

**PROBLEM DRINKING
AMONG THE GENERAL POPULATION:
A PUBLIC HEALTH ISSUE?**

I.M.B. Bongers

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**PROBLEM DRINKING AMONG THE GENERAL POPULATION:
A PUBLIC HEALTH ISSUE?**

**PROBLEEMDRINKEN IN DE ALGEMENE BEVOLKING:
EEN MAATSCHAPPELIJK PROBLEEM?**

PROEFSCHRIFT

TER VERKRIJGING VAN DE GRAAD VAN DOCTOR AAN DE
ERASMUS UNIVERSITEIT ROTTERDAM OP GEZAG VAN
DE RECTOR MAGNIFICUS PROF.DR P.W.C. AKKERMANS, M.A.
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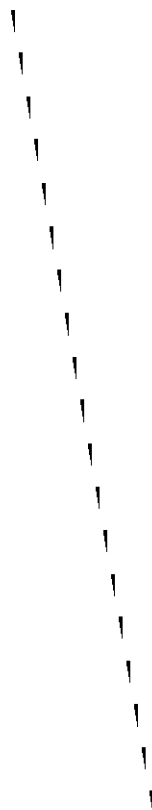
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The Chapter 4-13 are based on the following papers:

4. Bongers IMB, Lemmens PHHM, Oers HAM van, Tan FES (1997) Methode ter correctie voor vertekening van surveyresultaten ten gevolge van indirecte selectieve non-respons. *Tijdschrift voor Sociale Gezondheidszorg*, 75, 122-128.
5. Bongers IMB, Oers JAM van (1998) Mode effects on self-reported alcohol use and problem drinking: mail questionnaires and personal interviewing compared. *Journal of Studies on Alcohol*, 59, 280-285.
6. Bongers IMB, Goor LAM van de, Garretsen HFL (in press) Aggregate comparisons of self-reported versus non-self-reported drinking in a general population survey. *Substance Use & Misuse*.
7. Bongers IMB, Oers JAM van, Goor LAM van de, Garretsen HFL (1997) Alcohol use and problem drinking: prevalences in the general Rotterdam population. *Substance Use & Misuse*, 32 (11), 1491-1512.
8. Bongers IMB, Goor LAM van de, Oers JAM van, Garretsen HFL (1998) Gender differences in alcohol-related problems: controlling for drinking behaviour. *Addiction*, 93 (3), 411-421.
9. Oers JAM van, Bongers IMB, Goor LAM van de, Garretsen HFL (in press) Alcohol consumption, alcohol-related problems, problem drinking and socio-economics status. *Alcohol & Alcoholism*.
10. Garretsen HFL, Bongers IMB (submitted) The development of alcohol consumption and alcohol related problems in Rotterdam 1980-1994: more problem drinking amongst youngsters and middle aged. *Alcohol and Alcoholism*.
11. Bongers IMB, Goor LAM van de, Garretsen HFL (1998) Social climate on alcohol in Rotterdam, The Netherlands: public opinion on drinking behaviour and restrictive measures. *Alcohol & Alcoholism*, 32 (2), 141-150.
12. Bongers IMB, Garretsen HFL, Oers JAM van (1996) Help-seeking behaviour of problem drinkers. *Journal of Substance Misuse*, 1 (4), 216-221.
13. Bongers IMB, Oers JAM van, Wierdsma AI, Toet J (submitted) Drinking patterns, alcohol-related harm, and help-seeking behaviour in Rotterdam neighbourhoods: distribution and association. *European Journal of Public Health*.



Part I

INTRODUCTION

Chapter 1

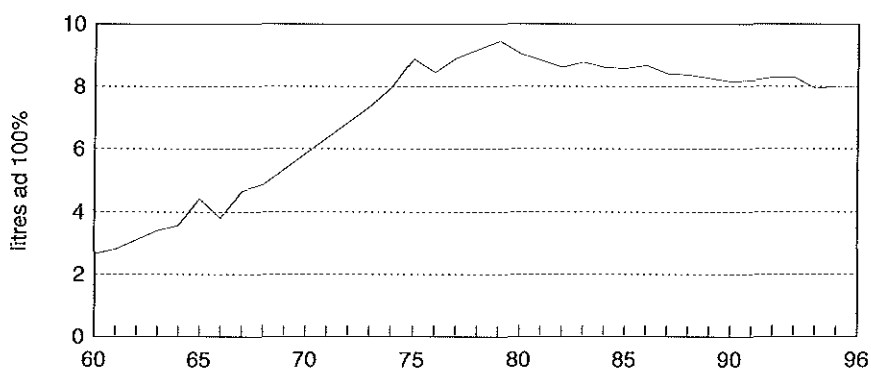
GENERAL INTRODUCTION

1. GENERAL INTRODUCTION

1.1 Introduction

It is becoming increasingly clear that inappropriate alcohol use and its consequences inflict a great burden on society. The general increase in the rates of alcohol consumption in most countries in the European Union (except for France and Italy) in the seventies triggered off this awareness. In the Netherlands, alcohol consumption has tripled since 1960: the consumption per capita increased from 2.6 litres in 1960 to 9.4 litres (ad 100%) in 1979 (Zwart & Mensink 1996). In the 1980s, consumption per capita stabilised at a high level and slightly declined recently to 8.0 litres (ad 100%) in 1996 (World Drink Trends 1997) (Figure 1).

Figure 1:
Consumption per capita in The Netherlands 1960-1996



As along with the increase in alcohol consumption the chance of alcohol-related problems increases (Edwards et al 1994), alcohol-related problems have become more pronounced over the last decades. Alcohol-related problems are often primarily associated with long-term alcohol-related health problems such as liver cirrhosis and Korsakow's syndrome. The drinker, however, may be confronted with a range of problems varying from psychological stress, social disfunctioning and/or work-related problems, to acute and chronic health damage. To develop chronic alcohol-related health problems, one must drink excessively for an extended period of time. Psychological, social and acute health problems, however, often arise earlier and already on lower drinking levels. Alcohol-related psychological, social, and acute health problems also exceed long-term health problems in relative and absolute terms.

By means of the Ledermann formula it can be estimated that almost 650,000 Dutch people consume at least 8 alcoholic beverages daily. Among them, about 320,000 consume at least 12 alcoholic beverages daily (Zwart & Mensink 1996). It should be noted, however, that these figures are to be interpreted

with great caution as the scientific and practical value of the Ledermann model is much debated. The critics of this model will be discussed later on in this chapter. Another way of presenting figures on heavy alcohol use among the population is to estimate the prevalence of problem drinking. Problem drinking is defined as excessive drinking accompanied by physical, psychological or social problems for the drinker him/herself or for others. The prevalence of problem drinking in the Dutch general population ranges from 7% to 11% (Garretsen 1983; Knibbe 1984).

With respect to long-term health problems it is known that 5.81 persons per 100,000 inhabitants of 15 years and older died from liver cirrhosis as the primary cause of death in 1994. Furthermore, 4.57 persons per 100,000 inhabitants of 15 years and older were admitted to a general hospital in relation to Korsakow's syndrome (Zwart & Mensink 1996). In this respect it is important to note that the prevalence of alcohol dependency is higher than the prevalence of disorders such as coronary heart disease, decompensatio cordis or cancer. Furthermore, Ruwaard and Kramers (1997) acknowledged that alcohol dependency contributes significantly to the number of unhealthy life years.

Drinking behaviour and therefore its consequences are not evenly divided among the general population. Within the total population, certain subpopulations can be distinguished which generally drink more and run more risk to get alcohol-related problems. Men, for instance, are more likely to drink and, if they do, they drink larger quantities than women do. Besides sex, other socio-demographic factors such as age, marital status and socio-economic class also differentiate in drinking behaviour and alcohol-related problems.

Inappropriate alcohol use not only inflicts a burden on the individual drinker but also on their direct environment and on society as a whole. The problems a drinker can inflict on spouse and children vary from psychological stress, physical trauma or financial problems. Society as a whole is confronted with a large bill to pay for loss of production, health services, alcohol-related violence, and drink-driving (Rice 1993).

Although alcohol consumption causes a lot of problems, it also has advantages. Alcohol consumption is often associated with conviviality, facilitation of sociability, and relief of stress. Furthermore, many epidemiological studies suggest a U-shaped relationship between alcohol consumption and health outcomes such as mortality, cardiovascular diseases, stroke, and even subjective health (Marmot et al 1981; Marques-vidal et al 1996; Stamfer et al 1988; Poikolainen et al 1996). Society as a whole benefits from alcohol consumption because of income from tax and employment, in e.g., the alcohol industry and alcohol retail trade.

The Netherlands Economic Institute has estimated both the costs and the benefits of alcohol use at the societal level (Muizer et al 1997). In 1994, the Dutch state spent 1,294 billion on inappropriate alcohol use related costs such as health care, loss of productivity, police, traffic and social security benefits. In addition, 1,266 billion was paid via the insurance system on health care, police etc.. Tax revenue on wine, beer, and spirits, the benefits of alcohol use, was 2,266 billion guilders in 1994. Per saldo, (inappropriate) alcohol use cost the Dutch society 253 billion guilders in 1994.

1.2 Concepts and study design of alcohol prevalence studies

The increased awareness of the great burden of alcohol-related harm on individuals and on society as a whole has led to a number of research activities. Research is done to gain insight into the extent and distribution of alcohol use and its consequences among the population and into the factors related to alcohol use and alcohol-related problems. In this research field, there are different definitions of problematic alcohol use in circulation. These definitions are based on a number of different approaches to alcohol-related problems. Three approaches or models can be distinguished: the medical-somatic model, the psychiatric model, and the sociological model (Sytema & Ormel 1986). The key concept of the medical-somatic model is alcohol dependence and its most important criteria are: physical dependence, withdrawal symptoms and other physical problems. The main feature of the psychiatric model is the alcohol dependence syndrome with an emphasis on psychological dependence. In the sociological model, alcohol problems are not regarded as a somatic or a psychiatric disease but as behaviour that provokes problems for the individual drinker (physical or psychological problems) and/or its environment (social problems). The key concept within the sociological model is problem drinking. Alcohol research employs not only different models, but also different methods of estimation. Generally speaking, two different estimation methods can be distinguished: the direct method and the indirect method. Direct estimations are based on the direct measurement of alcohol use and/or alcohol-related problems. Indirect estimations are based on aggregate, statistical data which is already collected for other purposes.

The Ledermann formula is the most familiar and widely used indirect method. This formula is used to estimate the number of people that drink a given (excessive) amount of alcohol. The estimation is based on the annual consumption of pure alcohol per drinker in a certain population. The annual alcohol consumption is based on alcohol sales data.

The Ledermann formula postulates that the quantity of alcohol consumed by a population is log-normally distributed. If the average annual alcohol consumption per capita among the 'drinking' population (defined as the population over 15 years of age) and the percentage of drinkers in this population are known, the number of people can be calculated that use a certain average amount of pure alcohol per day. Often, a daily consumption of pure alcohol of 15 dl or more (corresponding with 12 drinks or more) is used as cut-off point for excessive alcohol use (Wever and Gips 1977; van de Goor & Spruit 1990).

Besides alcohol sales data, mortality figures can also be used to estimate the prevalence of problematic alcohol use in a population. An example is the Jellinek formula which estimates the number of alcoholics on the basis of annual alcohol-related liver cirrhosis mortality. Other methods use mortality figures on e.g. alcoholism and suicide.

The Ledermann formula as well as the methods based on mortality data, follow the medical-somatic approach. The Ledermann formula estimates the prevalence of problematic drinking on the basis of the plausible assumption that a daily alcohol consumption of 15 cl indicates physical dependence (Sytema & Ormel

1986). The Jellinek formula uses alcohol-induced liver cirrhosis, a physical consequence of heavy alcohol use, as an indicator of the prevalence of problematic alcohol use.

The validity of indirect estimations of alcohol-related harm is often questioned. The assumptions behind the Ledermann model for instance are heavily criticised. Lemmens (1987) stated that the validity of estimating average consumption on the basis of alcohol sales data is questionable. The impact of illegal home brewing and the import and export of alcoholic beverages are hard to establish and is generally not taken into account (Garretsen 1983).

Furthermore, the premise of the Ledermann formula as regards homogeneity of drinking habits in the study population is almost always violated. Alcohol sales data are only available nationally and heterogeneity of drinking habits is a fact rather than a possibility. Lastly, the formula tends to give a high estimation of excessive drinking behaviour and the lower limit of the estimation cannot be established (Lemmens 1987). Figures based on the Ledermann formula should therefore be interpreted with great caution (Garretsen 1983; Lemmens 1987; Spruit 1997).

It applies to all methods based on mortality figures that it is questionable whether these mortality figures are good proxies for the burden of alcohol-related harm in society. Mortality figures give insight into chronic health problems due to drinking. However, only the extreme cases such as deaths due to e.g. liver cirrhosis count as a problem. Hospital admission and other help-seeking behaviour, for instance, are excluded. Furthermore, it is important to acknowledge that alcohol-related harm consists of much more types of problems than chronic health problems alone. Acute health problems, psychological problems and social problems for both the drinkers and other people are alcohol-related problems to which attention is not paid when information on alcohol-related harm is based only on mortality figures.

Another drawback of methods based on mortality figures and on alcohol sales data is that the information is only available nationally. No insight can be gained into differences in prevalences, neither at regional and local level nor at individual level. Furthermore, it should be noted that mortality figures may not be as objective as they seem. Registration procedures, definition problems, and diagnostic and curative knowledge are examples of factors which, besides alcohol consumption, can influence mortality rates to a great extent.

Despite these drawbacks, indirect methods are still being used. Because data have already been collected for other purposes, the methods are relatively inexpensive. Furthermore, if due to various reasons no other methods can be used and no other information is available, indirect methods can provide valuable information.

A direct method to estimate alcohol consumption and alcohol-related harm in a population is the survey method. A representative sample of a given population is approached for an interview or by postal questionnaire. The great advantage of survey data over indirect methods is that insight can be gained into several types of alcohol-related harm. Health, psychological, and social problems related to alcohol use can all be taken into account. Which alcohol-related pro-

blems are investigated depends mainly on the underlying model on which the definitions of alcohol-related problems are based. The underlying model can be medical-somatic as well as psychiatric or sociological. Also, more than one definition based on different models can be operationalised in one survey. Another advantage of survey data is that details on different aspects of drinking behaviour can be assessed. As the unit of measurement is at individual level (Room 1993), insight can be gained into individual drinking patterns. Frequency, quantity and variability in individual drinking behaviour can be assessed. Furthermore, attention can be given to drinking situations, types of alcoholic beverages, or attitudes towards and reasons for (heavy) drinking. At last, with survey data, drinking behaviour as well as alcohol-related problems can be related to other characteristics and behaviours at both individual and at aggregate level.

1.3 Sources of error in survey research

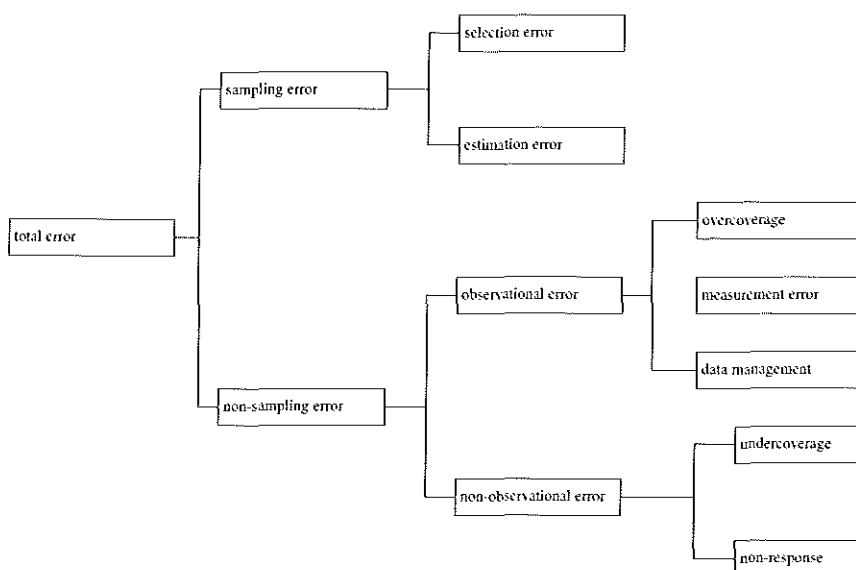
Despite its advantages, the survey method too has its drawbacks. Survey results are subject to errors which lead to loss of precision and/or biased results. The total error in survey results can be subdivided into different categories of error (Figure 2) (Bethlehem & Kersten 1986).

Firstly, errors can be caused by the fact that not the whole population of interest is studied but only a sample of this population. This so-called sampling error can be divided into a selection error and an estimation error. The selection error is the error that occurs when the actual probability to be included in the sample differs from the intended probability for certain subjects. The estimation error is the error caused by the fact that the study population is sampled on the basis of a certain sampling procedure.

Besides errors due to sampling, there are also errors that would occur even if the total population of interest was to be studied. These so-called non-sampling errors can be divided into observational and non-observational errors.

Observational errors can be divided into overcoverage, measurement errors, and data management errors. Overcoverage refers to the observational error that occurs when the sampling frame consists of persons who do not belong to the population of interest. A measurement error occurs when the collected information of the respondents in the study is not consistent with the actual facts. Data management errors are those errors that are caused by the handling of data. Two non-observational errors are undercoverage and non-response error. Undercoverage is the error that occurs when the sample frame does not include all the persons that belong to the population of interest. In other words, the sample frame from which the study sample will be drawn is not complete or not representative of the population under study. Non-response error may occur when there is no or incomplete information available of persons in the sample. Survey researchers can be confronted with all of the above-mentioned errors. With respect to alcohol surveys, however, particular attention should be paid to non-response and measurement errors as these sources of errors are often said to influence the results to a great extent.

Figure 2 Sources of error in survey research



Source: Bethlehem J, Kersten H (1986) *Werken met non-response*. Amsterdam, Universiteit van Amsterdam.

1.3.1 Non-response error

Non-response error refers to situations in which a study population differs systematically from the drawn sample and hence from the population of interest. The necessary information from individuals in the sample cannot be collected and data are missing in a non-random fashion. As survey researchers are confronted with increasing rates of non-response, concerns about biased results due to non-response have also increased.

In general, non-response leads to loss of precision of population estimators as the number of respondents decreases by non-response. However, the major concern is the potential selectivity of the non-response. The non-response is selective if there is a relation between the variables of interest and the occurrence of non-response.

In alcohol surveys, non-response is frequently put forward as a factor that causes underestimation of the prevalence of alcohol consumption and alcohol-related problems. Pernanen (1974) stated that it seems probable that heavier drinkers are overrepresented among the non-respondents. The overall evidence for Pernanen's hypothesis, however, appears to be far from conclusive (Lemmens 1988). Some studies found evidence in favour of Pernanen's argument (e.g. Wilson 1981; Lint 1981), whereas results from other studies reject the hypothesis (e.g. Garretsen 1983; Crawford 1986; Lemmens 1988).

What remains is that increasing non-response rates urge each alcohol-survey researcher to determine whether the non-response of a particular study was selective and whether the resulting bias seriously affected estimates of consumption and/or problems. Although non-response is easy to define, its effects

on the estimated prevalences are, unfortunately, hard to assess. Evaluation of and, if necessary, correction for non-response bias have to be applied despite the presence of the problem, which is intrinsic to non-response, that little or no information is available about the non-respondents. There are several methods with which to evaluate selective non-response (Bethlehem & Kersten 1986). An intensive follow-up among non-respondents could reveal (some) information about those non-respondents in particular who are hard to reach. Another method is to compare respondents and non-respondents with respect to background variables, which are known for the whole sample and related to the variables of interest.

1.3.2 Measurement errors

Besides errors which may occur when respondents are not willing to participate in a study, respondents who do participate may also cause biased results. With respect to these so-called measurement errors, it is important to acknowledge that by using the survey method, the information on alcohol use and problems is self-reported. The validity of self-reported drinking behaviour has been questioned frequently (Midanik 1982; 1988). From literature on validity of self-reports, two types of errors emerge: unintentionally "forgetting" and deliberate denial (Pernanen 1974). Deliberate denial can be either concealing or lying. Since questions about (excessive) drinking and alcohol-related problems can be regarded as somewhat threatening (Bradburn & Sudman 1979), concealment of (excessive) alcohol use and drinking problems is seen as the major threat to validity. Although overestimation may be a problem in some situations (e.g. new entrants into a treatment program or youngsters), underreporting is most likely to occur among the general population as excessive drinking and alcohol-related problems are in general socially undesirable in this context. The low coverage rates of surveys in comparison to sales statistics (50 percent on average) support this hypothesis (Midanik 1982, Neve et al 1993). The general tendency of underreporting in alcohol surveys leads to underestimation of the prevalence. Prevalences of alcohol use and alcohol-related problems based on self-reported data should therefore not be regarded as definite estimations but rather as indications of the lower bounds of the 'actual' prevalences in the population. Moreover, it is of major importance that survey studies pay attention to possible sources of underestimation. Garretsen & Saenger (1981) urge for insight into the existence and extent of underestimation in each alcohol survey study.

Several indicators of the validity of self-reports can be used. Examples are a comparison of different interview techniques, breath and blood analysis (mostly used in clinical populations), official reports such as coverage rate of alcohol sales data by general population survey at the national level (Midanik 1988). Another indicator of concurrent validity is the agreement between self-reports and so-called collateral reports of 'significant' others such as peer groups or spouse.

1.4 Alcohol survey research in The Netherlands

The first Dutch survey on drinking patterns was conducted by Gadourek (1963) in 1958. In this national survey, insight was gained into the frequency and nature of alcohol use and related socio-demographic factors. After this study, it took until the 1970s before the next survey on alcohol consumption was conducted. Jessen (1974) conducted a study on medical consumption in 1972 in which some attention was paid to alcohol consumption. In 1976, Sijlbing (1978) conducted a nationwide survey on alcohol consumption and smoking. In this survey, respondents were asked about their alcohol use and norms and attitudes towards alcohol use. Adriaanse (1981) conducted a survey on health-related behaviour including alcohol consumption.

The Dutch Central Bureau of Statistics (CBS) has been collecting information about alcohol consumption among the Dutch general population since 1980. In both the Quality of Life surveys (1980-1989) and the annual Health Interview Surveys (since 1989), questions are asked about drinking behaviour (CBS 1983; CBS 1984; CBS 1987; Swinkels 1991; Knibbe & Swinkels 1992; van Baal 1996). Also regional health surveys have been conducted that pay attention to alcohol consumption (e.g. Toet et al 1998). At last, since 1986, nationwide surveys have been conducted under the authority of the Bureau Alcohol Education Plan to evaluate the effects of mass-media alcohol campaigns (NIPO 1994, 1995).

The surveys conducted since 1958 all provide information on drinking behaviour among the Dutch general population. To give an overview of the changes in drinking behaviour over time, however, is complicated by differences in study design between the surveys such as sampling frame and measurement and operationalisation of alcohol consumption. Although the first survey on alcohol use was conducted in 1958 and more surveys have been conducted since, there is no long-standing tradition of systematically monitoring drinking behaviour among the general Dutch population. Only since 1989 has the CBS been measuring alcohol use among the general Dutch population by means of the annual Health Interview Surveys (HIS). Information on drinking behaviour measured by means of the HIS, however, is only summary. Information is collected with regard to the prevalence of drinkers, the average consumption and frequency of drinking six or more glasses of alcohol. No insight is gained into problems related to alcohol use or help-seeking behaviour with respect to alcohol use.

At the regional level, however, surveys have been conducted in which information is collected on both alcohol consumption and alcohol-related problems. In 1975, Schippers (1981) collected data on alcohol use, alcohol-related problems and contacts with social workers among the general population of some municipalities in the East of the Netherlands. Data were collected as part of a large-scale research project on 'problems in life'. In 1980, a survey on problem drinking and related factors was conducted in Rotterdam (Garretsen 1983). The central research question was aimed to gain insight into the prevalence of excessive alcohol use and its consequential problems among the total general population and its subpopulations. Simultaneously, a similar study was conduc-

ted in Limburg, an area in the South of the Netherlands (Knibbe 1984). As in both surveys drinking behaviour and alcohol-related problems were measured and operationalised in the same way, it was possible to make a comparison of figures of two geographical regions. In both surveys, insight was also gained into help-seeking behaviour among the general population. Furthermore, secondary analyses on the data of these two surveys provided insight into differences between problem drinkers in the general population on the one hand and problem drinkers known to alcohol treatment agencies on the other hand (Knibbe & Meyers 1988; Raat 1987; Bannenberg 1988). In 1989, a follow-up survey was conducted among the respondents of Knibbe's survey in Limburg. Research was done on the chronicity of problem drinking (Hajema et al 1997a), and on changes in alcohol consumption over time (Hajema et al 1997b), and a comparison was made between chronic problem drinkers in the general population and clients of ambulatory treatment agencies (Hajema et al 1994).

In summary, several general population surveys have been conducted in which attention is paid to various aspects of drinking behaviour. Most studies, however, are conducted ad hoc or pay only summary attention to drinking behaviour and no attention at all to alcohol-related problems. The regional surveys in Rotterdam (Garretsen 1983) and Limburg (Knibbe 1984) in 1980, together with the follow-up study among the respondents of the Limburg survey in 1989 (Hajema et al 1997a) are the only comprehensive studies recently conducted on (excessive) alcohol use, alcohol-related problems, help-seeking behaviour and related factors among the general Dutch population.

1.5 Purpose of the study

Since the last comprehensive studies on the prevalence of problem drinking and related factors were conducted, there have been many changes. The sharp increase in consumption per capita reached its peak in 1979 and stabilised at a high level of consumption per capita in The Netherlands (around 8 litres ad 100%). This high level of consumption per capita marks the strong integration of alcohol into Dutch society. The use of alcohol is accepted and sometimes even stimulated in many more situations and among many more subpopulations than before. On the other hand, the awareness of the great impact that inappropriate alcohol use has on the individual drinker, its direct environment, and on society as a whole has increased. The high level of consumption per capita provoked political discussion in the early 1980s and eventually a political memorandum named 'Alcohol and Society' (WVC 1986).

Given these developments with respect to alcohol since 1980, it seemed expedient to conduct again a comprehensive study on alcohol among the general population. The present study is (partly) a repeated measurement of prevalences of excessive drinking and problem drinking in the general population of Rotterdam. By using the same sample frame and the same definitions and operationalisation of excessive drinking and problem drinking as in the study of

Garretsen (1983), continuity in the data collection is guaranteed.

The main objective of this study is to gain insight into the prevalences of (excessive) alcohol use, problem drinking and related factors among the general population of Rotterdam. The findings of the study are meant to serve as part of a scientific and empirical basis for alcohol control policy. Furthermore insight is gained into some methodological issues which may jeopardise alcohol survey results.

To meet these objectives, the following questions will be posed:

- * What is the influence of non-response, data collection mode, and self-reports on the validity of alcohol survey data?
- * What is the prevalence of alcohol use and problem drinking among the general population of Rotterdam anno 1994 and how does it differ between its subpopulations?
- * Have the prevalences of alcohol use and problem drinking among the general population of Rotterdam and its subpopulations changed over time?
- * How can the social climate on alcohol in Rotterdam be described and how has it changed over time?
- * How many problem drinkers among the general population seek help and which factors at both individual and aggregate level are related to this help-seeking behaviour?

1.6 Signposting the chapters

Chapter 2 is a general introduction into alcohol control policy and outlines the relation between research and policy making. The design of the study is described in Chapter 3. Chapters 4, 5 and 6 are concerned with methodological issues. In Chapter 4, a method to evaluate and correct for non-response bias is extensively described. In Chapter 5, the influence of data collection modes (face-to-face interview versus postal questionnaire) on self-reported alcohol use and alcohol-related problems is assessed. In Chapter 6, some insight is gained into the validity of self-reported drinking behaviour by comparing self-reported drinking with drinking behaviour that is not self-reported at the aggregate level.

After the basic groundwork is established, Chapters 7 to 13 report on the results of the study with respect to contents. In Chapter 7, the prevalences of alcohol use, alcohol-related problems, and problem drinking in the general population of Rotterdam and its subpopulations are described. In Chapter 8, explanations are sought for the relatively high prevalence of alcohol-related problems among women, given their low prevalence of excessive drinking. In Chapter 9, the relation between (excessive) alcohol use and problem drinking and socio-economic status is assessed. In Chapter 10, prevalences of alcohol use and problem drinking in 1994 are compared with prevalences in 1980, both for the total Rotterdam population and for subpopulations. In Chapter 11, insight is gained into the social climate on alcohol by means of attitudes

towards drinking behaviour and public opinion of restrictive measures. In Chapter 12, help-seeking behaviour of problem drinkers and the factors related to this help-seeking behaviour are assessed. In Chapter 13, the relations between prevalence of drinking behaviour, alcohol-related problems, problem drinking and manifest help-seeking behaviour at neighbourhood level is described. Finally, in Chapter 14, the resulting insights throughout this thesis are evaluated taking into account the various methodological issues. The results of this study are placed in the context of alcohol control policy.

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Chapter 2

ALCOHOL CONTROL POLICY AND ALCOHOL RESEARCH

2. ALCOHOL CONTROL POLICY AND ALCOHOL RESEARCH

2.1 Introduction

In The Netherlands as well as in most other West European countries, alcohol use is strongly integrated in society. The Dutch social climate on alcohol can be characterised by 'moderateness': both positive and negative aspects of alcohol use are recognised. Drinking without problems is tolerated (and sometimes even stimulated) whereas excessive drinking and consequential problems are strongly disapproved of (Garretsen 1993).

This ambivalence towards alcohol use in society has a fundamental influence on alcohol policy. The central objective of the Dutch alcohol-control policy is the prevention of health risks and societal problems as a result from alcohol use (WVC 1986). Consistent with social climate concerning alcohol, alcohol-control policy is directed towards the reduction of problematic drinking without abandoning alcohol consumption in itself. Thus, the basic principle of the Dutch-alcohol control policy is harm reduction. The question arises as to how this reduction of problematic drinking can be achieved in a society in which alcohol use is part of daily life.

In this chapter, the different strategies of alcohol-control policy and alcohol control measures are reviewed. Subsequent to this review, an overview is given of Dutch alcohol-control policy. Finally, the role of alcohol research with respect to alcohol-control policy is outlined.

2.2 Alcohol prevention policy: which strategy should be chosen?

Alcohol-related harm inflicts a great burden on society. Over the last decades, more and more attention has been paid to counteract alcohol-related harm. There are economic, social, and cultural influences which bear on alcohol consumption and consequential problems. These will remain outside the government control, however, and cannot therefore be engineered. Still, the level of alcohol use and alcohol-related problems in a society can be changed by rational policy measures; the level of alcohol-related distress is not inevitable. It is beyond any doubt that results of empirical studies throughout the whole world have demonstrated that measures are available which can significantly reduce the burden of alcohol-related harm (Edwards et al 1994). Subsequently, the question is which strategy is most suitable to meet the broad aims of alcohol prevention policy of reducing the occurrence of alcohol-related problems. In general, a distinction can be made between a population-wide approach and a high risk approach to prevent alcohol-related harm (Rose 1992). The high-risk preventive strategy targets at individuals who are in special need, i.e. those who are at special risk of problematic drinking. The distribution of drinkers is dichotomised in order to identify a 'high-risk' group, comprising those individuals who qualify for special attention. The remainder of the people are classi-

fied as 'normal' and can be ignored. The population strategy of prevention is not focussed on individual persons but on the drinking population as a whole. It seeks to move the whole distribution of a risk factor in a more favourable direction.

At first sight the high-risk approach might be the most appealing. As the objective of preventive medicine is to avoid series of individual problems, it is natural to think that preventive action should be targeted at individuals at risk. Rose (1992) named the following principal merits of a high-risk strategy: the intervention is appropriate to the individual who is in special need and avoids interference with those who are not in special need. It is readily accommodated in the ethos and organisation of medical care. Furthermore, selectivity offers a cost-effective use of resources. If costs and risks are much the same for everybody, then the ratio of benefits to costs will be more favourable where the benefits are larger.

The high-risk approach, however, also has its weaknesses (Rose 1992). The achievements of the high-risk strategy, as with any individual-based approach, are limited to the individuals concerned: they are local and temporary. The approach aims to solve the problems of individuals and does not seek to alter underlying societal reasons for the problem. Furthermore, it requires people to deviate from the norms and behaviour of their immediate environment, which is very difficult. Finally and perhaps most importantly, the contribution of the high-risk approach to the overall control of some problems may be disappointingly small. If risks were largely confined to a small and readily identified segment of the population, and if interventions to this group were effective, a high-risk approach would be adequate to control the problem. If not, a high-risk strategy, however appropriate to the individuals involved, cannot solve a public health problem by itself.

This phenomenon has come to be called the 'prevention paradox' which means that only a minority of the alcohol-related problems in a population are attributable to those who are at the top end of the drinking spectrum (Moore & Gerstein 1981; Skog 1985; Kreitman 1986). Light and moderate drinkers are thought to be responsible for a much larger part of the problems, as the large number of such drinkers makes up for their smaller individual risk. On the basis of this 'prevention paradox', the claim was made that the population strategy of prevention is much more likely to produce tangible results than the high-risk strategy (Kreitman 1986; Kendell 1987).

While this proposition is now widely recognised, the extent to which it holds will depend on the type of alcohol problem at stake and also on drinking pattern concerned. It is stated that the average annual/weekly intake is the most important dimension of drinking for cirrhosis and most other long-term physical consequences of drinking. However, it has long been recognised that whether and how often a person drinks significant amounts on any one occasion are stronger predictors of social and casualty problems (Edwards et al 1994). As was stated by Skog (1996), the prevention paradox depends on the curvature of the risk function of alcohol problems by drinking behaviour and on the mean consumption level in the population. He concluded that the majority of the problems should be expected to be found among light and moderate drink-

kers for alcohol problems with slightly curved risk functions. Under these circumstances, the heavy drinkers are likely to contribute a substantial fraction of the cases only in populations with a very high mean consumption level, where such drinkers are abundant. In case of a strongly convex risk function, heavy drinkers will be the dominant source of problems.

For chronic health effects of drinking, like liver cirrhosis, the extremely high risk experienced by very heavy drinkers (Pequignot et al 1978) (strongly convex risk function) is more than sufficient to compensate for the rarity of such drinkers (Skog 1985). Norström (1995) indeed found that the high-risk approach was more effective for the prevention of liver cirrhosis mortality than the population approach. The risk functions of casualty or social problems are typically not extremely curved (Edwards et al 1994), which leads to the conclusion that light and moderate drinkers contribute most to the total share of these problems in society. For alcohol-related accidents and suicide, Norström (1995) indeed found that the population strategy was more effective than the high-risk approach. It should be noted, however, that in both cases, the comparative strategy yielded an appreciable impact as well.

When outlining alcohol policy it is of major importance to be aware of the continuity which exists between moderate and excessive drinking, and between harmless drinking and problematic drinking (Edwards et al 1994). Alcohol causes both pain and pleasure and these two kinds of experiences are not rigidly partitioned between two different kinds of people, or two distinct populations. Consequently, alcohol policy has to take into account the total drinking population for public health action. The individual with or at risk of alcohol-related problems, however, should also be considered in alcohol policy.

Alleviation and prevention of suffering through interventions that are focused on populations at risk is of major importance as it meets the individual needs of persons at risk and their social environments.

In short, based on this knowledge, neither of the two strategies discussed emerge as being superior to the other. Effective policies cannot be modelled exclusively by focusing on the extremes of a population's drinking behaviour. Nor can the overall burden of alcohol-related problems be solved by the population preventive strategy alone. Two interactive and mutually supportive types of policy will be required to meet alcohol policy's broad aim of reducing the occurrence of alcohol-related problems: high-risk and population preventive strategies are synergistic, interlocking responses to a spectrum of drinking behaviours and drinking problems.

2.3 Overview of efficacy of alcohol control measures

Alcohol-related problems have provoked a variety in policy response throughout time and the world. Examples are total prohibition, state monopoly, legal drinking ages, alcohol taxation, mass-media information campaigns, control on advertising, drink-driving programmes, server training etc. The policy responses incorporate prevention and treatment interventions. Treatment and preven-

tion are often conceived, implemented, and assessed as more or less unrelated activities. Room (1977) described them as 'two worlds of alcohol problems'. Edwards and his colleagues (1994) advocate a continuum of responses to cope with the continuum of drinking and consequential alcohol-related harm. On this continuum, prevention at population level and individual level, ranging from primary to secondary, and on to tertiary prevention, contribute in a mutually supportive way to the reduction of alcohol-related harm.

Some alcohol control measures are aimed to influence people's demand for alcohol: the less society drinks, the less alcohol-related harm there will be. Other measures aim to reduce alcohol use by means of influencing the supply of alcohol. Restricting alcohol availability is thought to lead to a reduction of problematic alcohol use in society. Another policy response aims to reduce the harm of problematic alcohol use by individual-based interventions. Early recognition of drinkers at risk of alcohol-related problems as well as treatment of more long-term problem drinkers are key features of this policy response. The Alcohol and Public Policy Project has put much effort into reviewing the empirical evidence on the efficacy of different policy measures ('Alcohol Policy and the Public Good' (Edwards et al 1994)). The following discussion on efficacy of alcohol policy measures will therefore be a summary of their comprehensive overview of available knowledge (for details and more references see Edwards et al 1994).

2.3.1 Information programmes

A well-known and frequently used policy measure is information programmes. Providing information about the risks of alcohol is aimed to bring about changes in alcohol-related attitudes and beliefs, and hence in drinking behaviour. Mass-media campaigns as well as personal communication in educational programmes are popular ways to circulate the message. Information campaigns are interventions which, by their nature, are likely to be interactive with many other environmental influences. Research has failed to detect significant effects on consumption as a consequence of exposure to these campaigns and educational programmes (Edwards et al 1994, chapter 8). Information programmes, in order to have any chance of effectiveness, therefore need to interact with other strategies, especially those with a more direct impact on the drinkers' environment. Furthermore, it should be acknowledged that if information programmes have an impact, it is likely to be in the long run. In this context, an important purpose of providing information is to help build on public awareness and support for the need of measures that affect drinkers directly. A third purpose of information programmes can be to increase the knowledge on how and where help for alcohol problems can be found. Furthermore, the taboo on seeking help can be diminished by the use of the mass media. Unfortunately, this topic generally receives much less attention in mass-media campaigns. The information programmes target either the total population or groups at risk of (specific) alcohol problems, depending on the message and the purpose of the programme. When targeting risk groups, one should be aware of the possible

unintended stigmatising influence the attention may generate (Garretsen 1983). The alcohol industry also provides information about alcohol. In fact, the commercial expenditure on alcohol advertising in many countries exceeds the expenditure on educational mass-media campaigns. In alcohol advertising, alcohol is depicted as a normal and desirable part of life. The dominant themes in alcohol advertising are indirect appeals associating drinking with wealthy life-styles, prestige, success, or adventure. There is some (inconsistent) evidence that alcohol advertising has a small but contributory impact on drinking behaviour (Edwards et al 1994, chapter 8). Through its messages, alcohol advertising maintains the social desirability of drinking, overshadows the risk of alcohol use to individual and public health and contradicts prevention objectives. These indirect effects alone are thought to be sufficient to justify the need to control the volume and content of alcohol advertising. Alcohol advertising needs to be examined, not in isolation and not only in terms of its direct effects on individual or aggregate alcohol consumption, but as an influence that creates the context in which alcohol education is delivered and in which alcohol-related policies are formulated.

2.3.2 Community action programmes

Community action programmes are a purposive way to influence drinking behaviour and social climate on drinking. The programmes are often multifaceted and provide a context for both environmentally directed interventions and strategies that provide information. The evaluation of community action programmes is a relatively new but growing field of alcohol research activities. As yet, evidence for an impact on alcohol-related problems is limited, but it is a strategy worthy of further research (Edwards et al 1994, chapter 8).

Community's acceptance of health policy, or better still its active backing, is a prerequisite for successful implementation, and must be integral to alcohol policies. Community action programmes recognise this fact since one of the main objectives is to mobilise existing community resources and support.

2.3.3 Drink-driving countermeasures

Examples of policy measures which are intended to influence alcohol use in a specific situation are drink-driving countermeasures. These measures are only effective when vigorously enforced and when given a high public profile (Edwards et al 1994, chapter 7). Deterrence and the strict enforcement of drink-driving laws are of fundamental importance. With increasing evidence of alcohol involvement in traffic accidents and the increasing public awareness, blood alcohol concentration levels (BAC) are being introduced in countries which previously lacked such limits. In countries where such legislation is already in force the limits are often being lowered. However, the enforcement of these limits is labour-intensive and hence costly. Therefore, in most countries it is unlikely that this measure yields its maximum impact.

2.3.4 Taxation

Taxation is a policy measure which influences the economic availability of alcohol. Edwards et al. (1994, chapter 5) concluded that taxation is a potentially useful environmental mechanism for reducing alcohol problems. Other things being equal, a population's consumption will to some, usually significant, degree be influenced by price. It should be noted, however, that alcohol taxation is usually not primarily used as a prevention measure but as a way to raise state income.

Empirical evidence refutes the general notion that heavy or dependent drinkers will be immune to price changes. Although few studies directly address the differential effects of price on various groups of consumers, the available evidence indicates that heavy and dependent drinkers are at least as responsive to price as the more moderate drinkers. (e.g. Grossman et al 1987; Cook & Tauchen 1982; Kendell et al 1983; Babor et al 1978).

A few objections can be made against the use of alcohol taxation as a control measure. Firstly, a price increase may stimulate illicit or home production. This phenomenon should be given attention especially because of the increased health risks associated with unregulated brewing. Secondly, it may be argued that alcohol taxation as a control measure is not socially equitable as the poor are more affected than the rich are (Popham et al 1976). However, Harris (1984) and Ashton and colleagues (1989) posed that taxes on alcohol in most cases impose a lower relative burden on low-income groups than taxes on most other goods. Furthermore, it should be kept in mind that the efficacy of fiscal control is likely to be eroded due to open borders. This urges for harmonisation of alcohol taxes at international (European) level.

The precise relation between alcohol prices and the level of alcohol use depends on the population, time period, beverage type and the prevailing social climate on alcohol in general. Harkin and colleagues (1995) roughly estimated that a 10% price increase leads to approximately a 5% decrease in beer consumption, a 7.5% decrease in wine consumption and a 10% decrease in spirits consumption.

2.3.5 Density and location of alcohol outlets

Regulating the number of alcohol outlets such as bars, restaurants and liquor shops and their location is a straightforward way to restrict the physical availability of alcohol. Authorities can restrict the number of bars and restaurants serving alcohol by a system of sales licences. The sale of alcohol could be forbidden in petrol stations and at or near schools or places of work.

