

Conducting a smoking prevalence survey

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Introduction

How much tobacco people use and the way in which they use it---whether they smoke manufactured cigarettes, chew snuff or spit tobacco, smoke pipes, or roll their own cigarettes---varies widely both across countries and between groups within a country. There is tremendous variation even in patterns and levels of the smoking of manufactured cigarettes, the most common form of tobacco use.

Numerous studies have shown that these differences reflect the influence of environmental factors. The tobacco industry conducts very effective promotional campaigns to encourage adolescents, in particular, to smoke. Once addicted, smokers find it difficult to quit - continual reinforcement of health information and messages, as well as incentives, are needed to help smokers persevere with quitting until their attempts to stop are successful.

Differences in smoking patterns translate eventually into differences in population morbidity and mortality. Several studies have calculated the resultant social costs of smoking. In the United States of America, such studies have been used to justify increases in cigarette excise taxes, which often support statelevel tobacco control programs. Increases in cigarette prices through excise taxes also result in reductions in smoking prevalence. Thus, just as public policy can influence smoking behaviour, the prevalence of smoking can also have a profound impact on public policy and finance.

Whether designing, monitoring or advocating tobacco control programmes, the availability of reliable data on smoking prevalence is crucial.

What is a smoking prevalence survey?

The main aim of a smoking prevalence survey is to characterize the current smoking behaviour of a given population, and of subpopulations of interest. Such surveys may also monitor exposure to variables that are known to influence smoking, such as the price of tobacco, any restrictions on smoking, and receptivity to tobacco industry messages.

How representative of the population is the sample to be surveyed?

The key issue in all surveys of smoking prevalence is how well the survey represents the population. A representative study depends on surveying a sufficiently large and random sample of the total population of interest.

In communities where almost all households have a telephone, surveys carried out by dialling telephone numbers at random (random digit dialing) are reasonably sure to give each individual in the population an equal chance of being selected. Elsewhere, surveys are typically undertaken by an interviewer who visits a random sample of homes (again, the survey should be designed so that each home has an equal chance of being included). In both these types of surveys, smoking prevalence can be collected by a respondent reporting on all adults in the household, however, detailed smoking practices is usually valid only when collected from self-respondents.

When the population of interest is children or younger adolescents, school-based surveys can provide a practical means of obtaining a representative sample. The questionnaire is usually completed by the student themselves, although the survey questions may be read out to the entire class simultaneously. If information on adolescent smoking is collected directly from households, it will be necessary to include many more homes to obtain the desired final sample size, as not every household contains adolescents (in the United States of America, approximately six times as many households will need to be included).

While no survey is perfectly representative, slight deviations from non-random sampling can be compensated for by statistical methods that weight the results to adjust for under-represented groups. It is strongly recommended that expert statistical advice be obtained during the initial design stages of the survey, as well as during the analysis of the data collected.

How large a sample is needed?

The size of the sample required will depend on the level of precision required in the results -- a larger sample size will allow a more accurate estimate of the true prevalence of smoking in the population being sampled. The final decision on sample size should be made on the basis of the results of an analysis of the statistical power of the key research questions. This should be undertaken by a statistical expert.

What questions should the survey include?

Smoking prevalence Smoking prevalence is usually reported separately for adults and for adolescents. A prevalence measure gives a picture of smoking among the population at a given time, and is often likened to a photographic snapshot.

In reality, however, tobacco use is dynamic. It takes time to become addicted to tobacco, and much, much longer to break the addiction. Moreover, the health consequences of smoking vary with length of exposure and persist to varying degrees even after tobacco use ceases. For these reasons, it is important to obtain data on previous as well as current tobacco use. In addition, to evaluate the effectiveness of interventions, it is important to ask questions that will detect changes in patterns of initiation and quitting. A critical point often ignored in prevalence surveys is to ensure that exactly the same the questions are asked in successive surveys so that inferences on changes in population behaviour can be drawn.

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Prevalence and patterns of use among specific populations may be of particular interest. For example, patterns of tobacco use among physicians may indicate the likelihood of future change among the general population as important health role models. Where it is high, patients are both less likely to be advised to stop smoking, and less likely to accept that smoking is harmful. The trends in smoking among medical students may also be an important indicator, as it is. The Tobacco Control Resource Centre is coordinating an international prevalence survey of smoking among physicians across Europe, and has developed and tested a standardised methodology for prevalence surveys among doctors. Visit the TCRC internet site for more details (<http://www.tobaccocontrol.org>).

Other important groups include minority or ethnic groups who may not be reached equally by health promotion messages. Differences in prevalence in specific population subgroups can be used to demonstrate the need for focussed interventions.

