobacco use is common. For example, under-reporting of smoking has been observed for adolescents when compared to adult smokers. Prevalence of adolescent smoking is found to be lower in household surveys than in school-based surveys because many adolescents conceal smoking behaviour from their parents (WHO 1998). Surveys where respondent concerns about privacy are alleviated tend to measure smoking prevalence more accurately among adolescents.

Smoking prevalence is also likely to be under-reported among groups where the demand for abstinence is high, such as pregnant women and cardiac patients, who have been advised to quit.

5.1.2 Per capita cigarette consumption

Per capita cigarette consumption is calculated from the total number of cigarettes sold or consumed divided by the population size. This measure can be used to assess trends in the smoking of manufactured cigarettes within the population concerned. Cigarette consumption may be estimated using population surveys or consumption data. Survey based estimates tend to under-report the number of cigarettes consumed when compared to consumption based data (WHO 1998).

World Health Organisation recommends that per capita cigarette consumption be calculated for the population most likely to smoke, that is, the population aged 15 years and above. In Australia, smoking surveys tend to target the population aged 14 years and above (eg. National Drug Strategy Household Survey) or the population aged 12 to 17 years for school-based surveys.

While per capita estimates of cigarette consumption provide a reliable measure of smoking behaviour for the whole population, they may not provide information on the smoking behaviour of specific population groups, nor identify changing patterns of consumption among those groups. Therefore, the WHO (1998) recommends that additional demographic information is collected to complement consumption data, such as, information on sex, age, race, ethnicity, socio-economic status and pregnancy status.

5.1.3 Understanding prevalence

Prevalence of smoking is usually defined as the proportion of a population who are smokers (both daily and occasional) at the time of the survey. For example,

$$\text{Prevalence of smokers (\%)} = \frac{\text{number of smokers in a population}}{\text{total size of the population}} \times 100$$

Similarly, the prevalence of daily smoking may be estimated as follows.

$$\text{Prevalence of daily smoking (\%)} = \frac{\text{number of daily smokers in a population}}{\text{total size of the population}} \times 100$$

It may be useful to monitor the process of quitting smoking. The proportion of ex-smokers in a population can be calculated as: (1) a proportion of the total population; or (2) a proportion of ever daily smokers.

$$\text{Prevalence of ex-smokers (\%)} = \frac{\text{number of ex-smokers in a population}}{\text{total size of the population}} \times 100 \quad (1)$$

$$\text{Prevalence of cessation (\%)} = \frac{\text{number of ex-smokers in a population}}{\text{number of ever daily smokers in a population}} \times 100 \quad (2)$$

Appendix Tobacco data elements in the National Health Data Dictionary

The following data standards were developed by the National Health Data Committee Expert Group on Smoking Measurement in 1998 to measure and report on the prevalence of smoking among adults aged 18 years and over, for use in Australian population surveys and data collections. The National Health Data Committee endorsed these items in 1998 for inclusion in the National Health Data Dictionary (AIHW 2000).

The Expert Working Group based these data standards on the measurement standards recommended by the World Health Organisation. The Expert Working Group did not develop data standards for the measurement of smoking among adolescents, or in relation to specific health conditions.

Tobacco smoking status

This item identifies a person's current and past smoking behaviour. Respondents are grouped into the following five mutually exclusive categories.

- Daily smoker- a person who smokes daily.
- Weekly smoker- a person who smokes at least weekly but not daily.
- Irregular smoker- a person who smokes less than weekly.
- Ex-smoker- A person who does not smoke at all now, but has smoked at least 100 cigarettes or a similar amount of other tobacco products in his/her lifetime.
- Never-smoker- A person who does not smoke now and has smoked fewer than 100 cigarettes or a similar amount of other tobacco products in his/her lifetime.

This item can be used to estimate smoking prevalence and monitor the health risk from smoking. The Expert Group have omitted the category 'current smoker', because the term does not make it clear to the user whether it includes both regular and irregular smokers.

Tobacco smoking-consumption/quantity (cigarettes)

This item is defined as the number of cigarettes (manufactured or roll-your own) smoked per day by a person. The number of cigarettes smoked is a measure of the magnitude of the tobacco problem for an individual. The item is relevant only for those that currently smoke cigarettes daily or at least weekly.

Tobacco smoking-duration (daily smoking)

This item is defined as the duration in years of daily smoking for a person who is now a daily smoker or has been a daily smoker in the past. Duration of daily smoking is an indicator of exposure to increased risk to health.

Duration is measured as the years elapsed from the time the person first started smoking daily to when they most recently stopped smoking daily (or the present for those still smoking each day).