Early studies on density of alcohol outlets suggested that density had little impact on alcohol consumption. However, more recent studies showed a significant positive effect of reduced outlet density on alcohol sales (e.g. Godfrey 1988; Wilkinson 1987). Van Oers and his colleagues (1993) found a small but significant association between the number of liquor shops and the percentage of alcohol users at neighbourhood level. Closing down shops, bars, or restaur-

rants may have a positive impact on alcohol consumption and hence alcohol-related harm. However, a negative effect of (a general) restriction of alcohol outlets may be an increase in illicit and home production, which is associated with increased health risks.

2.3.6 Restriction of sales hours or opening days

Restriction of opening hours or days for the sale of alcohol is another measure which has an impact on the availability of alcohol. Most of the studies on changes in sale opening hours or days demonstrated increased drinking associated with increased opening hours, and decreased drinking with elimination of some days of sale (Edwards et al 1994). This measure, however, seems to have more impact on drinking patterns than on the total alcohol consumption (e.g. Olsson & Wikström 1982). Nordlund (1985) also found little effect on overall consumption of an experimental 1-year Saturday closing in Norway for state stores. Nevertheless, the rate of acute alcohol problems was affected. Similar results were found in Finland (Säilä 1978).

2.3.7 Age limits

Setting age limits for purchasing alcohol is a measure which is aimed to restrict the availability of alcohol for a specific subgroup of the population, i.e. youngsters. As with drink-driving countermeasures, minimum age limits are only effective when vigorously enforced and when given a high public profile. Although most countries have some regulations on minimum age limits, it is often not strictly enforced (Edwards et al 1994). The highest age limit in the world has recently been set nationwide in the USA. Studies in the USA were uniform in their findings that the increase in age limits reduces alcohol-related traffic accidents for the age groups affected by the change (Edwards et al 1994). O'Malley and Wagenaar (1991) also found that increased age limits were associated with lower alcohol-consumption in the long run. An objection to setting age limits for alcohol too high is that if drinking is forbidden it may become more interesting. This might lead to uncontrolled drinking of (possibly) larger amounts among specific subgroups of youngsters.

2.3.8 Responsible beverage service

Responsible service of beverage, service training programmes, and increased legal liability for serving alcohol are primarily aimed to prevent drink-driving and other acute alcohol problems by promoting safer beverage serving practices. Research indicates that changes in service behaviour can reduce the BAC of persons leaving licensed establishments, and accordingly their risk of becoming involved in or causing a traffic accident (Edwards et al 1994). Holmilla (1998) stated that responsible beverage service has to be part of a wider con-

text, including partnership and involvement of the business, as well as law enforcement and increased public awareness. Recent studies on service training (Saltz 1988; Saltz & Hennessy 1990a,b) have shown that service training is most effective when linked with a change in the serving and sales practices of the licensed establishment, and with training for establishment managers. A study of McKnight (1992) confirmed that the effectiveness of server liability and sanctions against service to intoxicated persons is a direct function of compliance and enforcement. It was found that the compliance increased after visits and warnings by law enforcement officers, something that was confirmed by a drop in the number of drink-driving arrests.

2.3.9 Individually directed interventions

A prerequisite for public interest and support for public health policies on alcohol is the availability of adequate treatment facilities (Edwards 1994, chapter 9). The individual drinker in need should be helped as otherwise more general alcohol policies will be conceived as implausible. Different levels and types of problems may require different types and degrees of intervention. There is not one treatment which is appropriate for every drinking problem. It should be acknowledged that individual intervention is not only appropriate for drinkers at the very extreme end of the drinking continuum. More moderate drinkers who have entered or may enter the 'danger' zone should receive attention as well. Evidence points to the effectiveness of early recognition and brief intervention in general and primary health care settings (Wallace et al 1988; Anderson & Scott 1992).

2.3.10 Alcohol control measures in summary

In summarising the above knowledge on alcohol strategy and alcohol-control measures, one could try to propose an alcohol-control policy which is optimally mixed and prioritised. Levels and patterns of alcohol consumption and hence alcohol problems, however, differ by place and time as does the embedding of alcohol in society. Drinking behaviour is influenced by a complex set of different factors, of which a lot are unpredictable or uncontrollable. The formulation and implementation of one general, optimal alcohol policy will therefore be impossible.

The broad aim of alcohol policy is to reduce the occurrence of alcohol-related harm by creating an environment which helps people to make healthy choices and which renders unhealthy choices more difficult or expensive. To support this broad aim, two interactive and mutually supportive types of policy will be required (Edwards et al 1994). Firstly, measures have to be operated which will have an impact on alcohol consumption in general. Secondly, policy response should target specific high-risk contexts or behaviour. The need for balance must be stressed: the general population approach should not be the sole focus neither are targeted measures by themselves a sufficient policy response. A

comprehensive policy is one which makes use of taxation and control of physical access, which restricts advertising, supports drink-driving counter-measures and invests in treatment facilities. Educational strategies should be added on the basis of long-term results. Public education campaigns and comprehensive community action programmes can increase awareness, and thus public support for other environmental policies.

Theoretically, this balanced approach meets best the general objective of alcohol-control policy to reduce the occurrence of alcohol-related harm. Despite all the empirical knowledge, it remains difficult to put theory into practice.

Implementation of a comprehensive alcohol-control policy is highly complicated as many factors and actors with a differential interest and changing importance and influence play a role in the political arena. For example, there is strong and diverse evidence that restriction of the availability of and access to alcohol will positively influence alcohol use and consequent problems.

However, it is of major importance to recognise that the effectiveness of the restriction will depend on public support for and compliance with the restrictive measures. Form and level of availability reflect social acceptability and appropriateness. High social acceptability of alcohol is often reflected by low public support for restriction of availability.

2.4 Dutch alcohol policy in practice

In The Netherlands, alcohol use has become strongly integrated into society. Before World War II, alcohol use was mainly restricted to male drinking in pubs. Since World War II, drinking habits and drinking places have changed. Besides men, women and youngsters have also become more and more familiar with using alcohol. Furthermore, the Dutch no longer drink only in pubs but also at home, at home with friends and relatives, or in sports canteens (Dekker 1978). Even the work place is no longer completely 'dry'.

This general integration of alcohol into society is reflected by a sharp three-fold increase of alcohol consumption per capita from 1960 to 1980. In the 1980s, the consumption per capita stabilised at a high level of approximately 9 litres (ad 100%). Since the late 1980s consumption per capita has declined slightly to approximately 8 litres (ad 100%) (Zwart & Mensink 1996). The strong increase in alcohol consumption and hence alcohol-related problems provoked a political memorandum in 1986 named 'Alcohol and Society' (WVC 1986) in which a comprehensive alcohol-control policy was advocated. It was acknowledged that problematic alcohol use could no longer be seen as an isolated problem of individuals. Problematic alcohol use had become a societal phenomenon with major public health consequences.

The Dutch social climate on alcohol is characterised by 'moderateness': the general public tolerates drinking without problems whereas excessive drinking and consequential problems are strongly disapproved of. Consistent with social climate on alcohol, the Dutch alcohol-control policy is directed to a reduction of problematic drinking without abandoning alcohol consumption in itself. The central objective of alcohol-control policy is to prevent health risks and societal

problems related to alcohol use (WVC 1986). An important purpose of alcohol-control policy is to prevent frequent and heavy drinkers from becoming problem drinkers. Eventually, the prevalence of problematic drinkers should be reduced. Reduction of alcohol use per capita is seen as the most important means to meet this objective.

For alcohol policy to be effective, a coherent set of three policy measures which focus both on the demand and supply of alcoholic beverages is advocated (WVC 1986). Firstly, demand can be influenced by means of more educational and preventive activities. Secondly, the available treatment system should deal with individual alcohol problems more efficiently and more from a preventive perspective. Thirdly, to influence supply, the distribution of alcoholic beverages has to be regulated by law. In this context, the present law on alcohol should be replaced by more straightforward and efficient alcohol legislation.

Alcohol-policy measures will be most effective if they are supported by and implemented at the various levels of Dutch society. Therefore, besides the state government, local authorities can play a role in alcohol-control policy as well. With respect to alcohol treatment and care facilities, the government is responsible for the clinical facilities and the municipalities for the ambulatory services. Preventive activities are also planned and implemented at both national and local levels. The Collective Prevention Public Health Act (*Wet Collectieve Preventie Volksgezondheid*; WCPV, 1990) explicitly gives municipalities an important task in the field of health promotion and collective prevention. Furthermore, besides national prohibitory rules and orders, the law on alcohol gives municipal authorities the opportunity to implement local restrictions with regard to location and number of retail establishments.

Unfortunately, policy intentions are too often not put into practice. As mentioned previously, implementation of a comprehensive alcohol-control policy is highly complicated as many different factors and actors influence the process. As policy intentions can only yield a profit if they are put into practice, evaluation of its realisation should be seen as an important part of the total policy process. Therefore, it is interesting to know to what extent the policy intentions declared in the memorandum 'Alcohol and Society' are actually realised. The memorandum 'Health care policy 1992' (WVC 1991) reported on the evaluation of the alcohol-control policy as advocated in the memorandum 'Alcohol and Society'.

The first policy intention to increase educational and preventive activities has been largely realised. The Alcohol Education Plan (AEP), (called 'Alcohol Education and Prevention' since mid 1996) is the clearest example in this context. Since 1986, the AEP initiates mass-media alcohol campaigns whose main purpose is to enhance the knowledge on the risks of excessive drinking and to stimulate moderation of alcohol use. Public support for the campaigns is high and its messages are well known (NIGZ 1996). Although the effects of such information campaigns are hard to measure, some indication is given by the fact that 29% of youth between 15 and 25 years of age have talked to others about or in response to the campaigns. Among the youngsters who drink heavily, the percentage was 37% (AVP 1995). Furthermore, education on alcohol in

relation to work and driving is intensified and educational material is developed to be used in secondary schools. As a last example, 15% of the addiction care budget has to be spent on prevention and consultation. Unfortunately, there is no insight into whether and how this money is spent by the various addiction care facilities in The Netherlands. The effects of these efforts are also not evaluated.

With respect to the second policy response, i.e. a more efficient alcohol treatment system, some progress has been made. In medical education and other relevant education, education on addiction has started to become integrated (WVC 1991). In the field of addiction care, innovation and evaluation of interventions are given a higher priority than in the past. Unfortunately, however, alcohol care and alcohol problems in general still receive much less attention than (the care for) drug addicts. Furthermore, alcohol treatment is still insufficiently integrated into general and mental health care settings.

The policy intention to modernise alcohol legislation has not yet been realized. A bill for a revised law on alcohol is to be presented in Parliament in due course. Moderation of alcohol use, decentralisation and deregulation will be the basic principles of the revised law. High priority will be given to the practical possibilities for law enforcement. The law will contain a system of licenses and prohibitive rules. The distribution of alcohol and the conditions of this contribution are to be regulated. The sale of beer and wine will be allowed in every grocery store, for all other types of alcohol sale, however, licenses are needed. To receive a license, three sets of minimum requirements will have to be met; requirements with respect to age, establishment, and professional competence. The sale of alcohol will be banned from petrol stations, the workplace, health care facilities, educational institutes, and specific youth associations.

Although revision of the law is still very slow, self-regulation of alcohol advertising has been subjected to a voluntary code since 1990 (NIGZ 1996). All audio-visual advertisements other than those on television and 40% of television commercials must be accompanied by an educational slogan.

Furthermore, advertisements should not target underaged children, not relate drinking with work or sports and should not promote heavy drinking.

In short, a number of things have been accomplished since 1986. The memorandum 'Alcohol and Society' provoked a broad societal discussion on the prevention of alcohol-related problems. Much effort is put into mass-media campaigns and local prevention projects. Most importantly, alcohol consumption per capita has decreased slightly and several indicators of alcohol-related problems showed a decrease as well (NIGZ 1996).

Despite this positive news, individual and public health problems resulting from alcohol use are still numerous and not to be neglected (Spruit 1997). In this context it should be noted that although alcohol addicts outnumber drugs addicts to a large degree, much more political attention, research attention, and also treatment attention focuses on drugs use and its consequential problems. It is of major importance that the accomplishments so far are retained and extended as they are only the first step in the right direction. It should be kept in

mind that, for instance, alcohol legislation is still not revised and alcohol treatment is insufficiently integrated into general and mental health care settings.

2.5 The process of alcohol policy-making and the role of alcohol research in this process

For alcohol-control policy to become and remain an adequate and efficient answer to the burden of alcohol-related problems on individuals and on society as a whole in the Netherlands, it is crucial that alcohol use and its consequential problems stay on the political agenda. In other words, the policy process regarding alcohol should be 'on-going'.

The process of policy-making is often described as a cyclic process in which four consecutive phases can be distinguished: policy preparation, policy development, policy implementation, and policy evaluation (e.g. Hoksbergen 1980; WVC 1991). In the first phase, policy positions and objective are defined. In the second phase, differential interests, mostly on financial and economical grounds, are balanced and the feasibility of the policy is assessed.

Subsequently, when choices have been made, the policy is implemented. In the fourth phase, the implemented policy is evaluated. The first phase starts again when it is established to what extent the implemented policy has reached its goals. However, it should be acknowledged that this description of the policy process is an ideal theoretical model which is often, as with many other models, violated in practice. This issue will be elaborated upon later.

In the policy making process, objective information is needed to ensure that the policy response has a rational basis. Research can play a critical role in the policy process by identifying and evaluating problem areas, by establishing and analysing options, and by tracking the results of new policies (Hasseltine 1985). In the first phase of the policy-making process, research is an important source of information on the basis of which policy positions can be defined. In the fourth phase, scientific studies are to be done to gain insight into whether policy has achieved its intended objectives.

The important role of research in alcohol-control policy is acknowledged at policy level. In the memorandum 'Alcohol and Society' (WVC 1986), it was explicitly stated that research should accompany alcohol-control policy: the link between research and policy was said to be of major importance. In the context of alcohol policy at European level, the European Regional Committee of the WHO emphasises that the health of Europeans should be improved through implementation of policy based on science (Anderson 1996).

Nowadays, the accumulated research in support of public health policy as an effective tool to reduce alcohol problems is substantial. The wealth of research demonstrating public health benefits that are to be gained by policy responses is comprehensively reviewed in 'Alcohol Policy and the Public Good' (Edwards et al 1994). The objectives of the authors' scholarly effort were to "inform and empower policy makers who hold direct responsibility for health and social decisions and those who advise them".

Despite the available overview of knowledge, many people have expressed

their concerns about the delicate process of translating research evidence into the domain of public policy. Hawks (1995), for instance, asked why, despite the knowledge on effective policy responses, if we believe in a rational system of policy-making, these measures are not being applied. Unfortunately, the answer is straightforward: the process of policy-making is not in any way as rational as described in the theoretical models (Stockwell 1993). In the alcohol arena, as in others, it has been argued that policy-formation is usually determined by the relative power of competing lobby groups and by the mass appeal of policies for the electorate, rather than by the soundness of the research evidence underpinning the competing arguments (e.g. Stewart & Casswell 1988).

In short, policy making is characterised by non-rational processes. Development and implementation of a comprehensive alcohol-control policy is highly complicated as many factors and actors with a differential interest and changing importance and influence play a role in the political arena. Public health is only one of the many topics which have to be addressed. In general, topics such as economic growth or employment will be given higher priority. Therefore, it is of major importance that the public health arguments are well-founded (Dekker & van der Grinten 1995) and empirical research is the major source for these arguments.

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Chapter 3

DATA AND MEASUREMENTS

3. DATA AND MEASUREMENTS

3.1 General population survey 'Risky lifestyles in Rotterdam'

All analyses carried out in this thesis are based on a large-scale general population survey called 'Risky Lifestyles in Rotterdam' that was conducted in 1994. The major part of this large-scale study is a measurement of the prevalence of excessive drinking and problematic drinking among the general population of Rotterdam, similar to the study conducted by Garretsen in 1980-81 (1983). Besides data on drinking behaviour and problematic alcohol use, information was also gathered about smoking behaviour, gambling, cannabis use, and the use of sleeping pills/tranquilisers and on several issues related to these risky lifestyles. The objective of the survey 'Risky Lifestyles in Rotterdam' is three-fold:

1. To gain insight into the prevalence of excessive and problematic alcohol use and related factors in Rotterdam in 1994 and to gain insight into probable changes in prevalences or related factors compared to 1980-81.
2. To gain insight into the prevalence of risky lifestyles such as smoking, gambling, and cannabis use, and the use of sleeping pills/tranquilisers. Prevalences of the separate lifestyles are studied as well as the clustering of risky lifestyles and the factors related to the (clustering of) risky lifestyles.
3. To gain insight into the relation between socio-economic status and the prevalence of risky lifestyles, both separate and clustered.

In this thesis, the first and (in part) the third objective will be addressed.

3.2 Study design

The design of the large-scale study 'Risky lifestyles in Rotterdam' is that of a cross-sectional general population study. A large part of this study resembles the study that was conducted in 1980-'81 (Garretsen 1983). By using the same sample frame and the same definitions and operationalisation of the outcome variables as in the study of Garretsen (1983), continuity of the data collection will be ensured. A longitudinal study design in which the same respondents as in 1980-81 would be questioned was preferred for comparative reasons. However, tracing back these respondents was not possible because these respondents were not asked to give permission to store their names and addresses. Now, all respondents of the study 'Risky lifestyles in Rotterdam' are asked to give permission for being approached again so that a longitudinal study design will be possible in future.

3.3 Sample

As it was not possible to approach the respondents of 1980-'81 again, a new sample was drawn. The sample frame resembled that of the 1980-81 study (Garretsen 1983): it comprises the general population of Rotterdam in the age range 16-69. A random sample of 8,000 persons was drawn from the municipal register of Rotterdam in February 1994. The sample included inhabitants between 16 and 69 years of age and, to avoid language problems, persons with at least the Dutch nationality. In the study of 1980-81, people who were institutionalised were excluded from the sample. Due to an misunderstanding with the municipal register, this was not the case in 1994.

This rather large sample of 8,000 people was drawn because the prevalence of excessive drinking, problem drinking, and clustering of risky lifestyles is relatively low among the general population. Moreover, risky lifestyles are unequally distributed across the population. In order to conduct meaningful analyses in subpopulations with a low prevalence of excessive drinking or other risky lifestyles, a large-scale general population survey is necessary.

3.4 Data collection

The survey 'Risky lifestyles in Rotterdam' was conducted in the spring of 1994. Given the large sample size, postal questionnaires were chosen as data collection method. A small random sample (N=500) of the total sample (N=8,000) was interviewed face-to-face while all other persons (N=7,500) received a postal questionnaire. This procedure was chosen for a specific reason. In 1980-81, all data collection was done on the basis of face-to-face interviews. In this study it is possible to make a comparison of the results collected by postal questionnaire and face-to-face interview, which will show whether mode of data collection influences reported drinking behaviour and alcohol-related problems (see Chapter 5).

People in the sample were listed in alphabetical order and every sixteenth person was interviewed individually. The face-to-face interviews and the mail survey used the same structured questionnaire. In the face-to-face interview, the interviewer read all questions out loud. The face-to-face interviews were conducted by free-lance interviewers who were trained before the interviewing started. The interview took about 45 minutes. Feedback meetings were organised throughout the period of interviewing. To reduce non-response to the mail survey, two reminders were sent to recipients of the postal questionnaire. The second reminder included a new copy of the questionnaire. The people who were interviewed face-to-face were approached at least three times. Non-respondents of the face-to-face interviews received a postal questionnaire. This group did not receive a reminder.

The overall response is 3,537 completed questionnaires (44.2% of 8,000). Response rates of 43.9% (N=3,287) and 49.9% (N=250) were obtained for the mail survey and the personal interviews respectively.

3.5 Validity

The validity of survey research results is threatened by differential sources of error. One of these sources of error is selective non-response. Those who do not respond might differ from those who do respond with respect to outcome variables or background variables related to outcome variables. For the survey 'Risky lifestyles in Rotterdam', selectivity of response was assessed by background variables, which are related to the outcome variables and known for both respondents and non-respondents. As it turned out that the response was selective in terms of sex and age, all analyses were carried out using a weighted dataset by sex and age-specific response rates (see Chapter 4).

Furthermore, a follow-up study among a small sample of the non-respondents to the survey revealed that about half the non-respondents would refuse to co-operate with any survey (Jansen & Hak 1996). However, because of the small numbers, no definite conclusions could be drawn about reasons for refusal.

Selective refusal cannot be ruled out. The most concrete indication of selective refusal by drinking behaviour was that abstainers and very light drinkers refused to co-operate because they thought the research topic to be irrelevant to them. This is in conformity with findings by Lemmens et al (1988).

Another source of error is that not all inhabitants of Rotterdam are registered. Certain groups like the homeless and drug addicts especially, are most likely not to be included in the municipal register. A general population survey that uses the municipal register as sampling frame and with a data collection method of postal questionnaires will to a great extent miss these 'hidden populations'. As these groups have a high probability of excessive and problematic drinking, the prevalences of these behaviours in the total Rotterdam population will be somewhat underestimated.

A third source of error is the accuracy of self-reported data, i.e. the extent to which accurate information is provided by the respondent. As questions about (excessive) drinking and alcohol-related problems may be regarded as rather threatening (Bradburn & Sudman 1979), the concealing of (excessive) alcohol use and drinking problems is considered to be a major threat to validity. This premise is supported by the low coverage rates of surveys in comparison to sales statistics (50% on average) (Midanik 1982, Neve et al 1993). The validity of self-reported drinking behaviour in the survey 'Risky lifestyles in Rotterdam' is assessed by the collateral reports method (see Chapter 6). Reassurance was found about the validity of self-reported moderate drinking. There were some indications that excessive drinking might be underreported, particularly among women.

Given the mentioned sources of errors, the prevalences reported in this thesis should not be viewed as definite figures but rather as minimum estimations of the true prevalences in the general population of Rotterdam.

3.6 Measurements

The main outcome measures of this thesis, i.e. drinking behaviour, alcohol-related problems and problem drinking, are defined and operationalised in the same way as in Garretsen's study of 1980-81 (1983). In this section, the main outcome measures of this study will be addressed in detail. Measurements of specific outcome measures and independent variables will be discussed in the method section in the relevant chapter.

3.6.1 Alcohol consumption

Alcohol consumption was measured by the Quantity-Frequency-Variability index (QFV-index). Four questions were asked:

1. 'Which alcoholic drinks do you usually drink when you drink?'
2. 'How many days a month on average do you drink?' (usual Frequency);
3. 'If you drink alcohol, how many glasses do you drink on average?' (usual Quantity);
4. 'Have you ever drunk six or more glasses at one day in the past six months? (Variable heavy drinking)'.

Based on these four questions, respondents were categorised as abstainers, light drinkers, moderate drinkers, excessive drinkers, and very excessive drinkers (Table 1):

Table 1 Drinking categories: cut-off points

average drinking days a month	number of drinks on drinking day			
	≥6	4 or 5	2 or 3	> 0 to 1
28 or more	very excessive	excessive	moderate	light
21 - 27	very excessive	excessive	moderate	light
15 - 20	excessive	moderate	moderate	light
9 - 14	excessive	moderate	light	light
3 - 8	moderate	light	light	light
> 0 - 2	light	light	light	light

- very excessive drinkers: - 5 times a week 6 or more drinks ór
- 21 or more days a month 6 or more drinks;
- excessive drinkers: - 3 or 4 times a week 6 or more drinks ór
- 9 up to 20 days a month (inclusive) 6 or more drinks ór
- 21 or more days a month 4 or 5 drinks;
- moderate drinkers: - 3 up to 8 days a month (inclusive) 6 or more drinks ór
- 9 up to 20 days a month (inclusive) 4 or 5 drinks ór
- 15 or more days a month 2 or 3 drinks;
- light drinkers: - 1 up to 2 days a month (inclusive) 6 or more drinks ór
- 1 up to 8 days a month (inclusive) 4 or 5 drinks ór
- 1 up to 14 days a month (inclusive) 2 or 3 drinks ór
- 1 up to all days a month 1 drink ór
- drinking mainly low-alcohol beer (answer to question 1);
- abstainers: - never drinking alcohol (answer to question 1).

A respondent is categorised in the above-mentioned categories if he/she fulfils one of the criteria. In case of inconsistencies in the indicators Quantity-Frequency (QF) versus Variability (V), the respondent is classified in the category of highest alcohol use.

3.6.2 Alcohol-related problems

The operationalisation of alcohol-related problems is based on the eleven indicators of alcohol-related problems mentioned by Cahalan (1976):

- Repeated drunkenness;
- 'Binge' drinking (being drunk for a number of days in a row);
- 'Symptomatic drinking', behaviour that indicates somatic dependence and loss of control;
- 'Psychological dependence, drinking to escape difficulties and to relieve stress;
- problems with partner or family due to drinking;
- Problems with friends or neighbours;
- Problems at school or in the workplace;
- Problems with police or law;
- Health problems;
- Financial problems;
- Aggressive behaviour.

All indicators except for 'binge drinking', which is uncommon according to Cahalan, are considered. The indicators are clustered in five problem areas:

1. Psychological dependence;
2. Symptomatic drinking;
3. Social problems;

4. Health problems or accidents;
5. Frequent drunkenness and/or hangovers.

The score for each problem area is measured by a variable number of questions. Each problem area will be discussed separately below.

Psychological dependence

Psychological dependence is measured by 7 items. Respondents were asked whether they had any of the following experiences in the preceding six months:

- Drinking helps me to forget my problems;
- Drinking cheers me up when I am in a bad mood;
- Drinking helps me to ease my nerves;
- Drinking helps to think and work better;
- Drinking strengthens my self-confidence;
- A drink helps me when I feel lonely;
- I found it hard to do my work without having a few drinks now and then.

The score on the indicator psychological dependence is calculated by adding up the scores for the separate items. With each item, respondents can score either zero points (item does not apply to respondent), one point (item is a little bit true), or two points (item is true). Therefore the maximum score at the indicator psychological dependence is 14 points. Based on the total score respondents are categorised as follows: no psychological dependence (zero points), light (1 up to 3 (inclusive) points), moderate (4 up to 6 (inclusive) points), or severe psychological dependence (7 or more points). Respondents that score 'moderate' or 'severe' are defined as having problems with psychological dependence.

Symptomatic drinking

Symptomatic drinking is measured by 8 items. Respondents were asked whether they had any of the following experiences in the preceding six months:

- I skipped meals now and then when I was drinking;
- It happened that I woke up the morning after having been drinking and that I did not know what I had done during that night;
- When I started drinking it was hard to stop;
- I have been drinking in secret;
- Before I went to a party, I had a few drinks to be sure that I got enough;
- Immediately after I woke up, I started drinking;
- My hands were trembling the morning after I had been drinking;
- I kept on drinking although I promised myself not to.

If a respondent had one of these experiences, he/she scored 1 point and if not he/she scored zero points. The scores for all items are added up so that a respondent can have a score for the indicator symptomatic drinking from 1 up to 8 points. The scores are categorised into no symptomatic drinking (zero

points), light (1 symptom), moderate (2 or 3 symptoms), and severe symptomatic drinking (4 or more symptoms). Symptomatic drinking is regarded as a problem when 'moderate' or 'severe' is scored.

Social problems

The problem area 'Social problems' is divided into six categories:

- a. Problems with partner or relatives;
- b. Problems with friends or neighbours;
- c. Problems with school or work;
- d. Trouble with police and/or law because of alcohol use
- e. Relatives, friends, or acquaintances have complained that respondent becomes aggressive after drinking;
- f. Relatives, friends, or acquaintances have complained that respondent spends too much money on drinking.

Ad a.

Problems with partner or relatives were measured by 3 items:

- In the preceding six months, has your partner (if no partner: your parents) complained about your drinking too much or did he/she advise you to drink less?
- Have you had the feeling that your drinking has negatively influenced the home situation in the preceding six months?
- Have you had the experience in the preceding six months that your family gets annoyed about your drinking?

When the respondent affirmed one or more of these three questions he/she scored one point.

Ad b.

Problems with friends of neighbours were measured by 5 items. Respondents were asked whether in the preceding six months their alcohol use had any negative consequences on:

- their circle of friends or acquaintances;
- their contacts with neighbours;

And respondents were asked whether they had any of the following experiences in the preceding six months:

- Friends thought that I should drink less;
- My drinking was one of the reasons for a lost friendship or my drinking put a great distance between myself and my friends;
- The neighbours said I should drink less.

When the respondent affirmed one or more of these five questions he/she scored one point.

Ad c.

Problems at work were measured by 5 items:

Respondents were asked whether in the preceding six months their alcohol use had any negative consequences on:

- their work or their chances to get work;

And respondents were asked whether they had any of the following experiences in the preceding six months:

- I could not do my job because I had drunk too much the day before;
- Drinking made me quit my job;
- I (almost) lost my job due to drinking;
- I have been drunk or tipsy while I was doing my job.

When the respondent affirmed to one or more of these five questions he/she scored one point.

The last three problems (d,e,f) were measured by one question: if respondents affirmed the question whether they ever got into trouble with police and/or law due to alcohol use, they scored one point, otherwise they scored zero points. If respondents received any complaints about aggressiveness in the preceding six months they scored one point, otherwise they scored zero points. The same holds for complaints about spending too much money on alcohol.

As the problem area 'Social problems' is divided into six categories, the total score for this problem area can vary from 0 to 6 points. The total score can be further categorised into no social problems (zero points), light (1 point), moderate (2 points), and severe social problems (3 or more points). Social problems are regarded as a problem when people scored moderate or severe problems in this problem area.

Health problems and alcohol-related accidents

Health problems are measured by two questions:

- Has your general practitioner ever commented on your drinking behaviour?
- Have you been in hospital or a clinic for a disease which was related to drinking (in the preceding six months)?

If respondents affirmed one of these questions they scored one point.

Alcohol-related accidents are measured by one statement:

- After I had been drinking, I had an accident.

The scores for the problem area 'health problems and alcohol-related accidents' vary from 0 (negative score for both sorts of problems) to two points (positive score for both sorts of problems)

Drunkness/hangovers

The score of the respondents in this problem area is measured by two questions:

- How often have you been drunk or tipsy in the preceding six months?
- How often did you have a hangover in the preceding six months?

A respondent who reports to be drunk or to have a hangover once to three times a month scores one point and a respondent who reports to be drunk or to have a hangover once a week or more scores two points.

3.6.3 Problem index

By adding up the scores for the different problem areas, a ten-point problem index can be constructed (Table 2). Having alcohol-related problems is then defined as having at least moderate problems in one problem area (problem index=1). It must be noted that the problem areas may differ with respect to severity. Especially being drunk or having a hangover once to three times a month (scoring 1 point for the problem area drunkenness/hangovers) may not be interpreted as a big problem. However, analyses show that among those that score 1 point on the problem index only 17.4% (N=66) scores on the problem of drunkenness/hangovers.

3.6.4 Problem drinking

Problem drinking is operationalised as a combination of alcohol-related problems and a certain level of drinking. To be classified as a problem drinker, the score must be at least one point on the problem index (reporting at least moderate problems on one problem area). To check whether these problems are really alcohol-related, people must also drink excessively before they are categorised as problem drinkers. Furthermore, as drinking a lot in only a few days (e.g. at the weekend) can also cause problems, those who drink six or more drinks once or twice a week and have a score of 1 or higher on the problem index will also be categorised as problem drinkers.

Table 2 Operationalisation of the Problem Index

Problem areas		Score on the separate problem areas		intermediate score		maximum contribution to problem index*
Psychological dependence:		7 questions	0-3 positive = 0 points 4-6 positive = 1 point ≥ 7 positive = 2 points			2 points
Symptomatic drinking:		8 questions	0-1 positive = 0 points 2-3 positive = 1 point ≥ 4 positive = 2 points			2 points
Social problems:						2 points
- problems with partner/family:	3 questions	≥ 1 positive	= 1 point	0-1 point	= 0 points	
- problems with friends/neighbours:	5 questions	≥ 1 positive	= 1 point	2 points	= 1 point	
- problems with work:	5 questions	≥ 1 positive	= 1 point	≥ 3 points	= 2 points	
- complaints about aggressive behaviour:	1 question	1 positive	= 1 point			
- complaints about spending too much money on alcohol:	1 question	1 positive	= 1 point			
Health-related problems:						2 points
- Health problems:	2 questions	≥ 1 positive	= 1 point			
- Accidents:	1 question	1 positive	= 1 point			
Drunkenness/Hang-over		2 questions	monthly = 1 point weekly = 2 points			2 points
				Maximum score on problem index:		10 points

* 1 point on a problem area is interpreted as moderate problems and 2 points as severe problems

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Part II

METHODOLOGY

Chapter 4

METHOD TO CORRECT FOR BIAS IN SURVEY RESULTS DUE TO INDIRECT SELECTIVE NON-RESPONSE

Abstract

In this article background variables of non-response will be outlined. Then, a method based on the response probability model to evaluate and correct for selective non-response will be described in great detail. Non-response is an important source of error in survey research and the general increase in non-response rates is therefore a cause for concern. Non-response, because of the smaller number of observations, leads to a decrease in precision of outcome measures. If non-response is selective it can also lead to biased results. There is a distinction between direct (differential) selective non-response and indirect (non-differential) selective non-response. Direct non-response occurs when the non-response is directly related to the research topic. Indirect non-response occurs when the non-response is selective by background characteristics in relation to the research topic. Indirect selective non-response can be evaluated and corrected for by means of the response probability model. This method defines differences in response probabilities on the basis of background variables that are related with the outcome variable of the research. Weighting factors are subsequently calculated with which data can be weighted. Comparing the value of the outcome variable before and after weighting will provide insight into the degree of bias as a result of indirect selective non-response.

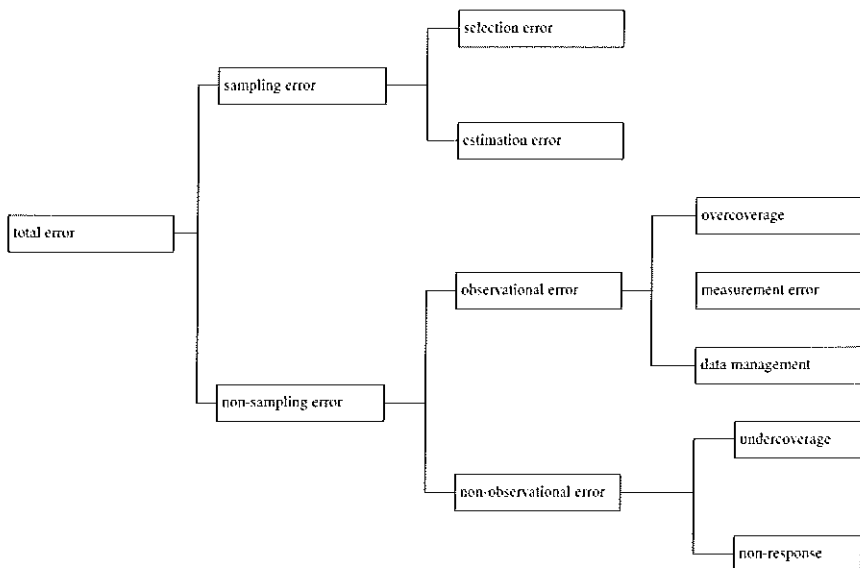
4. METHOD TO CORRECT FOR BIAS IN SURVEY RESULTS DUE TO INDIRECT SELECTIVE NON-RESPONSE

4.1 Introduction

Survey research is accompanied by several sources of error (Figure 1). These sources of error could result in less precise and/or biased results (Bethlehem & Kersten 1986). Non-response is an important source of error, not only because non-response rates have sharply increased over the years, but also because its impact on survey results can be great (Bethlehem & Kersten 1986). First, this article will outline the backgrounds of non-response. Then, a method based on the response probability model to evaluate and correct for selective non-response will be described in great detail and in a non-statistical manner. Non-response has sharply increased over the last few decades. From an overview by de Heer and Israëls (1992) it appears that non-response to the Dutch household surveys of the Dutch Central Bureau for Statistics increased from 28% in the early seventies to 50% in 1991. For research projects in the educational sector, non-response is estimated to be between 35% and 55%; in the commercial sector it is not exceptional to have a non-response of 70% (de Bie 1987). Non-response to the Health Questionnaire of the Central Bureau for Statistics in 1994 was approximately 45%.

Non-response means that data are not available of people that were included in the sample. The response percentage can be calculated by dividing the number of completed questionnaires by the net sample size (de Bie 1987). There is a distinction between unit non-response and item non-response. With unit non-response there are no data about the potential respondent at all; with item non-response only part of the data have been obtained. When non-response is related to the research outcome variable, the non-response is selective. In other words, non-respondents have a different value for the outcome variable than respondents have. Selective non-response can be either direct (differential) or indirect (non-differential). Direct selective non-response means that non-response is directly related to the outcome variable of the research. For example, with a health questionnaire, non-response could be higher among unhealthy people. As a result, the number of unhealthy people will be underestimated. Indirect selective non-response occurs when non-response is related to a background variable, which is also related to the outcome variable. An example of this is the difference in response between people with a higher and with a lower socio-economic status (SES), in combination with the fact that people with a lower SES are generally less healthy. If people with a lower SES respond less, the health situation of a population will consequently be overestimated. Both direct and indirect selective non-response can cause biased results. Several factors influence the degree of non-response, for example, the research institute that carries out the survey or the population under study. In general, universities and other non-profit organisations obtain a higher response rate

Figure 1 Sources of error in survey research



Source: Bethlehem J, Kersten H (1986) *Werken met non-response*. Amsterdam, Universiteit van Amsterdam

Key to Figure 1:

Selection error:	Error that occurs because for some people the real probability to be included in the survey differs from the assumed probability.
Estimation error:	Error that occurs because the study population is sampled on the basis of a certain sampling procedure.
Overcoverage:	Part of the observational error that occurs when the sample frame includes people who do not belong to the population of interest.
Measurement error:	Part of the observational error that occurs because information about respondents after observing and processing does not correspond with reality.
Data management error:	Part of the observational error that occurs due to mistakes in data processing.
Undercoverage:	Error that occurs because persons that should be included in the study population are excluded from the sample frame.
Non-response:	Error that occurs because information cannot be obtained about persons in the sample.

than market research organisations or other commercial organisations (Hox & de Leeuw 1993). Samples from a geographically close-by and select population usually yield a higher response than a random sample taken from the total population. Other factors that could influence the response are the method of data collection and the involvement of ethnic groups. Face-to-face interviews usually result in a higher response rate compared to similar telephone interviews or postal questionnaires (Hox & de Leeuw 1993). Research among minorities shows that Turks participate more than Moroccans do (Media + Minderheden 1986; CBS 1985). The region of a country and degree of urbani-

sation play a role too, just like length of the questionnaire, the timing of the research and the quality of the questions and that of the interviewers. Lastly, the level of response can be influenced by the research topic. If the topic is of low saliency or threatening to the respondent, a respondent may decide not to participate.

Non-response can occur because of five reasons (Bethlehem & Kersten 1986). The first two reasons are the most important as they are related to the research topic directly and indirectly respectively. As explained earlier, the relation between non-response and research topic could lead to biased survey results.

1. Refusal: people may refuse to participate because of privacy reasons, inconvenient timing of the interview, or because they have no interest in questionnaires in general. Refusals may also be due to a specific topic. If the topic of a survey is about socially unacceptable behaviour, people that show this behaviour may be less willing to co-operate.
2. Hard to reach: this happens when a group of non-respondents is repeatedly absent from home or does not return the questionnaire. The increase in the number of single households, greater mobility and more out-of-door leisure activities make it difficult to contact people. The contribution of this group of non-respondents to the total non-response has therefore increased (Louwen 1992). Since the probability of people being at home or sending back the questionnaire may be related to the research topic, this subgroup of non-respondents is of major importance in non-response research.
3. Untraceable/Unapproachable: data of a number of non-respondents cannot be obtained because they moved away (address unknown), died, or were not approached by the interviewer.
4. Incapable: this refers to people who cannot participate. This may be due to illness, dementia, a mental handicap or to language barriers or hospitalisation in a psychiatric hospital or nursing home.
5. Not processable: lost and/or useless questionnaires.

In order to restrain non-response rates, Dillman (1978;1991) tried to identify and balance the many aspects of the research process (particularly postal questionnaires) that may influence the quality and quantity of response, thereby trying to obtain the maximum result. He addressed the issues of questionnaire size and order of questions, layout, first question and reminder schedules. In addition, the chances of contacting respondents could be improved by increasing the number of call attempts made and by conducting more interviews in the evening so as to improve the chance of contacting people at home (Louwen 1992).

Despite all the (research) efforts to reduce non-response, in practice it seems that high response rates are often not feasible. A low response rate, however, confronts the survey researcher with two problems: firstly, non-response causes a lower number of observations than anticipated. Although results do not necessarily have to be wrong, the precision with which outcome measures can be estimated will be reduced. Incorporating non-response in the determination of the sample size could be an efficient solution to this problem. A second and considerably bigger problem is the potential selectivity of non-response. As

explained earlier selective non-response may end up in biased results, which will threaten the validity of the study. It is therefore very important for each survey research to gain insight into the potential bias of results due to non-response selectivity.

There are two ways in which to (partly) solve the problem of bias. Firstly, the study population can be re-defined on the basis of non-response analyses. In this procedure, subgroups with similar response rates are selected. For example, when the response rate is lower among men than among women, the sample population could be re-defined on the basis of sex. This procedure is useful only to correct for indirect selective non-response. In case of a low response rate to a health questionnaire among unhealthy people (direct selective non-response), it would not be informative to re-define the study population to include healthy people only. A second option would be to correct for selective non-response. To correct for bias due to direct and indirect non-response, two methods have been developed.

Insight into, and if necessary, correction for bias due to direct and indirect selective non-response should be obtained despite the fact, inherent in non-response, that no or very little information about non-respondents is available. In one of the first papers on non-response selectivity Hansen and Hurwitz (1946) propose to collect more information about non-respondents. In this classic method, a sample of non-respondents is approached for participation in the survey by means of an intensive callback procedure that can be done either in person, by telephone or in writing. It is especially possible with an intensive callback procedure to obtain information about the group of non-respondents with a non-response reason of 'hard to reach'.

On the basis of the non-response analysis results it can be investigated whether the (sample of) non-respondents are any different from the original group of respondents with respect to outcome measure or to background variables related to outcome measure. The assumption behind this method is that the group of non-respondents that respond to the callback procedure is representative of the total group of non-respondents.