All smoking surveys should gather sociodemographic information. At a minimum, this should include data on age, gender, educational level and socioeconomic status. Different trends in smoking by educational level, for example, can indicate the rate of diffusion of smoking initiation or cessation across the population. Before it was widely known that smoking was harmful, more privileged social groups were the first to take up smoking. Since then, this group has led the population in giving up smoking. One aim for a tobacco control programme can be to minimize the difference in initiation and cessation levels across social groups.

Standard questions on smoking

With respect to surveillance and evaluation of tobacco control efforts, we are most interested in trends in tobacco use. Effective data collection requires that the questions asked remain comparable over time. Countries that have collected data on smoking prevalence over many years include the United States of America, the United Kingdom, Australia, Canada, and the Scandinavian countries. These surveillance systems developed independently and the data collected are not always comparable between countries. Over the past ten years, an effort has been made to recommend a standard set of questions for use in places seeking to establish a tobacco use surveillance system. Questions recommended by the World Health Organization are as follows:

1. Have you ever smoked? (YES/NO) If NO, stop interview/questionnaire here.
2. Have you ever smoked at least 100 cigarettes (or the equivalent amount of tobacco) in your lifetime? (YES/NO)
3. Have you ever smoked daily? (YES/NO)
4. Do you now smoke daily, occasionally, or not at all? (indicate category)
5. On average, what number of the following items do/did you smoke per day?
 - ___ manufactured cigarettes
 - ___ handrolled cigarettes
 - ___ bidis

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- pipefuls of tobacco
- cigars/cheroots/cigarillos
- goza/hookah

6. How many years have you smoked/did you smoke daily? (To be asked only of everdaily smokers.)
7. How long has it been since you last smoked daily? (To be asked only of exdaily smokers.)
 - less than one month
 - one month or longer but less than six months
 - six months or longer but less than one year
 - one year or longer but less than five years
 - five years or longer but less than 10 years
 - 10 years or longer.

Those with the capacity to conduct indepth surveys may be interested in downloading the questionnaires used to evaluate the California Tobacco Control Program (<http://ssdc.ucsd.edu/>) (available in English and Spanish). The original data sets and the types of reports that can be generated from such surveys can also be downloaded from this site. It will also be worthwhile to review questionnaires used in other major surveillance systems

Smoking initiation

Smoking initiation can vary markedly across cultures, ethnic groups and genders. In many Western countries, most smokers seem to first become interested in smoking when they are about 10 years old; however, smoking behaviour does not stabilize until around age 25. Elsewhere, smoking may not begin until much later. There is good evidence that the later a person starts smoking, the easier quitting will be.

Questions on smoking for children and adolescents include:

1. Have you ever tried or experimented with smoking, even a few puffs? Yes/No

For those who have not:

2. Do you think that in the future you might experiment with cigarettes? Definitely not/Probably not/probably yes/definitely yes
3. At any time in the next year do you think that you will smoke a cigarette? Definitely not/Probably not/probably yes/definitely yes
4. If one of your best friends were to offer you a cigarette would you smoke it? Definitely not/Probably not/probably yes/definitely yes

For those who have smoked

5. Have you smoked 100 cigarettes in your life?
6. Think about the last 30 days. On how many of these days did you smoke?
7. How long ago did you smoke your last cigarette

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8. On the days that you (did) smoke, what was the average number of cigarettes that you smoked?
9. Have you ever seriously thought about quitting?

Smoking cessation

It is also important to monitor predictors of quitting. Smokers usually make several attempts to quit before they succeed. Among former smokers, the time of abstinence from cigarettes is the most important indicator of the probability of relapse. Relapse is very high in the first few weeks after stopping smoking, but declines considerably thereafter. Exsmokers who have abstained for a 12-month period have about a 5% risk of relapsing, so 12 months of continuous abstinence is often used as the criterion for successful quitting.

Tobacco control programs often aim to influence the behaviour of 'hard core' smokers, so it is useful to monitor their prevalence in the population. There are a number of ways of identifying such smokers. One approach is to determine how many smokers have never thought about quitting, have never tried to quit, and have no intention of doing so in the foreseeable future.

Among smokers who wish to quit, the level of nicotine addiction -as measured by number of cigarettes smoked each day and the time between waking and smoking the first cigarette -is an important predictor of the likelihood of a successful quit attempt. Past success in staying abstinent is also an important indicator. Availability of and willingness to use recommended medications during quitting is also associated with success. A thorough surveillance system will monitor each of these variables.