Tobacco smoking-ever-daily use

This item identifies whether a person has ever smoked tobacco in any form daily in his or her lifetime. Respondents are grouped into the following two categories.

- Ever-daily
- Never-daily

This item can be used to assess an individual's risk to health from smoking and to monitor population trends in smoking behaviour.

Tobacco smoking-frequency

This item identifies how often a person now smokes a tobacco product. Respondents are grouped into the following four categories.

- Smokes daily
- Smokes at least weekly, but not daily
- Smokes less often than weekly
- Does not smoke at all

The frequency of smoking helps to assess a person's exposure to tobacco smoke.

Tobacco smoking-product

This item identifies the type of tobacco smoked by a person.

- Cigarettes – manufactured
- Cigarettes – roll-your-own
- Cigars
- Pipes
- Other tobacco product
- None

In conjunction with information about the frequency of smoking, the type of tobacco used can establish a profile of smoking behaviour and monitor shifts in smoking behaviour between tobacco products.

Tobacco smoking-start-age (daily smoking)

This item is defined as the age in years at which a person who has ever been a daily smoker first started to smoke daily. Start-age may be used to derive duration of smoking, which is a much stronger predictor of the health risks associated with smoking than is the total amount of tobacco smoked over time.

Tobacco smoking-quit age (daily smoking)

This item is defined as the age in years at which a person who has smoked daily in the past and is no longer a daily smoker most recently stopped smoking daily. Quit-age and start-age provide information on duration of daily smoking and exposure to increased health risks.

Tobacco smoking-time since quitting (daily smoking)

This item is defined as the time since a person most recently quit daily smoking.

Time since quitting daily smoking may provide an indication of improvement in the health risk profile of a person.

Time since quitting is categorised as follows.

- Less than 1 month
- 1 month to 12 months, etc
- 2 years to 78 years
- months not specified
- years not specified
- not stated

References

- AIHW: Waters AM, Jelfs P, Bennett S & Carter R 1996. Tobacco use and its health impact in Australia. Cat. No. CVE 1. Canberra: AIHW.
- AIHW: Mathers C, Vos T & Stevenson C 1999. The burden of disease and injury in Australia. AIHW Cat No. PHE 17. Canberra: AIHW.
- AIHW 2000. National health Data Dictionary Version 9. AIHW Cat. No. HWI 24. Canberra: AIHW.
- AIHW: Miller M & Draper G 2001a. Statistics on drug use in Australia 2000. AIHW Cat No. PHE 30. Canberra: AIHW.
- AIHW: Ridolfo B & Stevenson C 2001b. The quantification of drug-caused mortality and morbidity in Australia, 1998. AIHW Cat No. PHE 29. Canberra: AIHW.
- DHAC (Department of Health and Aged Care) 1999. Background paper: a companion document to the National Tobacco Strategy 1999 to 2002-03. Canberra: DHAC.
- English et al 1995. In AIHW: Waters AM, Jelfs P, Bennett S & Carter R 1996. Tobacco use and its health impact in Australia. Cat. No. CVE 1. Canberra: AIHW.
- Health Canada 2000. Trends in smoking, 1999. Canadian Tobacco Use Monitoring Survey. Wave 2/Annual, February-December 1999.
- Krupski 1991. In AIHW: Waters AM, Jelfs P, Bennett S & Carter R 1996. Tobacco use and its health impact in Australia. Cat. No. CVE 1. Canberra: AIHW.
- NHMRC (National Health and Medical Research Council) 1997. The health effects of passive smoking. A scientific information paper. Canberra: DHAC.
- Parish et al 1995. In AIHW: Waters AM, Jelfs P, Bennett S & Carter R 1996. Tobacco use and its health impact in Australia. Cat. No. CVE 1. Canberra: AIHW.
- Phillips AN & Smith GD 1994. In AIHW: Ridolfo B & Stevenson C 2001. The quantification of drug-caused mortality and morbidity in Australia, 1998. AIHW Cat No. PHE 29. Canberra: AIHW.
- Richardson et al 1993. In AIHW: Waters AM, Jelfs P, Bennett S & Carter R 1996. Tobacco use and its health impact in Australia. Cat. No. CVE 1. Canberra: AIHW.
- Robbins et al 1994. In AIHW: Waters AM, Jelfs P, Bennett S & Carter R 1996. Tobacco use and its health impact in Australia. Cat. No. CVE 1. Canberra: AIHW.
- US Department of Health and Human Services 1990. In AIHW: Waters AM, Jelfs P, Bennett S & Carter R 1996. Tobacco use and its health impact in Australia. Cat. No. CVE 1. Canberra: AIHW.
- WHO (World Health Organization) 1998. Guidelines for controlling and monitoring the Tobacco Epidemic. Geneva: WHO.

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