Although the intensive callback procedure could yield a lot of information, it is time-consuming and very costly. An alternative procedure is the Central Question Method (Bethlehem & Kersten 1986). With this method, non-respondents will be asked only one, and most important, question, since they are usually more willing to answer just one question. This way, some information can be collected about non-respondents who refuse to co-operate with the research. Time and money are often not available to contact non-respondents again.

Insight into and potential correction for direct selective non-response is therefore not normally possible. However, to gain some insight into the occurrence of bias due to indirect selective non-response it is possible to use the often available information about some background variables of non-respondents. This information can be available from the sample draw from (population) registers or from data collected by the interviewer.

There are at least two types of methods that use background information about both respondents and non-respondents (Little & Rubin 1987). The first method is to replace missing values with "suitable" values. Non-respondents and

respondents are classified in groups on the basis of available information. The "suitable" value can be defined in different ways. For example, average values can be used of groups of respondents with similar background variables to the non-respondents (Mean Imputation).

A second, widely used, method that uses respondents' and non-respondents' background variables is the weighting of data. Most weighting methods for correction for indirect selective non-response start with dividing respondents into substrata. These substrata have been defined by background variables which are as homogeneous as possible with respect to outcome variable and response behaviour. On the basis of response behaviour, weighting factors are then allocated to the various substrata (Bethlehem & Kersten 1986). The result is that prevalence estimates will have been corrected for indirect selective non-response. If one is interested in prevalence estimates within the above-mentioned substrata, correction for indirect selective non-response is not necessary. In that case, the study population(s) can be re-defined, as described above. Usually, however, the interest is in more general prevalence estimates as well as in stratum-specific prevalence estimates.

A broader use of the various methods, in our opinion, is hampered by the statistical nature of most literature on methods for non-response analyses. For example, a method based on the response probability model that provides valuable knowledge and that is easily applicable to evaluate and correct for indirect selective non-response is not often used. This method provides insight into potential indirect selectivity of non-response on the basis of information about background variables for the total sample. Furthermore, it is possible to define weighting factors, which can correct for the potential bias due to indirect selective non-response.

In the second part of this chapter, the method based on the response probability model will be described in a non-statistical manner. The underlying theory will be explained in general terms and the application will be illustrated by a practical example. The practical example is taken from the survey 'Risky Lifestyles in Rotterdam' (Bongers et al 1997). The non-response rate for this survey was 55.8% (response rate 44.2%, N=3,537). An improvement in the estimation of the outcome measure after correction for bias due to indirect selective non-response based on the response probability model will be illustrated in this chapter.

4.2 Design of the survey 'risky lifestyles in Rotterdam'

The survey 'Risky Lifestyles in Rotterdam' was conducted in the spring of 1994. A random sample of 8,000 persons was drawn from the municipal population register of Rotterdam, the Netherlands. The sample included Dutch nationals between 16 and 69 years of age. Two important outcome variables of this survey are excessive drinking and problem drinking. Alcohol use is measured by average quantity and frequency of alcohol use and a-typical or variable heavy alcohol use. On the basis of these measures of alcohol use, respondents were divided into the following categories: abstainers, light, moderate, and (very) excessive drinkers (Bongers et al 1997; Garretsen 1983). Problem drink-

king is operationalised in terms of self-reports on alcohol problems in combination with excessive drinking to certify the alcohol-related nature of the reported problems (Bongers et al 1997; Garretsen 1983). The response rate was 44.2% (N=3,537).

The question arose as to whether the non-response would be related to two of the important outcome variables: excessive drinking and problem drinking. To evaluate and correct for (indirect) selective non-response, a non-response analysis was carried out on the basis of the response probability model. For an elaborate description of the study design see Bongers et al (1997).

4.3 Application of the response probability model to evaluate and correct for bias due to indirect selective non-response

The response probability model can be used to gain insight into and, if necessary, to correct for bias as a result of indirect selective non-response. This method uses information about background factors of the total sample and assesses the potential differences in response probability by background variable. In most studies, background variables are not regarded as the most important objective. However, if non-response is related to background variables, which are also related to the outcome variable, non-response is indirectly selective with respect to the outcome variable(s) under study (indirect selective non-response). The assumption behind the response probability model is that the average value of the outcome variable is the same among respondents and non-respondents; direct selective non-response is assumed to be non-existent. The implications of this assumption will be addressed later in this article.

The response probability model will be illustrated by means of a fictitious example in which the response probabilities are known of men and women as well as their value on the outcome variable of alcohol use. The outcome measure is the average alcohol consumption of the total population. Table 1 shows that response probability is higher for women than for men, which means that women respond more often than men do. Alcohol use is also related to sex: in general, women drink less than men do. The example shows that the population as a whole drinks on average 15 alcoholic beverages a week. The fictitious study in which only the alcohol consumption of respondents is known, shows an average consumption of an estimated 13.7 drinks a week. Since the response among women is higher and women drink less, the average consumption for the total population is underestimated on the basis of the results in this fictitious study. Indirect selective non-response leads thus to biased results. In order to correct for the indirect selective non-response bias, data are weighted on the basis of the response probabilities. After weighting, the estimated average consumption turns out to be equal to the true average consumption of 15 drinks a week (see Table 1 for a calculation). The example shows that the response probability model can correct for bias due to indirect selective non-response.

Table 1 Application of the response probability model: fictitious example among a sample of 100 men and 100 women

	Alcohol use*	Response	Non-response	Response probability	Weighting factor
men (N=100)	20	35%	65%	0.35	2.86
women (N=100)	10	60%	40%	0.60	1.67
Calculations:					
Alcohol use in total population*:	$(100 \times 20 + 100 \times 10) / 200$		≈ 15 drinks a week		
Alcohol use in response group*: (not corrected)	$(35 \times 20 + 60 \times 10) / 95$		≈ 13.7 drinks a week		
Alcohol use in response group*: (corrected)	$[W_{\text{men}}(35 \times 20) + W_{\text{women}}(60 \times 10)] / [W_{\text{men}}(35) + W_{\text{women}}(60)]$		≈ 15 drinks a week		

* average number of glasses of alcoholic beverages a week

To gain insight into and correct for potential indirect selective non-response by means of this method in practice, it is necessary to select background variables that are both related to the outcome variable and known for the whole sample. In the survey 'Risky Lifestyles in Rotterdam', the two background variables that are known for the whole sample are sex and age. Literature shows that sex and age are related with the outcome variables alcohol use and alcohol problems (Garretsen 1983; Knibbe & Swinkels 1992). Subsequently, it is investigated whether response probability differs for each category of background variable. To this end, the study population is divided into response substrata. The various substrata are obtained by combining the categories of background variables so that the substrata are as homogeneous as possible with respect to response probability and value of the outcome variable (response probability model). Then, the recorded response probability is calculated for each substratum. The recorded response probabilities form the basis for the weighting factors, which can correct for the biased outcome measure due to indirect selective non-response bias (analogous to the fictitious example in Table 1). Each substratum receives a weighting factor (w_i) which is defined as the gross sample size in the respective substratum (n_i) divided by the total gross sample size (N):

$$w_i = n_i / N$$

w_i = weighting factor for substratum i

n_i = gross sample size in substratum i

N = total gross sample size

In addition, for each substratum, the value is calculated of the outcome variable to be corrected (x_i). These values are multiplied by the weighting factors for the substratum concerned. The corrected outcome variable (X_{corr}) is obtained by adding up the weighted values of the outcome variable per substratum:

$$X_{\text{corr}} = \sum w_i * x_i$$

X_{corr} = corrected outcome measure
 w_i = weighting factor for substratum i
 x_i = value outcome measure in substratum i

In Table 2, the weighting procedure above is applied to the outcome measure problem drinking in the survey 'Risky Lifestyles in Rotterdam' (note 1).

Table 2 Weighting procedure to correct for indirect selective non-response in the survey 'Risky Lifestyles in Rotterdam' (sample: N=8,000)

	men			women		
	n_i	x_i	w_i	n_i	x_i	w_i
16-24 years	698	23.6%	0.087	659	5.4%	0.082
25-34 years	1,052	12.6%	0.132	1,045	2.9%	0.131
35-44 years	832	18.1%	0.104	839	2.0%	0.105
45-54 years	645	13.0%	0.081	696	2.7%	0.087
55-69 years	601	10.4%	0.075	932	1.9%	0.117
N=8,000						

Calculations:

$$w_i = n_i / N = 698 / 8,000 = 0.087 \text{ (substratum i = men between 16 to 24 years of age)}$$

$$X_{\text{cor}} = \sum w_i * x_i = (0.087 * 23.6\%) + (0.132 * 12.6\%) + \dots + (0.087 * 2.7\%) + (0.117 * 1.9\%) = 8.9\%$$

N =	Total gross sample size
n_i =	Gross sample size in substratum
w_i =	Weighting factor of substratum
x_i =	Percentage of problem drinkers in substratum (based on net sample size in substratum)
X_{cor} =	Corrected percentage of problem drinkers in total population

It was assumed above that all background variables, which are known for the whole sample and which are thought to be related to the outcome variable, are actually incorporated into the response probability model. Depending on the number of background variables and the number of respondents, it may turn out that the number of respondents per substratum is too small. A solution would be to add up some of the categories of background variables. If this does not solve the problem, the number of background variables in the model should be restricted. The selection of background variables can be made by means of logistic regression analyses (Hosmer & Lemeshow 1989). The purpose is to construct a response probability model that is capable to adequately describe response behaviour but that uses the smallest possible number of background variables.

A comparison of the outcome variable before and after weighting will provide insight into the degree of bias due to indirect selective non-response. Table 3 presents the main outcome variables of the survey 'Risky Lifestyles in Rotterdam' both before and after weighting. The prevalence of excessive drink-

king as well as the prevalence of problem drinking turn out to be considerably higher after correction for differences in response probability has taken place. On the basis of these results it has been concluded that in order to improve the representativity of the results, all further analyses should be carried out using a dataset that is weighted for indirect selective non-response.

Table 3 Prevalence of excessive alcohol use and problem drinking before and after weighting for differences in response probabilities (%[95%-confidence interval])

	% [95%-CI] before weighting	% [95%-CI] after weighting
excessive alcohol use		
excessive drinkers	4.9 [4.2-5.6]	5.3 [4.6-6.0]
very excessive drinkers	2.6 [2.1-3.1]	2.9 [2.3-3.5]
problem drinking		
yes	8.2 [7.3-9.1]	8.9 [8.0-9.8]

4.4 Limitations of the response probability model

In the survey 'Risky Lifestyles in Rotterdam' insight was gained into potential bias due to indirect selective non-response by means of the response probability model. Firstly, non-response turned out to be related to sex and age, both of which are associated with alcohol use. After correction for these differences in response probability, the prevalence of (very) excessive drinking increased from 7.5% to 8.2% and the prevalence of problem drinking from 8.2% to 8.9%. Therefore, correction for indirect selective non-response in this study caused the estimated outcome variables to increase by about 9 percent. To improve the representativity of the results it was decided that all further analyses would be based on a dataset that is weighted and corrected for indirect selective non-response.

Indirect selective non-response does not necessarily always cause biased results. If results are not biased, weighting and correcting for indirect selective non-response are not required. Lemmens et al (1988) in their survey on drinking habits of the Dutch general population, found differences in response probability according to age, marital status and geographic region. However, correction for these differences did not considerably change the estimated outcome variable of average alcohol consumption.

Although it is assumed that the representativity of the final results after weighting for differences in response probability will increase, there should be no misconception that the bias due to indirect selective non-response has been entirely eliminated. The use of a method based on the response probability model carries with it certain limitations. Firstly, weighting in general can give rise to increased variance as regards point estimates. In other words, the precision of the estimates may be reduced. In the survey 'Risky Lifestyles in Rotterdam' this turned out not to be the case: the width of the 95%-confidence

intervals of the weighted and unweighted prevalences hardly varied (Table 3). A second restriction is the limitation of testing for indirect selective non-response for those background variables that are known for the total sample. As with all post-stratification methods, it cannot be guaranteed that non-respondents will not differ from respondents with respect to other factors that may be related to the outcome variable, but for which information about the whole sample is not available.

One of the primary limitations, however, is that the method exclusively evaluates and corrects for indirect selective non-response. It is assumed that outcome variables are similar for non-respondents and for respondents. In other words, direct selective non-response is assumed to be non-existent. Should there be any direct selective non-response, the correction for non-response bias is not conclusive. The estimated prevalence corrected for indirect selective non-response may still differ from the 'true' prevalence.

Whether or not direct selective non-response plays a role in the survey 'Risky Lifestyles in Rotterdam' cannot be confirmed with certainty. For this, data on excessive drinking and problem drinking should have been available for non-respondents. Other alcohol research shows that direct selective non-response might play a role. In addition to applying the response probability model method, Lemmens and his colleagues (1988) also approached a sample of non-respondents with the intensive callback procedure. After comparing alcohol use between respondents and non-respondents it appeared that female non-respondents generally drank less and were more likely to be abstainers than female respondents. The authors therefore concluded that for women, the assumption that there is no direct relation between outcome variable and non-response did not hold true. It was notable, however, and contrary to general expectations, that heavy drinkers were not overrepresented among the non-respondents.

4.5 Conclusions

The limitations of the response probability model go back to the essence of non-response: the lack of information about part of the original sample. The possibilities for non-response analyses are naturally limited due to this phenomenon. It will be clear that no method, whether applied during or after the data collection, can provide a solution to selective non-response bias. It is therefore of major importance that non-response is kept to an absolute minimum. Furthermore, as much information as possible must be gathered, using different methods if necessary, about non-respondents so as to gain insight into non-response bias.

One option is to use the response probability model. In practice it is often difficult to obtain more information about non-respondents than some details about background variables. Correction for differences in response probability by means of weighting is usually the only feasible option that remains. Despite its limitations and assumptions, the method described provides a good opportunity to evaluate and, if necessary, to correct for selective non-response bias.

To conclude, it should be noted that non-response is not the only source of

error in survey research (see Figure 1). Insight into, for example, the validity of the obtained information is of great importance too.

For a more elaborate (statistical) discussion about the method described, please refer to the thesis of Bethlehem & Kersten: 'Working with non-response' (Bethlehem & Kersten 1986).

NOTES

1. This weighting procedure closely resembles the method of estimating a population average on the basis of a stratified sample for which response probabilities differ per stratum (Bethlehem & Kersten 1986).

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Chapter 5

MODE EFFECTS ON SELF-REPORTED ALCOHOL USE AND PROBLEM DRINKING: MAIL QUESTIONNAIRES AND PERSONAL INTERVIEWING COMPARED

Abstract

Objective: Much attention is paid to the influence of different data collection methods on the quality of self-reported drinking behaviour estimates. Thus far, however, the findings show inconsistencies. Therefore, a comprehensive study was conducted to compare data on alcohol use and alcohol-related problems obtained by mail survey and personal interviews. **Method:** A general population survey on alcohol was conducted among a random sample of 8,000 Dutch inhabitants of Rotterdam aged 16 to 69. A small sample (N=500) of the total sample (N=8,000) was personally interviewed and the others (N=7,500) received a mailed questionnaire. The response rate was 44% (N=3537). Respondents of the mail survey and personal interviews are compared on overall response rate, item-nonresponse rate, background factors, self-reported alcohol use, alcohol-related problems, and problem drinking. **Results:** No notable differences in self-reported alcohol use, alcohol-related problems or problem drinking were found by data collection mode. This holds for both the total general population and for men and women separately. The overall response rate was somewhat higher for the personal interviews. No important significant differences were found in item nonresponse or background factors. **Conclusions:** The absence of notable differences in estimated self-reported drinking behaviour by mail survey and personal interviews indicates that both data collection methods yield comparable results. This is true for both the total population and for men and women separately.

5. MODE EFFECTS ON SELF-REPORTED ALCOHOL USE AND PROBLEM DRINKING: MAIL QUESTIONNAIRES AND PERSONAL INTERVIEWING COMPARED

5.1 Introduction

Scientific knowledge is based on weighing and considering the findings of several studies. This analysis, however, is complicated by the notion that inconsistencies and even consistencies may be due to artefacts. Differences in study design could be such an artefact. One aspect of study design which often differs between surveys is data collection mode.

The last decades, much research is done on the influence of differential data collection modes on the quality of survey estimates. De Leeuw (1992) has integrated this research by meta-analysis and has provided a systematic overview of findings on differences in data quality between mail, telephone and personal interviews. She concluded that similar conclusions will be drawn from well-conducted personal and telephone surveys. Comparison of mail surveys with telephone and personal interviews, however, showed small but not negligible differences. She found that both overall non-response and item non-response were higher in mail surveys. When questions are answered in mail surveys, however, the resulting data tend to be of higher quality especially when more sensitive questions are concerned.

Thus, mode of data collection may well have an impact on respondents' willingness to reveal socially undesirable behaviour. It is stated that this impact is mediated through differences in anonymity of response by mode of data collection (Schwartz et al 1991). Modes that provide high response anonymity may elicit a greater willingness to reveal undesirable behaviour. Compared to other data collection modes, mail surveys have a relatively high response anonymity which could be the reason for their results on sensitive topics being of higher quality.

In studies on mode differences, one is interested in the effect of data collection other factors being equal. One of the factors that often differs between data collection mode is sampling frame (de Leeuw 1992). For studying the general population, for instance, mail surveys require an explicit sampling frame of names and addresses (e.g. municipal register). For face-to-face interviews, however, sophisticated sampling designs have been developed that do not require a detailed sampling frame or a list of persons or households (Cochran 1977; Kish 1987). Telephone surveys often use random digit dialling techniques that are based on the sampling frame of all possible telephone numbers. The consequent differences in coverage of the source population might bias the comparison of data collection mode (Aquilino & Lo Sciuto 1990; Aquilino 1992).

Recently, several studies have been conducted on the effects of data collection modes on self-reported alcohol and drug use. Aquilino and his colleagues

assessed the effects of telephone interviews, personal interviews and self-administered answer sheets within personal interviews (Aquilino 1994; Aquilino 1992; Aquilino & Lo Sciuto 1990). Some mode differences were found. In general, however, the differences were rather small. Admission of alcohol and especially illicit drug use was most likely in personal interviews with answer sheets, slightly less likely in the personal interviews without answer sheets and least likely in telephone surveys.

Rehm and Spuhler (1993) tested the effect of personal interviews versus postal questionnaires after telephone interviewing on responses about alcohol consumption. They found substantial differences in favour of personal interviews. On average, consumption reported by personal interview was 36% higher among males and 17% higher among females. In a subsequent study, personal interviews resulted in a 22% higher alcohol consumption than written questionnaires (Rehm & Arminger 1995). In the same study, however, alcohol-related problems were found to be more easily disclosed by written questionnaires. No explanation could be given for this inconsistent pattern and further research was urged.

Available literature is, therefore, inconsistent on the effect of data collection method on responses about alcohol consumption and alcohol-related problems. In this study, self-reported alcohol use and alcohol-related problems obtained by postal questionnaire and personal interview are compared comprehensively. Personal interview and mail survey modes are compared in terms of overall response rate, item non-response rates, and sociodemographic characteristics of respondents. Furthermore, self-reported alcohol use, alcohol-related problems and problem drinking are compared both for the total population and for men and women separately.

Ideally, also other data collection modes, like telephone interviews or self-administered answer sheets within a oral interview, would have been included in the comparison. As the data used for this comparison were not collected primarily for data collection mode comparison, such differentiation in data collection mode was not feasible. The combination of postal questionnaires and oral interviews was chosen for pragmatic purposes. Given the large sample size (N=8,000) budgetary constraints necessitated postal questionnaires as main data collection mode. Former Dutch studies on the same topic, however, used face-to-face interviews. For the comparison of results over time, insight had to be gained into differences between postal questionnaires and face-to-face interviews specifically.

Based on the literature, differences in estimated alcohol use and alcohol-related problems by data collection mode were expected. Which data collection method will yield higher estimates for alcohol consumption and alcohol-related problems was unclear from literature. As mail surveys offer greater anonymity than personal interviews (Schwartz et al 1991), it was expected that self-reports of alcohol use and alcohol-related problems would be higher among mail respondents. These mode effects are expected to be strongest for excessive drinking and especially alcohol-related problems as questions concerning these areas are more sensitive than drinking itself. This differential sensitivity is caused by the ambivalent attitude towards drinking in society. Light and

moderate drinking is tolerated and sometimes even stimulated whereas heavy drinking and alcohol-related problems are not tolerated and seen as socially undesirable. Furthermore, differences in mode effects by sex are assessed. Society has different norms and attitudes towards female drinking than male drinking: drinking and especially heavy drinking is more accepted for men than for women (Harkin et al 1995). Mode effects are therefore expected to be stronger among women than among men.

5.2 Methods

Data collection

Research is done on the effects of data collection mode on self-reported alcohol use, alcohol-related problems and problem drinking. In spring 1994, a large-scale mail survey, called 'Risky Lifestyles in Rotterdam' was conducted. For this general population survey, a random sample of 8,000 persons was drawn from the municipal population register of Rotterdam, the Netherlands. The sample included inhabitants between 16 and 69 years of age and, to avoid language problems, persons with at least Dutch nationality.

To gain insight into the influence of data-collection mode on self-reported alcohol use and alcohol-related problems, a small systematic sample ($n=500$) of the total sample ($N=8,000$) was interviewed face-to-face. Persons in the total sample were listed in alphabetical order and every sixteenth person was interviewed face-to-face. The rest of the sample ($n=7,500$) received a mailed questionnaire. The same structured questionnaire was used in both the personal interviews and the mail survey. In the personal interview, all questions were read aloud by the interviewer. Free-lance interviewers were trained before the interviewing started and feedback meetings were organized during the period of interviewing. To reduce non-response in the mail survey, two reminders were sent to recipients of the postal questionnaire. The second reminder included a new copy of the questionnaire. The people who were interviewed face-to-face were approached at least three times. Non-response analyses revealed that the response was selective in terms of sex and age. Consequently, both data-sets are weighted by sex and age-specific response rates (Bongers et al 1997a).

Measurements

Overall response rate and item-non-response rates are compared for mail survey and personal interview. The overall non-response rate was calculated using the method described by Wiseman and Billington (1984). This method was extended by de Bie (1987).

Respondents on the mail survey and personal interviews are compared on the background factors: sex, age, marital status, education, income, occupation and daily activities. Education is defined as the respondent's highest level of education and income as the annual net household income. Respondent's occupation was classified according to the Dutch Standard Occupation Classification 1992 (Standaard beroepenclassificatie 1992). The daily activities variable categorizes

respondents as employed or house-keeping, unemployed, declared unfit for work, retired, scholar or conscript.

Alcohol use is measured by the Quantity-Frequency-Variability method. Four questions were asked: Which alcoholic drinks do you usually drink when you drink? (abstainers are those who answer, 'I never drink alcohol'); How many days a month do you drink on average? (F); If you drink alcohol, how many glasses do you drink on average? (Q); Have you ever drunk six or more glasses in 1 day in the past six months?' (V). The Quantity, Frequency, and Variability questions were used as separate indicators of drinking behaviour. In addition, an alcohol consumption index was generated that distinguished the following categories: abstainers, and light, moderate, excessive and very excessive drinkers.

The operationalization of alcohol-related problems is based on the 11 indicators of alcohol-related problems mentioned by Cahalan (1976). All indicators except 'binge drinking'- which is uncommon according to Cahalan- are considered. The indicators are clustered in five problem areas: psychological dependence, symptomatic drinking, social problems, health problems and frequent drunkenness and/or hangovers.

Psychological dependence is operationalized as drinking to relief stress, loneliness, and worries, etc. Respondents were asked whether they felt these statements applied to them. The indicator symptomatic drinking measures the existence of symptoms related to excessive drinking: trembling hands the morning after drinking, difficulties to stop drinking, etc. Social problems are composed of problems with partner/family, problems with friends/neighbours, work-related problems, problems with the police/law, complaints about aggressive behaviour after drinking and complaints about spending too much money on alcohol. Health problems are operationalized by having had an accident after drinking, having been in hospital for a disease related to alcohol, or respondent's doctor making a remark about respondent's drinking behaviour. Respondents had to have experienced them in the last six months; only for problems with the police/law and the doctor making a remark about respondent's drinking behaviour were respondents asked whether they had ever experienced this. (For the exact questioning, see Garretsen 1983, and chapter 3).

Problems in each problem area are measured by a variable number of questions. On the basis of the number of problems reported, persons are categorized as having no, moderate or severe problems on a problem area (score of, respectively, 0, 1 or 2 points). Furthermore, a 10-points problem index is formed by summing up the scores on the five separate problem areas. Having alcohol-related problems is defined by scoring one or more on the problem index. Detailed information on the scoring of alcohol-related problems is given in Bongers et al (1997b and chapter 3).

Problem drinking is operationalized as a combination of alcohol-related problems and a certain level of drinking. To be classified as a problem drinker one has to score at least one point at the problem index, and to confirm these problems are alcohol-related one has to drink excessively. Furthermore, as drinking a lot on a few days (e.g., on the weekend) can also cause problems, the definition of excessive drinking is extended with the category 'six or more glas-

ses once or twice a week'.

Cahalan's (1976) concept of 'problem drinking' was used for the first time in Dutch surveys by Garretsen (1983) and Knibbe (1984). It provides detailed information on alcohol-related problems on several problem areas. For this reason and comparison reasons, Cahalan's concept of 'problem drinking' was favoured over other instruments of measuring problem drinking (e.g. the Michigan Alcohol Screenings Test or the CAGE questionnaire).

Analyses

Analyses were carried out using the program SPSS/PC+ 4.0. Overall response rate, item-non-response rates, distribution of background factors and prevalence of alcohol use, alcohol-related problems and problem drinking were compared by data collection method. Potential differences were assessed for both the total population and for men and women separately. Significance was tested by the Chi-square statistic or Fisher's exact test when expected frequencies were lower than five (in more than 20% of the cells). In addition, the Kolmogorov-Smirnov two-sample test was computed for those variables that are measured at the ordinal level.

5.3 Results

Overall response rates for the mail survey was 43.9% ($n=3,287$) and it was 49.9% ($N=250$) for the personal interviews. The item non-response for each variable used in this study is compared by data collection method. For each variable considered, the item non-response was higher in the mail survey. However, the item non-response was at most 5% (for the variable occupation), and statistical significance was only reached for the variables occupation (5.8% vs 0.8% $X^2=10.35$, 1 df, $p<0.01$), education (4.3% vs 0.7% $X^2=6.87$, 1 df, $p=0.01$) and psychological dependence (7.7% vs 3.3% $X^2=5.50$, 1 df, $p<0.05$). Differences in distribution of background factors between the two data collection modes are assessed (Table 1). Occupational level differed significantly by data collection mode. However, no consistent pattern of difference by occupational level was found. Among the mail respondents, the prevalence of no occupation was almost 5% higher and the prevalence of having (had) unskilled work 6% lower. No substantial differences were found in the distribution of higher occupational levels. The distribution of sex, age, marital status, education, net household income and daily activities was very similar and did not differ significantly between the mail survey and the personal interviews. For those variables that were measured on the ordinal level the Kolmogorov-Smirnov two-sample test was computed. This test yielded the same results as the Chi-square statistic with the only exception being that by the Kolmogorov-Smirnov test the difference in occupational level by data collection mode was non-significant.

In Table 2, the distribution of estimated self-reported alcohol use is compared between the mail survey and the personal interviews for men and women separately. The distribution of all four indicators of alcohol use was very similar

Table 1 Differences in background variables by mode of data collection

		Mail survey	Personal interviews
Sex	men	47.9	50.5
			$X^2=0.53; df=1; p=0.46$
Age	16-24	17.0	17.0
	25-34	26.2	27.1
	35-44	20.8	21.6
	45-54	16.8	16.2
	55-69	19.2	18.2
			$X^2=0.34; df=4; p=0.99$
Marital status	married	49.0	48.9
	cohabiting	12.4	17.0
	unmarried	28.2	24.4
	divorced	7.7	7.1
	widowed	2.6	2.6
			$X^2=5.03; df=4; p=0.28$
Education	primary school	10.1	8.3
	lower vocational/general	38.3	41.7
	intermediate vocational/general and higher general	25.1	23.9
	higher vocational	14.4	13.6
	university	12.1	12.4
			$X^2=1.68; df=4; p=0.80$
Income	≤ £ 25,000	29.8	28.0
	£ 25,000-45,000	32.6	36.8
	£ 45,000-65,000	22.6	22.2
	≥ £ 65,000	15.0	13.0
			$X^2=1.85; df=3; p=0.60$
Occupation	none	19.3	14.7
	unskilled	5.6	11.6
	semi-skilled	27.4	24.3
	skilled	28.1	32.4
	managerial	13.3	11.1
	professional	6.2	6.0
			$X^2=19.49; df=5; p=0.002$
Daily activities	employed/house-keeping	67.3	68.3
	unemployed	8.0	8.7
	declared unfit to work	4.7	4.8
	retired	8.5	7.3
	scholar/conscript	11.5	10.8
			$X^2=0.67; df=4; p=0.95$

Table 2 Differences in distribution of estimated self-reported alcohol use by of mode data collection and sex (%)

	Men		Women	
	Mail survey	Interview	Mail survey	Interview
<i>Total study population:</i>				
Drinking categories				
abstainers	11.6	11.1	23.9	22.8
light drinkers	50.2	46.5	61.5	65.8
moderate drinkers	24.0	27.2	11.7	11.2
excessive drinkers	8.9	11.4	1.9	0.0
very excessive drinkers	5.2	3.8	0.9	0.9
	N=1560	N=126	N=1686	N=123
	X ² =2.09;df=4;p=0.72		X ² =2.88;df=4;p=0.58	
<i>Drinking population:</i>				
≥ 6 glasses a week				
≥ 3 times a week	9.3	5.6	1.9	0.0
1 or 2 times a week	16.4	15.9	5.2	2.1
less than once a week	43.5	39.3	26.6	21.9
never	30.8	39.3	66.2	76.0
	N=1307	N=107	N=1264	N=96
	X ² =4.65;df=3;p=0.20		X ² =5.66;df=3;p=0.13	
Drinking days a month (average)				
≥ 21	20.8	21.9	12.2	12.6
12-20	18.8	15.6	9.9	7.1
6-11	22.5	25.5	18.3	16.9
≤ 5	37.9	37.0	59.7	63.5
	N=1312	N=110	N=1264	N=96
	X ² =1.01;df=3;p=0.80		X ² =1.07;df=3;p=0.78	
Glasses on a drinking day (average)				
≥ 6	19.5	22.1	4.0	6.7
4-5	17.9	20.7	8.8	5.4
3	23.2	20.4	19.4	18.7
2	28.0	24.7	42.0	43.7
1	11.5	12.1	25.7	25.5
	N=1312	N=111	N=1264	N=95
	X ² =1.56;df=4;p=0.82		X ² =2.83;df=5;p=0.59	

between the two data collection methods. Most differences found were small with the only exception being that for both men and women the percentage of never drinking six or more glasses was around 10% higher among the personal interview group. For all four indicators of alcohol use and for both men and women, the differences in distribution found were not significant either tested by the Chi-square statistic or the Kolmogorov-Smirnov two-sample test.

Comparable results were found for the total population.

Comparison of mail survey and personal interview on alcohol-related problems and problem drinking for men and women separately is shown in Table 3. In general, the prevalences of alcohol-related problems and problem drinking were higher among the respondents of the mail survey. The differences, however, were relatively small and non-significant. This holds for the total population and for men and women separately.

Table 3 Differences in distribution of alcohol-related problems and problem drinking among the drinking population by mode of data collection and sex (%)

		Men		Women	
		Mail survey	Interview	Mail survey	Interview
Alcohol-related problems					
at least one problem		36.2	34.5	20.9	13.7
		N=1299	N=104	N=1116	N=92
		$X^2=0.06;df=1;p=0.81$		$X^2=2.26;df=1;p=0.13$	
1. Psychological dependence					
yes		16.8	15.3	13.3	8.0
N=1331	N=108	N=1174	N=95		
		$X^2=0.16;df=1;p=0.69$		$X^2=1.75;df=1;p=0.19$	
2. Symptomatic drinking					
yes		16.9	15.5	5.4	2.2
N=1367	N=110	N=1274	N=95		
		$X^2=0.06;df=1;p=0.77$		$X^2=1.25;df=1;p=0.26$	
3. Social problems					
yes		10.6	11.6	2.4	2.2
N=1299	N=104	N=1141	N=95		
		$X^2=0.02;df=1;p=0.88$		$p=1.00^*$	
4. Health problems					
yes		6.4	5.4	1.3	0.0
N=1366	N=109	N=1235	N=94		
		$X^2=0.04;df=1;p=0.84$		$p=0.62^*$	
5. Drunkenness/Hang-overs					
yes		14.6	14.5	3.8	3.0
N=1394	N=111	N=1299	N=97		
		$X^2=0.0005;df=1;p=1.00$		$p=1.00^*$	
Problem drinking					
yes		17.8	12.8	3.9	2.1
N=1380	N=110	N=1280	N=97		
		$X^2=1.41;df=1;p=0.23$		$p=0.58^*$	

* Significance was tested by the Fisher's exact test because of expected frequencies lower than 5 in more than 20% of the cells.

5.4 Discussion

In this study, the comparability of data on drinking behaviour obtained by two different data collection methods (mail survey and personal interviews) was assessed. No notable differences in self-reported alcohol use, alcohol-related problems or problem drinking were found by data collection mode. This holds for both the total population and for men and women separately.

A 6% higher response rate for the personal interviews than for the mail survey was found. This finding is in accordance with the review of Goyder (1985), who reports an estimated net response difference between interview and mail surveys of 7.5% for surveys with response rates between 30% and 70%. In her meta-analysis, de Leeuw (1992) also reported similar findings.

The 6% difference in response rate between the mailed questionnaire and face-

to-face interviewed groups, however, might have implications for the comparison of drinking behaviour between the two groups. One might argue that the difference in response rate is accompanied by a difference in selectivity of the response towards drinking behaviour: the 6% lower response rate for the mail survey might be due to a lower response probability of specifically excessive drinkers. This would lead to higher prevalences of (excessive) drinking among the personal interview group.

This hypothesis, however, is contradicted by the idea that anonymity is higher for mail surveys than for personal interviews. Higher anonymity would lower the barrier to respond for excessive drinkers instead of raising it. Research specifically designed to address this issue is needed to reveal whether indeed differences in response rates by collection mode are accompanied by a difference in selectivity of response. In this study, differences in (indirect) selectivity of response by data collection mode are mitigated by weighting the two datasets collected by mailed questionnaire and personal interview by sex- and age-specific response rates.

Higher item-non-response rates were found in the mail survey for all variables considered. This higher item non-response, however, was only significant for the education, occupation and psychological dependence variables. De Leeuw (1992) found that, in general, mail respondents show higher item non-response than do personal interview respondents. She noted, however, that this relationship only holds for nonsensitive questions: for sensitive questions, the relationship does not exist and mail surveys could even show less item non-response. The results of this study are consistent with these findings as no notable differences in item non-response were found for sensitive questions like alcohol use or alcohol-related problems.

The distribution of background factors was nearly identical for the two groups of respondents except for the background factor, occupational level. The differences, however, were relatively small and no consistent pattern of difference was found. No satisfactory explanation could be found for this inconsistent pattern.

One may argue that (part of) the lack of mode effects found could be attributed to this differential occupational distribution. Taking into account the small differences in distribution and the inconsistencies in the differential distribution of occupational level, it seems improbable that differences in occupational level account for (part of) the lack of mode effects found.

The relatively small number of respondents of the personal interview mode ($n=250$) might be seen as a weak point of the study. Power analysis shows, however, that these numbers are sufficient to detect differences in prevalences of alcohol use and problem drinking of 4% or more (power 95% and alpha 5%). Therefore, results are not expected to be altered by having a larger number of respondents.

The findings of this study offer clues for interpreting results of different alcohol surveys. No notable mode effects (mail survey versus personal interviews) were found for alcohol use, alcohol-related problems or problem drinking. The hypothesis that mode effects would be stronger for excessive drinking and alcohol-related problems was not confirmed. In addition, no differential mode

effects were found for men and women. From this study, it can be concluded that mail surveys and personal interviews on alcohol use and alcohol-related problems yield comparable results. This holds for both men and women.

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Chapter 6

AGGREGATE COMPARISONS OF SELF-REPORTED VERSUS NON-SELF-REPORTED DRINKING IN A GENERAL POPULATION SURVEY

Abstract

Insight is gained into the validity of self-reported drinking in the general population by comparing self-reports and non-self-reports on the aggregate level. Married and cohabiting respondents of a general population survey (N=2,169) were asked about both their own and their spouses' drinking behaviour. It was found that on the aggregate level, distribution of moderate drinking and usual frequency of drinking is similar between self- and non-self-reports. Self-reported 'heavy' drinking, however, is lower than non-self-reported heavy drinking among women in general, older women, and women with a lower education. Among men in general and older men in particular, however, self-reported occasional 'heavy' drinking was found to be higher. The similar distribution of 'moderate' drinking and usual frequency of drinking between self- versus non-self-reports gives reassurance about the validity of self-reported drinking behaviour. The discordance in self-reported versus non-self-reported 'heavy' drinking, however, raises questions about the validity. Interpretation of the discordance is not conclusive: more research (experimental and qualitative) has to be done to disentangle this issue.

6. AGGREGATE COMPARISONS OF SELF-REPORTED VERSUS NON-SELF-REPORTED DRINKING IN A GENERAL POPULATION SURVEY

6.1 Introduction

In this paper, self-reported and non-self-reported alcohol consumption in a general population survey are compared on the aggregate level. Validity and reliability of self-reported drinking behaviour have frequently been questioned (Midanik 1982, 1988). Literature on validity of self-reports separates sources of errors into unintentional "forgetting" and deliberate denial (Pernanen 1974). Deliberate denial can take the form of concealing or lying. As questions about (excessive) drinking and alcohol-related problems can be viewed as more or less threatening (Bradburn & Sudman 1979), concealing of (excessive) alcohol use and drinking problems is seen as the major threat to validity. Midanik (1989) warns, however, that lying may take the form of overestimation as well as underestimation. New entrants into a treatment program might be likely to overreport their alcohol consumption to give the impression that they are genuinely in need of the treatment itself and its secondary benefits. Upon completion of the treatment, however, clients might underreport their drinking behaviour. Youngsters might be another group of respondents in favour of overreporting their alcohol consumption. Thus, based on the specific context there are gains to be made by presenting oneself as being a heavier or a lighter drinker. For respondents of the general population, however, underreporting is most likely as within this context excessive drinking and alcohol-related problems are in general socially undesirable. The low coverage rates of surveys to sales statistics (on average 50 percent) support this premise (Midanik 1982; Neve et al 1993).

Several indicators of validity have been used in a variety of populations. Examples are breath and blood analysis in clinical populations, official reports like coverage rate of official sales data by general population survey or comparison of different interview techniques (Midanik 1988). Furthermore, relevant respondents of an alcohol survey could be verified with registers of agencies providing care to alcoholics (Mulder & Garretsen 1983). Another indicator of concurrent validity is the agreement between self-reports and so-called collateral reports of significant others such as peers or spouses. The traditional rationale of this indicator is that the perceived threat is less if questions concern others' drinking behaviour. Social desirable responding is thought to be less apparent in such a situation and collateral reports therefore are expected to be more valid.

The effectiveness of this indicator, however, depends on the plausibility of a number of assumptions. This in fact means that the two above mentioned sources of error should not, or at least to a lesser extent, exist for collateral reports: the person who reports about other's drinking behaviour is hypothesized to have complete knowledge of the other's drinking behaviour. He or she should

remember this drinking behaviour accurately and should not want to exaggerate nor want to conceal the other's drinking. Exaggeration could be based on dissatisfaction with the other's drinking behaviour while strong emotional involvement with the other ("spousal courtesy") could lead to concealment (Room 1989).

It will be clear that these assumptions are not easily fulfilled. Although tempting, using the collateral reports as a 'true' criterion and thus evaluating self-reported drinking by collateral reports as a standard would be erroneous to do (Midanik 1982). Instead, the amount of agreement between both sources of information is the validity measure: the degree of congruency and incongruency between the reports and the amount and direction of discrepancies yield information on a potential bias in self-reports (Midanik 1988).

Collateral reports have been mostly used to assess the validity of self-reports within a clinical setting. While the debate is going on, reviews on this topic have concluded that there is considerable concordance between self-reports and spouse reports of alcoholics (Midanik 1982, 1988; Babor et al 1987).

Findings differ between studies on the net direction of discordance: on whether the alcoholic or spouse reports more drinking or drinking problems. A detailed discussion on and comparison of the various aspects of the different studies on comparison of self-reported and non-self-reported alcohol use is given in the review articles of Midanik (1982, 1988) and Babor et al (1987).

In this paper, the agreement between self-reports and non-self-reports of drinking in the general population is analysed. This is done on the aggregate level as, as in most general population surveys, only respondents were questioned and not their spouses. Respondents were asked to describe their own and their spouses' drinking behaviour. As the information on drinking behaviour given by the respondent concerns two different persons: spouse and respondent, self-reports and non-self-reports can not be compared at the individual level. The comparison is therefore necessarily limited to aggregate comparisons of alcohol consumption between all respondents and all spouses.

Respondents and spouses can be viewed as two representative samples of the same population: the married and cohabiting inhabitants of Rotterdam. The reported alcohol consumption of both respondents and spouses are estimates of the 'true' alcohol consumption of this population. As only respondent's alcohol consumption is self-reported, the agreement between alcohol consumption of respondents and spouses yields information on the validity of self-reports on the aggregate level in a similar way as the traditional collateral reports method does on the individual level.

Using the above mentioned study design, one draw-back should be kept in mind. In the design of this study, self-reported and non-self-reported drinking behaviour are treated as two independent data sets. The reports of self and spouse drinking behaviour, however, are correlated in the sense that each pair of observations comes from the same individual namely the respondent.

Spouse drinking behaviour may be influenced by own drinking behaviour of the respondent. One could argue that people may tend to report their partner's drinking as more similar to their own drinking behaviour than it actually is. Whether or not this so-called similarity bias actually plays a role in this design

can neither be ruled out nor adequately assessed based on our data. Therefore, this study is not meant to give conclusive answers with regard to the issue of the validity of self-reported data. It is, however, indicative of the validity of self-reported drinking behaviour into which much more insight needs to be gained.

Two aggregate-level studies in the general U.S. population by Cahalan and colleagues (1969) and Room (1989) found that the self-reported frequency of drinking tended to have a quite similar distribution to, but to be slightly higher than spouse-reported frequency. This higher self-reported frequency is true particularly for men. A study in the general Dutch population by Lemmens (1991) yielded that, on the aggregate level, self-reported recent, actual consumption measured by the weekly recall method was higher for the male subsample. On the other hand, spouse reported mean consumption as measured by the summary measure of usual quantity and frequency of drinking, was higher for men. For the female subsample, no significant differences were found.

Room (1989) suggested that further aggregate-level comparisons of self- versus spouse reports should take into account a great variety of drinking variables as well as patterning of differences in different subpopulations. In this paper, aggregate level self- versus non-self comparisons are carried out for four different drinking variables: drinking categories, usual quantity, usual frequency, and irregular heavy drinking. The comparisons were carried out for men and women separately and in subpopulations defined by age and educational level.

6.2 Methods

Data

Research was done on the validity of self-reports of alcohol consumption of the general population survey called 'Risky Lifestyles in Rotterdam'. For this survey, a random sample of 8000 persons was drawn from the municipal population register of Rotterdam, the Netherlands, in February 1994. The sample included inhabitants between 16 and 69 years of age and, to avoid language problems, persons with at least the Dutch nationality. Data collection by postal questionnaire and face to face interview (7,500 and 500 people respectively) took place in spring 1994. No differences in drinking behaviour by mode of data collection were found (Bongers & van Oers 1998). To engage people in the study, their attention was drawn towards the relation between lifestyles and health. For detailed description of the study design of the study 'Risky Lifestyles in Rotterdam' see Bongers et al (1997a).

The overall response rate was 44.2% (N=3537). Table 1 shows the background characteristics of the 3,537 respondents. Although, the response rate is in agreement with other experiences in survey research (Bethlehem & Kersten 1986, Hox & de Leeuw 1994), non-response bias might occur which could affect self-reports and non-self-reports differently. Self-reports are more likely to be affected by non-response bias than non-self-reports as potential respondents are more likely to avoid the survey because of their own heavy drinking

Table 1 Background characteristics of the study population

Background characteristics		%
Sex	male	48.1
	female	51.9
Age	16-24	17.0
	25-34	26.2
	35-44	20.9
	45-54	16.8
	55-69	19.2
Marital status	married	49.0
	cohabiting (without being officially married)	12.8
	unmarried	27.9
	divorced	7.7
	widowed	2.7
Daily activities	employed/house-keeping	67.4
	unemployed	8.1
	declared unfit to work	4.7
	retired	8.4
	scholar/conscript	11.4
Educational level	primary school	9.9
	lower vocational/general	38.6
	intermediate vocational/general and higher general	25.0
	higher vocational	14.4
	university	12.0
Income	≤ fl 25,000	29.5
	fl 25,000-45,000	33.0
	fl 45,000-65,000	22.6
	≥ fl 65,000	14.9

behaviour than that of their partners.

Non-response analyses showed that the non-response among respondents was selective by sex and age (Bongers et al 1997b). By weighting the respondents according to sex- and age-specific response rates, self-reports are corrected for indirect selective non-response bias. Unfortunately, no insight could be gained into possible direct non-response bias. A study among non-respondents of another Dutch alcohol survey, however, showed that heavy drinkers were not overrepresented among non-respondents of the survey (Lemmens et al 1988). Therefore, it is assumed that after weighting the self-reports for indirect non-response bias, self-reports and non-self-reports are comparable.

Measurements

All respondents who reported to be married or cohabiting without being married (N=2169) were questioned about their own and their spouses' alcohol consumption. Alcohol consumption was measured by four questions:

1. 'Which alcoholic drinks do you/your partner usually drink when you/your partner drink(s)?';

2. 'How many days a month do you/your partner drink on average?' (usual frequency=UF);
3. 'If you/your partner drink(s) alcohol, how many glasses do you/your partner drink on average?'(usual Quantity=UQ);
4. 'Have you/your partner ever drunk six or more glasses at one day in the past six months?'('heavy' drinking episodes=V).

These four questions were first used in The Netherlands by Garretsen (1983) in a Rotterdam alcohol survey in 1980-81. The same questions have been used in several alcohol surveys throughout The Netherlands since. By using the same definitions and operationalization of alcohol consumption, continuity is given to data collection on alcohol in The Netherlands.

The merits of these particular questions are that with these questions insight can be gained into drinking patterns among the general population. Frequency and quantity of drinking is supplemented with a question regarding the consumption of six or more glasses per occasion as such drinking pattern particularly places the drinker (and others) at risk for (acute) adverse consequences of drinking.

Based on these questions, four drinking variables were generated:

1. a summary measure based on all questions, that distinguishes the categories abstainers, 'light', 'moderate', 'excessive' drinkers, and 'very excessive' drinkers (QFV-index) The cut-off points of the drinking categories are shown in Table 2. Abstainers are those who answered 'I never drink alcohol' to the first question.;
2. frequency of drinking (UF);
3. quantity of drinking (UQ);
4. 'heavy' drinking episodes (V).

The last three drinking variables only apply to drinkers.

To compare self-reports with non-self-reports within different subpopulations, information on sex, age, and educational level of both respondents and their spouses was used. As sex and age of the spouses were unknown, spouses were assumed being of the opposite sex and around the same age as the respondents.

Table 2 Drinking categories: cut-off points

average drinking days a month	number of glasses at a drinking day			
	≥ 6	4 or 5	2 or 3	> 0 to 1
28 or more	very excessive	excessive	moderate	light
21 - 27	very excessive	excessive	moderate	light
15 - 20	excessive	moderate	moderate	light
9 - 14	excessive	moderate	light	light
3 - 8	moderate	light	light	light
> 0 - 2	light	light	light	light

The age of the respondent (and correspondingly the spouse) was categorised into categories of 16-24; 25-34; 35-44; 45-54; and 55-69 years of age. Respondents were questioned about their own and their spouses' educational level. Education is defined as the person's highest level of education.

Analyses

Analyses were carried out using the program SPSS/PC+ 4.0. Self-reported versus non-self-reported drinking in the general population was compared on the aggregate level. The distribution of self-reported and non-self-reported alcohol consumption measured by four drinking variables was compared for men and women separately and in the subsamples defined by age and educational level. Within the subsamples, respondents' drinking was compared with drinking of equivalent spouses: eg. self-reports of women between 16 and 24 years of age versus non-self-reports of women between 16 and 24 years of age. The respondents in these analyses were restricted to respondents reported to be married or cohabiting without being married.

Overall differences in the distribution of self-reported versus non-self-reported alcohol consumption measured by one of the drinking variables were analysed. In case of a significant overall difference, differences at the category level of the drinking variable were tested. Significance was tested by the Chi-square statistic or Fisher's exact test, in the event of expected frequencies lower than 5 in more than 20% of the cells.

6.3 Results

Analyses on the aggregate level showed that self-reports and non-self-reports were comparable on moderate drinking and frequency of drinking for both men and women (Table 3). For men, self-reports and non-self-reports were comparable on most of the drinking indicators. The only significant discrepancy was that men themselves were more likely to report to drink occasionally six or more glasses and less likely to report to drink never six or more glasses. For women, on the contrary, self-reports and non-self-reports disagreed on 'heavy' drinking. Women themselves were significantly less likely to report to be a 'heavy' drinker. On the aggregate level, the percentages of 'very excessive' drinking and drinking six or more glasses three or more times a week were higher among the female non-self-reports than among female self-reports. The same was found for drinking six or more glasses on a drinking day. Analyses by age for men and women separately showed only differences in drinking behaviour between self-reports and non-self-reports for the highest age-category. Within the other age-categories, no differences between self-reports and non-self-reports were found.

At the aggregate level, women within the age-category of 55 to 69 were less likely to report for themselves drinking six or more glasses and more likely to report for themselves never drinking six or more glasses (Table 4). Men between 55 and 69 years of age, on the contrary, were less likely to report for themselves never drinking six or more glasses and more likely to report for

Table 3 Self-reported versus non-self-reported drinking behaviour among males and females(%)

	MEN		WOMEN	
	Self-reports	Non-self-reports	Self-reports	Non-self-reports
Alcohol use				
abstainers	11.3	10.9	22.8	26.7
light drinkers	51.9	52.9	62.2	57.4 ^b
moderate drinkers	24.5	23.6	12.6	12.0
excessive drinkers	7.6	7.5	1.6	1.8
very excessive drinkers	4.6	5.1	0.8	2.1 ^b
N=	996	1207	1125	843
	X ² =0.66; df=4; p=0.96		X ² =11.78; df=4; p=0.02	
≥ 6 glasses a week^a				
≥ 3 times a week	8.2	8.5	1.6	4.5 ^c
1 or 2 times a week	12.6	11.4	4.5	5.1
less than once a week	43.0	36.5 ^b	23.1	25.7
never	36.2	43.7 ^b	70.9	64.7 ^b
N=	831	1001	863	603
	X ² =11.87; df=3; p=0.008		X ² =11.67; df=3; p=0.003	
drinking days a month (average)^a				
≥ 21	24.8	26.8	14.9	12.4
12-20	19.1	16.3	10.4	12.3
6-11	20.7	18.5	18.0	20.4
≤ 5	35.4	38.4	56.7	55.0
N=	831	1020	858	604
	X ² =4.55; df=3; p=0.21		X ² =3.81; df=3; p=0.28	
glasses on a drinking day (average)^a				
≥ 6	14.4	12.8	2.5	5.4 ^c
4-5	16.1	15.0	6.6	7.9
3	23.8	21.8	18.2	20.9
2	32.4	36.3	44.5	42.9
1	13.4	14.1	28.2	22.9 ^b
N=	830	1022	857	611
	X ² =4.18; df=4; p=0.38		X ² =14.16; df=4; p=0.007	

^a Abstainers excluded

^b Difference between self-reports and non-self-reports at category level (p-value ≤ 0.05)

^c Difference between self-reports and non-self-reports at category level (p-value ≤ 0.01)

themselves drinking less than once a week six or more glasses.

Analyses by educational level for men and women separately revealed no differences in self-reports versus non-self-reports for men (results not shown).

Among women with a lower vocational or lower general education significant differences for all drinking variables except for the variable average drinking days a month were found (Table 5). Women were less likely to report for themselves drinking 'very excessively' and drinking six or more glasses three or more times a week. Furthermore, self-reported drinking behaviour yielded higher percentages of abstinence and drinking one glass on a drinking day. The percentage of 'light' drinkers and drinking three to five glasses on a drinking day was higher among the self-reports.

Table 4 Self-reported versus non-self-reported drinking behaviour among males and females between 55 and 69 years age (%)

	MEN		WOMEN	
	Self-reports	Non-self-reports	Self-reports	Non-self-reports
Alcohol use				
abstainers	13.2	16.3	29.6	38.0
light drinkers	51.6	49.8	52.6	46.0
moderate drinkers	24.2	24.5	15.8	10.2
excessive drinkers	6.8	4.5	2.0	5.9
very excessive drinkers	4.2	4.9	d	d
N=	208	245	259	187
	X ² =2.07; df=4; p=0.72		X ² =10.28; df=3; p=0.02	
≥ 6 glasses a week^a				
≥ 3 times a week	8.1	8.3	d	d
1 or 2 times a week	10.8	6.1	5.1	12.1 ^b
less than once a week	29.1	13.3 ^c	5.7	14.7 ^b
never	52.0	72.4 ^c	89.2	73.3 ^c
N=	162	181	185	116
	X ² ; df=3; p=0.0004		X ² =12.87; df=2; p=0.002	
drinking days a month (average)^a				
≥ 21	30.7	39.2	24.4	20.4
12-20	17.3	12.2	10.5	13.3
6-11	16.7	15.3	18.0	25.7
≤ 5	35.3	33.3	47.1	40.7
N=	164	189	180	113
	X ² =3.60; df=3; p=0.31		X ² =3.55; df=3; p=0.31	
glasses on a drinking day (average)^a				
≥ 6	6.6	6.3	d	d
4-5	15.1	6.8	3.4	10.3
3	21.1	18.4	12.1	14.5
2	37.5	44.7	48.9	45.3
1	19.7	23.7	35.6	29.9
N=	166	190	182	117
	X ² =7.76; df=4; p=0.10		X ² =6.62; df=3; p=0.08	

^a Abstainers excluded

^b Difference between self-reports and non-self-reports at category level (p-value ≤ 0.05)

^c Difference between self-reports and non-self-reports at category level (p-value ≤ 0.01)

^d Category is collapsed with adjoining category

Table 5 Self-reported versus non-self-reported drinking behaviour among females with a lower vocational or lower general education (%)

	Self-reports	Non-self-reports
Alcohol use		
abstainers	24.7	31.2 ^b
light drinkers	59.6	51.6 ^b
moderate drinkers	13.4	11.4
excessive drinkers	1.7	3.2
very excessive drinkers	0.7	2.6 ^b
N=	540	378
	X ² = 14.40; df=4; p=0.006	
≥ 6 glasses a week^a		
≥ 3 times a week	1.9	6.2 ^c
1 or 2 times a week	3.8	6.2
less than once a week	20.4	23.1
never	73.9	64.6 ^c
N=	403	260
	X ² = 12.40; df=3; p=0.006	
drinking days a month (average)^a		
≥ 21	14.2	15.7
12-20	9.1	12.9
6-11	16.1	20.0
≤ 5	60.6	51.4
N=	401	255
	X ² =6.12; df=3; p=0.11	
glasses on a drinking day (average)^a		
≥ 6	2.3	4.2
4-5	6.6	11.1 ^b
3	15.4	21.8 ^b
2	48.1	42.5
1	27.6	20.3 ^b
N=	403	261
	X ² =13.86; df=4; p=0.008	

^a Abstainers excluded

^b Difference between self-reports and non-self-reports at category level (p -value ≤ 0.05)

^c Difference between self-reports and non-self-reports at category level (p -value ≤ 0.01)

6.4 Discussion

The findings of this study indicate that the distribution of 'moderate' drinking tends to be similar between self- and non-self-reports on the aggregate level. The same holds for usual frequency of drinking. With respect to 'heavy' drinking, however, discordance between the two sources of information was found. Among women, the prevalence of 'heavy' drinking is higher for non-self-reports than for self-reports. This higher prevalence of non-self-reported 'heavy' drinking is true particularly for women between 55 and 69 years of age

and women with a lower vocational or lower general education. Among men, however, self-reported occasional 'heavy' drinking episodes is higher among men in general and particularly men between 55 and 65 years of age. The discordance between self-reported and non-self-reported 'heavy' drinking might (partly) be explained by the so-called 'similarity' bias mentioned in the introduction whereby people tend to report their partner's drinking as more similar to their own. As women in general drink less 'heavily', women would report lower 'heavy' drinking for their partners and vice versa. Although this similarity bias cannot be refuted by our data, the fact that the distribution of 'moderate' drinking and frequency of drinking was similar between self-reported and non-self-reported drinking behaviour may indicate that at least this bias cannot explain all discordance in 'heavy' drinking. In our view, there is no reason for the 'similarity' bias to act differently by pattern of drinking behaviour. If the bias would explain the discordance in distribution of 'heavy' drinking between self- and non-self-reports on the aggregate level, the distribution of 'moderate' drinking and frequency of drinking should also have been dissimilar. Two other assumptions in the study-design could also have introduced bias in the results. As sex and age of the spouses were unknown, spouses were assumed being of the opposite sex and around the same age as the respondent. Bias could be introduced by some partners being of equal sex. This misclassification, however, is expected to be negligible as in another Dutch survey it was found that only 2% of the partners of the respondents were of equal sex (Lemmens 1991). The assumption of equal age could introduce some bias as in general husbands are somewhat older than their wives: the age of the male spouses will be somewhat underestimated whereas the age of the female spouse will be somewhat overestimated. By categorizing age in 10-year-categories, the bias is minimized.

Furthermore, interpreting the results, the underlying assumptions and restrictions of the collateral reports method should be kept in mind. The validity of self-reports is threatened by two sources of errors: unintentional "forgetting" and deliberate denial (Pernanen 1974). To be a good indicator of concurrent validity, collateral reports should not be contaminated by any of these two errors. So respondents ought to have complete knowledge of their spouse's drinking behaviour, ought to remember this drinking behaviour accurately, and at last they ought not want to conceal nor exaggerate their spouse's alcohol consumption.

As already pointed out, these conditions are not easily fulfilled. So non-self-reports are not per definition more valid. As both reports could be affected by the same sources of error, neither may be accurately assessing 'true' alcohol consumption (Midanik 1988). Therefore, non-self-reported drinking behaviour is not to be taken as a 'true' standard (Midanik 1982). Instead, the amount of agreement and direction of discrepancies between the two sources of information as such yield information on a potential bias in self-reports.

A similar distribution of moderate drinking and usual frequency of drinking between self- and non-self-reports was found. This large degree of agreement between the two sources of information gives reassurance about the validity of this self-reported drinking behaviour. The discordance on 'heavy' drinking

between self- versus non-self-reports, however, raises questions about the validity of self-reported 'heavy' drinking behaviour. The consistently higher non-self-reports on 'heavy' drinking within the mentioned female subpopulations may indicate that within these subpopulations heavy drinking is underreported. This interpretation is based on the premise that perceived threat is less if questions concern other's drinking behaviour instead of own drinking behaviour.

The fact that lower self-reports of 'heavy' drinking are particularly found among female subpopulations may be explained by the differential norms and attitudes for male and female (heavy) drinking. The norms and attitudes towards ('heavy') drinking may be more strict for women than for men, especially for older women and women with a lower education. Among these subpopulations, 'heavy' drinking is than more socially undesirable and the perceived threat could be considered to be higher. This assumption is reflected by findings on the public opinion on drinking behaviour in the general population survey 'Risky Lifestyles in Rotterdam'. Women, older, and lower educated respondents were less tolerant towards others 'heavy' drinking behaviour than men, youngsters and higher educated people (Bongers et al 1998).

Extrapolation of our findings to the total study population (respondents with and without partners) may indicate that self-reported prevalence of 'heavy' drinking among women is underreported. The extent of the underestimation varies between one-and-a-half to even eight-fold depending on the subpopulation and drinking variable considered. This extrapolation, however, is based on the premises that non-self-reports on 'heavy' drinking are more reliable and that sources of errors are equally distributed among respondents with and without partners. More in general, one should acknowledge that generalisations of study findings is complicated by the fact that drinking behaviour as well as reporting about drinking behaviour is a dynamic and complex process which is environmentally, culturally, and time bounded.

The higher prevalence of self-reported occasional 'heavy' drinking episodes by (older) men may be interpreted as overreporting of occasional 'heavy' drinking by (older) men. These lower male spouse reports on occasional 'heavy' drinking, however, could also be explained by women not knowing about all of their partner's drinking behaviour (Room 1989). Especially, occasional 'heavy' drinking episodes could be unknown by wives.

The ambivalence in the way to interpret discordant findings shows clearly that care should be taken in drawing definite conclusions. More research is needed to reveal why people report about their own and their spouse's drinking behaviour the way they do. The relation between a particular behaviour and the reporting of that behaviour is complex and many intermediate factors will play a role. Perceived threat is but one of these factors, the complexity or difficulty of the task of reporting about oneself's and another's drinking behaviour could be another (Lemmens 1991). Lemmens (1991) explored the plausibility of certain underlying assumptions of the collateral reports method. Unfortunately, due to conflicting results most of the research questions remained unanswered. Lemmens (1991) suggested an experimental approach to gain more insight into this issue. Also qualitative research could be helpful in answering these funda-

mental questions.

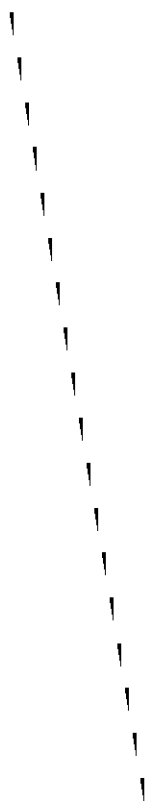
Relatively little research is done on the agreement between self- and spouse reported alcohol use in the general population (Midanik 1982, 1988; Room 1989). Consistent with the studies by Cahalan et al (1969) and Room (1989), the self- and non-self-reports in this study did not differ on frequency of drinking. Inconsistent with another former study in which respondents and their spouses were both questioned about respondent's drinking behaviour (Lemmens 1991), in our study non-self-reported 'heavy' drinking was found to be higher than self-reported 'heavy' drinking among women. Lemmens (1991) did not find any significant differences between self- and spouse reports for women on the aggregate level. For men, on the contrary, he found inconsistent results: self-reported recent, actual consumption was higher whereas self-reported mean consumption was lower for the male subsample on the aggregate.

The findings of our study and also former studies (Cahalan et al 1969; Room 1989; Lemmens 1991) indicate that the level of agreement differs between the aspects of drinking behaviour considered as well as the study population involved. Before definite conclusions can be drawn, more research has to be done on the validity of self-reports of drinking in the general population. The inconsistencies found within and between studies need clarification and thorough insight is needed into which factors determine the reporting behaviour about one's own and one's spouse's drinking behaviour.

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Part III

RESULTS

Chapter 7

ALCOHOL USE AND PROBLEM DRINKING: PREVALENCES IN THE GENERAL ROTTERDAM POPULATION

Abstract

Research was done on the distribution of abstinence, excessive drinking, alcohol-related problems, and problem drinking among the general population of Rotterdam, The Netherlands in 1994. Prevalences are assessed among the total population and subpopulations defined by sex, age, marital status, educational level, daily activities, and income. A general population survey was conducted among a random sample of 8,000 Dutch inhabitants of Rotterdam in the 16-69 age-range. The response rate was 44% (N=3,537). The majority of the respondents were 'light' or 'moderate' drinkers. Prevalences of excessive drinking, alcohol-related problems (1 or more) and problem drinking in the total population were 8%, 28%, and 9%, respectively. It is shown that women tend to report many alcohol-use-related problems considering their relatively low consumption pattern; young men have a high prevalence of problem drinking; being single, being unemployed, and being declared unfit to work are associated with problematic drinking. The results found for socioeconomic status appeared to be inconsistent.

7. ALCOHOL USE AND PROBLEM DRINKING: PREVALENCES IN THE GENERAL ROTTERDAM POPULATION

7.1 Introduction

Monitoring drinking behaviour and alcohol-related problems in the general population is of great importance for health policy. Insight into the prevalence of excessive drinking and problem drinking among the general population and its subpopulations provides clues for primary prevention activities. Some information on drinking behaviour in the general Dutch population is gathered on a regular basis by the Central Bureau of Statistics of the Netherlands (Knibbe & Swinkels 1992). There is, however, no tradition of monitoring problem drinking in the general Dutch population (van de Goor & Spruit 1990).

In 1980 the first general population survey which central topic was the measurement of the prevalence of problem drinking and its related factors was conducted by Garretsen in Rotterdam (Garretsen 1983). Simultaneously, a similar study was conducted in the southern part of The Netherlands (Knibbe 1984). In these studies, excessive drinking was defined as drinking four or five glasses per day or drinking six or more glasses more than twice a week. Problem drinking was defined as having one or more alcohol-related problems and drinking excessively. Prevalences of excessive drinking and problem drinking of 8 and 7%, respectively, were found among the general Rotterdam population, and prevalences of 7 and 11%, respectively, were found in the Southern part of The Netherlands.

In the last four decades the alcohol consumption per capita in The Netherlands has increased from 2.6 l. (~100%) in 1960 to a maximum of 9.4 l. (~100%) in 1979. In the following years it stabilised and decreased slowly to a level of 7.9 l. (~100%) in 1994 (de Zwart & Mensink 1996). This tendency of slight decrease is seen throughout Europe (World drink trends 1995). The question immediately rises how this trend in alcohol consumption per capita is reflected into prevalences of excessive drinking and problem drinking. Although alcohol consumption and alcohol-use-related problems vary considerably between countries, in the European Community a tendency is seen of adopting and integrating each others drinking habits (Hupkens et al 1993). For instance, when a new beverage type is introduced (e.g. wine in 'beer' countries), the drinking norms of the new beverage type seem mainly to be adopted of the 'original' countries. Therefore national research findings appear to have its value beyond its borders.

In 1994 a repeated measurement of prevalences of excessive drinking and problem drinking in the general population of Rotterdam has been conducted. By using the same sample frame and the same definitions and operationalization of excessive drinking and problem drinking as applied in the study of Garretsen (1983), continuity is given to the data collection. This continuity of data collection on excessive drinking and problem drinking provides a basis for

initiation and evaluation of health policy measures.

This study was designed to gain insight into the prevalences of abstinence, excessive drinking, alcohol-use-related problems, and problem drinking among the general population of Rotterdam, The Netherlands in 1994. The prevalences will be assessed for the total population as also for subpopulations defined by sex, age, educational level, daily activities, income, and marital status.

7.2 Methods

Data-collection

This study was conducted within the framework of a large-scale general population survey called 'Risky Lifestyles in Rotterdam'. For this survey a random sample of 8,000 persons was drawn from the municipal population register of Rotterdam, The Netherlands in February 1994. The sample included inhabitants aged 16 to 69 years and, to avoid language problems, persons with at least Dutch nationality. To engage people in the study, their attention was drawn towards the relation between lifestyles and health. In this context the importance of gaining insight into lifestyle patterns was stressed. The sampling frame resembles that of the study of 1980 (Garretsen 1983). The large sample size was chosen to be able to conduct meaningful analyses in subpopulations with a low prevalence of excessive drinking and/or alcohol-related problems. Data collection by postal questionnaire and personal interview (7,500 and 500 people respectively) took place between March and June 1994. People were randomly assigned to the mode of data collection. The personal interviews were conducted at home by free-lance interviewers who were trained before the study started. During the period of interviewing, feedback meetings were organised. The interviewers were female students, usually in the social sciences, and approximately 25 years old.

To reduce non-response, two reminders were sent to recipients of the postal questionnaire. The last reminder included a new copy of the questionnaire. The people who were interviewed face-to-face were approached at least three times. Response rates of 43.9% (N=3287) and 49.9% (N=250) were obtained for the mail survey and the personal interviews, respectively. The overall response rate was 44.2% (N=3,537). No differences in self-reported drinking habits by data collection method were found (Bongers & van Oers 1998). As the response was selective in terms of sex and age, all analyses have been carried out using a data-set weighted by sex and age-specific response rates (Bongers et al 1997).

Measurements

Abstinence, excessive drinking, alcohol-related problems and problem drinking are measured and operationalized in the same way as in the study of 1980 (Garretsen 1983). Alcohol consumption was measured by four questions: 'Which alcoholic drinks do you usually drink when you drink?' (abstainers are those who answer 'I never drink alcohol'); 'How many days a month do you drink on average?'; 'If you drink alcohol, how many glasses do you drink on

average?'; 'Have you ever drunk six or more glasses at one day in the past six months?'. Based on these questions respondents were categorized as abstainers, 'light', 'moderate', 'excessive', or 'very excessive' drinkers (Table 1). In this paper, the categories very excessive and excessive drinking have been joined.

Table 1 Drinking categories: cut-off points

average drinking days a month	number of glasses at a drinking day			
	≥ 6	4 or 5	2 or 3	> 0 to 1
28 or more	very excessive*	excessive	moderate	light
21 - 27	very excessive*	excessive	moderate	light
15 - 20	excessive	moderate	moderate	light
9 - 14	excessive	moderate	light	light
3 - 8	moderate	light	light	light
> 0 - 2	light	light	light	light

* In this study, the categories excessive and very excessive drinking are joined.

The operationalisation of alcohol-related problems is based on the 11 indicators of alcohol-related problems mentioned by Cahalan (1976). All indicators except 'binge drinking', which is uncommon according to Cahalan, are considered. The indicators are clustered in five problem areas: psychological dependence; symptomatic drinking; social problems; health problems or accidents; frequent drunkenness and/or hang-overs. Psychological dependence is operationalized as drinking to relief stress, loneliness, and worries etc.. The indicator 'symptomatic drinking' measures the existence of symptoms related to excessive drinking: shaking hands the morning after drinking, difficulties to stop drinking, etc.. The score for a problem area is measured by a variable number of questions. A ten points problem-index is formed by summing up the scores of the five separate problem areas (Table 2). In this paper, a dichotomous variable 'alcohol-related problems' is used as outcome variable which is defined as zero versus one point or more in the problem index.

Cahalan's (1976) concept of 'problem drinking' was used for the first time in Dutch surveys by Garretsen (1983) and Knibbe (1984). Problem drinking is operationalized as a combination of alcohol-related problems and a certain level of drinking. To be classified as a problem drinker, one has to score at least one point at the problem index. To check whether these problems are really alcohol-related, people also have to drink excessively. Furthermore, as drinking a lot on a few days (e.g., on the weekend) can also cause problems, the definition of excessive drinking is extended with the category 'once or twice a week six or more glasses'.

The prevalences of abstinence, excessive drinking, alcohol-related problems, and problem drinking are assessed for the total study population and for sub-populations defined by the background variables sex, age, marital status, education, income, and daily activities. Marital status is operationalized as being

Table 2 Operationalisation of the Problem Index

Problem areas		Score on the separate problem areas		intermediate score		maximum contribution to problem index*
Psychological dependence:		7 questions	0-3 positive = 0 points 4-6 positive = 1 point ≥ 7 positive = 2 points			2 points
Symptomatic drinking:		8 questions	0-1 positive = 0 points 2-3 positive = 1 point ≥ 4 positive = 2 points			2 points
Social problems:						2 points
- problems with partner/family:	3 questions	≥ 1 positive	= 1 point	0-1 point	= 0 points	
- problems with friends/neighbours:	5 questions	≥ 1 positive	= 1 point	2 points	= 1 point	
- problems with work:	5 questions	≥ 1 positive	= 1 point	≥ 3 points	= 2 points	
- complaints about aggressive behaviour:	1 question	1 positive	= 1 point			
- complaints about spending too much money on alcohol:	1 question	1 positive	= 1 point			
Health-related problems:						2 points
- Health problems:	2 questions	≥ 1 positive	= 1 point			
- Accidents:	1 question	1 positive	= 1 point			
Drunkenness/Hang-over		2 questions	monthly = 1 point weekly = 2 points			2 points
				Maximum score on problem index:		10 points

* 1 point on a problem area is denoted as moderate problems and 2 points as severe problems

married, unmarried (and not cohabiting), divorced, widowed, or cohabiting without being officially married. Education is defined as the respondent's highest level of education and income is defined as the annual net household income. The variable daily activities categorizes respondents as employed or house-keeping, unemployed, declared unfit for work, retired, scholar or conscript.

Analyses

Analyses were carried out using the program SPSS/PC+ 4.0. Prevalences of abstinence, excessive drinking, alcohol-use-related problems and problem drinking were assessed for the total population and for men and women separately. Subsequently, the prevalences were bivariate assessed in subpopulations defined by sex and by categories of the background variables age, marital status, daily activities, education, and income. As the percentage of drinkers differs by most background variables, the prevalences of excessive drinking, alcohol-use-related problems, and problem drinking were calculated for drinkers only. Significance was tested by the Chi-square statistic or Fisher's exact test in the event of expected frequencies lower than 5 in more than 20% of the cells. Because of multiple statistical testing, the 1% level ($p=0.01$) is regarded as indication of statistical significance.

7.3 Results

The background characteristics of the study population are described in Table 3. Prevalences of alcohol use, alcohol-related problems, and problem drinking in the total population and among men and women separately are shown in Table 4. In the total population, almost 18% of the persons were abstainers.

Abstinence was twice as prevalent among women than among men. Almost three quarters of the population were 'light' to 'moderate' drinkers and 8% of the total population drank excessively. 'Excessive' drinking was more prevalent among men than among women. This sex difference was also reflected in the prevalence of problem drinking: 15% of the men were defined as problem drinkers against 3% of the women. The prevalence of problem drinking was 9% in total population and 11% in the subpopulation of drinkers only. Alcohol-related problems were reported by 28% of the total population and 30% of the drinkers. Men reported alcohol-related problems more often than women. Almost half of the men and two-third of the women with alcohol-related problems reported only moderate problems at one problem area.

In Table 5, differences in prevalences of abstinence (among the total study population), excessive drinking, alcohol-use-related problems, and problem drinking (among the drinking population) by age are shown. The prevalence of abstinence differed significantly by age for both men and women. Among men, abstinence was most prevalent among the youngest and the oldest men. Among women, the prevalence of abstinence was highest among the oldest women. No significant differences in excessive drinking were found with respect to age for both men and women. The prevalence of problem drinking and alcohol-related

Table 3 Background characteristics of the study population

Background characteristics		%
Sex	male	48.1
	female	51.9
Age	16-24	17.0
	25-34	26.2
	35-44	20.9
	45-54	16.8
	55-69	19.2
Marital status	married	49.0
	cohabiting (without being officially married)	12.8
	unmarried	27.9
	divorced	7.7
	widowed	2.7
Daily activities	employed/house-keeping	67.4
	unemployed	8.1
	declared unfit to work	4.7
	retired	8.4
	scholar/conscript	11.4
Educational level	primary school	9.9
	lower vocational/general	38.6
	intermediate vocational/general and higher general	25.0
	higher vocational	14.4
	university	12.0
Income	≤ fl 25,000	29.5
	fl 25,000-45,000	33.0
	fl 45,000-65,000	22.6
	≥ fl 65,000	14.9

problems, however, differed significantly by age. Problem drinking and alcohol-related problems were most prevalent among men between 16 and 24 years of age who drink. Of the men reporting alcohol-use-related problems in this age group, 62.1% reported frequent drunkenness or hang-overs, 51.3% scored at symptomatic drinking, and 31.5% reported social problems (data not shown).

Analyses by marital status showed that among divorced and widowed women, abstinence is more prevalent (Table 6). No differences in the prevalence of abstinence by marital status were found among men. Among men, the prevalence of 'excessive' drinking differed significantly by marital status: 'excessive' drinking was most prevalent among divorced men. Among divorced but also among unmarried men, problem drinking and alcohol-use-related problems were more prevalent. In addition, differences in alcohol-use-related problems by marital status were found among women: divorced and widowed women who drink reported alcohol-use-related problems more often.

In Table 7, differences in prevalences of abstinence, 'excessive' drinking, alcohol-use-related problems, and problem drinking by daily activities are shown.

Significant differences in prevalence of abstinence were found for both men and women. Abstinence was most prevalent among unemployed women, women who are declared unfit to work, and retired women. Among men, abstinence was most prevalent among those declared unfit to work. Significant differences in prevalences of 'excessive' drinking, alcohol-related problem, or problem drinking by daily activities were found among men but not among women. Among men declared unfit to work prevalences were highest. In addition, unemployed men had a high prevalence of alcohol-use-related problems and male students/conscripts had a high prevalence of problem drinking and alcohol-use-related problems.

Educational level is associated with abstinence. The prevalence of abstinence decreased significantly with increasing level of education (Table 8). The sex difference decreased also by increasing educational level. At lower educational levels the percentage of abstainers among women was about twice as high as among men, whereas at the highest educational level, the percentage was almost the same among men and women. The prevalences of 'excessive' drinking and problem drinking, however, did not differ by educational level.

Annual net house-hold income was related to abstinence in the same way as educational level (Table 9). Also no differences by income were found in the prevalence of 'excessive' drinking. On the contrary, a clear trend for problem drinking and alcohol-use-related problems was found. Alcohol-use-related problems were more prevalent among men and women in lower income categories. Problem drinking was also more prevalent among men with a lower income

Table 4 Prevalence of alcohol use, alcohol-related problems and problem drinking (%)

	men	women	total population
Alcohol usage			
abstainers	11.6	23.7	17.9
light drinkers	49.9	62.0	56.2
moderate drinkers	24.3	11.7	17.8
excessive drinkers	9.1	1.8	5.3
very excessive drinkers	5.1	0.8	2.9
	$X^2=314.64; df=4; p<0.0001$		
	N=1685	N=1810	N=3496*
Alcohol-related problems**			
one or more (whole population)	35.1	20.3	27.9
	$X^2=79.24; df=1; p<0.0001$		
	N=1499	N=1429	N=2928*
one or more (only drinking population)	36.1	20.3	28.8
	$X^2=78.09; df=1; p<0.0001$		
	N=1401	N=1211	N=2613
Problem drinking			
yes (whole population)	15.4	2.9	8.9
	$X^2=166.63; df=1; p<0.0001$		
	N=1684	N=1812	N=3496*
yes (only drinking population)	17.4	3.8	10.9
	$X^2=135.73; df=1; p<0.0001$		
	N=1488	N=1379	N=2867

* Difference with total number of respondents (N=3537) due to missing values

** Score of at least one at the problem index; one means reporting moderate problems at one of the five areas of alcohol-related problems

Table 5 Prevalence of abstinence (in total study population), excessive drinking, alcohol-related problems and problem drinking (in drinking population) by *age* and sex (%)

	men					women				
	16-24*	25-34	35-44	45-54	55-69	16-24	25-34	35-44	45-54	55-69
<i>Total study population:</i>										
Abstinence										
yes	16.3	9.9	9.9	8.5	14.2	22.8	20.3	19.8	23.3	32.4
			X ² =13.08;df=4;p=0.01					X ² =22.63;df=4;p=0.0002		
			N=1663					N=1794		
<i>Drinking population:</i>										
Excessive drinking										
yes	17.3	12.1	19.7	19.2	14.6	2.6	3.0	3.4	5.7	3.2
			X ² =10.27;df=4;p=0.04					X ² =4.26;df=4;p=0.37		
			N=1472					N=1368		
Alcohol-related problems										
one or more	48.7	34.8	38.3	30.9	26.5	25.0	21.2	13.3	18.8	23.9
			X ² =28.27;df=4;p<0.0001					X ² =12.91;df=4;p=0.01		
			N=1385					N=1203		
Problem drinking										
yes	28.2	14.0	20.1	14.2	12.1	7.1	3.6	2.5	3.5	2.8
			X ² =31.30;df=4;p<0.0001					X ² =8.71;df=4;p=0.07		
			N=1469					N=1365		

* Age-categories

Table 6 Prevalence of abstinence (total study population), excessive drinking, alcohol-related problems, and problem drinking (drinking population) by marital status by sex (%)

	men					women				
	1 ^a	2	3	4	5	1	2	3	4	5
<i>Total study population:</i>										
Abstinence										
yes	11.5	10.6	12.3	9.9	13.2	24.8	14.0	19.1	31.1	37.9
			X ² =0.86;df=4;p=0.93					X ² =29.29;df=4;p<0.0001		
			N=1663					N=1774		
<i>Drinking population:</i>										
Excessive alcohol use										
yes	14.4	11.8	18.7	26.7	15.0	3.2	2.6	3.5	6.0	6.7
			X ² =14.33;df=4;p=0.006					X ² =4.09;df=4;p=0.39		
			N=1471					N=1361		
Alcohol-related problems										
one or more	23.2	32.6	51.2	56.9	25.3	14.6	23.0	24.6	34.5	32.4
			X ² =108.11;df=4;p<0.0001					X ² =29.67;df=4;p<0.0001		
			N=1385					N=1200		
Problem drinking										
yes	10.2	14.6	26.4	31.6	7.5	1.9	6.8	6.4	5.3	0
			X ² =66.06;df=4;p<0.0001					X ² =19.88;df=4;p=0.0003		
			N=1469					N=1358		

^a 1=married, 2=cohabit with partner without being officially married, 3=unmarried (and not cohabiting), 4=divorced, 5=widowed

Table 7 Prevalence of abstinence (total study population), excessive drinking, alcohol-related problems, and problem drinking (drinking population) by daily activities by sex (%)

	men					women				
	1*	2	3	4	5	1	2	3	4	5
<i>Total study population:</i>										
Abstinence										
yes	8.6	17.0	21.2	11.6	16.4	16.7	30.8	33.5	35.8	14.7
			X ² =25.67;df=4;p<0.0001					X ² =26.28;df=4;p<0.0001		
			N=1662							
<i>Drinking population:</i>										
Excessive drinking										
yes	15.1	20.9	32.3	12.1	14.9	3.4	2.3	4.5	3.7	4.6
			X ² =19.00;df=4;p=0.0009						0.99;df=4;p=0.91	
			N=1472						N=1355	
Alcohol-related problems										
one or more	30.9	53.4	57.7	20.4	49.0	18.1	31.4	21.3	26.1	25.9
			X ² =64.88;df=4;p<0.0001						11.64;df=4;p=0.02	
			N=1386						N=1196	
Problem drinking										
yes	14.3	20.6	38.4	6.5	27.7	3.4	7.9	4.1	1.3	6.3
			X ² =54.51;df=4;p<0.0001						X ² =7.69;df=4;p=0.10	
			N=1470						N=1354	

* 1=employed/house-keeping; 2=unemployed; 3=declared unfit to work; 4=retired; 5=scholar/conscript

Table 8 Prevalence of abstinence (total study population), excessive drinking, alcohol-related problems, and problem drinking (drinking population) by *educational level* by sex (%)

	men					women				
	1 st	2	3	4	5	1	2	3	4	5
<i>Total study population:</i>										
Abstinence										
yes	26.0	12.5	12.6	7.6	4.3	48.2	25.8	21.1	11.6	4.8
			X ² =46.69;df=4;p<0.0001					X ² =109.89;df=4;p<0.0001		
			N=1616					N=1742		
<i>Drinking population:</i>										
Excessive drinking										
yes	24.0	16.7	18.1	14.0	12.6	4.2	3.8	2.8	3.1	3.0
			X ² =8.77;df=4;p=0.07						0.98;df=4;p=0.91	
			N=1430						N=1336	
Alcohol-related problems										
one or more	40.1	36.6	36.2	32.3	37.2	26.4	20.8	18.7	23.5	15.7
			X ² =2.30;df=4;p=0.68						4.84;df=4;p=0.30	
			N=1350						N=1177	
Problem drinking										
yes	20.9	19.3	16.5	14.4	17.1	5.3	2.5	2.9	5.9	5.9
			X ² =3.78;df=4;p=0.44						X ² =8.13;df=4;p=0.09	
			N=1430						N=1334	

* 1=primary school; 2=lower vocational/general; 3=intermediate vocational and intermediate/higher general ; 4= higher vocational ; 5=university

Table 9 Prevalence of abstinence (total study population), excessive drinking, alcohol-related problems, and problem drinking (drinking population) by *income* by sex (%)

	men					women			
	1*	2	3	4		1	2	3	4
<i>Total study population:</i>									
Abstinence									
yes	14.1	10.3	9.6	5.0		31.3	22.6	16.8	10.0
		X ² =13.83;df=3;p=0.003					X ² =45.94;df=3;p<0.0001		
		N=1506					N=1495		
<i>Drinking population:</i>									
Excessive drinking									
yes	18.8	16.0	14.3	16.0		5.1	3.3	2.6	3.8
		X ² =2.52;df=3;p=0.47					X ² =2.98;df=3;p=0.39		
		N=1349					N=1162		
Alcohol-related problems									
one or more	52.5	34.2	27.2	24.4		31.5	18.7	15.4	14.7
		X ² =63.00;df=3;p<0.0001					X ² =27.60;df=3;p<0.0001		
		N=1273					N=1029		
Problem drinking									
yes	28.8	14.9	13.0	11.4		6.7	3.0	2.6	2.8
		X ² =43.55;df=3;p<0.0001					X ² =9.28;df=3;p=0.03		
		N=1347					N=1158		

* 1= ≤ fl 25.000; 2= fl 25.000-45.000 ; 3= fl 45.000-65.000 ; 4= ≥ fl 65.000

7.4 Discussion

In this study, insight is gained into the prevalences of abstinence, 'excessive' drinking, alcohol-use-related problems, and problem drinking in the general Rotterdam population and its subpopulations. A prerequisite for health policy in general and alcohol policy in specific is generalizable information. As van der Maas (1989) noted, to outline health policy, information is needed about the health situation of the population, about health-influencing factors, and about possibilities to intervene in these factors. The WHO stated in 'Targets for Health for All' that all member states should improve and expand their knowledge needed to support their Health for All developments (WHO 1985). A comprehensive example of providing information to policy makers is the Rotterdam Local Health Information System (van Oers 1993). This information system is used to support policy makers in a direct way by collecting, processing, and communicating health information to them and in a more indirect way by performing epidemiological research based on the information collected. The individual level information on alcohol use and problem drinking in the general population and its subpopulations collected in this study could be viewed as a part of the data collection described in the above example. Clues are offered for alcohol control policy which are based on the insights gained; prevention activities can be tailored towards specific subgroups of the population.

The limitations of this study should be kept in mind. First of all, the data is based on self-reports. The validity of self-reports is threatened by two sources of error: deliberate denial and unintentional forgetting (Pernanen 1974). The prevalences reported should therefore not be viewed as definite figures but rather as minimum estimates of the true prevalences in the general population. Some may consider the response rate of 44% rather low. Considering the study design, however, this response rate is in agreement with findings in literature (Hox & de Leeuw 1994; Lemmens et al 1988). Still, as in every survey, selective non-response might be a source of error. This issue is (partly) addressed by weighting the data set (Bongers et al 1997). The last limitation that should be mentioned is the cross-sectional nature of the data: the information is calendar time and lifetime specific. As drinking behaviour, however, is a dynamic, environment-time-culture bound, and complex process, these data will describe only certain aspects of drinking behaviour.

The prevalences of abstinence and excessive drinking of respectively 18 and 8%, respectively, in the total population resemble figures found in recent national and local surveys (Swinkels 1994; Klaus & Reelick 1990) and the survey of Garretsen in 1980 (Garretsen 1983). The prevalence of problem drinking of 9% is somewhat higher than the 7% found in 1980. A strong increase, however, is seen for the prevalence of alcohol-use-related problems reported: from 18% in 1980 to 28% in 1994.

The results show that (excessive) alcohol use and problem drinking are differentially distributed by background factors. As is well-known, more men than women drink alcoholic beverages. 'Excessive' drinking and problem drinking are also more prevalent among men than women. The more remarkable, there-

fore, is the relatively high prevalence of alcohol-related problems of 20% among women given their low percentage of 'excessive' drinkers of only 3%. A most natural explanation would be that in most cases only minor problems are being mentioned and that the problems are not or only partially alcohol-use-related. Although two-third of the women report moderate problems at only one problem area, the remaining one-third of the women report problems on more than one problem area and/or report severe problems. It could, therefore, be argued that some women experience alcohol-use-related problems at lower consumption levels.

Alcohol-related health problems like illness or injuries/accidents could occur at lower consumption levels as women in general require less ethanol than men to achieve a comparable increase in blood alcohol level (Dawson & Archer 1992). The blood alcohol level is a measure for intoxication, and the more intoxicated, the higher the risk at health problems. Furthermore, the more strict norms and attitudes towards female drinking in society may lead to more social problems at lower consumption levels (Garretsen 1983). Another explanation could be that women more than men underreport their actual alcohol use because of these stricter norms. It is not probable, however, that the noted difference can be fully explained by this underreporting of alcohol use as alcohol-use-related problems also tended to be underreported by women (Garretsen 1983).

Drinking behaviour and problematic drinking also differs by age. The high prevalence of 'excessive' drinking and problem drinking among young men needs special attention. As expected, drunkenness is the most pronounced problem area in this group, but symptomatic drinking and social problems are also often mentioned. Marital status is also related to problematic drinking behaviour. 'Excessive' drinking and problem drinking is more prevalent among divorced males: a quarter of them are categorized as 'excessive' drinker and/or problem drinker. Among unmarried men, problem drinking is also more prevalent. These results are consistent with results found in a recent national health survey (Verweij & Kardaun 1994). Among divorced and widowed women who drink, alcohol-use-related problems are more prevalent. These results together suggest that being single is related to problematic drinking. Being declared unfit to work was also found to be related to 'excessive' drinking and problem drinking among men. Among male students, problem drinking but not 'excessive' drinking was more prevalent. Unemployed men and women reported more alcohol-related problems, but did not have a significantly higher prevalence of 'excessive' drinking or problem drinking. The association between unemployment and problematic drinking is often mentioned in literature (Forcier 1988). Declared unfit to work has also been found to be related to problematic drinking (Garretsen 1983). The relation between socio-economic status, indicated by education and annual net household income, and 'excessive' alcohol use and problem drinking is inconsistent as alcohol misuse and its consequences appear to be related to income but not to education. The decreasing gender difference in abstinence rate by high income and high educational levels is also mentioned by other authors (Knibbe & Swinkels 1992).

This study has shown that the distribution of 'excessive' drinking and alcohol-use-related problems in the general population is a general public health con-

cern. Problematic drinking is associated with specific aspects of life. People are at differential 'risk' for problematic drinking, dependent upon their stage and situation of life. Men are more often 'excessive' drinkers and problem drinkers. Women, however, tend to report many alcohol-related problems relative to their consumption pattern. In addition, young men have a high prevalence of alcohol-use-related problems and problem drinking. Being single also seems to be related to problematic drinking as are also unemployment, and especially for men, being declared unfit to work. The results found for socioeconomic status were inconsistent: although a low income was clearly associated with problematic drinking, a lower educational level was not.

Drinking in general and 'excessive' and problem drinking specifically are not only a public health concern, but also a social, economic, and political issue. Different and sometimes opposite interests make the creation and pursuit of an alcohol policy very complex. Both the agenda of the policy makers and the spearheads of policy in general have an influence on how the insights gained in studies like this are reflected in the actual alcohol control policy.

Focusing on the public health issue, this study indicated that subgroups of the general population who are at 'risk' for problematic drinking, might need special attention. Effective prevention activities specifically tailored towards these subgroups necessitates more insight into the characteristics of the subgroups. An important following phase of this study will therefore be to conduct multivariate analyses and gain more in-dept insight into the specific drinking patterns and kind and severity of alcohol-related problems of the subgroups at risk.

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Chapter 8

GENDER DIFFERENCES IN ALCOHOL-RELATED PROBLEMS: CONTROLLING FOR DRINKING BEHAVIOUR

Abstract

Aims: Two hypotheses were tested to explain a high prevalence of alcohol-related problems among women relative to their low prevalence of excessive drinking: 1) At a given level of drinking, women may report more problems of any type than do men. 2) At a given level of drinking, the number of problems or the severity of the reported problems may be lower among women than among men. **Design:** General population survey. **Setting:** Rotterdam, the Netherlands. **Participants:** 3537 Dutch respondents within the age range 16-69 years. **Measurements:** Alcohol-related problems were measured in five problem areas: psychological dependence, symptomatic drinking, social problems, health problems/accidents and frequent drunkenness/hang-overs. A problem index was formed by adding up the scores in the five separate problem areas. Alcohol use was measured by the Quantity-Frequency-Variability index. **Findings:** For the same level of drinking, women were as likely as men to report alcohol-related problems except that women light drinkers were actually less likely to report problems than men. Men tended to have a greater accumulation of different types of problems within drinking categories than women. Overall problem severity, however, did not differ between men and women. The apparent excess prevalence of alcohol problems in women relative to drinking level appears to be due to presence of problems even among light drinkers and a greater preponderance of light drinkers in women than men. **Conclusions:** The first hypothesis was rejected; drinking levels being the same, the level of alcohol problems is the same or even lower for women than for men. As hypothesized, men tend to have a greater accumulation of different kinds of problems than women. However, the severity of the reported problems does not differ between men and women.

8. GENDER DIFFERENCES IN ALCOHOL-RELATED PROBLEMS: CONTROLLING FOR DRINKING BEHAVIOUR

8.1 Introduction

Drinking alcohol is traditionally considered to be primarily a male issue, both in society and in alcohol research. This view can be justified by consistent research findings over time and in many different countries: men drink more alcohol and experience more alcohol-related problems than women do (Plant 1990). However, although women drink less and experience fewer problems than men, the number of women who drink and the amounts women drink nowadays are by no means negligible (Lammers 1995, Neve et al 1996). Indeed, there is a growing concern about women's drinking behaviour. This concern is compounded by the belief that when men and women exhibit similar drinking behaviour, women are more susceptible to alcohol-related harm than men.

This belief is rooted both in biological differences and in societal norm differences between men and women. It has long been recognized that a given dose of ethanol produces a significantly higher blood-alcohol level (BAL) in women than in men (Jones & Jones 1976). This higher BAL is attributed to a smaller volume of distribution in women due to their lower content of bodily fluids and to significantly smaller quantities of the enzyme alcohol dehydrogenase - important for the metabolism of ethanol- in the gastrointestinal tracts of women (Freza et al 1990). These sex differences in distribution and metabolism of alcohol may contribute to an increased vulnerability of women to acute and chronic complications of alcohol abuse.

Societal norms towards drinking are also thought to differ between the gender. Being an alcoholic is believed to carry far more stigma for women than for men and social disapproval of alcohol abuse is generally thought to be greater for women than for men (Sandmaier 1980). Female drinkers may therefore experience more social conflicts and personal distress than their male counterparts (Roman 1988). This traditional perspective of a gender relation between alcohol and social harm is challenged by Robbins and Martin (1993). They question whether women experience more social conflicts than men. They base their argument on the view that female deviant behaviour is characterized by internalization of distress whereas male deviant behaviour is more outwardly directed and anti-social. It is probably due to the increased stigma that women are more likely to exercise greater self-monitoring and control when they drink than men (Caudill et al 1987). Indeed, Robbins (1989) found that female alcohol abuse is less strongly associated with behavioural problems such as dangerous driving, problems with the police, and problems at work. Women, on the other hand, internalize their distress which leads to more subjective personal distress.

A recent Dutch general population survey confirmed that the prevalences of

excessive drinking and alcohol-related problems were significantly higher among men than among women (Bongers et al 1997a), but there was a high prevalence of alcohol-related problems among women relative to their prevalence of excessive drinking. Whereas the prevalence of excessive drinking was found to be more than five times higher among men than among women (14.2% and 2.6%, respectively), the prevalence of alcohol-related problems was less than twice as high (35.2% and 20.3%, respectively). The question arises as to how can this relatively high prevalence of alcohol-related problems among women be explained.

In this study, two hypotheses are tested which might explain the relatively high prevalence of alcohol-related problems among women:

Hypothesis 1: The relation between drinking behaviour and alcohol-related problems differs between men and women so that at a given level of drinking, women suffer more problems of any type than do men.

Hypothesis 2: Whilst women are more likely to report at least some problem at a given level of drinking, the number of problems that they report or the severity of their reported problems may be less than that of men.

8.2 Methods

Sample

The present study was part of a large-scale general population survey called 'Risky Lifestyles in Rotterdam'. For this survey, a random sample of 8,000 persons was drawn from the municipal population register of Rotterdam, The Netherlands, in February 1994. The sample included inhabitants between 16 and 69 years of age and, to avoid language problems, persons with at least the Dutch nationality. Data collection by postal questionnaires and oral interviews (7,500 and 500 people respectively) took place in the spring of 1994. No differences were found with respect to self-reported alcohol use, alcohol-related problems, or problem drinking by means of data collection method (Bongers & van Oers 1998).

The overall response rate was 44.2% (N=3,537). Considering the data-collection method (postal questionnaires), the low saliency of the research topic, and the location of the study (a highly urbanized city), the response rate is not atypical (see Hox & de Leeuw 1994). A follow-up study among non-respondents of a Dutch alcohol survey conducted by Lemmens and colleagues (1988), however, did not indicate that these people generally drink more, nor that alcohol abuse is more common in this category. Similar results were found by Garretsen (1983) among non-respondents of an alcohol survey in Rotterdam, The Netherlands. Furthermore, a follow-up study among a sample of the non-respondents of our study revealed that about half would refuse to cooperate with any survey. In this follow-up study, it was concluded that it was unlikely for the non-response to be selective with regard to the topic of the study (Jansen & Hak 1996). However, non-response analyses showed that the

response was selective in terms of sex and age (Bongers et al 1997b): women between 16 and 44 years of age were most likely to respond whereas men, especially men between 35 and 54 years of age, were least likely to respond. The differential response probability model was used to evaluate and correct for the consequences of this non-differential non-response (Bethlehem & Kersten 1986). First, differences in response probabilities by background variables, which are related to the outcome variable of the study, were determined. Subsequently, the data were weighted according to response probabilities. The results reported in this article are based on the weighted data set.

Measurements

The operationalization of alcohol-related problems was based on the 11 indicators of alcohol-related problems mentioned by Cahalan (1976). All indicators except 'binge drinking' - which is uncommon according to Cahalan - were considered. The indicators were clustered in 5 problem areas:

1. psychological dependence;
2. symptomatic drinking;
3. social problems;
4. health problems;
5. frequent drunkenness and/or hangovers.

Psychological dependence was operationalised as self-reported drinking to enhance self-confidence, to relieve stress, loneliness and worries, and to ease thinking and working. The indicator symptomatic drinking examined the existence of symptoms related to excessive drinking: skipping meals when drinking, trembling hands the morning after drinking, finding it difficult to stop drinking, start drinking immediately after waking up, keep on drinking despite the fact that one has promised oneself not to, drinking secretly, taking a few drinks before going out to know for sure that one will have enough, and not knowing afterwards what one has done while drinking. Social problems were indexed by problems with partner/family, problems with friends/neighbours, work-related problems, problems with the police/law, complaints about aggressive behaviour after drinking and complaints about spending too much money on alcohol. Health problems were operationalized by having had an accident after drinking, having been in hospital for an alcohol-related disease, or the general practitioner (GP) making a remark about respondent's drinking behaviour. The time frame for all questions was the last 6 months; exceptions were problems with the police/law and a GP making a remark about the respondent's drinking in which the time frame was unlimited. For the precise questions, see Garretsen (1983) and chapter 3.

Items in each problem area were measured by a variety of questions. On the basis of the number of reported problems, persons were categorized as having no, moderate or severe problems in a problem area (Table 1). Furthermore, a problem index was formed by adding up the scores on the five separate problem areas. Having alcohol-related problems was defined by a score of one or more on the problem index.

Drinking behaviour was measured by the Quantity-Frequency-Variability index (QFV-index). Four questions were asked:

1. 'Which alcoholic drinks do you usually drink when you drink?';
2. 'How many days a month do you drink on average?' (F);
3. 'If you drink alcohol, how many glasses do you drink on average?' (Q);
4. 'Have you ever drunk six or more glasses of alcohol in one day in the past six months?' (V).

On the basis of these questions, four drinking variables were generated:

1. a summary measure based on all questions, distinguishing between the categories abstainers, light, moderate, excessive drinkers, and very excessive drinkers. Abstainers were those who answered 'I never drink alcohol' to question 1. The cut-off points for the categories light, moderate, excessive, and very excessive drinkers are shown in Table 2;
2. usual frequency of drinking (F);
3. usual quantity of drinking (Q);
4. heavy drinking (V).

The following background variables were used in the analyses: age, marital status, education, and daily activities. Marital status was operationalized as being married, unmarried (and not cohabiting), divorced, widowed, or cohabiting without being married. Education is defined as the respondent's highest educational qualification. The variable daily activities categorizes respondents as employed or house-keeping; unemployed; declared unfit for work; retired; student or conscript.

Analyses

To test the hypothesis that at a given level of drinking women suffer more problems than do men, the percentages of persons that reported alcohol-related problems at the different levels of drinking were compared between men and women. In addition, the average score on the problem index at the different levels of drinking was compared between men and women.

Differences in alcohol-related problems between men and women as also gender differences in number and severity of reported problems were assessed by controlling for differences in drinking behaviour and differences in background variables by means of logistic regression analyses (Hosmer & Lemeshow 1989).

Significance of gender differences after controlling for differences in drinking behaviour was assessed by calculating 95%-confidence intervals of the odds ratios. For the other analyses, the significance was tested by the unpaired Student-T-test in case of a quantitative outcome variable (average score on problem index) and by the Chi-square test in case of the other categorical variables. In the event of expected frequencies lower than 5 in more than 20% of the cells, the Chi-square test was replaced by the Fisher's exact test. Because of multiple statistical testing, the 1% level ($p=0.01$) was regarded as indication of statistical significance for these analyses.

Table 1 Operationalisation of the Problem Index

Problem areas		Score on the separate problem areas		intermediate score		maximum contribution to problem index*
Psychological dependence:		7 questions	0-3 positive = 0 points 4-6 positive = 1 point ≥ 7 positive = 2 points			2 points
Symptomatic drinking:		8 questions	0-1 positive = 0 points 2-3 positive = 1 point ≥ 4 positive = 2 points			2 points
Social problems:						2 points
- problems with partner/family:	3 questions	≥ 1 positive	= 1 point	0-1 point	= 0 points	
- problems with friends/neighbours:	5 questions	≥ 1 positive	= 1 point	2 points	= 1 point	
- problems with work:	5 questions	≥ 1 positive	= 1 point	≥ 3 points	= 2 points	
- complaints about aggressive behaviour:	1 question	1 positive	= 1 point			
- complaints about spending too much money on alcohol:	1 question	1 positive	= 1 point			
Health-related problems:						2 points
- Health problems:	2 questions	≥ 1 positive	= 1 point			
- Accidents:	1 question	1 positive	= 1 point			
Drunkenness/Hang-over		2 questions	monthly = 1 point weekly = 2 points			2 points
Maximum score on problem index:						10 points

* 0 points on the problem area is denoted as no problems, 1 point as moderate problems and 2 points as severe problems

Table 2 Drinking categories: cut-off points

average drinking days a month	number of glasses at a drinking day			
	≥ 6	4 or 5	2 or 3	> 0 to 1
28 or more	very excessive*	excessive	moderate	light
21 - 27	very excessive*	excessive	moderate	light
15 - 20	excessive	moderate	moderate	light
9 - 14	excessive	moderate	light	light
3 - 8	moderate	light	light	light
> 0 - 2	light	light	light	light

8.3 Results

Drinking behaviour differed significantly between men and women who reported alcohol-related problems (Table 3). Excessive drinking was much more common among men than among women.

Table 3 Distribution of drinking behaviour among men and women who reported alcohol-related problems (scoring ≥ 1 on problem index)

	Men	Women
abstainers	4.0	15.2
light drinkers	33.3	52.7
moderate drinkers	30.4	23.5
excessive drinkers	19.1	5.6
very excessive drinkers	13.2	3.0
	N=522	N=283
	X ² =92.41;df=4;p<0.0001	

Contrary to the first hypothesis, the percentage of women who reported alcohol-related problems in each drinking category was not higher than the percentage of men (see Fig. 1 and Table 4). Indeed, female light drinkers reported significantly fewer alcohol-related problems than male light drinkers. The same results were found for frequency of heavy drinking and average consumption on drinking days: within the same categories, no gender differences were found with respect to reports of alcohol-related problems. For the indicator 'drinking days a month' it was even found that within all categories of drinking days, women reported significantly fewer problems than men.

The average score on the problem index increased with increasing alcohol consumption for both men and women who reported alcohol-related problems (Table 4). The only exception was the higher problem index score among female abstainers compared with female light drinkers. Within the same drink-

Figure 1: Percentage of men and women who report alcohol-related problems by drinking behaviour

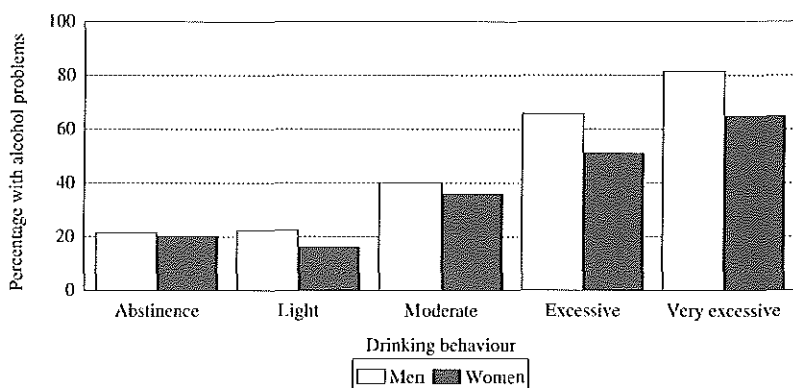


Table 4 Sex differences in alcohol-related problems by drinking behaviour (%)

	Men	Women	Significance
<i>% WITH A SCORE OF ≥ 1 ON THE PROBLEM INDEX:</i>			
<i>drinking categories</i>			
abstainers	21.3	20.3	p=0.95
light drinkers	22.7	15.3	p<0.001
moderate drinkers	40.9	37.1	p=0.38
excessive drinkers	66.8	51.7	p=0.11
very excessive drinkers	81.6	65.0	p=0.17
<i>Drinking ≥ 6 glasses</i>			
≥ 3 times a week	79.3	70.0	p=0.40
once or twice a week	65.1	62.9	p=0.87
less than once a week	31.3	25.3	p=0.07
never	14.0	13.4	p=0.85
<i>Average drinking days per month</i>			
≥ 21 days	44.2	31.7	p=0.02
12-20 days	46.2	31.5	p=0.01
6-11 days	34.3	21.3	p=0.002
≤ 5 days	28.9	15.4	p<0.001
<i>Number of glasses per drinking day</i>			
≥ 6 glasses	71.3	58.4	p=0.09
4 or 5 glasses	50.5	41.6	p=0.15
3 glasses	30.0	20.4	p=0.01
2 glasses	14.0	14.8	p=0.82
1 glass	15.0	13.7	p=0.82
<i>AVERAGE SCORE ON THE PROBLEM INDEX:</i>			
abstainers	1.29	1.64	p=0.35
light drinkers	1.63	1.36	p=0.02
moderate drinkers	2.28	1.81	p=0.10
excessive drinkers	2.91	3.44	p=0.36
very excessive drinkers	4.50	3.59	p=0.48

Table 5 Odds of alcohol-related problems of women compared with men who drink, adjusted for drinking behaviour and background variables (OR [95 %-CI])

	Crude OR female versus male	Model 1: Adjusted OR female versus male	Model 2: Adjusted OR female versus male
<i>Odds among total drinking population on:</i>			
One or more alcohol-related problems	0.45 [0.38-0.54]	0.94 [0.76-1.17]	0.92 [0.74-1.18]
Psychological dependence	0.74 [0.60-0.92]	1.08 [0.84-1.39]	1.01 [0.77-1.32]
Symptomatic drinking	0.27 [0.21-0.36]	0.78 [0.56-1.09]	0.79 [0.56-1.13]
Social problems	0.20 [0.13-0.30]	0.56 [0.35-0.89]	0.53 [0.32-0.87]
Health problems/accidents	0.18 [0.10-0.30]	0.49 [0.27-0.90]	0.37 [0.19-0.73]
Drunkenness/hang-overs	0.23 [0.17-0.31]	0.85 [0.58-1.24]	0.91 [0.59-1.39]
<i>Odds among drinking population who report alcohol-related problems on:</i>			
A score of three or more on the problem index	0.28 [0.17-0.44]	0.53 [0.31-0.90]	0.51 [0.28-0.92]
<i>Odds among drinking population who report alcohol-related problems on severe problems in specific problem area:</i>			
Psychological dependence	0.76 [0.48-1.22]	1.58 [0.85-2.92]	1.19 [0.58-2.45]
Symptomatic drinking	0.84 [0.45-1.57]	1.13 [0.56-2.28]	1.29 [0.53-3.13]
Social drinking	0.89 [0.40-2.00]	1.03 [0.39-2.72]	1.05 [0.28-4.00]
Health problems/accidents	1.54 [0.42-5.65]	2.21 [0.31-15.69]	*
Drunkenness/hang-overs	0.44 [0.21-0.92]	0.56 [0.24-1.33]	0.49 [0.76-5.49]

Model 1: Adjusted for drinking behavior (categories of drinking, usual frequency of drinking, usual quantity of drinking, irregular heavy drinking)

Model 2: Adjusted for drinking behavior and background variables (age, marital status, educational level, and daily activities)

* Due to insufficient numbers no figures available

king categories, male-female comparisons on average problem index score again yielded no significant differences. The same results were found for the other drinking variables with, as the exception, a significantly higher average problem index score among men in comparison to women who both drink 12-20 days a month or who both drink more than 20 days a month.

After controlling for differences in drinking behaviour, women were as likely as men to report one or more alcohol-related problem (Table 5). The same results were found for the specific problem areas psychological dependence, symptomatic drinking, and drunkenness/hangovers. The likelihood of reporting social and health problems, however, remained lower for women compared with men after controlling for differences in drinking behaviour.

When drinking behaviour was the same, women were significantly less likely to experience problems with partner/family (OR=0.46 95%-CI: 0.33-0.64) and with the police or law (OR=0.22 95%-CI: 0.12-0.43). After controlling for differences in drinking behaviour, women were as likely as men to experience complaints about aggressive behaviour, spending too much money on alcohol, problems with friends/neighbours and work-related problems. Assessment of the different types of health problems revealed no significant differences between men and women after controlling for differences in drinking behaviour.

Consistent with the second hypothesis, the likelihood of a score of three or more on the problem index remained significantly lower among women than among men who reported alcohol-related problems (problem index score ≥ 1) after controlling for differences in drinking behaviour (Table 5). Contrary to the second hypothesis, among those who reported problems in a specific problem area, women were as likely as men to report severe problems after controlling for differences in drinking behaviour (Table 5). The same results were found after controlling for background variables in addition to drinking behaviour.

8.4 Discussion

The findings of this study indicate that, at the same drinking level, the percentage of women who report alcohol-related problems is the same as or lower than the percentage of men who report alcohol-related problems. The overrepresentation of lighter drinkers among women who report alcohol-related problems is not because female (light) drinkers report more problems but because of the much greater absolute number of lighter drinkers among women than among men. This phenomenon is paradoxical: because the group, which comprises lighter drinkers with a low risk of alcohol problems, is so large it accounts for a considerable part of the total complex of alcohol-related problems.

Controlling for differences in drinking behaviour in multi-variate analyses also showed that women were as likely as men to report alcohol-related problems. The likelihood of reporting social and health problems was lower among women than among men, for a given pattern of drinking behaviour. This lower

likelihood of social problems among women is in line with the findings of Robbins & Martin (1993).

One explanation for the lower likelihood of women to report alcohol-related social problems might be that women, more than men, underreport their alcohol-related social problems. The stigma on female alcohol misuse could lead to women experiencing more alcohol-related social problems but at the same time women reporting fewer of these social problems. Garretsen (1983) found indications of a higher degree of underreporting of alcohol-related social problems among women than among men.

The second hypothesis stated that at a given level of drinking, the number of problems or the severity of the reported problems is lower among women than among men. Indeed, the analyses show that men were more likely to score higher on the problem index, also after controlling for drinking behaviour. This high score may indicate severe problems or problems in several problem areas. The results show that among those who mention problems, men and women did not differ with respect to the severity of problems. So, drinking levels being the same, men tended to have a greater accumulation of different kinds of problems than women.

It should be acknowledged that this study has certain limitations. Alcohol-related problems and drinking behaviour were measured by particular indicators. These indicators did not necessarily cover the full range and diversity of both alcohol-related problems and drinking behaviour. Omission of alcohol-related problems, particularly those that are experienced by women, could lead to an underestimation of the total complex of alcohol-related problems that women experience. In addition, it might be possible that at the same drinking level women experience more of these 'women-specific' problems.

With respect to drinking behaviour, several aspects of drinking behaviour in which women may differ from men were not measured in this study. Women are less likely to drink daily or to drink continuously (van Thiel & Gavalier 1988). The first aspect of drinking behavior is fully covered by the QFV-index, the latter only to a certain extent. Gender differences in drinking behaviour aspects such as drinking at home versus in public, drinking alone versus with others, and pace of drinking alcoholic beverages were not included in the study. It could be that these non-measured aspects of drinking behaviour have a differential impact on male and female alcohol-related problems. Furthermore, the alcohol-related problems measured in this study and in alcohol research in general may be the result of drinking patterns which more frequently occur among men than among women. This will indirectly lead to an underestimation of female alcohol-related problems.

Further research that is designed to maximize the coverage of alcohol-related problems and drinking behaviour for both men and women is needed.

Recently, Ames and colleagues (Ames et al 1996, Saltz & Ames 1996) suggested novel indicators of drinking problems among women. An indicator suggested by Saltz & Ames (1996), which is uniquely relevant to women's drinking, is 'Planning opportunities to drink'. Their efforts form a good basis for the development of instruments in which the coverage of women's alcohol problems is maximized.

The finding that the chances of health problems at a given level of drinking were lower among women than among men is surprising. Women are often thought to be more vulnerable than men to health problems. The lower content of bodily fluids and the decreased activity of the gastric enzyme alcohol dehydrogenase are thought to lead to a greater vulnerability of women to acute and chronic complications of alcohol abuse (Freza et al 1990).

The lower probability of health problems might be explained by its operationalization as this covers only a limited range of the possible alcohol-related health problems. Long-term consequences, such as liver diseases or brain damage, which are more likely to occur among alcohol-abusing women (Dunc 1988), were not included in the study. Furthermore, the inclusion of alcohol-related accidents might result in men scoring higher than women with respect to health problems, as men are found to be more involved in dangerous driving (Robbins 1989). Also the health problem indicator 'GP making a remark about respondent's drinking behaviour' could result in a higher score for men as the GP may be less likely to recognize female problem drinking than male problem drinking.

Besides the findings that are directly related to the two hypotheses tested, a few notable findings also deserve attention. First, it was found that one-fifth of the abstainers reported alcohol-related problems. The high prevalence is partly explained by an artefact. The prevalence is only based on those abstainers who answered the questions on alcohol-related problems. Half the number of abstainers (50.4%), however, did not answer the questions, probably because they found the questions did not apply to them. Presuming that these abstainers do not have alcohol-related problems, the prevalence of alcohol-related problems among abstainers is much lower: 10.2% instead of 20.6%.

However, that any alcohol-related problems are apparently experienced by people who do not drink clearly requires explanation. The outcome may be due to the operationalization of abstinence: people who answered 'I never drink alcohol' on the question 'which alcoholic drink do you usually drink' were categorized as abstainers. These people do not have to be life-long abstainers. As no time period was given, abstainers who reported alcohol-related problems may have drunk heavily in the recent past. This hypothesis, however, is contradicted by the findings that only about ten percent of these abstainers answered 'yes' to the question 'have you drunk considerably more in the past ten years'. Another reason could be that the reported 'alcohol-related' problems were not alcohol-related. Although in every question the relation between the problem and respondent's alcohol use was explicitly made, abstainers might have answered the questions without taking into account that the respective problems should be alcohol-related. If that is the case, the impact of this problem will be more widespread as it will occur not only among abstainers but among all the respondents in the survey. Although this cannot be asserted with great certainty, analyses of the effects of data collection modes on self-reported alcohol use and its consequences do not indicate that such a response bias is likely to occur. No differences were found in prevalences of reported problems among drinkers between the respondents of postal mail questionnaires and face-to-face interviews (where interviewers are able to reinforce the idea that problems

should be attributable to one's drinking) (Bongers & van Oers, 1998). The same applies to abstainers.

To clarify the unexpected outcome of abstainers reporting alcohol-related problems, further research is needed in which more in-depth insight is gained into why abstainers report alcohol-related problems. For this research, a first prerequisite is that abstinence is thoroughly measured and operationalized.

Another notable finding is that the multi-variate analyses showed that a higher rate of alcohol-related problems in general was explained by the differences in drinking behaviour between men and women. The same held true for specific problem areas: psychological dependence, symptomatic drinking, and drunkenness/hangovers. The higher male prevalence of social and health problems, however, was not fully explained by differences in drinking behaviour nor by differences in background variables; men remained significantly more likely to report social and health problems. These results indicate that other factors apart from drinking behavior and the background variables age, education, marital status and daily activities might lead to differences in social and health problems between men and women. Again, however, by taking more aspects of drinking behaviour into account, drinking behaviour might explain more of the differences in alcohol-related social and health problems between men and women.

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Chapter 9

ALCOHOL CONSUMPTION, ALCOHOL-RELATED PROBLEMS, PROBLEM DRINKING AND SOCIOECONOMIC STATUS

Abstract

In general, a lower socio-economic status (SES) is related to a lower health status, more health problems and a shorter life expectancy. Although causal relations between SES and health are unclear, lifestyle factors play an intermediate role. Purpose of the study is to obtain more insight into the relation between SES, alcohol consumption, alcohol-related problems and problem drinking. A general population survey among 8,000 people in Rotterdam was conducted, measuring alcohol consumption, alcohol-related problems, problem drinking and SES. Odds-ratio's were calculated using educational level as independent and alcohol consumption, alcohol-related problems and problem drinking as dependent variables. Abstinence decreases significantly by increasing educational level, for both sexes. For men, excessive drinking, and notably very excessive drinking, is more prevalent in the lowest educational group. For women, no significant relation between educational level and prevalence of excessive drinking was found. After controlling for differences in drinking behavior, among men the prevalence of "psychological dependence" and "social problems" was higher in intermediate educational groups; prevalence of "drunkenness" was lower in intermediate educational groups. For women, a negative relation was found between educational level and "psychological dependence"; prevalence of "symptomatic drinking" was higher in the lowest educational group. Prevalence of problem drinking was not related to educational level, for both sexes. It is concluded that differences exist between educational levels with respect to abstinence, but only limited difference is found with respect to excessive drinking. Furthermore, there is evidence for higher prevalences of alcohol-related problems in lower educational levels, after controlling for differences in drinking behavior, for both sexes.

9. ALCOHOL CONSUMPTION, ALCOHOL-RELATED PROBLEMS, PROBLEM DRINKING AND SOCIO-ECONOMIC STATUS

9.1 Introduction

During the last decade, much research has been done on the relation between socio-economic status and health. Available evidence shows important differences in health between people in relation to their socio-economic status (SES). These differences are mostly to the disadvantage of people in lower socio-economic groups, and find expression in a wide range of health indicators, including subjective health, health complaints, chronic diseases and mortality (Townsend 1988a, b; Mackenbach 1992). The reduction of existing socio-economic health differences is an important target of the WHO-program "Health For All By The Year 2000" (World Health Organisation, 1985). Causal relations between socio-economic status and health are still largely unclear, but lifestyle factors like smoking, dietary habits and alcohol consumption are likely to play an important intermediate role. Therefore, information on prevalence of risky lifestyles by socio-economic status in the general population is of great importance. In this way, the identification of high-risk subpopulations in terms of socio-economic status can provide clues for further development of prevention programs and health promotion activities.

To achieve a reduction of socio-economic health differences, in which excessive alcohol-consumption might play a role, knowledge of prevalences of excessive alcohol use and alcohol-related (health)problems in relation to socio-economic status is of particular interest. In literature different interpretations about the role of alcohol in the relation between socio-economic status and health are given. One line of research suggests that individuals from different socio-economic groups have a different attitude towards risky behaviour and self-efficacy. It is suggested that individuals with a higher socio-economic status are more aware of the consequences of their behaviour, and therefore more prone to make healthier choices (Kenkel 1991). Other findings in literature suggests the possibility that (excessive) alcoholconsumption might lead to lower income and educational level (Cook & Moore 1993; Ruhm 1995; Mullahy & Sindelar 1996).

The relation between alcohol consumption, drinking patterns, alcohol-related problems and socio-economic status seems to be complex. In general population studies a higher prevalence of abstinence in lower socio-economic groups is found, for both men and women (Cummins 1981; Knupfer 1989; Romelsjö 1989; Hulshof et al 1991; Knibbe & Swinkels 1992; Bennett et al 1996; Marmot 1997). In most general population studies, a higher prevalence of light or moderate drinking is found in higher socio-economic groups, for both sexes (Cummins 1981; Jacobsen 1989; Knupfer 1989; Hulshof et al 1991; Knibbe & Swinkels 1992; Bennett et al 1996; Marmot 1997). A study among a representative sample of the general youth population also shows a higher prevalence

of abstinence in lower socio-economic groups, but contrary to findings in other studies it was found that lower socio-economic groups reported more frequent drinking (Crowley 1991). In a number of studies no relation at all was shown between social class and moderate alcohol consumption, for both sexes (Clarke et al 1990; Romelsjö 1991). In a study of Braddon et al (1988), no relation between moderate alcohol consumption and social class for men, and a negative relation for women, was found.

About the relation between excessive alcohol consumption and socio-economic class less is known than about socio-economic class and abstinence. Available studies show inconsistent results. In several general population studies it was found that education is negatively associated with heavy alcohol consumption, for both sexes (Cummins 1981; Knupfer 1989; Hulshof et al 1991; Tejera et al 1991). Results from other studies show a negative relation between heavy alcohol consumption and socio-economic status for men, and a positive relation for women (Knibbe & Swinkels 1992), a negative relation for men and no relation for women (Tenconi et al 1992) or no relation for men and a positive relation for women (Marmot 1997).

Little is known about the relation between socio-economic status and problem drinking, although it is stated in literature that more information is needed about the kinds of alcohol-related problems associated with socio-economic status (Knupfer 1989). Reasons for this lack in information are that alcohol-related problems are not measured or the lack of sufficient numbers of respondents in most studies. In the Whitehall II Study (Marmot 1997) psychological problems associated with alcohol consumption were measured using the CAGE questionnaire. For men, no relation was found between socio-economic status and prevalence of positive cases on the CAGE. For women, a positive relation between socio-economic status and prevalence of positive cases was found. However, prevalence of heavy alcohol consumption among women varied from 3.2% in the lowest to 29.8% in the highest socio-economic group, and prevalence of alcohol-related problems only varied from 4.2% to 14.3% among those groups.

Possible explanations for the inconsistencies found in literature can be that heavy alcohol consumption was not defined in the same way in these studies, and that different indicators for socio-economic status were used. Furthermore, inconsistencies might be due to the fact that results are based on studies from different countries or different regions within a country, with different drinking cultures and attitudes towards alcohol-related problems. However, differentiating between 'wet' countries on the one hand and 'dry' countries on the other did not lead to clarification of this inconsistencies.

To obtain more insight into the relationship between socio-economic status, alcohol-consumption and problem drinking, the present study was set up. The first research question deals with the relationship between socio-economic status and alcohol consumption in the general population, taking into account different patterns of excessive alcohol consumption. The second research question investigates the relation between socio-economic status and alcohol-related problems in the drinking population, taking into account the possible influence of differences in alcohol consumption between the different socio-economic groups.

9.2 Methods

Data-collection

This study is part of the large-scale general population survey called 'Risky Lifestyles in Rotterdam'. For this survey, a random sample of 8,000 persons was drawn from the municipal population register of Rotterdam. The sample included inhabitants between 16 and 69 years of age and, to avoid language problems, persons with at least the Dutch nationality. Data-collection took place in spring 1994 by postal questionnaire and personal interview (7,500 and 500 people respectively). Personal interviewing of 500 people was done to allow for valid comparison with results of earlier surveys. Overall response rate was 44.2% (N=3,537), for the postal and the personal interviews the response rates were respectively 43.9% (N=3,287) and 50.0% (N=250). No differences were found in self-reported drinking habits by method of data collection (Bongers & van Oers 1998). The response, however, was found to be selective towards sex and age, i.e. women between 16 and 44 years of age were most likely to respond and men were least likely to respond. Therefore analyses were carried out using a dataset weighted by sex- and age-specific response rates (Bongers et al 1997a).

Measurements

Alcohol consumption is measured using the quantity-frequency-variability method, as described by Garretsen (1983). In this method four questions are asked: "Which alcoholic drinks do you usually drink when you drink?"; "How many days a month do you drink on average?"; "If you drink alcohol, how many glasses do you drink on average?"; "Have you ever drunk six or more glasses at one day during the past six months?". Based on these four measurements, an alcohol-consumption-index is generated, distinguishing the categories abstainers, light drinkers, moderate drinkers and excessive drinkers (Bongers et al 1997b). For this study, the group excessive drinkers was further subdivided into three different excessive drinking patterns: (1) the "very excessive drinkers": drinking 21 or more days a month 6 or more glasses a day; (2) the "irregular excessive drinkers": drinking 9 to 20 days a month 6 or more glasses a day and (3) the "regular excessive drinkers": drinking 21 or more days a month 4 or 5 glasses a day.

The measurement of alcohol-related problems is based on the concept introduced by Cahalan (1976). In this concept the five problem areas psychological dependence, symptomatic drinking, social problems, health problems/accidents and frequent drunkenness and/or hang-overs are distinguished. Problems on each problem area are measured by a variable number of questions. Based on the number of problems reported, persons are categorised as having no, moderate or severe problems on a problem area (score of 0, 1 or 2 points respectively). Subsequently, the scores at the five separate problem areas are summed up and form a problem-index, ranging from 1 to 10. Having alcohol-related problems is defined by scoring one or more points on the problem index (Garretsen 1983; Bongers et al 1997b).

Problem drinking is defined as a combination of alcohol-related problems and

a certain level of drinking. To be classified as a problem drinker, one has to score at least one point on the problem index. To certify that these problems are alcohol-related, the person in question also has to drink excessively or one or two times a week 6 or more glasses.

Indicators for socio-economic status at the individual level focus mainly on the field of income, education and occupation. Although income, education and occupation show strong mutual correlation, each of these indicators is partially referring to different aspects of socio-economic status (Liberatos et al 1988).

Income reflects the access to material goods, education reflects the access to immaterial goods and occupation reflects the power and prestige associated with specific jobs. In general population surveys, measurement of socio-economic status by educational level has advantage above income or occupational level. All respondents have a certain level of education, whereas not all respondents (especially women) have a personal income or occupation. Furthermore, income as indicator of socio-economic status has the practical disadvantage that a relatively large proportion of the respondents are reserved in giving information about their income. Therefore, in this survey socio-economic status of a respondent is measured by the highest educational level. This was classified into five categories: (1) primary school, (2) lower vocational or lower general, (3) intermediate vocational, intermediate or higher general, (4) higher vocational and (5) university.

Analyses

Prevalence figures for abstinence, excessive drinking, excessive drinking patterns, alcohol-related problems and problem drinking were calculated for men and women separately for all subpopulations defined by educational level.

Prevalence figures for abstinence are based on the total population, all other prevalences are based on the drinking population. Significance was tested at the 5% level by the Chi-square statistic or the Fisher's exact test, when expected frequencies were lower than 5 in more than 20% of the cells.

Logistic regression analysis was performed to calculate odds-ratio's with 95% confidence intervals for abstinence, excessive drinking, excessive drinking patterns, alcohol-related problems and problem drinking. Educational level was used as independent variable, using the highest educational group as reference category. In the analysis of abstinence, excessive drinking and excessive drinking patterns, age was controlled for. Controlling for age was done to make a comparison of the drinking behaviour between the educational classes, which is not influenced by different age-structures between the different classes. In the analysis of alcohol-related problems and problem drinking, age and alcohol consumption were controlled for. This was done to make a comparison of alcohol-related problems and problem drinking between different educational classes, which is not influenced by differences in age-structures and drinking behavior between the different classes. Odds-ratio's are presented before (crude) and after (controlled) controlling for the variables mentioned. Analysis were carried out using the program SPSS/PC+ 4.0.

9.3 Results

9.3.1 Abstinence, excessive drinking and drinking patterns

In Table 1 the number of respondents in each educational group is given, for the total and the drinking population separately. Percentages and odds-ratio's in all other tables are based on these numbers of respondents.

Table 1 Number of respondents by *educational level* in the population and the drinking population

	1*	2	3	4	5	total
Total population						
men	146	549	409	275	267	1646
women	194	777	451	220	147	1789
Drinking population						
men	107	478	357	254	256	1452
women	98	576	357	194	140	1365

* 1=primary school; 2=lower vocational/general; 3=intermediate vocational and intermediate/higher general; 4=higher vocational; 5=university

The results in Table 2 show significantly decreasing prevalences of abstinence by increasing level of education for both sexes. Notable is the decreasing gender difference by increasing educational level. At lower educational levels the percentage abstainers for women is about twice as high as for men, whereas, at the highest educational level, the percentage is almost the same for men and women. No significant differences in the prevalence of excessive drinking were found between educational levels, for both sexes. For men, analysis of specific excessive drinking patterns shows significant differences in prevalence between educational levels in the category "very excessive drinking" only. For women, similar results are obtained, but it must be kept in mind that number of respondents are small.

Logistic regression analysis, when controlling for age, is leading to similar results for both sexes for the relation between educational level and abstinence (Tables 3 and 4). With respect to excessive drinking, a significant higher prevalence of excessive drinking is found in the lowest educational category, for men. Also a significant higher prevalence of "very excessive drinkers" for men is found in the lowest educational category. For men, "irregular excessive drinking" and "regular excessive drinking" does not show any differences between educational groups. For women, no significant results were obtained for any type of excessive drinking pattern.

Table 2 Prevalence of abstinence (total population), excessive drinking and excessive drinking patterns (drinking population) by *educational level*

		1*	2	3	4	5	X ² (df)	p	N
Abstinence (in total population)									
yes	men	26.0	12.5	12.6	7.6	4.3	46.69 (4)	0.00	1646
	women	48.2	25.8	21.1	11.6	4.8	109.89 (4)	0.00	1789
Excessive drinking (in drinking population)									
yes	men	24.0	16.7	18.1	14.0	12.6	8.77 (4)	0.07	1452
	women	4.2	3.8	2.8	3.1	3.0	0.98 (4)	0.91	1365
Excessive drinking patterns (in drinking population):									
Very excessive drinking									
yes	men	17.1	6.5	6.3	3.3	2.4	31.84 (4)	0.00	1452
	women	3.1	1.7	0.2	0.5	0.0	10.04 (4)	0.04**	1365
Irregular excessive drinking									
yes	men	3.6	4.0	5.1	5.9	6.6	3.05 (4)	0.55	1452
	women	0.0	0.7	1.9	1.3	1.8	4.01 (4)	0.40**	1365
Regular excessive drinking									
yes	men	3.5	6.3	6.9	5.1	3.6	4.53 (4)	0.34	1452
	women	1.2	1.4	1.0	1.3	1.2	0.32 (4)	0.99**	1365

* 1=primary school; 2=lower vocational/general; 3=intermediate vocational and intermediate/higher general; 4=higher vocational; 5=university

** to many cells with expected frequency <5

9.3.2 Alcohol-related problem areas and problem drinking

From Table 5 it is obvious that certain alcohol-related problems are more prevalent in lower educational categories. For men and women, this clear trend is found for the alcohol-related problem area "psychological dependence" and for men it is also found for "health problems". Furthermore, Table 5 shows that "drunkenness/hang-over" is more prevalent for women in higher educational categories. Prevalence of problem drinking is about three to four times higher for men than for women, for all educational levels. No significant differences between educational levels are found for problem drinking, for both sexes. When controlling for age and drinking behaviour, logistic regression analysis shows significant higher prevalence of "psychological dependence" and "social problems" and significant lower prevalence for "drunkenness/hangovers" for lower and intermediate educational levels, among men (Table 6).

In Table 7 results of the logistic regression analysis for women are shown. After controlling for age and drinking behaviour a clear negative relation is found between socio-economic status and "psychological dependence". Also, "symptomatic drinking" is higher in the lowest educational group. No significance was reached for the relation between educational level and problem drinking for men and women. For women, this is probably due to the small number of observations.

Table 3 Differences in abstinence (total population), excessive drinking and excessive drinking patterns (drinking population) among men by educational level: odds-ratio's before and after controlling for age, with 95%-confidence intervals

	Odds-ratio's [95% confidence intervals]				
	1*	2	3	4	5
Abstinence (in total population; N=1646)					
crude	7.81**[3.86-15.83]	3.17**[1.66-6.04]	3.20**[1.65-6.21]	1.84 [0.88-3.86]	1
controlled	11.82**[5.51-25.36]	3.88**[1.81-8.32]	3.14**[1.61-6.12]	2.03 [0.96-4.28]	1
Excessive drinking (in drinking population; N=1452)					
crude	2.20**[1.22-3.96]	1.40 [0.90-2.17]	1.53 [0.97-2.43]	1.13 [0.68-1.89]	1
controlled	2.34**[1.25-4.40]	1.35 [0.85-2.13]	1.50 [0.95-2.39]	1.11 [0.66-1.86]	1
Excessive drinking patterns (in drinking population; N=1452):					
Very excessive drinking					
crude	8.34**[3.21-21.67]	2.82 [1.17-6.80]	2.72 [1.10-6.76]	1.36 [0.47-3.93]	1
controlled	6.05** [2.22-16.52]	2.05 [0.83-5.03]	2.69 [1.07-6.73]	1.12 [0.39-3.27]	1
Irregular excessive drinking					
crude	0.54 [0.17-1.73]	0.59 [0.30-1.17]	0.77 [0.39-1.53]	0.88 [0.43-1.83]	1
controlled	1.53 [0.43-5.38]	0.96 [0.48-1.95]	0.77 [0.39-1.55]	1.08 [0.52-2.26]	1
Regular excessive drinking					
crude	0.98 [0.27-3.48]	1.82 [0.85-3.89]	2.01 [0.92-4.38]	1.46 [0.61-3.49]	1
controlled	0.75 [0.20-2.78]	1.48 [0.67-3.22]	1.93 [0.88-4.24]	1.31 [0.55-3.20]	1

* 1=primary school; 2=lower vocational/general; 3=intermediate vocational and intermediate/higher general; 4=higher vocational; 5=university

** odds-ratio significant by different from reference-category

Table 4 Differences in abstinence (total population), excessive drinking and excessive drinking patterns (drinking population) among women by educational level: odds-ratio's before and after controlling for age, with 95%-confidence intervals

		Odds-ratio's [95% confidence intervals]				
1*		2	3	4	5	
Abstinence (in total population; N=1789)						
crude	18.59**[8.14-42.24]	6.93**[3.18-15.24]	5.33**[1.65-6.21]	2.62**[1.10-6.19]	1	
controlled	22.99**[3.63-19.71]	7.82**[3.56-17.20]	5.82**[2.38-11.70]	2.60**[1.09-6.19]	1	
Excessive drinking (in drinking population; N=1365)						
crude	1.42 [0.35-5.80]	1.27 [0.44-3.68]	0.92 [0.29-2.94]	1.03 [0.29-3.66]	1	
controlled	1.30 [0.29-5.83]	1.08 [0.35-3.31]	0.92 [0.28-2.96]	1.01 [0.28-3.60]	1	
Excessive drinking patterns (in drinking population; N=1365):						
Very excessive drinking						
crude	-	-	-	-	-	
controlled	-	-	-	-	-	
Irregular excessive drinking						
crude	-	0.38 [0.08-1.92]	1.04 [0.24-4.56]	0.73 [0.12-4.29]	1	
controlled	-	0.33 [0.06-1.86]	0.96 [0.21-4.28]	0.71 [0.12-4.23]	1	
Regular excessive drinking						
crude	1.00 [0.09-11.50]	1.16 [0.22-6.08]	0.81 [0.13-5.07]	1.06 [0.15-7.47]	1	
controlled	0.88 [0.47-1.64]	0.98 [0.17-5.65]	0.82 [0.13-5.25]	1.04 [0.15-7.35]	1	

* 1=primary school; 2=lower vocational/general; 3=intermediate vocational and intermediate/higher general; 4=higher vocational; 5=university

** odds-ratio significant by different from reference-category

Table 5 Prevalence of alcohol-related problems and problem drinkint at the different problem areas (in the drinking population) by *educational level*

		1*	2	3	4	5	X ² (df)	p	N
Alcohol-related problem areas:									
Psychological dependence									
yes	men	21.0	20.4	17.3	13.3	10.2	15.25 (4)	0.00	1452
	women	20.5	14.7	12.0	13.8	4.3	14.35 (4)	0.01	1365
Symptomatic drinking									
yes	men	17.8	16.6	16.9	16.0	16.2	0.21 (4)	0.99	1452
	women	7.5	3.8	5.0	7.7	4.7	5.65 (4)	0.23	1365
Social problems									
yes	men	12.2	11.2	12.1	10.5	6.3	6.07 (4)	0.19	1452
	women	1.7	2.6	1.3	3.6	2.0	3.27 (4)	0.51**	1365
Health problems									
yes	men	13.7	8.9	5.2	3.2	3.6	21.50 (4)	0.00	1452
	women	0.0	1.5	0.8	1.3	0.6	2.33 (4)	0.68**	1365
Drunkenness/hang-overs									
yes	men	13.1	12.3	13.3	16.2	19.7	8.43 (4)	0.08	1452
	women	1.0	2.2	4.0	5.7	8.3	16.61 (4)	0.00	1365
Problem drinking									
yes	men	20.9	19.3	16.5	14.4	17.1	3.77 (4)	0.44	1452
	women	5.3	2.5	2.9	5.9	5.9	8.13 (4)	0.09	1365

* 1=primary school; 2=lower vocational/general; 3=intermediate vocational and intermediate/higher general; 4=higher vocational; 5=university

** to many cells with expected frequency ≤ 5

Table 6 Differences in problem drinking and alcohol-related problems at the different problem areas (in the drinking population) among men by educational level: odds-ratio's before and after controlling for age and drinking behaviour, with 95 %-confidence intervals

	Odds-ratio's [95% confidence intervals]				
	1*	2	3	4	5
Alcohol-related problem areas (in drinking population; N=1452):					
Psychological dependence					
crude	2.33**[1.19-4.56]	2.25**[1.41-3.60]	1.84**[1.12-3.01]	1.35 [0.78-2.34]	1
controlled	1.91 [0.87-4.22]	1.76**[1.03-3.00]	1.75**[1.02-3.00]	1.42 [0.78-2.60]	1
Symptomatic drinking					
crude	1.12 [0.59-2.11]	1.03 [0.68-1.56]	1.05 [0.68-1.63]	0.99 [0.61-1.58]	1
controlled	0.91 [0.39-2.14]	0.86 [0.51-1.45]	0.95 [0.56-1.59]	1.05 [0.60-1.84]	1
Social problems					
crude	2.07 [0.87-4.88]	1.88**[1.04-3.40]	2.05**[1.12-3.75]	1.74 [0.90-3.33]	1
controlled	2.93 [0.91-9.44]	2.42**[1.15-5.06]	3.03**[1.47-6.25]	3.21**[1.48-6.95]	1
Health problems					
crude	4.25**[1.74-10.38]	2.61**[1.25-5.46]	1.48 [0.66-3.34]	0.90 [0.34-2.35]	1
controlled	2.76 [0.89-8.55]	2.00 [0.85-4.72]	1.30 [0.52-3.25]	1.00 [0.35-2.85]	1
Drunkenness/hang-overs					
crude	0.62 [0.33-1.18]	0.57**[0.38-0.87]	0.62**[0.40-0.96]	0.79 [0.50-1.24]	1
controlled	1.14 [0.43-3.04]	0.54**[0.30-0.97]	0.55**[0.31-0.99]	0.91 [0.50-1.68]	1
Problem drinking (in drinking population)					
crude	1.28 [0.74-2.31]	1.16 [0.78-1.73]	0.96 [0.62-1.48]	0.82 [0.51-1.32]	1
controlled	1.54 [0.41-5.71]	1.16 [0.53-2.57]	1.01 [0.44-2.30]	0.82 [0.34-2.00]	1

* 1=primary school; 2=lower vocational/general; 3=intermediate vocational and intermediate/higher general; 4=higher vocational; 5=university

** odds-ratio significant different from reference-category

Table 7 Differences in problem drinking and alcohol-related problems at the different problem areas (in the drinking population) among women by educational level: odds-ratio's before and after controlling for age and drinking behaviour, with 95%-confidence intervals

		Odds-ratio's [95% confidence intervals]				
1*		2	3	4	5	
Alcohol-related problem areas (in drinking population: N=1365):						
Psychological dependence						
crude	5.68**[2.07-15.54]	3.80**[1.62-8.94]	2.99**[1.24-7.22]	3.53**[1.41-8.83]	1	
controlled	8.06**[2.57-25.26]	5.34**[2.15-13.27]	3.64**[1.47-9.02]	3.66**[1.43-9.37]	1	
Symptomatic drinking						
crude	1.63 [0.52-5.08]	0.80 [0.33-1.95]	1.07 [0.43-2.66]	1.69 [0.70-4.06]	1	
controlled	5.28**[1.11-25.02]	1.59 [0.50-5.06]	2.06 [0.69-6.14]	2.59 [0.86-7.79]	1	
Social problems						
crude	0.88 [0.09-8.59]	1.33 [0.35-5.07]	0.65 [0.14-3.04]	1.86 [0.44-7.81]	1	
controlled	1.65 [0.12-22.32]	1.76 [0.36-8.53]	0.67 [0.13-3.55]	2.14 [0.45-10.09]	1	
Health problems						
crude	-	2.48 [0.26-24.04]	1.31 [0.11-15.44]	2.28 [0.34-2.35]	1	
controlled	-	1.24 [0.09-16.78]	0.75 [0.05-11.52]	1.87 [0.14-24.72]	1	
Drunkenness/hang-overs						
crude	0.11**[0.01-0.93]	0.25**[0.11-0.56]	0.46 [0.21-1.03]	0.66 [0.28-1.56]	1	
controlled		0.62 [0.18-2.17]	0.61 [0.21-1.80]	0.71 [0.23-2.18]	1	
Problem drinking (in drinking population)						
crude	0.89 [0.28-2.81]	0.40**[0.17-0.98]	0.48 [0.19-1.23]	0.99 [0.39-2.50]	1	
controlled		0.70 [0.03-17.13]	0.70 [0.04-13.69]	1.90 [0.10-37.53]	1	

* 1=primary school; 2=lower vocational/general; 3=intermediate vocational and intermediate/higher general; 4=higher vocational; 5=university

** odds-ratio significant different from reference-category

9.4 Discussion

The purpose of this study was to obtain more insight into the relation between socio-economic status, alcohol consumption and problem drinking, based on a survey among the general Rotterdam population. Before discussing the results of this study, attention will be paid to the possible effects of the response rate on the results of this survey.

During the last decades, non-response in Dutch national household-surveys raised from 28% to about 50%; in the 1994 Dutch national health-survey, the non-response was about 45% (Heer & Israels 1992; Frenken 1994). Besides this general observed increasing non-response in surveys, factors like data-collection method, saliency of the research topic, location of the study and nature of the organisation performing the study play a role in the size of the non-response (Molenaar 1991; Dillman et al 1993; Hox & de Leeuw 1994). So, considering the data-collection method (in majority postal questionnaires), the low saliency of the research topic (risky lifestyles) and the location of the study (a highly urbanized city), the response rate of 44.2% in this study is in agreement with response-rates in other survey-research in The Netherlands. As was mentioned in the methodology section, response showed to be selective towards sex and age. To correct for this, analyses were performed using a dataset weighted by sex- and age-specific response rates (Bongers et al 1997a). Due to the type of analysis, the presented results are not influenced by a response selective towards socio-economic status. However, it is important to know if the response is selective towards alcohol consumption and problem drinking and whether this selection is the same for all socio-economic groups. Follow-up studies among non-respondents of earlier Dutch alcohol-surveys did not indicate that non-respondents generally drink more, nor that alcohol abuse is more common among non-respondents (Garretsen 1983; Lemmens et al 1988). However, little is known about possible selectiveness towards drinking behaviour or problem drinking in different socio-economic groups. A follow-up study among a sample of non-respondents of our study (N=131) revealed that about 34% of the non-respondents (N=44) could not be reached (address unknown, moved, chronically ill, dead) and 66% (N=87) refused to cooperate with the survey. About 50% of the group refusers consisted of 'total refusers', who refuse cooperation with any survey. Despite the small number of participants, and the low willingness of the group to cooperate with this follow-up study, results indicate that non-response is unlikely to be selective towards socio-economic status, alcohol consumption or problem drinking (Jansen & Hak 1996).

From this study, it can be concluded that abstinence is significantly related to socio-economic status: prevalence of abstinence is lower in higher educational groups, for both sexes. These results are consistent with findings in literature (Romelsjö 1989; Knupfer 1989; Knibbe & Swinkels 1992; Bennett et al 1996; Marmot 1997). Furthermore, gender differences in abstinence decrease with increasing educational level. A possible explanation for this might be that

women drinking alcohol is more widely accepted in higher socio-economic groups. As the participation of women in the workforce increases, workplace influence may be a factor in this.

Because of the higher prevalence of drinkers in higher educational levels, also a higher prevalence of excessive drinking might be expected. However, results indicate a significant increase in excessive drinking in the lowest educational group, for men. Subdivision into different excessive drinking patterns leads to even more pronounced significant higher odds-ratio for the "very excessive drinkers" specifically. No significant differences between educational groups are found for the "irregular" and "regular" excessive drinkers. These results indicate that only the "very excessive" drinking pattern, which, on the long term, is the most health threatening (e.g. leading to chronic liver cirrhosis, Korsakow, Hepatitis) seems to be related to educational level. The other excessive drinking patterns, which are more likely to be associated with problems like drunken-driving, social problems, financial problems or problems with police/justice, are not related with educational level. Studies of Cummins (1981), Knupfer (1989), Tejera et al (1991), Hulshof et al (1991), Knibbe and Swinkels (1992) and Tenconi et al (1992) are in line with our findings, with regard to men. However, in the Whitehall II Study (Marmot 1997) no relation was found between socio-economic group and excessive drinking among men. Furthermore, in our study, as in the study of Tenconi et al (1992), no association is found between educational group and excessive drinking among women. Results reported by Cummins (1981), Knupfer (1989), Hulshof et al (1991) and Tejera et al (1991) suggest a negative association, Knibbe and Swinkels (1992) and Marmot (1997) suggest a positive association. As the cut-off point for heavy alcohol consumption might have been different for the several studies mentioned above, this could have led to different results. As our study reveals that only among the "very excessive drinkers" a negative association with educational group is found, this finding can contribute to the explanation of inconsistent results in earlier research. For women, no significant differences in excessive drinking between educational levels was found. This might be due to small numbers of excessive drinkers among women, leading to very wide confidence intervals in logistic regression analysis. To overcome this problem, special surveys among women or including more women in general population surveys, might be necessary.

For both sexes, "psychological dependence" turns out to be more prevalent in lower educational groups. For men, "alcohol-related health problems" are more prevalent in lower educational groups, for women "drunkenness/hangovers" is more prevalent in higher educational groups. When controlling for age and drinking behavior, "psychological dependence" turns out to be negatively associated with educational level. For women, this relation is more pronounced than for men. Furthermore, "social problems" are significant negatively associated with educational level among men, but not among women. The lack of significance in the logistic regression analysis among women might be due to small numbers. It must be kept in mind that these self-reported problems may have different meanings for the different educational groups. It might be that

individuals who live in a more abstinent subculture are more likely to experience their own drinking as a problem than individuals in a less abstinent subculture, at equal levels of alcohol consumption. Furthermore, the relation between "social problems" and educational level among men might be that coping behaviour is different in the different educational groups.

Although "very excessive drinking" is more prevalent among men in the lowest educational group, no higher prevalence of "health problems" is found. This is possibly because the questions on alcohol-related health problems did not focus on long-term health problems which are related to very excessive drinking patterns such as chronic liver cirrhosis, Korsakow, and Hepatitis.

Also problem drinking in general seems not related to educational level, when corrected for differences in drinking behaviour, for both sexes. For men, this is in line with results based on the CAGE, as reported by Marmot (1997); for women, possibly due to small numbers, no agreement with results reported by Marmot (1997) is found.

Overall, it can be concluded that regarding drinking behaviour, differences exist between educational groups with respect to abstinence, but only limited difference is found between educational groups with respect to excessive drinking. Furthermore, there is evidence for differences in alcohol-related problems related to educational level. At equal levels of alcohol consumption higher prevalences of alcohol-related problems are found in lower educational groups, for both sexes.

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Chapter 10

THE DEVELOPMENT OF ALCOHOL CONSUMPTION AND PROBLEM DRINKING IN ROTTERDAM 1980-1994: MORE PROBLEM DRINKING AMONGST YOUNGSTERS AND MIDDLE AGED

Abstract

In 1980-81 and 1994, two surveys on problem drinking have been conducted in the city of Rotterdam, The Netherlands. This article presents data on changes in alcohol consumption and alcohol-related problems between 1980-81 and 1994. Special attention is paid to possible shifts in groups at risk and to shifts in kind of problems experienced. It was found that in 1994 compared to 1980-81 problem drinking has become more prevalent amongst youngsters and middle aged.

10. THE DEVELOPMENT OF ALCOHOL CONSUMPTION AND PROBLEM DRINKING IN ROTTERDAM 1980-1994: MORE PROBLEM DRINKING AMONGST YOUNGSTERS AND MIDDLE AGED

10.1 Introduction

The level of alcohol consumption in The Netherlands is, compared to other countries, moderate. In 1996 the consumption per capita was 8.0 litres of pure alcohol (World Drink Trends 1997). This is less than in neighbouring countries like France (11.1), Germany (9.8) and Belgium (9.0) but more than in other Western European countries, like for instance the UK (7.6) and more than in the USA (6.6). There have been big changes in Dutch alcohol consumption over time. During the period 1960-1975, there was a sharp rise in the alcohol consumption per capita from 2.6 to 8.7 litres (ad 100%). Over this period, the rise in alcohol consumption in the Netherlands was the sharpest of all countries in the world. After 1975, the consumption stabilized first at a high level and later it decreased slightly to 8.0 litres in 1996. The decrease in alcohol consumption per capita over the period 1980-1996 can be quantified as a percentage of change of 10%.

These figures based on alcohol sales data show that "the" Dutchman has been drinking less. Per capita figures, however, give only a restricted insight. It is not clear whether the decrease in consumption holds for all population groups. It may well be possible that some groups have been drinking more, while others have been drinking less. Furthermore, these figures do not show changes in the prevalences of alcohol-related problems either. In general, only some figures on changes in the prevalence of alcohol related problems are available (for instance mortality and hospital figures).

In order to obtain more insight in these issues, some surveys on alcohol consumption and alcohol-related problems have been conducted in the Netherlands. The first extensive surveys on problem drinking were conducted in 1980-81 in the city of Rotterdam and the province of Limburg (Garretsen 1983; 1984; Garretsen & Knibbe 1985a+b; Knibbe 1984). The Rotterdam study was repeated in 1994 (van de Goor et al 1996; Bongers et al 1997a) and the study in Limburg in 1989 (Hajema et al 1997). The alcohol consumption in big cities like Rotterdam and in the southern provinces like Limburg differs from the average consumption of the total Dutch population. With regard to men, average alcohol consumption is highest among those living in the south followed by those living in big cities. The average consumption among women is highest among those living in big cities (Knibbe & Swinkels 1992).

Changes in alcohol consumption in Rotterdam between 1987 and 1996, based on municipal health surveys, are studied by Toet et al (1998). The authors found that the percentage of drinkers has remained fairly stable over this

period. With respect to excessive drinking they found a decreasing trend in the age-categories 25-34 and 35-44. Unfortunately, no information was available on changes in alcohol-related problems over time.

In this article, data on changes in consumption and in alcohol related problems in Rotterdam between 1980 and 1994 are presented. The study addresses the following questions:

- What is the development of alcohol consumption over the period 1980-1994 in the total Rotterdam population and its subpopulations, defined by socio-demographic factors?
- What is the development of problem drinking and some specific alcohol-related problems over the period 1980-1994 in the total Rotterdam population and its subpopulations, defined by socio-demographic factors?

10.2 Methods and measurements

Data

The results are based on two cross-sectional general population surveys on (problem) drinking carried out in Rotterdam in 1980-81 and in 1994. In 1980-81, data were collected by means of a structured face-to-face interview carried out at the homes of the respondents. In total 2,150 people were interviewed (72% of those approached). The sample was drawn by selecting a random list of people from the Rotterdam Municipal Registration Service (Garretsen & Knibbe 1985). The sample included inhabitants of Rotterdam between 16 and 69 years of age. To avoid language problems respondents had to have the Dutch nationality. The response was hardly selective in terms of sex and age; so the use of a weighed data set was not necessary (Garretsen 1983).

The survey conducted in 1980-81 was repeated in 1994. A random sample of 8,000 inhabitants of Rotterdam was drawn, again between 16 and 69 years of age and with the Dutch nationality. Because of reasons of privacy it was not possible to interview the same respondents again. The 1994 questionnaire contained the same drinking and alcohol-related problem questions as in 1980-81; however, more questions were asked on other "risky life styles" such as smoking, the use of sleeping pills, the use of hashish and marihuana and gambling. In 1994, data were collected by means of postal questionnaires (N=7,500) and by face-to-face interviews (N=500). As no differences in self-reported drinking habits by data collection method were found (Bongers & van Oers 1998), the total data-set of 1994 formed the basis for the comparison of the results of 1980-81 and 1994.

The overall response rate was 44%, smaller than in 1980. Although at first sight this response rate seems rather disappointing, nowadays it cannot be called divergent with other studies. Taking into account the form of data collection, the subject of the study and the research area (a big city) the achieved response does not deviate from other studies (Hox and de Leeuw, 1993). However, as the response was selective in terms of sex and age, the 1994 results are based on a data-set weighed by sex and age-specific response rates (Bongers et al 1997b).

Measurements

In both the 1980-81 and 1994 study, the measurement and operationalisation of the outcome variables was the same. Alcohol consumption was measured by using a quantity - frequency - variability method. An index was generated distinguishing the categories abstainers, light, moderate and excessive drinkers (Garretsen 1983; Bongers et al 1997a). A respondent was defined as an excessive drinker when he or she drank 4 glasses or more during at least 21 days a month or 6 glasses or more during at least nine days a month.

The measurement of alcohol related problems is based on the work of Cahalan (1976). Five problem areas were defined:

- Psychological dependency on alcohol ("escape-drinking", drinking to forget one's worries etc.);
- Symptomatic drinking (loss of control and physical dependency, items such as black-outs, shaking hands, etc.);
- Social problems (problems with partner, friends, police, problems at work, etc.);
- Health problems and accidents caused by the use of alcohol;
- Frequent intoxication/hangovers.

Problems on each problem area were measured by a variable number of questions. On the basis of the number of problems reported, persons were categorized as having no, moderate or severe problems on a problem area (score of 0, 1 or 2 points respectively). Subsequently, a problem-index was formed by adding up the scores on the five separate problem areas. Having alcohol-related problems was defined by scoring one or more on the problem index.

Problem drinking - defined as excessive alcohol consumption accompanied by somatic, psychological or social problems for the problem drinker himself or for others - is operationalised as a combination of a certain level of alcohol use and alcohol related problems (Garretsen 1983; Bongers et al 1997a). To be classified as a problem drinker a respondent had to report at least moderate problems in one of the 5 problem areas mentioned (score of one or more on the problem index) and he or she had to drink excessively. As drinking a lot on a few days (e.g. in the weekend) can also cause problems, for the categorisation of problem drinkers, the definition of excessive drinking was extended with the category 'once or twice a week six or more glasses'.

It is interesting to check whether different kinds of drinking problems show different trends. To be able to answer this question more in-depth analyses have been done for two problem areas: "psychological dependency on alcohol" and "social problems". "Psychological dependency" is chosen because this problem area relates most to the core of the concept of addiction; social problems is chosen because it can be expected that this area can be influenced most by social and cultural changes over time.

The following socio-demographic variables were also measured: sex, age, marital status, educational level, and daily activities. Marital status was operationalized as being married, unmarried (and not cohabiting), divorced, widowed, or

cohabiting without being married. Education is defined as the respondent's highest educational qualification. The variable daily activities categorises respondents as employed or house-keeping, unemployed, declared unfit for work, retired and student or conscript.

Analyses

To gain insight into the development of drinking behaviour and its (specific) consequences over time, prevalences of the following outcome variables were compared between 1980-81 and 1994: abstinence, light, moderate and excessive drinking, and problem drinking in general and problem drinking with social or psychological problems. These comparisons were done for the total population and by sex and age. The development of drinking behaviour and its (specific) consequences over time was also assessed by educational level, marital status, and daily activities. To gain insight into the significance of the changes over time, 95% confidence intervals were calculated.

10.3 Results

10.3.1 Shifts in drinking behaviour and problem drinking

Table 1 presents the prevalences of drinking behaviour and problem drinking in 1980-81 and 1994 for the total population and for men and women separately. No significant differences in prevalences were found between 1980-81 and 1994. However, a trend was found of an increase in problem drinking in general (7.1% to 8.9%). The analysis by sex showed that this increase holds particularly for men. Furthermore, the number of abstainers decreased slightly, whereas the number of moderate and excessive drinkers slightly increased. The results for men and women showed the same weak trend: somewhat less abstainers and a little more moderate and excessive drinkers.

Considerable differences in drinking behaviour and problem drinking between the different *age-groups* were found (Table 2). People between 25 and 34 drank significantly less excessively in 1994 compared to 1980-81 (6.7% vs. 13.1%). Also a trend of less problem drinking was found within this age category (7.8% vs. 11.6%).

The opposite was true for the age categories 45-54 and 16-24. The percentage of excessive drinkers and problem drinkers in the age group 45-54 almost doubled from respectively 5.9% to 10.8% and 4.0% to 7.7% respectively. A same sharp rise was seen for the age group 16-24: a significant rise from 8.6% to 14.8% problem drinkers was found.

With respect to the variables educational level, marital status and daily activities there were some, but no significant differences in drinking behaviour and problem drinking over time (data not shown). Within the group with the lowest *educational level* (only primary school), the percentage of abstainers rose from 25% in 1980-81 to 39% in 1994 and, in this same category the percentage of excessive drinkers also rose from 7% to 9%. Within the category highest edu-

Table 1 Prevalences of drinking behaviour and problem drinking by sex among the general Rotterdam population in 1980-81 and 1994

%	1980-1981			1994		
	men	women	total	men	women	total
Drinking behaviour						
abstainers	13.6 [11.4-15.7]	25.5 [22.9-28.1]	19.9 [18.2-21.6]	11.6 [10.1-13.1]	23.7 [21.7-25.7]	17.9 [16.6-19.2]
light drinkers	50.7 [47.6-53.8]	61.7 [58.8-64.6]	56.5 [54.4-58.6]	49.9 [47.5-52.2]	62.0 [59.8-64.2]	56.2 [54.6-57.8]
moderate drinkers	22.1 [19.5-24.7]	10.1 [8.3-11.9]	15.8 [14.2-17.4]	24.3 [22.3-26.3]	11.7 [10.2-13.2]	17.8 [16.5-19.1]
excessive drinkers	13.5 [11.4-15.6]	2.6 [1.7-3.5]	7.8 [6.7-8.9]	14.2 [12.5-15.9]	2.6 [1.9-3.3]	8.2 [7.3-9.1]
N=	1004	1104	2108	1685	1810	3496
Problem drinkers						
yes	12.0 [10.0-14.0]	2.7 [1.8-3.6]	7.1 [6.0-8.2]	15.4 [13.7-17.1]	2.9 [2.1-3.7]	8.9 [8.0-9.8]
N=	1024	1121	2145	1684	1812	3496
Problem drinkers with social problems						
yes	4.4 [3.1-5.7]	0.4 [0.03-0.8]	2.3 [1.7-2.9]	6.2 [5.0-7.4]	0.8 [0.4-1.2]	3.4 [2.7-4.0]
N=	1023	1121	2144	1663	1805	3469
Problem drinkers with problems regarding psychological dependence						
yes	4.7 [3.4-6.0]	1.4 [0.7-2.1]	3.0 [2.3-3.7]	6.5 [5.3-7.7]	1.0 [0.5-1.5]	3.6 [3.0-4.2]
N=	1024	1120	2144	1670	1807	3478

Table 2 Prevalences of drinking behaviour, problem drinking in general and with social or psychological problems among the general Rotterdam population in 1980-'81 and 1994 by age

%	1980-1981					1994				
	16-24	25-34	35-44	45-54	55-69	16-24	25-34	35-44	45-54	55-69
Drinking behaviour										
abstainers	25.8 [21.0-29.0]	11.6 [8.5-14.7]	13.1 [9.2-17.0]	20.9 [15.6-27.2]	23.8 [20.4-27.2]	19.4 [16.2-22.6]	15.1 [12.8-17.4]	14.8 [12.2-17.4]	16.1 [13.1-19.1]	25.3 [21.9-28.7]
light drinkers	59.5 [55.0-64.0]	56.4 [51.6-61.2]	55.7 [50.0-61.4]	54.3 [48.7-59.3]	55.8 [51.8-60.0]	54.8 [50.8-58.8]	64.2 [61.1-67.3]	56.6 [53.0-60.2]	51.0 [46.9-55.1]	50.1 [46.2-54.0]
moderate drinkers	9.0 [6.4-11.6]	18.9 [15.1-22.7]	19.2 [14.7-23.7]	18.9 [14.7-23.1]	15.4 [12.5-18.3]	17.4 [14.0-20.0]	14.0 [11.8-16.2]	18.3 [15.5-21.1]	22.1 [18.7-25.5]	18.4 [15.4-21.4]
excessive drinkers	5.7 [3.6-7.8]	13.1 [9.8-16.4]	12.0 [8.3-15.7]	5.9 [3.4-8.4]	5.0 [3.3-6.7]	8.5 [6.3-10.7]	6.7 [5.1-8.3]	10.2 [8.0-12.4]	10.8 [8.3-13.3]	6.2 [4.3-8.1]
N=	457	413	291	339	604	592	918	722	580	645
Problem drinkers										
yes	8.6 [6.0-11.2]	11.6 [8.5-14.7]	10.3 [6.9-13.7]	4.0 [1.9-6.1]	3.3 [1.9-4.7]	14.8 [11.9-17.7]	7.8 [6.1-9.5]	10.0 [7.8-12.2]	7.7 [5.5-9.9]	5.3 [3.6-7.0]
N=	463	415	300	349	614	595	920	725	577	639
Problem drinkers with social problems										
yes	3.2 [1.6-4.8]	4.1 [2.2-6.0]	3.0 [1.1-4.9]	0.9 [0.09-1.9]	0.8 [0.1-1.5]	5.6 [3.7-7.5]	3.1 [2.0-4.2]	4.7 [3.2-6.2]	2.3 [1.1-3.5]	1.2 [0.4-2.0]
N=	463	415	300	348	614	593	914	722	568	632
Problem drinkers with problems regarding psychological dependence										
yes	2.4 [1.0-3.8]	3.6 [1.8-5.4]	4.7 [2.3-7.1]	2.6 [0.9-4.3]	2.4 [1.2-3.6]	4.1 [2.5-5.7]	2.9 [1.8-4.0]	5.6 [3.9-7.3]	3.1 [1.7-4.5]	2.6 [1.4-3.8]
N=	463	414	300	349	614	592	918	723	571	633

cational level an increase in the number of abstainers was seen, but a (although slight) decrease in the number of excessive drinkers. In both 1980-81 and 1994, within the category *married people* there were relatively few excessive drinkers (7.4% and 7.1% respectively) and problem drinkers (5.1% and 4.8% respectively). Divorced, single and cohabitating people are more often excessive or problem drinkers. However, within the category of cohabitating people the percentage of problem drinking decreased from 16% to 10%. Within the category single people this percentage increased from 10% to 15%. Traditionally most excessive and problem drinkers can be found in the categories unemployed and declared unfit for work. However, some big changes occurred in the period 1980-81 to 1994. Within the category unemployed the percentage of problem drinkers decreased from 22% to 12% and within the category declared unfit for work the percentage increased from 11% to 18%. Of the students 6% was categorized as problem drinkers in 1980-81 and 16% in 1994.

10.3.2 Shifts in specific problems experienced

The figures discussed above show trends in problem drinking in general. However, it is also interesting, as explained earlier, to gain insight into problem drinking with respect to specific problems. Therefore, analyses have been done in which problem drinking is specified for two problem areas separately: "psychological dependency on alcohol" and "social problems".

Although no significant differences in problem drinking with respect to social or psychochological problems were found, a trend is seen of an increase in the percentage of problem drinkers for both specific problems (Table 1). This increase in problem drinking with psychological problems holds particularly for the male subpopulation.

The differences in problem drinking with psychological or social problems over time by age (Table 2) or by other socio-demografic factors (data not shown) were not significant. A few weak trends, however, were found. The increase in the prevalence rate of psychological dependency was the biggest for the 16-24 years old (from 2.4 to 4.1%). Also an increase was found for people declared unfit for work (from 5.1% to 10.3%). A relatively big decrease was found for the unemployed (from 9.1% to 6.3%) and for retired people (from 4.2 to 1.2%).

As far as social problems are concerned there has been a trend of an increase for every age group except the 25-34 years old. Also a big increase is found for the divorced (from 2.8% to 5.8%) and for the persons declared unfit to work (from 6.2% to 9.5%).

10.4 Discussion

In the period 1980-1996, the consumption per capita in the Netherlands showed a decrease of 10%. At first sight this decrease is not reflected in the Rotterdam data. On the contrary, a weak trend was seen of a slight decrease in the percentage of abstainers and a slight increase in the percentage of moderate and excessive drinkers. A few explanations for this inconsistency can be given. It may be possible that the average consumption within the categories moderate and excessive drinking has become lower between 1980-81 and 1994. Furthermore, the results could be an effect of the fact that drinking behaviour is categorised both in the analyses as in the questionnaire. Another possible explanation for this difference between nationwide consumption per capita data and Rotterdam survey data is that there may be changes over time in the level of underreporting in surveys. However, the comparable survey in Limburg showed lower percentages of drinkers which is in agreement with the trend over time in the consumption per capita. This makes the explanations mentioned above less likely. Perhaps we face real changes in the way that the situation in Rotterdam developed in other direction than the Dutch average. For the Rotterdam population as a whole it can be concluded that differences between 1980-81 and 1994 are relatively small. However, looking at the differences within some categories of the population it appeared that differences were bigger. The prevalence of excessive and problem drinking rose in some categories and dropped in others which results in a leveling out of the total numbers. The study results showed sharp rises in excessive and problem drinking for the categories 16-24 and 45-54. The increase in psychological dependency even was the biggest for the 16-24 years old. Remarkably, an increase in the number of male and female problem drinkers experiencing social problems was found, but with regard to psychological dependency an increase was found only for the males. These results are difficult to interpret. The increase in (problem-)drinking amongst youngsters is alarming indeed. These results are in accordance with results of nationwide schoolsurveys (Kuipers et al 1997). Between 1984 and 1996 amongst school youth of 16, 17, and 18 years of age (and some older ones) a decrease in the prevalence of alcohol consumption was found but an increase in the number of heavy drinkers. However, Toet et al (1998) found no substantial increase in the prevalence of heavy drinking in the age group 16-26 between 1987 and 1996 (results based on municipal health surveys). Kuipers et al (1997) Toet et al (1998) did not present results on problem drinking.

The increase amongst the middle-aged is unexpected. It is difficult to find explanations for the fact that the results are so different for the 45-54-years-old compared to the age categories below 45 and above 54. It could be argued that this finding is due to a cohort effect. These middle-aged people are born in the 1940s and started drinking presumably in the 1960s. Since 1960, Dutch alcohol consumption per capita increased substantially. The increase in alcohol intake among the young people at that time, those who are now middle-aged, was even stronger than in other subpopulations (Knibbe et al. 1985). Neve et al. (1993), however, tested this hypothesis and had to reject it. They

found that the relatively high consumption of youngsters in 1970 did not result in a lasting deviation in the cohort born in the 1940s from other cohorts; in later years, the 1940s cohort behaved mostly in concert with the population as a whole. More in-dept research in this topic is necessary.

Another result with societal relevance is the fact that people declared unfit to work really seem to be at risk - the study results show increases in the percentages of problem drinkers in general, but also in the prevalences of psychological dependency and in social problems in particular. A discussion within the local (and national) government on integrative prevention policy towards youngsters and people declared unfit to work will be encouraged.

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Chapter 11

SOCIAL CLIMATE ON ALCOHOL IN ROTTERDAM, THE NETHER- LANDS: PUBLIC OPINION ON DRINKING BEHAVIOUR AND ALCOHOL CONTROL MEASURES

Abstract

Research was undertaken regarding the Dutch social climate on alcohol in 1994 and results were compared with earlier findings. It was found that the social climate on alcohol in the Netherlands can be characterized by 'moderation'. Over the years, drinking without problems has become more acceptable (and is even encouraged at times) whereas excessive drinking and consequent problems still meet strong disapproval. Opinions concerning alcohol control measures mirror this attitude. Measures such as restriction of drinking in public places and raising the age limits are endorsed by the public. However, more people are now against restrictions on the general availability of alcohol. Although drink-driving has decreased over the years, its prevalence is still high, especially among those who are most at risk.

11. SOCIAL CLIMATE ON ALCOHOL IN ROTTERDAM, THE NETHERLANDS: PUBLIC OPINION ON DRINKING BEHAVIOUR AND ALCOHOL CONTROL MEASURES

11.1 Introduction

Alcohol is known and used throughout the world. However, the way in which, and to what extent alcohol is integrated into society differs across countries: every society has its own social climate on alcohol. Social climate on alcohol can be described as the blend of different views on drinking, conceptions of alcohol-related problems, and the defining of appropriate measures for dealing with them. All such aspects exist in every society and may change over time (Partanen & Montonen 1988).

In The Netherlands, alcohol consumption is deeply integrated into society. This integration is marked by a steep, threefold increase of alcohol consumption per capita from 1960 to 1980. In the 1980s, the consumption per capita stabilized at a high level of ~9 l. Since the late 1980s and early 1990s, consumption per capita has decreased slightly to approximately 8 l. (Zwart & Mensink 1996). The marked increase in alcohol consumption, leading to the highest level of alcohol use ever in The Netherlands, provoked a political memorandum *Alcohol and Society* (Alcohol en Samenleving 1986). A more comprehensive alcohol control policy was advocated: more prevention and educational activities, a more efficient alcohol treatment system, and modernization of the law on alcohol. Consequently, over the last decade, more preventive activities have been developed and implemented such as national mass media campaigns and alcohol education in schools (Garretsen & van de Goor 1995; NIGZ 1996). Greater emphasis is put on early recognition of problem drinkers (Hoeksema & Holten 1990). Also, a bill for a revised law on alcohol is planned to be presented in Parliament end 1997.

The present law on alcohol regulates the distribution of alcoholic beverages and the conditions of distribution. Some of the crucial articles are: legal drinking ages of 16 for beer and wine and 18 years for spirits, and sale licences for public houses and restaurants issued by the municipal authority. The sale of beer and wine is allowed in every grocery store, but the sale of spirits requires a licence. Alcohol advertising is subject to a voluntary code: all audiovisual advertisements (except television) and 40% of the television advertisements will be accompanied by an educational slogan. Furthermore, advertisements should not be aimed at underaged children, relate drinking with work or sports with physical activity nor promote heavy drinking. Furthermore, the bill for the revised law on alcohol proposes the prohibition of the sale of alcohol in petrol stations and work places and to ban alcohol from health care facilities, educational institutes, and specific youth associations.

In the context of alcohol control policy, knowledge of the social climate on alcohol is of major importance. First, social climate on alcohol directly influ-

ences drinking behaviour and hence alcohol-related problems. Furthermore, social climate on alcohol is the framework within which alcohol control policy and its measures are placed (Edwards et al 1994). The efficacy of alcohol control policy depends to a large extent on public support for this policy. On the other hand, preventive measures may influence the social climate on alcohol use, for instance towards a greater awareness of alcohol-related harm. This greater awareness may in turn change the acceptability of public policies known to reduce alcohol-related harm. Despite its importance for alcohol policy, only limited empirical information is available on the Dutch social climate on alcohol. In 1958, just before the strong increase in alcohol use, Gadourek (1963) assessed some aspects of social climate on alcohol. The next and last survey in which comprehensive information was gathered on social climate on alcohol was conducted in 1980-'81, at a time that alcohol consumption per capita stabilized at a high level (Garretsen 1983). Since 1980, however, various aspects concerning alcohol have changed in Dutch society. The consumption per capita remains at a high level, but recently a slight decline was noted. Furthermore, the memorandum *Alcohol and Society* (Alcohol en Samenleving 1986) induced political action. Therefore, it seems expedient to renew insight into the Dutch social climate on alcohol.

The aims of this study were to gain insight into various aspects of social climate on alcohol among the inhabitants of Rotterdam, The Netherlands, in 1994, and the changes in social climate over the years. Conforming to the definitions by Partanen and Montonen (1988), the following indicators of social climate on alcohol were used: 1) attitudes towards drinking behaviour of close relatives; 2) attitudes towards drinking behaviour at a party; 3) the journey home after having drunk; 4) opinion on restrictive measures. The first three indicators give insight into attitudes towards drinking behaviour and its consequences. The last indicator sheds light on public opinion about measures of alcohol policy.

It could be argued that trends in alcohol consumption per capita will be mirrored by attitudes towards drinking behaviour: the more society drinks, the higher the tolerance with respect to drinking behaviour in society and vice versa. Therefore, the stabilisation of alcohol consumption per capita at a high level in the last 15 years should be expected to be mirrored by a stabilisation of public tolerance with respect to drinking behaviour at a high level. However, prevention and information campaigns may have increased public awareness of alcohol-related harm. This increased awareness could have led to stronger support for alcohol control measures and a (slight) decrease in tolerance for alcohol use. Law enforcement on legal limits for drinking and driving might have produced a decrease in drink-driving. Furthermore, from a political view-point it is important to know whether the revision of the law on alcohol, stressing restrictions on availability of alcohol in public places and among young people, is supported by the public.

11.2 Methods

Data collection

Data on social climate on alcohol in 1994 were collected within the framework of a large-scale general population survey called Risky Lifestyles in Rotterdam. For this survey, a random sample of 8,000 persons was drawn from the municipal population register of Rotterdam, The Netherlands, in February 1994. The sample included inhabitants between 16 and 69 years of age and, to avoid language problems, persons with Dutch nationality. Data collection by postal questionnaire and oral interview (7,500 and 500 people respectively) took place in the spring of 1994. No differences were found between the two data collection methods with respect to self-reported drinking habits (Bongers & van Oers 1998).

The overall response rate was 44.2% (N=3,537). Considering the main data collection method (postal questionnaires), the low saliency of the research topic and the location of the study (a highly urbanized city), the response rate is not atypical (Hox & de Leeuw 1994). Furthermore, a follow-up study among a sample of the non-responders of our study revealed that about half of them were unwilling to cooperate in any survey. In this follow-up study, it was concluded that it was unlikely for the non-response to be selective with regard to the topic of the study (Jansen & Hak 1996). However, non-response analyses showed that the response was selective in terms of sex and age (Bongers et al 1997a). The differential response probability model was used to evaluate and correct for the consequences of this differential non-response (Bethlehem & Kersten 1986). The 1994 results reported in this article are based on the weighted data set.

To study changes in the social climate on alcohol, the 1994 findings were compared with findings of 1958 and 1980-81. In 1958, Gadourek (1963) conducted a survey on alcohol and smoking among the Dutch general population. In 1980-81, Garretsen (1983) conducted an alcohol survey among Dutch inhabitants of Rotterdam, The Netherlands. The design and methods of these studies are extensively explained in the above-mentioned publications.

Measurements

Social climate was assessed by the following indicators: 1) attitudes towards drinking behaviour of close relatives; 2) attitudes towards drinking behaviour at a party; 3) the journey home after having drunk (drink-driving); 4) opinions on restrictive measures. In 1994 and 1980-81 all four indicators were measured, whereas in 1958 only the first two indicators were measured.

Attitude towards drinking behaviour of close relatives was measured by the questions: 'Would you mind if a close relative would be a) tipsy every now and then; b) drunk every week; c) a teetotaler? Attitudes towards drinking at a party was measured by the questions: 'Suppose there is a party, how many alcoholic drinks is a man of your age allowed to drink according to you? He will not be driving a car himself'. Respondents were asked the same question about women. Drink-driving was measured by asking respondents: 'How do you usually proceed home after having drunk three or more glasses?'. The cut-

off point of three or more glasses was chosen, as it corresponds on average to a blood-alcohol concentration (BAC) higher than 0.5 promille, (50 mg/dl) which is the Dutch legal limit. Opinions on restrictive measures were ascertained by asking respondents whether they were in favour or against 1) prohibition of advertising; 2) a price increase per glass of 50 cents (equal to a price increase of about 20% to 25%); 3) restrictions on alcohol use in public places like schools, trains, swimming pools; 4) reduction of the number of public houses; 5) reduction of the number of outlets in which alcohol beverages are sold.

Drinking behaviour of the respondents was measured by the Quantity-Frequency-Variability method. Four questions were asked: 'Which alcoholic drinks do you usually drink when you drink?'; 'How many days a month do you drink on average?' (F); 'If you drink alcohol, how many glasses do you drink on average?' (Q); 'Have you ever drunk six or more glasses in one day in the past six months?' (V). Based on these questions, respondents were categorized into abstainers, light, moderate, excessive, and very excessive drinkers (for categorization, see Bongers et al 1997b and chapter 3).

The background factors of sex, age, daily activities, and educational level were measured. The variable of daily activities categorized respondents as employed or house keeping; unemployed; declared unfit for work; retired; student or conscript. Educational level was defined as respondent's highest level of education.

Data analyses

To gain insight into the social climate on alcohol in 1994 and its changes over time, proportions of respondents with restrictive and less restrictive attitudes or opinions were compared for each indicator of social climate. On the basis of the 1994 data, insight was gained into differences in social climate by background variables and by own drinking behaviour.

The relation between social climate and the background variables of sex, age, daily activities, and educational level was analysed bivariate. Differences in attitudes towards others' drinking behaviour by own drinking behaviour were analysed by logistic regression analyses. Odds ratios were calculated and adjusted for differences in background variables. Differences in drink-driving and restrictive measures by own drinking behaviour were analysed bivariate. For alcohol policy it is important to know how respondents behave and react, who are most likely to drink and drive or who are most affected by restrictive measures, respectively. In these cases, adjusting for background variables is not informative.

11.3 Results

11.3.1 Public opinion on drinking behaviour and its consequences

Table 1 shows respondents' attitudes towards drinking behaviour of close relatives over the years. The percentage of respondents who would not mind their close relatives being tipsy occasionally increased substantially over the years. In 1958, 30% of the respondents would not mind, whereas in 1980-81 and

1994, figures of 40% and 45% were obtained. The percentage of respondents who would mind if their close relatives were to be drunk every week decreased slightly from 98% in 1958, to 95% in 1980-81, and 93% in 1994. In 1958, 87% of the respondents would not mind if a close relative was a teetotaler. This percentage increased to 93% in 1980-81, and declined to 89% in 1994. Attitude towards drinking behaviour of close relatives differed by sociodemographic characteristics. More than half of the women (52.2%) would mind if close relatives were to be tipsy occasionally, against 37.1% of the men. Age was also an important influential factor: the higher the age, the more respondents cared if their close relatives were tipsy. It was found that 28.9% of the young people between 16 to 24 years of age would mind this against 68.7% of the respondents between 55 to 69 years of age. Consistent with the findings by age, 28.9% of the subgroup students and conscripts would mind if close relatives were sometimes tipsy against 66.8% of the retired respondents. Furthermore, the higher the educational level the less respondents would mind if close relatives were tipsy. Although the findings with regard to being drunk every week were less pronounced, they pointed in the same direction. Finally, no clear differences in opinion towards teetotalers were found by background factors.

Respondents' drinking behaviour was found to be strongly related to their attitude towards drinking behaviour of close relatives after controlling for differences in sex, age, educational level, and daily activities (Table 2). The level of tolerance with respect to close relatives being tipsy every now and then increased significantly in parallel to their own drinking behaviour: very excessive drinkers were almost 9 times as likely as abstainers to tolerate this kind of drinking. Although most respondents agree on their negative attitude towards frequent drunkenness, moderate and (very) excessive drinkers were significantly more likely than abstainers to be tolerant if close relatives were to be drunk every week. No significant differences were found in tolerance with respect to teetotalers by own drinking behaviour, except that very excessive drinkers were significantly less likely to be tolerant.

Table 3 shows tolerance towards drinking behaviour at a party over the years. A considerable number of respondents answered 'don't know' to these questions, especially in 1958. In 1994, almost 40% of the respondents allowed men to drink as much as they like at a party provided they did not have to drive home themselves. Another 21% of the respondents answered they would allow 5 or more glasses. Only 2% of the respondents thought men should not drink at all at a party. Similar figures were found with respect to female drinking at a party.

These findings resemble the findings of 1980-81. In 1958, however, people were much stricter with respect to drinking at a party: only one-third of the respondents allowed men to drink 5 or more glasses. Also notable is that, in 1994, as in 1980-81, the norms towards male and female drinking behaviour at a party were similar, whereas in 1958, people (men as well as women) were stricter towards female than towards male drinking.

Attitude towards drinking behaviour at a party differed by subgroup of the population. Women were less tolerant than men with respect to drinking at a

party: 43.3% of the men against 33.1% of the women answered that men of the same age may drink as much as they want. Age was also related to attitude: drinking as much as you want was tolerated by almost half of the young people (47.2%) against only one-fifth (19.9%) of people in the oldest age category. Furthermore, the higher the educational level, the more tolerant respondents were towards male drinking behaviour at a party. Comparable results were found for female drinking behaviour at a party.

After controlling for sex, age, educational level, and daily activities, the likelihood of tolerance with respect to drinking behaviour at a party was strongly related to respondents' own drinking behaviour (Table 4). Compared with abstainers, moderate drinkers were five times as likely and excessive drinkers 10 times as likely to allow men to drink five or more glasses at a party. For female drinking behaviour, the same pattern was found, although the odds ratios were not as high as for male drinking behaviour.

In 1980-81 and 1994, respondents who drank were asked how they usually get home after having drunk three or more glasses. For these years, the percentage of respondents who reported to drive home by car or motorbike themselves decreased from 12% to 7% (Table 5). Drink-driving was strongly related to drinking behaviour (Table 6). The more respondents drink, the more often they reported to drive home after three or more drinks. Almost a quarter of the very excessive drinkers and 15% of the respondents that drink six or more glasses once a week or more drove home themselves. The more regularly respondents drink outside their own home, the more often they drove home after three or more drinks. Respondents who drank regularly in sports club canteens were particularly likely to drive themselves home.

Drink-driving also differed by subgroups of the population. In 1994, men drove home more often after drinking than women (11.3% versus 2.5%). Of the youngsters (16-24 years of age) only 3.1% drove home after drinking, against 10.1% of the respondents between 44 and 54 years of age. The percentages among the other age categories varied between 6 and 9%. Consistent with the results by age, the percentage of students and conscripts who drove home after drinking was very low (1.9%). The percentage of those who drove home after drinking was relatively high among working and retired respondents: 8.2 and 8.5%, respectively.

11.3.2 Public opinion on alcohol control measures

In 1994 as well as in 1980-81, the great majority of respondents was in favour of restricted alcohol consumption in public places like schools or trains (Table 7). In both years, more than 60% of respondents were in favour of raising the age limits for buying alcoholic beverages. With respect to the remaining measures (price increase of 50 cents, reduction of traditional outlets, and prohibition of advertising) only a minority of the respondents reported in favour. The support for prohibition of advertising and price increase has dropped with 10% from 1980-81 to 1994.

Attitude towards restrictive measures differed by background characteristics

(Table 8). Women were more often in favour of restrictive measures than men. Younger people (under 35 years of age) were more negative about restrictive measures. Educational level was also related to attitude towards restrictive measures: the higher the educational level of respondents, the less they were in favour of restrictive measures. Finally, students and conscripts were mostly negative towards restrictive measures.

Respondents' drinking behaviour was strongly related to their opinion on restrictive measures. The more people drank, the less they favoured restrictive measures. Half or more of the abstainers were in favour of restrictive measures irrespective of the type of measure. Excessive drinkers most often opposed these restrictive measures. However, a relatively high percentage of very excessive drinkers was in favour of the restrictive measures: their percentage lay between that of light and moderate drinkers.

In general, those subgroups in the population which would be particularly affected by the measures were less in favour of restrictions. More than half of those between 16 and 19 years of age (57.6%) were against raising the age limits for buying alcoholic beverages. Among students and conscripts, as many as two-thirds (64.6%) were against raising the age limits. Of this same subgroup, more than three quarters (76.3%) opposed a price increase of 50 cents. Income was not related to opinion as regards the latter measure. Furthermore, among those that drink in licensed premises once or more a week, only 10% were in favour of a reduction in the number of public houses.

Table 1 Public opinion on drinking behaviour of close relatives (%)

	1958*				1980-'81**				1994			
	yes	no	don't know	N=	yes	no	don't know	N=	yes	no	don't know	N=
Would you mind if a close relative is:												
tipsy every now and then?	68.6	30.4	1.0	1291	56.3	39.9	3.8	2128	44.8	48.2	7.0	3379
drunk every week?	98.1	1.6	0.3	1289	95.3	3.4	1.4	2139	92.9	4.3	2.9	3373
a teetotaler?	9.9	86.6	3.0	1286	4.0	93.4	2.6	2111	5.4	88.8	5.7	3361

* Data source: Gadourek (1963)

**Data source: Garretsen (1983)

Table 2 Odds of tolerance with respect to drinking behaviour of close relatives by own drinking behaviour controlled for sex, age, educational level, and daily activities (based on 1994 data)

	Abstainers	Light drinkers	Moderate drinkers	Excessive drinkers	Very excessive drinkers
Odds of not minding if close relatives would be:					
tipsy every now and then	1	2.38 [1.88-3.02]	5.78 [4.28-7.80]	6.56 [4.28-10.06]	8.89 [5.04-15.68]
every week drunk	1	0.74 [0.42-1.31]	1.99 [1.08-3.66]	2.11 [1.00-4.45]	3.17 [1.33-7.57]
a teetotaler	1	1.40 [0.90-2.18]	0.94 [0.55-1.61]	0.82 [0.39-1.76]	0.39 [0.18-0.88]

Table 3 Public opinion on male and female drinking behaviour of respondents' contemporaries at a party when they do not have to drive home themselves (%)

	1958*		1980-'81**		1994	
	males	females	males	females	males	females
Men or women are allowed to drink at a party:						
As much as they like	***	***	36.2	34.1	38.2	37.2
≥ 5 glasses	33.7	11.8	24.3	17.4	20.9	15.7
3 or 4 glasses	31.2	32.2	19.7	22.4	20.3	20.9
1 or 2 glasses	9.4	26.8	5.9	10.4	8.6	12.7
0 glasses	1.7	8.2	1.2	2.3	2.3	3.3
don't know	24.1	21.0	12.7	13.3	9.6	10.2
N=	1251	1256	2150	2150	3368	3412

* Data source: Gadourek (1963)

** Data source: Garretsen (1983)

*** "No answer" category in this study

Table 4 Odds of tolerance with respect to male and female drinking behaviour at a party by own drinking behaviour controlled for sex, age, educational level, and daily activities (based on 1994 data)

	Abstainers	Light drinkers	Moderate drinkers	Excessive drinkers	Very excessive drinkers
Odds of allowing males or females to drink ≥ 5 glasses at a party when they do not have to drive home themselves:					
males	1	2.29 [1.81-2.90]	5.04 [3.71-6.86]	10.21 [5.94-17.35]	11.65 [5.83-23.25]
females	1	2.00 [1.58-2.52]	4.25 [3.17-5.69]	6.83 [4.28-10.90]	7.41 [4.14-13.25]

Table 5 How respondents usually go home after having drunk three or more glasses (%)*

	1980-'81**	1994
Usual way of going home after having drunk ≥ 3 glasses:		
by car/motorbike	12.1	7.1
by bike	3.3	13.7
by cab, by public transport, or driven home by friend/partner	57.8	55.3
on foot	9.6	22.0
does not apply to me as I never drink ≥ 3 glasses	26.3	32.1
other	1.5	4.0
	N=1672	N=2878

* Respondents were allowed to give more answers. In 1980-'81, however, the maximum was two answers whereas in 1994 no maximum was given.

** Secondary analyses on the dataset of Garretsen (1983)

Table 6 Driving home by car or motorbike after having had three or more drinks by drinking behaviour (among drinkers)

Drinking behaviour	N	Driving home by car/motorbike after drinking ≥ 3 glasses
Categories of drinking		
light drinkers	1931	3.9%
moderate drinkers	616	11.9%
excessive drinkers	185	15.3%
very excessive drinkers	100	24.3%
		$X^2=115.01; df=3; p<0.001$
Drinking ≥ 6 glasses		
once or more a week	447	15.6%
less than once a week	961	8.8%
never	1334	3.2%
		$X^2=89.98; df=2; p<0.001$
Drinking in a pub, restaurant or disco		
once or more a week	376	11.9%
less than once a week	1582	7.6%
never	543	3.1%
		$X^2=26.40; df=2; p<0.001$
Drinking in a sports canteen		
once or more a week	155	21.4%
less than once a week	398	13.4%
never	1812	4.9%
		$X^2=82.37; df=2; p<0.001$
Place where one drinks the most per occasion		
at home (own or that of friends/family)	1705	6.4%
in public places	809	8.8%
at work or at school	22	19.8%
		$X^2=10.04; df=2; p=0.007$

Table 7 Public opinion on alcohol control measures in 1980-'81 and 1994 (%)

	1980-'81				1994		
	in favour	indifferent	against	N=	in favour	against	N=
In favour or against:							
Prohibition of advertising	52.1	26.5	21.4	2094	40.6	59.4	3358
Price increase of 50ct a glass	41.9	24.2	33.8	2089	31.5	68.5	3346
Restrictions on alcohol use in public places	77.6	11.3	11.1	2107	81.1	18.9	3440
Raising age limits	61.5	18.6	19.9	2080	61.7	38.3	3381
Reduction of number of pubs	30.4	30.6	39.0	2038	29.2	70.8	3301
Reduction of number of shops selling alcoholic beverages	32.9	29.4	37.6	2056	32.8	67.2	3325

Table 8 Public opinion on alcohol control measures by background variables in 1994

	In favour of \geq 4 measures	In favour of 2 or 3 measures	In favour of zero or 1 measure
Total population (N=3159)	32.3	40.0	27.8
Sex			
men	25.8	40.0	34.2
women	38.6	39.9	21.5
		$X^2=85.83; df=2; p<0.001$	
Age			
16-24	23.1	37.7	39.2
25-34	22.9	42.8	34.4
35-44	33.5	42.4	24.1
45-54	40.1	38.1	21.8
55-69	49.0	36.0	15.0
		$X^2=178.42; df=8; p<0.001$	
Educational level			
primary school	52.7	31.9	15.4
lower vocational/general	41.9	39.2	19.0
intermediate vocational/ general and higher general	28.4	41.8	29.8
higher vocational	20.9	43.2	35.9
University	9.3	40.7	50.0
		$281.78; df=8; p<0.001$	
Daily activities			
employed/housewife	31.7	41.6	26.7
unemployed	34.4	44.5	21.1
declared unfit to work	49.3	32.7	18.0
retired	44.2	39.3	16.5
student/conscript	18.8	31.6	49.6
		$140.86; df=8; p<0.001$	

11.4 Discussion

The results indicate that the public has become more tolerant with respect to alcohol use. Tolerance of 'being tipsy every now and then' increased remarkably between 1958 (Gadourek 1963) and 1980-81 (Garretsen 1983) and increased slightly from 1980-81 to 1994. Drinking (a lot) at a party was tolerated by the majority of the respondents in 1994 as well as in 1980-81. In 1958, respondents were much stricter with respect to this behaviour. It is noteworthy that, since 1958, the norms towards male and female drinking at a party have converged. Several factors were related to attitudes towards drinking behaviour. The most important factor was the respondent's own drinking behaviour: the more people drink, the more tolerant they were of other people's drinking behaviour.

As hypothesized, the changes in attitude towards alcohol use over time are mirrored by changes in consumption per capita: the increased tolerance of alcohol use is in line with the sharp increase in consumption per capita from 1960 to the 1980s. Stabilisation of the consumption per capita at a high level in more recent years is mirrored by a stabilization in the tolerance with respect to drinking (a lot) at a party.

Contrary to the recent slight decrease in consumption per capita, tolerance with regard to close relatives 'being tipsy every now and then' slightly increased between 1980-81 and 1994. Consequently, the question is whether this slight increase in tolerance is real. It may, for instance, be explained by different interpretations of 'being tipsy every now and then': in 1994, 'being tipsy' might be perceived as just 'drinking a little too much' and in 1980-81 as 'being nearly drunk'. Further research is needed, as no conclusive answer can be given on the basis of this study.

Another indicator of social climate on alcohol was drink-driving. The prevalence of driving home after having drunk three or more glasses was assessed. Three or more glasses was chosen as the legal limit in The Netherlands is set at a BAC of 50 mg/dl which corresponds to up to two glasses for an average person. The percentage of people who drive themselves home after having drunk three or more glasses decreased from 12 to 7% from 1980-81 to 1994. This decrease is likely to be due to the increased level of enforcement of the legal limit over those years (Mathijssen & Wesemann 1993). Deterrence is the primary approach to prevent drinking in conjunction with a risky situation. Drink-driving legislation when energetically enforced has been shown to be a highly effective public policy in terms of injuries averted and lives saved (Edwards et al 1994).

Of course it is alarming that among those who drink a lot and/or often drink outside the home, drink-driving was most prevalent. Education programmes on drink-driving should be aimed at these specific target groups. Contrary to what is often thought, young people are not the section of the population that should be approached in this respect. The percentage of young people who drove home after having drunk too much was relatively low. This finding might be explained by the fact that many youngsters do not possess a vehicle but, as they live in the urban city of Rotterdam, they have access to public transport.

The occurrence of drink-driving found among 'normal' moderate drinkers raises the question whether mass media campaigns and alcohol education programmes reach all the risk groups. More attention should be paid to the fact that moderate drinking can also cause problems in certain situations.

In both 1980-81 and 1994, support was clearly given to a restriction on alcohol use in public places. The next most favoured measure was raising the age limits. Yet, in 1994 only a minority of respondents supported measures which restricted the general availability of alcohol. When comparing our results with those of a survey among Dutch Members of Parliament in 1994 (Hendriks et al 1997) it became clear that both the public and Members of Parliament generally desire restrictions on alcohol in public places. It is notable, however, that only one-fifth of the Members of Parliament wished to raise the age limits against almost two-thirds of the public.

The support for prohibition of alcohol advertising and a price increase of 50 cents per glass dropped by 10% from 1980-81 to 1994. There are no definite explanations for this drop in support. The lower level of support for a ban on alcohol advertising might be related to the voluntary code on alcohol advertising that has operated since 1990. People may consider the code as sufficient. The 1994 and 1980-81 data were limited to the general population of Rotterdam. Rotterdam is a city in the urban west of the Netherlands. Although the Netherlands is not a large country, differences in social climate on alcohol by geographic region are possible. Garretsen & Knibbe (1985) showed that people in the south eastern Netherlands are more tolerant with respect to drinking than people in Rotterdam. Therefore, caution should be exercised when extrapolating to the whole Dutch population. The comparison of the 1958 figures with those of 1994 and 1980-81 also require some caution, as the sample in 1958 was representative of the total Dutch population whereas in the latter studies the general Rotterdam population was sampled.

In summary, the social climate on alcohol in 1994 in Rotterdam, The Netherlands can be characterized by 'moderation': both positive and negative aspects of alcohol are recognized. Drinking without problems is tolerated (and sometimes even stimulated) whereas excessive drinking and consequent problems are strongly disapproved of. The opinions on alcohol control measures are mirrored by attitudes towards drinking. Measures such as the restrictions on drinking in public places and raising the age limits are endorsed by the public. However, most people are against measures, including price increases, which would restrict the general availability of alcoholic beverages.

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Chapter 12

HELP-SEEKING BEHAVIOUR OF PROBLEM DRINKERS

Abstract

Although problem drinking is a considerable burden on society, alcohol-related problems are often either not treated at all or only at a very late stage. Insight into the help-seeking behaviour of problem drinkers is therefore of major importance for prevention and treatment activities. Research was undertaken on the prevalence and determinants of help-seeking behaviour of problem drinkers in the general population of Rotterdam in the Netherlands, using Aday and Anderson's model of predisposing, need and enabling factors. Results show that 7.9% of problem drinkers in the community have at some time sought help for alcohol-related problems. Significant differences were found between help-seeking and non-help-seeking problem drinkers in terms of level of alcohol use and alcohol-related problems (need factors). Severe alcohol-related health problems and social problems turned out to be the most important triggers for requesting help. After controlling for need for help, married and highly educated problem drinkers were underrepresented in the help-seeking group (predisposing factors). Another important finding is that half of the problem drinkers did not know of agencies or people who could offer help for alcohol-related problems (enabling factor). The findings are discussed in the context of prevention and treatment activities.

12. HELP-SEEKING BEHAVIOUR OF PROBLEM DRINKERS

12.1 Introduction

Heavy alcohol use and problem drinking lead to considerable medical and social problems in many western countries. Alcohol-related problems, however, are often either not treated at all or only at a very late stage. Despite the low percentage of help-seekers (Hingson et al 1980) and the fact that early detection is likely to lead to a better treatment outcome (Skinner et al 1985), there is a lack of information on help-seeking behaviour among problem drinkers (Majella Jordan & Oei 1989).

It is generally possible to distinguish two research topics in existing literature concerning help-seeking behaviour. The first attempts to reveal the process of help-seeking itself, while the second focuses attention on the explanation of the variation in help-seeking behaviour between people. The latter topic, is mostly studied by comparing people within the alcohol treatment system with problem drinkers in the general population (Knibbe & Meyers 1988; Weisner 1993).

However, using problem drinkers in the general population as a reference population does raise a problem.

As problem drinking in the general population is broadly defined, a relatively high proportion of people will fall within the definition of a problem drinker. It is probable, therefore, that the major reason for seeking help, namely alcohol-related problems, is not equally distributed between the two populations: the clinical population is likely to report more severe alcohol-related problems than problem drinkers in the general population. Thus, the clinical population is more in need of help. Therefore, the differences found between the clinical population and problem drinkers in the general population could be due to differences in need for help, rather than differences in help-seeking behaviour itself.

A solution to this problem is to compare two groups of people with the same level and severity of alcohol-related problems, one of which seeks help and the other does not. This design is used in a study design in which help-seeking problem drinkers are compared with non-help-seeking problem drinkers, both in the general population. Although also in this design help-seeking behaviour will depend on need for help, the strong advantage is the possibility of controlling for differences in need for help. This controlling is possible as both groups meet the same minimum criterion of being problem drinkers and as need for help is equally sufficiently measured in both groups. This statistical operation of controlling makes the two groups who differ in help-seeking behaviour comparable in terms of need for help and differences found between the two groups can be assigned to help-seeking behaviour.

When comparing a clinical population with problem drinkers in the general population, controlling for differences in need for help is more complicated. A clinical population is likely to be far removed from problem drinkers in the

general population on the continuum of need for help. The consequent small overlap in need for help, together with the fact that measuring need for help equally sufficiently in both groups is very difficult, makes it hard to control for differences in need for help in such a design.

The comparison of help-seeking and non-help-seeking problem drinkers in the general population does present its own problems. Firstly, the low prevalence of help-seeking behaviour among problem drinkers in the general population (Hingson et al 1980) makes such a design feasible only if a large-scale survey is conducted. Secondly, the definition of problem drinking used in this study might be seen as another drawback of this design. Surely not all problem drinkers need professional help. However, problem drinkers in the general population could be seen as a group who are 'at risk' of needing treatment. Given that early detection is likely to lead to a better treatment outcome -perhaps with only brief intervention (Bien et al 1993)- insight into the help-seeking behaviour and its determinants among problem drinkers in a general population could even be viewed as a topic of special interest.

This study examines the differences in past help-seeking behaviour between problem drinkers in the general population of Rotterdam, the Netherlands. Firstly, the proportion of problem drinkers who have at some time sought help is assessed. Secondly, the determinants of help-seeking behaviour are revealed by comparing problem drinkers who have at some time sought help with those who have not according to several factors. This comparison is structured by the model (widely used in health service research) of Aday and Anderson (1974), in which predisposing, need and enabling factors are distinguished as determinants of help-seeking behaviour. In this study, need factors are operationalized as level of alcohol use and type and severity of alcohol-related problems, predisposing factors as socio-demographic background variables, and acquaintance with alcohol treatment facilities is viewed as an enabling factor. Secondly, the association between help-seeking behaviour and predisposing and enabling factors is assessed independently of need for help. This is done by matching help-seeking problem drinkers with non-help-seeking problem drinkers for the variables alcohol use and alcohol-related health problems.

12.2 Methods

Data

This study was conducted within the framework of a large-scale general population survey called 'Risky Lifestyles in Rotterdam'. For this survey, a random sample of 8000 persons was drawn from the municipal population register of Rotterdam, the Netherlands, in February 1994. The sample included inhabitants between 16 and 69 years of age and, to avoid language problems, persons with at least Dutch nationality. Data collection by postal questionnaire and oral interview (7500 and 500 people respectively) took place in the spring of 1994. The overall response rate was 44.2%. As the response was selective in terms of sex and age, all analyses have been carried out using a weighed data-set by sex and age-specific response rates (for detailed description, see Bongers et al 1997a).

Measurements

Help-seeking behaviour is measured by asking each respondent whether they had ever received any help related to alcohol use. As only a few respondents indicated they were receiving help at that moment, past help-seeking behaviour was measured. Furthermore, those respondents who replied in the affirmative were asked from whom they received this help.

Problem drinking is operationalized as a combination of alcohol-related problems and a certain level of alcohol use (for detailed description, see Garretsen 1983; Bongers et al 1997b). The measurement of alcohol-related problems is based on a concept introduced by Cahalan (1976), in which five problem areas are defined: psychological dependence; symptomatic drinking; social problems; alcohol-related health problems; frequent drunkenness and/or hangovers. Problems in a single problem area are measured by a variable number of questions and summarized into no, light, moderate, and severe problems.

Alcohol consumption is measured by using the quantity-frequency-variability method. An alcohol-consumption-index was generated, distinguishing the categories abstainers, light, moderate, and excessive drinkers. To be classified as a problem drinker, one has to report at least moderate problems in one of the problem areas and drink considerably.

To gain insight into factors which are associated with differences in help-seeking behaviour between problem drinkers in the general population, Aday and Anderson's model (1974), which distinguishes need, predisposing and enabling factors is used. Need for help is operationalized by level of alcohol use and type and severity of alcohol-related problems, as described above.

Furthermore, respondents were asked to rate their perceived general health as good, moderate or bad. They were asked whether they had had a severe illness in the past five years and how many times they had visited their general practitioner in the past six months. Finally, respondents were asked whether their general practitioner had ever made any remarks about their drinking behaviour. Several socio-demographic factors are measured as predisposing factors: sex, age, marital status, educational level, religion, country of birth, having children (at home) and daily activities. The variable daily activities categorize respondents as employed or house-keeping, unemployed, declared unfit for work, retired, scholar or conscript.

Acquaintance with alcohol treatment facilities is measured as an enabling factor. All respondents were asked whether they knew of agencies or people in Rotterdam who offer help related to alcohol-related problems. In the event of an affirmative answer, respondents were asked to write down the names of those they knew.

Analyses

Analyses were carried out using the program SPSS/PC+ 4.0. Firstly, the proportion of problem drinkers who had at some time sought help was determined. Subsequently, help-seeking problem drinkers and non-help-seeking problem drinkers were uni-varietely compared on need, predisposing and enabling factors. Significance was tested by the Chi-square statistic or Fisher's exact test, in the event of expected frequencies <5 in more than 20% of the cells.

Because of multiple statistical testing, the 1% level ($p=0.01$) is regarded as indication of statistical significance and the 5% level ($p=0.05$) as an indication of association.

In order to assess the association between help-seeking behaviour and predisposing and enabling factors independently of need for help, help-seeking problem drinkers were matched with non-help-seeking problem drinkers for the variables alcohol use and alcohol-related health problems. For each help-seeking problem drinker, one non-help-seeking problem drinker could be found with exactly the same level of alcohol use and the same extent of alcohol-related health problems.

12.3 Results

In the total study population, 1.7% of the respondents had at some time sought help related to alcohol use. Help-seeking behaviour is most common among problem drinkers: 7.9% of the problem drinkers had at some time sought help compared with 1.0% of the non-problem drinkers. Two-thirds of these non-problem drinkers had drunk considerably more in the past and almost two-thirds of them reported alcohol-related problems in the last six months.

As expected, help-seeking behaviour was significantly associated with need for help (Table 1). The more that problem drinkers drank, the more they had sought help at some point. Problem drinkers who reported alcohol-related health problems sought significantly more help than problem drinkers without health problems. In addition, those with severe health problems sought more help than those with light and moderate health problems. Although just reporting alcohol-related problems in the problem areas social problems and symptomatic drinking was not related to help-seeking behaviour, those with severe problems in these areas sought significantly more help than those with light and moderate problems. Problem drinkers with severe psychological dependence also sought more help than those with light and moderate psychological dependence, although this relation was not significant at the 1% level ($p=0.03$). Frequent drunkenness/hangovers was not related to help-seeking behaviour at all. Help-seeking behaviour was also related to other factors indicating need for help (Table 2). Bad perceived general health, more than two GP contacts in the past six months and remarks of the GP concerning the respondent's alcohol use were all associated with help-seeking behaviour. No significant relation, however, was found with having had a severe illness within the last five years.

Before controlling for the two need factors alcohol use and alcohol-related health problems, help-seeking behaviour was found to be related to the predisposing variables age, marital status, daily activities and education, but not to sex, having children (at home), country of birth or religion (Table 3). Problem drinkers with an university or higher vocational education were significantly under-represented among those who sought help. Problem drinkers between 35 and 69 years of age, divorced and unemployed problem drinkers, on the other hand, sought significantly more help. Problem drinkers who were declared unfit for work also sought more help ($p=0.02$), whereas married problem drink-

kers sought less help ($p=0.02$).

The second half of Table 3 shows that after controlling for the two need factors, help-seeking behaviour is no longer significantly associated with predisposing factors at the 1% level. At the 5% level, help-seeking behaviour is only significantly associated with the predisposing factors marital status and educational level. Although the association between help-seeking behaviour and age was no longer significant, an indication was found that people below 35 years of age were underrepresented among those who sought help ($p=0.09$). As was found before the two need factors had been controlled, no association was found between help-seeking behaviour and the predisposing variables sex, having children (at home), country of birth or religion.

The acquaintance with alcohol treatment facilities (the enabling factor) is higher among problem drinkers than among the total population (46.5% versus 32.5%). Specialized in- or out-patient alcohol treatment facilities and Alcoholics Anonymous are cited by most of the respondents (48.5% and 42.0%). Peripatetic general mental health care was cited by 34.0%, the general practitioner by 5.4%, and the municipal health services by 4.1%. Other types of facilities were also cited by 13.7%. No differences were found between problem drinkers and non-problem drinkers. Problem drinkers who sought help, however, cited specialized in- and outpatient alcohol treatment facilities somewhat more often (Chi-square 4.94; $df=1$; $p=0.03$).

Of those problem drinkers who had sought help at some point, 81.6% were acquainted with opportunities for help compared with 43.3% of those who had never sought help. After controlling for need for help, help-seeking problem drinkers were still significantly more acquainted with treatment facilities than non-help-seeking problem drinkers (Chi-square 7.01; $df=1$; $p=0.01$). Most of the help-seeking problem drinkers went to, among other things, a specialized peripatetic service (41%).

Table 1 The percentage of problem drinkers who sought help by the need factors: alcohol use and alcohol-related problems

	Alcohol drinking			Health problems		Severe health problems*		Severe social problems*		Severe symptomatic drinking*		Severe psychological dependence*		Severe drunkenness/hangovers*	
	1**	2	3	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no
%who sought help	16.0	7.1	3.4	23.3	2.3	50.6	17.6	26.2	2.8	22.5	4.4	14.7	4.9	14.4	6.5
N=	77	113	118	78	227	14	64	52	146	60	176	54	183	79	116
Significance	X ² =10.3			X ² =33.2						X ² =18.0				X ² =2.5	
	df=2			df=1						df=1				df=1	
	p=0.01			p<0.0001		p=0.01***		p<0.0001***		p<0.0001		p=0.03***		p=0.11	

* Comparison of those with severe problems with those with light or moderate problems among the group of problem drinkers who reported problems

** 1=very excessive drinking; 2=excessive drinking; 3=moderate drinking

*** Significance was tested by the Fisher's exact test, because expected frequencies were lower than 5 in more than 20% of the cells.

Table 2 The percentage of problem drinkers who sought help in terms of the need factors: perceived general health, severe illness, general practitioner contacts, and GP remarks about respondent's drinking behaviour

	Good perceived general health		Severe illness [*]		Remarks of the GP about respondent's alcohol use		number of GP contacts ^{**}		
	yes	no	yes	no	yes	no	0	1	≥ 2
% who sought help	4.5	16.9	12.7	6.5	27.0	5.0	2.9	3.7	17.9
N=	219	86	71	235	41	265	118	89	98
	X ² =12.9		X ² =2.1				X ² =19.43		
	df=1		df=1				df=2		
	p<0.0001		p=0.15		p<0.0001 ^{***}		p<0.0001		

^{*} in the previous five years

^{**} in the previous six months

^{***} Significance was tested by the Fisher's exact test, because expected frequencies were lower than 5 in more than 20% of the cells.

Table 3 The percentage of problem drinkers who sought help by predisposing factors, before and after control for need for help by matching for alcohol use and alcohol-related health problems

	Age			Married		Divorced		Unemployed		Declared unfit to work		University/ higher vocational education	
	16-34	35-54	55-69	yes	no	yes	no	yes	no	yes	no	yes	no
Before control for need of help													
% who sought help	2.7	13.0	12.8	1.4	10.2	19.3	6.5	22.2	6.3	20.9	6.8	1.1	10.7
N=	158	114	34	79	227	35	270	34	266	28	272	99	196
Significance*	X ² =11.4			X ² =5.1								X ² =7.4	
	df=2			df=1								df=1	
	p=0.003			p=0.02		p=0.01*		p=0.003*		p=0.02*		p=0.01	
After control for need of help:													
% who sought help	27.7	58.9**		12.0	58.8	68.2	44.7	66.1	45.3	55.6	48.0	13.7	56.2
N=	15	31**		9	38	10	37	10	37	11	36	36	8
Significance	X ² =2.8									X ² =0.01			
	df=1									df=1			
	p=0.09			p=0.02*		p=0.29*		p=0.29*		p=0.93		p=0.048*	

* Significance was tested by the Fisher's exact test, because expected frequencies were lower than 5 in more than 20% of the cells.

** Because of small numbers, the categories 34-54 and 54-69 are combined

12.4 Discussion

This study reveals a great deal of valuable information for alcohol prevention and alcohol treatment activities, as it provides insight into the prevalence of help-seeking behaviour and its related factors. A major advantage of this study is the opportunity to assess target groups for prevention and treatment in terms of socio-demographic factors, controlled for need for help.

When interpreting the results, the limitations of this study should be borne in mind. First of all, it should be acknowledged that controlling for need for help in this study is not exhaustive. Differences in help-seeking behaviour in terms of socio-demographic factors might therefore still be due to remaining differences in need for help. Due to the small number of help-seeking problem drinkers, controlling for more indicators of need for help was not possible. Secondly, as is inherent to the type of data, it was only possible to study variations between help-seeking and non-help-seeking problem drinkers. The study provides no insight into the process of help-seeking behaviour.

In this study, 7.9% of the problem drinkers in the general Dutch population had at some time sought help concerning alcohol-related problems. This is somewhat higher than the rough estimate of 5% based on two other Dutch general population surveys (Raat 1987) and lower than figures found in an American survey (Hingson et al 1980).

The results showed the expected strong association between help-seeking behaviour and alcohol-related problems. Relatively speaking, problem drinkers with alcohol-related health problems are most inclined to seek help: half of those who reported severe health problems had sought help. Severe social problems were also a trigger for requesting help: more than a quarter of those problem drinkers with severe social problems asked for help, compared with <5% of those without such social problems. These results are consistent with other findings (Jordan & Oei 1989; Thom 1986). Psychological dependency, indicating "being addicted", on the contrary, was not such a significant motive for requesting help. Again, this stresses the immense problems: the treatment centers often see problem drinkers when it is too late and when a great deal of damage has already been done.

This leads to the question of whether target groups for prevention and treatment activities could be defined independently of need for help. Controlled for differences in need for help, marital status and educational level were shown to be associated with help-seeking behaviour, although only at the 5% level.

Firstly, married problem drinkers were underrepresented in the help-seeking group. One might have expected that married problem drinkers were rather over represented than under-represented because their spouses would insist on their seeking help. Underrepresentation seems to be the case, however, perhaps because spouses make it possible for problem drinkers to 'function' longer in society. This finding might lead to a (renewed) consideration of the question as to whether or not (preventive) activities should be directed more towards partners of problem drinkers.

Highly educated problem drinkers were also underrepresented in the help-seeking group. This might be explained by the fact that in higher social-economic

groups alcohol consumption is generally more common and therefore the tolerance of extensive alcohol use perhaps higher. It could also be that seeking help, and in this way acknowledging drinking as a problem is more taboo and leads more easily to stigma in high socio-economic groups than in lower socio-economic groups. Another part of the explanation could be that highly educated problem drinkers have more opportunities and skills to hide their drinking problems and/or function well despite them. Without reducing activities aimed at low socio-economic groups, it could be worthwhile to draw highly educated people's attention to problem drinking and the consequences of delayed help-seeking behaviour.

The fact that, after controlling for alcohol use and alcohol-related health problems, being divorced or unemployed or being declared unfit for work are no longer related to help-seeking behaviour, might be a surprise. However, it again pinpoints the importance of distinguishing the main reason for requesting help for alcohol-related problems: extensive alcohol use and alcohol-related problems themselves. This finding also stresses the importance of controlling for need for help when assessing the relation between help-seeking behaviour and factors other than need for help.

Finally, it has been shown that half of the problem drinkers themselves do not know of any people or agencies that offer help for alcohol-related problems. Awareness is much higher among help-seeking problem drinkers which is, however, probably due to the mere fact that past help-seeking behaviour has been measured. It is also worth noting that respondents cited agencies that have no facilities for help aimed at alcohol-related problems (e.g. municipal health services). With respect to getting information across, mass media campaigns may play a role. It could be worthwhile considering having these campaigns directed not only at providing information about alcohol (use), but also more at the possibilities of receiving help.

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Chapter 13

DRINKING PATTERNS, ALCOHOL-RELATED HARM, AND HELP-SEEKING BEHAVIOUR IN ROTTERDAM NEIGHBOURHOODS: DISTRIBUTION AND ASSOCIATION

Abstract

Background: The distribution of and the association between different drinking patterns, alcohol-related harm, and help-seeking behaviour at the neighbourhood level of Rotterdam, The Netherlands is examined. Two questions are posed: 1) are there geographical differences in drinking patterns, alcohol problems, problem drinking, and number of alcohol clients within the city of Rotterdam? 2) is there an association between drinking patterns, alcohol-related harm, and help seeking behaviour at the neighbourhood level?

Methods: Ecological analyses are conducted based on individual data originating from a survey and person-based registers. Respondents to the survey were classified as abstainers, light, moderate or excessive drinkers, and were classified as having alcohol-related problems and/or being a problem drinker. Person-based registers were used to obtain data on the number of ambulatory and clinical alcohol clients in Rotterdam. Help-seeking behaviour was measured by the number of ambulatory and clinical clients.

Results: Large differences between neighbourhoods in prevalence of drinking patterns, alcohol-related problems and problem drinking were found. The number of alcohol clients varied much less between neighbourhoods. The number of alcohol clients was not correlated with the percentage excessive drinkers and problem drinkers at neighbourhood level. The higher the percentage of abstainers, the lower the number of alcohol clients in a neighbourhood.

Discussion: It was concluded that in all neighbourhoods the number of problem drinkers outnumbers those seeking professional help, indicating a friction between need and supply of help with respect to problematic drinking. Furthermore, findings seem to indicate that besides drinking behaviour and drinking-related problems other individual and social factors play a role in the process of help-seeking behaviour.

13. DRINKING PATTERNS, ALCOHOL-RELATED HARM, AND HELP-SEEKING BEHAVIOUR IN ROTTERDAM NEIGHBOURHOODS: DISTRIBUTION AND ASSOCIATION

13.1 Introduction

Within the scope of the World Health Organization (WHO) action program "Health for all by the year 2000", the European Regional Committee of the WHO defined 38 specific targets for its region (WHO 1995). Two targets focus on the reduction of alcohol use and alcohol-related problems. In 1985, the Regional Office of the WHO in Europe initiated the Healthy Cities Project as the European manifestation of the Health for All program (WHO 1988). The Healthy Cities Project focusses especially on cities, as it is believed that in the year 2000, 75% of the European population will live in urban areas. The project has the local level as starting point for health policy which has a great advantage when implementing health measurements and health policy. The small distance between actors makes that specific situations can be more adequately and sensitively dealt with. The community can have more influence on and is more influenced by local policy. Furthermore, at a local level it is often easier to combine policy and action (Hancock 1990).

To support the attainment of the Health for All targets on alcohol, the WHO initiated the European Alcohol Action Plan in which a comprehensive public health policy on alcohol is proposed at the European, national, and local levels (WHO 1993a). Within the scope of the Healthy Cities Project, one of the strategic objectives of the plan is to initiate and strengthen community and municipal action on preventing and managing alcohol related harm (WHO 1993b). The Dutch government adapted the international program 'Health for All by the year 2000' of the WHO in the Nota 2000 (WVC 1986). The Nota 2000 states that the aforementioned 38 WHO targets are to be achieved by a shared responsibility of the government, community and public organizations. Consistent with the Healthy Cities Project, the urgency of regional and local health action to meet the targets is underlined. By means of the Collective Prevention Public Health Act (WCPV 1990), Dutch local governments have the explicit responsibility for developing and implementing local health policy in general, including local alcohol policy in specific.

For the development and implementation of local alcohol policy, four prerequisites are to be met: political commitment, intersectoral approach, community participation, and detailed insight into the local situation on alcohol consumption, alcohol-related harm and its related factors (van Oers 1993). With respect to this last prerequisite, research plays an important role. Empirical information on the extent of (excessive) alcohol use, alcohol-related problems, and help-seeking behaviour with respect to alcohol problems is essential for the definition of alcohol policy goals.

It is important that besides assessing the local situation on alcohol use and associating issues at the level of the total municipality, attention is paid to the situation in the different neighbourhoods of a municipality (van Oers & Garretsen 1993). Insight into geographical differences in drinking patterns, alcohol related harm, and help-seeking behaviour between neighbourhoods supports local policy makers in setting priorities and direct policy measures at specific areas. Furthermore, research on geographical patterns of drinking and associating issues may add to the scientific understanding of the phenomenon due to its differential point of departure compared to traditional research based on individual data.

This study examines the distribution of and the association between different drinking patterns, alcohol-related harm, and help-seeking behaviour at the neighbourhood level of the city of Rotterdam, The Netherlands. Two questions are posed. First, are there geographical differences in drinking patterns, alcohol problems, problem drinking, and number of alcohol clients within the city of Rotterdam? Second, is there an association between drinking patterns, alcohol-related harm, and help seeking behaviour at the neighbourhood level?

13.2 Methods

Survey

Data on drinking patterns, alcohol-related problems, and problem drinking came from a large-scale survey called 'Risky Lifestyles in Rotterdam' conducted in 1994. For this survey, a random sample of 8000 persons was drawn from the municipal population register of Rotterdam, the Netherlands. The sample included inhabitants between 16 and 69 years of age and, to avoid language problems, persons with at least the Dutch nationality. Data was collected by postal questionnaires and oral interviews (7500 and 500 people respectively). No differences were found with respect to self-reported alcohol use, alcohol-related problems, or problem drinking by data collection method (Bongers & van Oers 1998). The overall response rate of the survey was 44.2% (N=3537). Considering the data-collection method (postal questionnaires), the low saliency of the research topic, and the location of the study (a highly urbanized city), the response rate is not atypical (Hox & de Leeuw 1994). As non-response analyses showed that the response was selective in terms of sex and age, the data from this survey were weighted by sex and age-specific response rates (Bongers et al 1997a).

Drinking behaviour was measured by the Quantity-Frequency-Variability index (QFV-index) by means of four questions:

1. 'Which alcoholic drinks do you usually drink when you drink?';
2. 'How many days a month do you drink on average?' (F);
3. 'If you drink alcohol, how many glasses do you drink on average?' (Q);
4. 'Have you ever drunk six or more glasses of alcohol in one day in the past six months?' (V).

Based on these questions respondents were categorized as abstainers, light,

moderate, or excessive drinkers (see Table 1). Abstainers were those who answered 'I never drink alcohol' to question 1. The measurement of alcohol-related problems was based on the eleven indicators of alcohol-related problems mentioned by Cahalan (Cahalan 1976). All indicators except 'binge drinking' - which is uncommon according to Cahalan - were considered. The indicators were clustered in five problem areas: psychological dependence, symptomatic drinking, social problems, health problems, and frequent drunkenness and/or hangovers. Problems on each problem area were measured by a variable number of questions. On the basis of the number of problems reported, persons were categorized as having no, moderate or severe problems on a problem area (score of respectively 0, 1 or 2 points). Subsequently, a problem-index was formed by adding up the scores on the five separate problem areas. Having alcohol-related problems was defined by scoring one or more on the problem index. For detailed information on the scoring see Bongers et al. (Bongers et al 1997b).

Problem drinking was operationalised as a combination of alcohol-related problems and a certain level of drinking. To be classified as a problem drinker, one had to score at least one point on the problem index (moderate problems on one problem area). To check whether these problems were really alcohol-related, people also had to drink excessively. Furthermore, as drinking a lot on a few days (e.g. in the weekend) can also cause problems, for the classification of problem drinking, the definition of excessive drinking was extended with the category 'drinking six or more glasses once or twice a week'.

Table 1 Drinking categories: cut-off points

average drinking days a month	number of glasses at a drinking day			
	≥ 6	4 or 5	2 or 3	> 0 to 1
28 or more	very excessive*	excessive	moderate	light
21 - 27	very excessive*	excessive	moderate	light
15 - 20	excessive	moderate	moderate	light
9 - 14	excessive	moderate	light	light
3 - 8	moderate	light	light	light
> 0 - 2	light	light	light	light

Registers

Data on help-seeking behaviour was based on person-based (instead of admission-based) registers of clients admitted to treatment facilities in Rotterdam. Two registers were used: the Rotterdam Drugs Information System (RODIS) for the ambulatory alcohol clients and the Psychiatric Case register Rotterdam (PCR) for the clinical alcohol clients. RODIS and PCR are case registers in which data on all contacts with all services in the respective areas of care are collected at a central location and linked per client. RODIS was originally initiated by the Municipal Health Service Rotterdam to monitor the methadone treatment services, but was extended to all outpatient services for addiction

(Toet et al 1993). PCR includes data on (general) psychiatric hospitals, day centers, sheltered homes, psychiatric wards, crisis intervention centers, outpatient clinics and outpatient services for mental health and addiction, and alcohol and drug clinics (Wierdsma & Dieperink 1995).

Help-seeking behaviour was operationalized by two indicators: the number of ambulatory clients and the number of clinical clients. These two indicators refer to the two levels of alcohol care: the lower-threshold ambulatory care and the higher-threshold clinical care. Most people enter the care system via the ambulatory facilities. Some will stay within this level of care, others will be referred immediately or after a while to clinical treatment facilities.

Consequently, an overlap exists between the ambulatory and clinical clients and therefore summing up the number of ambulatory and clinical alcohol clients does not make sense. The number of ambulatory and clinical alcohol clients should be viewed as indicators of two different levels of help-seeking behaviour.

Being an ambulatory or a clinical alcohol client was defined as having been admitted to an ambulatory respectively a clinical treatment facility in Rotterdam in 1994. As the analyses are on the Rotterdam neighbourhood level, only the ambulatory (N=958) and clinical (N=677) clients who live in Rotterdam were selected. The clients of whom the neighbourhood code was unknown were excluded from the study: around 18% of the clinical clients and around 4% of the ambulatory clients.

Analyses

The individual data on drinking patterns, alcohol-related problems, problem drinking and alcohol clients was aggregated and analyzed on the neighbourhood level. Rotterdam has about 600.000 inhabitants, divided among 85 neighbourhoods. In this analysis, neighbourhoods with less than 5000 inhabitants were excluded. This exclusion of small neighbourhoods is necessary to avoid large fluctuations in the results due to large random errors. Alternatively, small neighbourhoods could have been combined with adjacent larger ones.

However, most neighbourhoods have more than one adjacent neighbourhood which would lead to an arbitrary combination of neighbourhoods. Moreover, adjacent neighbourhoods can differ significantly from each other, not only with respect to the presented variables but in their complete physical and social structure (van Oers & Garretsen 1993). The remaining 45 neighbourhoods represent 88% of the total population of Rotterdam.

On the basis of scatter plots of the outcome variables, 3 neighbourhoods were identified as outliers. One neighbourhood was an outlier because of a relatively high percentage of abstainers and a low percentage of light drinkers. The other two neighbourhoods were outliers because of their relatively low percentage of moderate and excessive drinkers in combination with a high percentage of people with alcohol-related problems. After excluding these three neighbourhoods, differences in the prevalences of drinking categories, alcohol-related problems, problem drinking, and number of ambulatory and clinical alcohol clients between neighbourhoods were assessed. Second, associations were examined between percentages of drinking categories, alcohol-related problems,

problem drinking, and number of ambulatory and clinical alcohol clients. The strength of the association was given by the correlation coefficient and the slope of the association by the regression coefficient. The correlation and regression coefficients were calculated with and without controlling for age- and sex differences between neighbourhoods. Age and sex differences were controlled for by indirect standardization (Rothman 1986).

13.3 Results

Table 2 shows that differences between neighbourhoods existed for drinking behaviour and its consequences. The ranges for all drinking variables were quite large, the percentage of excessive drinkers ranged from 0% to 20.8% and of light drinkers from 40.6% to 74.3%. The range for alcohol-related problems was even larger: from 12.3% to 56.6%. The prevalence of problem drinking ranged from 7.9% to 20.1%. The number of alcohol clients per 1000 inhabitants, however, varied much less between neighbourhoods.

Table 2 Medians, minima, maxima, and range of the percentage of abstinence, light, moderate, and excessive drinking, alcohol-related problems problem drinking and the number of alcohol clients per 1000 inhabitants at the Rotterdam neighbourhood level (N=42)

	abstainers (%)	light drinkers (%)	moderate drinkers (%)	excessive drinkers (%)	alcohol problems (%)	problem drinkers (%)	ambulatory alcohol clients (number/ 1000 inhabitants)	clinical alcohol clients (number/ 1000 inhabitants)
Median	16.7	55.9	16.8	7.3	27.8	7.9	1.6	0.8
Minimum	4.7	40.6	5.6	0.0	12.3	1.5	0.3	0.0
Maximum	34.0	74.3	31.9	20.8	53.4	20.1	2.9	1.9
Range	29.3	33.7	26.2	20.8	41.1	18.6	2.5	1.9

The percentage of alcohol-related problems and problem drinking in a neighbourhood were associated with certain drinking categories (Table 3). The percentage of people with alcohol-related problems was positively correlated with the percentage of excessive drinkers in a neighbourhood. However, no association was found between the percentage of people with alcohol-related problems and the percentage of abstainers, light, and moderate drinkers. Problem drinking, on the other hand, was positively associated with moderate drinking and negatively associated with light drinking. No significant association was found between the percentage of problem drinkers and abstainers in a neighbourhood. Due to the operationalisation of problem drinking, problem drinking was per definition positively associated with excessive drinking and alcohol-related problems.

The number of alcohol clients, ambulatory as well as clinical, was positively associated with the percentage of people with alcohol-related problems (Table 3). However, no significant association was found between the number of alcohol clients and the percentage of excessive drinkers and problem drinkers in a neighbourhood. Furthermore, the higher the percentage of abstainers, the higher the number of alcohol clients in a neighbourhood. The number of ambulatory and clinical alcohol clients were strongly positively related to each other.

Table 3 Association between drinking categories, alcohol problems, problem drinking, and alcohol clients at the neighbourhood level (N=42) (correlation and regression coefficients)

	abstainers	light drinkers	moderate drinkers	excessive drinkers	alcohol problems	problem drinkers	ambulatory alcohol clients	clinical alcohol clients
people with alcohol problems (%)	r= -0.17 β= -0.23 p= 0.293	r= -0.26 β= -0.34 p= 0.096	r= 0.16 β= 0.26 p= 0.310	r= 0.50 β= 1.12 p= 0.001	1 -			
problem drinkers (%)	r= -0.24 β= -0.18 p= 0.132	r= -0.49 β= -0.35 p= 0.001	r= 0.45 β= 0.41 p= 0.003	r= 0.61 β= 0.75 p < 0.001	r= 0.74 β= 0.41 p < 0.001	1 -		
ambulatory alcohol clients (number/1000 inhabitants)	r= 0.38 β= 0.03 p= 0.012	r= -0.25 β= -0.02 p= 0.116	r= -0.23 β= -0.02 p= 0.135	r= 0.12 β= 0.02 p= 0.455	r= 0.48 β= 0.03 p= 0.001	r= 0.29 β= 0.03 p= 0.065	1 -	
clinical alcohol clients (number/1000 inhabitants)	r= 0.32 β= 0.03 p= 0.042	r= -0.16 β= -0.02 p= 0.304	r= -0.25 β= -0.02 p= 0.113	r= 0.10 β= 0.01 p= 0.511	r= 0.35 β= 0.02 p= 0.023	r= 0.16 β= 0.02 p= 0.323	r= 0.62 β= 0.64 p < 0.001	1 -

* With respect to the regression coefficients, the column variables are the independent variables and the row variables are the dependent variables. E.g., β is the absolute difference in prevalence of people with alcohol problems (%) with 1 unit difference in prevalence of abstainers (%)

Table 4 Association between drinking categories, alcohol problems, problem drinking, and alcohol clients at the neighbourhood level (N=42) standardized for sex and age (correlation and regression* coefficients)

	abstainers	light drinkers	moderate drinkers	excessive drinkers	alcohol problems	problem drinkers	ambulatory alcohol clients	clinical alcohol clients
people with alcohol problems (%)	r= -0.26 β= -0.20 p= 0.092	r= -0.21 β= -0.47 p= 0.178	r= 0.26 β= 0.23 p= 0.093	r= 0.52 β= 0.32 p < 0.001	1 -			
problem drinkers (%)	r= -0.20 β= -0.26 p= 0.215	r= -0.44 β= -1.70 p= 0.003	r= 0.51 β= 0.78 p= 0.001	r= 0.57 β= 0.60 p < 0.001	r= 0.73 β= 1.25 p < 0.001	1 -		
ambulatory alcohol clients (number/1000 inhabitants)	r= 0.47 β= 0.48 p= 0.002	r= -0.26 β= -0.70 p= 0.102	r= -0.27 β= -0.29 p= 0.089	r= 0.06 β= 0.04 p= 0.715	r= 0.32 β= 0.40 p= 0.037	r= 0.15 β= 0.11 p= 0.345	1 -	
clinical alcohol clients (number/1000 inhabitants)	r= 0.33 β= 0.44 p= 0.033	r= -0.16 β= -0.60 p= 0.321	r= -0.24 β= -0.36 p= 0.133	r= 0.05 β= 0.05 p= 0.749	r= 0.21 β= 0.36 p= 0.184	r= 0.06 β= 0.06 p= 0.708	r= 0.90 β= 1.25 p < 0.001	1 -

* With respect to the regression coefficients, the column variables are the independent variables and the row variables are the dependent variables. E.g., β is the absolute difference in prevalence of people with alcohol problems (%) with 1 unit difference in prevalence of abstainers (%)

In Table 4, correlation and regression coefficients standardized by age and sex are shown. Almost no differences in the strength of the associations were found after controlling for differences in age and sex between neighbourhoods. The slope of most associations, however, became more steep. A difference after standardization for sex and age was that the strength of the association between the percentage of problem drinkers and both the number of ambulatory and clinical alcohol clients in a neighbourhood weakened even more. Furthermore, the strength between the association of percentage of abstainers and number of ambulatory alcohol clients increased. The associations between alcohol problems and clinical alcohol clients and between abstainers and excessive drinkers became non-significant after standardization for sex and age.

13.4 Discussion

This study showed considerable geographical differences in prevalences of drinking patterns and alcohol-related harm within the city of Rotterdam, The Netherlands. In one neighbourhood, no excessive drinkers were observed whereas in another neighbourhood one fifth of the inhabitants could be categorized as excessive drinker. Furthermore, in some neighbourhoods, around half of the inhabitants reported to experience alcohol-related problems due to own drinking whereas in some other neighbourhoods this was one fifth or less.

One may argue that these large geographical differences in drinking patterns and alcohol-related harm are due to random error. The fact, however, that both the highest and lowest prevalences were found in large neighbourhoods with many respondents contradicts this hypothesis. Thus the results indicate that there are geographical differences due to factors other than random error.

These geographical differences in drinking patterns and alcohol-related harm legitimize the premise of local health policy and urge for setting priorities and direct policy measures at specific areas within one municipality.

Geographical differences in help-seeking behaviour were assessed using ambulatory and clinical client registers. Although case registers and record-linkage studies are said to have an untapped potential for research on the geographical distribution of use of health care (Mortensen 1995), these registers have certain limitations. Contacts of patients with health services outside the geographical area cannot be recorded. Furthermore, clients of small scale (privatized) services not participating in the registers are not monitored either. Moreover, counting all clients in the prevalence rate does not differentiate between persons with only one contact and patients that have an extensive treatment plan.

However, these sources of measurement errors are not likely to have an important effect on differences at the neighbourhood level (Wierdsma & Sytema 1996).

The number of persons seeking help with respect to drinking varied much less between neighbourhoods. It should be acknowledged, however, that as help-seeking behaviour was operationalized by the number of clients of alcohol treatment facilities, non-professional help such as social support or contacts with

the AA were not taken into account. It may be that the access to social support and the AA differs by neighbourhood. Factors such as social-economic status and social networks may act as intermediates in this relation.

Notable was that in all neighbourhoods, the number of problem drinkers outnumbered those who seek professional help. This finding is consistent with individual level findings which show that only 10% or less of the problem drinkers seeks help or is recognized as problem drinker by professional health care workers (e.g. Bongers et al 1996; Cornel 1994). In line with the former comment, it should be noted that not all possible forms of help with regard to alcohol problems were taken into account. The number of problem drinkers who receive any kind of help will exceed the number of those who seek professional help. To which extent, however, is unclear as not much is known about help-seeking behaviour outside the professional circuit. Furthermore, it should be noted that not all problem drinkers will need (professional) help. Due to the operationalisation of problem drinking, the group problem drinkers ranges from excessive drinkers who are 'only' frequently drunk to drinkers who have severe alcohol-related health and social problems. Despite these comments, our results indicate a friction between need and supply of help with respect to problematic drinking. Gaining insight into this friction and its explanatory factors should be given higher priority on both the political as well as on the research agenda.

The second research question concerned the association between drinking patterns, alcohol-related harm, and help-seeking behaviour at the neighbourhood level. When interpreting the results of the correlation analysis, it is important to acknowledge that due to the type of the data, this study has only an explorative character. Although the presented associations do not indicate causal relationships, they offer, however, clues for further investigations and can give direction to further development and implementation of local alcohol policy. Surprisingly, it was found that the percentage of excessive drinkers and problem drinkers was not correlated to the number of alcohol clients at the neighbourhood level. A positive correlation was found between prevalence of alcohol-related problems and number of alcohol clients, both ambulatory ($r=0.48$) and clinical clients ($r=0.35$). After standardization for sex and age, only the correlation between the prevalence of alcohol-related problems and the number of ambulatory clients remained significant.

These findings are contradictory to what one would expect and are not easily explained. Besides the aforementioned finding that problem drinkers outnumbered alcohol clients in all neighbourhoods, a high percentage of excessive drinkers and/or problem drinkers in a neighbourhood is not reflected by a large number of alcohol clients. This again urges for a better harmonization of the (latent) need and supply of alcohol care facilities. Within this context, attention should be paid to both professional and non-professional alcohol care facilities. Furthermore, insight has to be gained into which factors are related to this gap between need and supply. Our findings seem to indicate that the experience of alcohol-related problems may be of greater importance in the process of help-seeking behaviour than the drinking level itself.

Besides drinking behaviour and drinking-related problems, other factors may

also play a role in the process of help-seeking behaviour. Both individual and social factors are likely to influence help-seeking behaviour. A possible social factor which could have an influence on help-seeking behaviour is social climate towards alcohol. The social climate towards alcohol varies not only between different countries (Hupkens et al 1993) but also between different regions within one country (Garretsen 1983; Knibbe 1984). Within this line, it could be hypothesized that the social climate towards alcohol also differs on the neighbourhood level. Differences in social climate on the neighbourhood level may be due to differences between neighbourhoods with respect to social cohesion, availability of alcohol, and individual socio-demographic characteristics.

The results show that, although excessive and problem drinking were not associated with help-seeking behaviour at neighbourhood level, abstinence was: the higher the percentage of abstainers, the larger the number of alcohol clients. This finding might be explained by differences in social climate towards alcohol between neighbourhoods. Neighbourhoods where alcohol is lavishly used can be called 'wet' and neighbourhoods where one drinks more moderate can be called 'dry'. It could be hypothesized that the pressure for problem drinkers to seek help is stronger in a 'dry' than a 'wet' environment because problem drinkers deviate more from normal in a 'dry' than in a 'wet' drinking environment.

At last, to gain more insight into the explanatory factors of the presented correlations, it seems expedient to pay attention to factors on both individual and social level simultaneously. By using multi-level analysis, the importance of factors on both levels can be assessed simultaneously.

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Chapter 14

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

14. DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

14.1 Introduction

The main objective of this study is to gain insight into the prevalences of (excessive) alcohol use and problem drinking and the related factors among the general Rotterdam population. The findings of the study are meant to serve as part of a scientific and empirical basis for alcohol-control policy. Furthermore, insight is gained into methodological issues which may jeopardise the validity of alcohol survey results. In this chapter, the resulting insights will be evaluated and placed in the context of alcohol-control policy.

14.2 Methodology

When conducting a survey and interpreting its results, it is important to take into account potential sources of error. With respect to alcohol surveys, particular attention should be paid to non-response error and measurement errors due to self-reports. As explained in Chapter 1, these sources of error may have a particularly great influence on alcohol survey results. Furthermore, for the comparison of results of different alcohol surveys, it is important to gain insight into the impact of data collection modes on alcohol survey results. The first potential source of error which was evaluated is non-response bias. By means of the response probability model method it was found that the response was selective in terms of sex and age. To enhance the representativity of the study results, it was concluded that all further analyses would be carried out on the basis of a data set, which is weighted by sex and age-specific response rates.

Although the results of this study are based on the weighted dataset, it should be noted that this is no guarantee that the influence of non-response bias is completely eliminated. Given the limitations of the study, the most feasible option was chosen to evaluate and correct for non-response bias. The remaining uncertainty is directly related to the essence of the phenomenon of non-response: the lack of complete information about the total sample. Firstly, it cannot be guaranteed that the response was not selective towards other background variables which may also be related to the outcome variables under study, but of which no information is available among the non-respondents. Secondly, whether or not the response was directly related to alcohol use or alcohol-related problems remains unknown.

It can be concluded that to minimise non-response bias in alcohol surveys it is of major importance to keep non-response as low as possible. Therefore, great efforts are required to collect as much information as possible about non-respondents. If feasible, information not only on background variables but also on outcome variables should be collected. Based on this information and (pos-

sibly) with the use of different methods, potential non-response bias can be evaluated and, if necessary, corrected for.

As a second source of error, insight was gained into the validity of self-reported drinking by comparing self-reported drinking behaviour and drinking behaviour that was not self-reported at aggregate level. The similar distribution of 'moderate' drinking and usual frequency of drinking across self- and non-self-reports gives some reassurance about the validity of self-reported drinking behaviour. The discordance between self-reported 'heavy drinking' versus 'heavy drinking' that is not self-reported, however, raises questions about the validity of self-reports. The fact that the direction of the discordance differs between men and women pleads even more for insight into the issue.

Unfortunately, the design and data of this study only allow descriptive analyses of the issue of validity of self-reported alcohol use. Before any definite conclusions can be drawn, more research into this topic is needed. Research is required in order to clarify the process of reporting about one's own and one's spouse's drinking behaviour and the factors which determine this process. An experimental approach as well as a qualitative design could help to reveal these issues (Lemmens 1991).

The validity of self-reported alcohol use and its consequences is a much debated issue. This study cannot give conclusive answers. It should be noted, however, that to gain insight into certain aspects of alcohol use and its consequences, self-reports are indispensable. Self-reports will always remain an important (if not the most important) source of information on alcohol use and its consequences. This perception puts the emphasis on more research into the validity of self-reports and an even stronger emphasis on the development and refinement of methods to collect sensitive and accurate self-reported data.

The third methodological issue was to assess the comparability of self-reported data on alcohol use and its consequences by using two different data collection methods (mail survey and face-to-face interviews). The use of two different data collection modes did not yield any notable differences in self-reported alcohol use, alcohol-related problems or problem drinking. From these analyses, it can be concluded that mail surveys and face-to-face interviews on alcohol use and its consequences among the general population yield comparable results. This applies to both men and women.

Differences in study design between studies often complicate the comparability of results over time. One aspect of study design which often differs between surveys is data collection mode. The analyses of this study, however, indicate that the validity of trend figures on alcohol use and its consequences based on surveys with different data collection modes is not jeopardised. With regard to the underlying study, it can be concluded that the results of the surveys conducted in 1980-81 and in 1994 can be compared despite the use of two different data collection modes.

In this study, only two data collection modes were compared. Other modes such as telephone interviews, self-administered reply-sheets in a face-to-face interview or computer-assisted interviewing were not taken into account. It seems expedient to gain insight into the comparability of results obtained by different data collection methods in general, since more and more data collec-

tion modes will be invented and used in due course.

It should be noted that the methodological findings of this study are based on a study population between 16 and 69 years of age and with the Dutch nationality. They are inhabitants of Rotterdam, a very urbanised city in the West of The Netherlands. Because the study population had to have at least the Dutch nationality, migrants are underrepresented in this study. One should be aware that intercultural differences may lead to different findings among migrants. The same applies to age and geographical limits; one should be reluctant to merely apply the results of this study to other populations.

The methodological findings as well as the remaining uncertainties show that more attention should be paid to methodological research with respect to alcohol surveys. The interpretation of the results, both from a scientific and a political point of view, would be facilitated by more insight into the above-mentioned issues. As with all statistics, the figures in this study should not be regarded as the absolute 'truth' but rather as indications or estimates of the 'truth'. The overall conclusion to be drawn from these methodological findings is that figures resulting from alcohol surveys are meaningful but will become even more meaningful when their limitations are taken into account.

14.3 Results

In conformity with other research (e.g. Spruit 1997), this study also shows that alcohol consumption and its consequences are a great cause for public health concern in The Netherlands. Although the majority of the general Rotterdam population consists of light or moderate drinkers, alcohol-related problems are quite prevalent. Since the mid 1980s, the prevalence of excessive drinking among the general Rotterdam population has remained more or less stable at around 8%. The prevalences of alcohol-related problems and problem drinking, however, slightly increased between 1980 and 1994 to 28% and 9% respectively. The public health impact of these prevalences on public is reflected by the fact that alcohol dependency scores high on both the list of most prevalent disorders among the Dutch population and on the list of disorders that contribute most to life years lived in unhealthy conditions (Ruwaard & Kramers 1997). In reply to this public health problem, the Netherlands have an alcohol policy which is directed towards the reduction of problematic drinking without abandoning alcohol consumption altogether. The reduction of consumption per capita is seen as the most important means to meet this objective. A major objective stated in the mid eighties to reduce consumption per capita by 25% in the year 2000, is aimed to influence the drinking behaviour of the total population. Alcohol-control measures such as mass-media campaigns and various restrictive measures are implemented to decrease alcohol consumption per capita. In the 1980s, consumption per capita indeed decreased each year. In the nineties, however, this decrease has almost halted and consumption per capita in the 1990s may well show a slightly upward trend (Spruit 1997). In other

words, problematic alcohol use still remains a public health issue which continues to require attention.

With respect to alcohol-control policy, it is important to note that drinking behaviour and its consequences are not evenly distributed among the population. Depending on socio-demographic factors, people run differential risk for problematic drinking. Drinking behaviour, for instance, greatly differs by sex and age. Results in this study, in conformity with general knowledge, show that men are more often found to be excessive drinkers and problem drinkers than women are. Women, however, tend to report relatively many alcohol-related problems given their low prevalence of excessive drinking. Analyses by age show that men between 16 and 24 years of age have a relatively high prevalence of both excessive drinking and problem drinking. Moreover, since 1980 the prevalence of excessive and problem drinking among these male youngsters have increased sharply. In addition, being single is found to be related to problematic drinking as is unemployment and, especially for men, being declared unfit to work. Low socio-economic status is related to very excessive drinking and alcohol-related problems; neighbourhoods differ with respect to the prevalence of excessive and problem drinkers.

Subgroups among the general population that are at risk of problematic drinking, ought to receive special attention in alcohol-control policy. It should be noted, however, that determining which subpopulations are at risk is just the beginning. Preventive activities tailored to meet the needs of socio-demographically defined groups at risk should therefore target changeable aspects and characteristics of the subgroups that are shown to be associated with problematic drinking behaviour. This pleads for more insight into the reasons for and motives behind drinking behaviour in general and 'harmful' drinking patterns in particular, both among the total population and among subgroups at risk.

General monitoring of drinking behaviour and alcohol-related problems in the total population and its subpopulations will provide essential information about the issue's situation. Knowledge about backgrounds, however, provides the clues for changing the existing situation by means of rational political action. However, focusing on high-risk groups only will not solve all the problems. As was outlined in Chapter 2, it is of major importance to be aware of the continuity which exists between moderate and excessive drinking, and between harmless and problematic drinking behaviour. Alcohol causes both pain and pleasure and these two kinds of experiences are not rigidly partitioned between two different kinds of people or two distinct populations. Consequently, besides focusing on high-risk groups, alcohol-control policy should also focus on the totality of the drinking population.

The need for a population approach in alcohol-control policy is shown by the in-depth analyses that were initiated by the result that women tend to report relatively many alcohol-related problems given their low prevalence of excessive drinking. To explain the relatively high prevalence of alcohol-related problems among women, two hypotheses were tested: 1) at a given level of drinking, women may report more problems of any type than men do; 2) the number of problems or the severity of the reported problems may be lower among women than among men. It was found, however, that at similar drinking levels,

women were as likely as men to report alcohol-related problems. Although men have a greater accumulation of different types of problems within drinking categories than women have, overall problem severity does not differ between men and women. It can be concluded that the apparent excess prevalence of alcohol problems for women given their drinking level, appears to be due to the presence of problems even among light drinkers and a greater preponderance of light drinkers among women than men.

This conclusion indicates that effective alcohol policies cannot be modelled exclusively on the basis of the extremes of a population's drinking behaviour. It should also be noted, however, that the overall burden of alcohol-related problems cannot be solved by the population preventive strategy on its own. As was outlined in Chapter 2, two interactive and mutually supportive types of policy will be required to meet the broad aim of alcohol policy of reducing the occurrence of alcohol-related problems: high-risk and population preventive strategies are synergistic, interlocking responses to a spectrum of drinking behaviours and drinking problems.

To improve the efficacy of alcohol-control policy, it should be acknowledged that all policy measures, including both high-risk and population measures, are placed within the framework of social climate on alcohol (Edwards et al 1994). The efficacy of policy measures depends to a large extent on public support and compliance with the measures. This study shows that the social climate on alcohol can be characterised by "moderateness": both positive and negative aspects of alcohol are recognised. Drinking without problems is tolerated (and sometimes even stimulated) whereas excessive drinking and consequent problems are strongly disapproved of. The opinions on alcohol-control measures are mirrored by these attitudes towards drinking. Measures such as restrictions on drinking in public places and raising age limits were endorsed by the public. However, most people were against measures that would restrict the general availability of alcoholic beverages.

It might therefore be expected that the recently rejected proposal to raise the age limit for low-alcohol beverages from 16 to 18 would receive great public support. Naturally, however, support is lowest among those that will be affected most by the specific measures. This study indicates that the support for the proposal could be expected to be very low. It can be concluded that implementing measures without paying attention to public opinion may well lead to low compliance with and consequently a low efficacy of the measures. A public health campaign on alcohol to legitimise restrictive measures for all subgroups of the population, especially for those that will be affected, should therefore precede and accompany the implementation of such measures.

This conclusion reflects the most important aim of mass-media alcohol campaigns. As discussed in Chapter 2, research has failed to detect significant effects on consumption as a consequence of exposure to these campaigns and educational programmes. Public education campaigns, however, help to build public awareness and support for other environmental policies that affect drinking behaviour directly. Educational campaigns should therefore be introduced on the basis of success in the long run.

Besides the high-risk and population preventive strategies, attention should

also be paid to the provision of adequate treatment facilities. A prerequisite for public interest and support for public health policies on alcohol is the availability of adequate treatment facilities (Edwards 1994). As was outlined in Chapter 2, the individual drinker in need should be helped or otherwise more general alcohol policies will be conceived as implausible. This study shows, as other studies did (e.g. Cornel 1994; Raat 1987), that less than 10% of problem drinkers have ever sought help. Furthermore, in all Rotterdam neighbourhoods, problem drinkers outnumber those seeking professional help. Severe alcohol-related health problems turned out to be the most important incentive to seek help. Although this may seem logical, it in fact indicates that alcohol-related problems are mostly treated at a very advanced stage when alcohol-related harm is unlikely to be reversible.

These findings argue in favour of paying more attention to the prevention of problem drinking. It should be acknowledged that individual interventions are not only appropriate for drinkers at the extreme end of the drinking continuum. More moderate drinkers who have entered or are at risk to enter the 'danger' zone should receive particular attention. All the more so because research points to the effectiveness of early recognition and brief intervention (Wallace et al 1988; Anderson & Scott 1992). The Dutch association of general practitioners introduced a protocol about how to handle problem drinking in general practice (van Zutphen et al 1990). Despite this protocol the recognition of problem drinkers in general practice remains difficult (Cornel 1994). It seems expedient to make a greater effort, both politically and practically, to try and integrate alcohol treatment into general and primary health-care settings.

Special attention should be paid to the difficulties general health practitioners encounter with regarding the recognition of problem drinking (Cornel 1994). A basic requirement for adequate alcohol treatment facilities in general is that people find their way to the facilities. A lot of factors play a role in this process. A very evident but basic condition is that people are familiar with alcohol treatment facilities. This study showed that half the number of problem drinkers do not know of any people or agencies that offer help for alcohol-related problems. Among the total general population, only about one-third of people are familiar with alcohol care facilities. It can be concluded that people should be better informed about the existing facilities. Mass-media campaigns may play a role to get information across. It could be worthwhile considering to direct these campaigns not only towards providing information about alcohol (use), but also more towards the possibilities of receiving help.

Moreover, alcohol-control policy will be most effective if, besides being based on a continuum of responses, it is implemented at both national and local level. The scale of local situations is a great advantage when implementing alcohol-control measures. The proximity of the various actors makes that specific situations can be more adequately and more sensitively dealt with. The community has more influence on and is more influenced by local policy. Furthermore, at local level it is often easier to combine policy and action (Hancock 1990). This study showed considerable geographical differences in prevalences of drinking patterns and alcohol-related harm in the city of Rotterdam, The Netherlands. These geographical differences in drinking patterns and alcohol-related harm

legitimise the premise of local health policy and plead for setting priorities and directing policy measures towards specific areas within one municipality. In summary, a comprehensive alcohol-control policy should aim to prevent people from drinking excessively and to reduce the number of people with drink problems. The policy response should incorporate both prevention and treatment interventions and take into account social climate on alcohol in society. To cope with the continuum of drinking and consequential alcohol-related harm, a continuum of responses is advocated. On this continuum, prevention at population level and individual level, ranging from primary to secondary, and on to tertiary prevention, will contribute in a mutually supportive way to the reduction of alcohol-related harm.

As was outlined in Chapter 2, the development and implementation of a comprehensive alcohol-control policy is highly complicated as many factors and actors with a differential interest and changing importance and influence play a role in the political arena. Public health is but one of the many topics which have to be addressed. It is, therefore, of major importance that the public health arguments are well-founded (Dekker & van der Grinten 1995) and research is a significant source for these arguments.

The main objective of this research was to gain insight into the prevalences of (excessive) alcohol use and problem drinking and the related factors among the general Rotterdam population. In summary, it can be said that knowledge is gained about the prevalences of (excessive) alcohol use and problem drinking in 1994, the changes in prevalences over time, the social climate on alcohol use, and about help-seeking behaviour with regard to alcohol use. This knowledge is gained for the total population and for several subpopulations.

It should be noted, however, that not all subpopulations of the general Rotterdam population have been covered in the study. The sample included inhabitants between 16 and 69 years of age with at least the Dutch nationality. As a result, nothing can be said with regard to people under 16 and older 69 years of age. Furthermore, ethnic minorities are very much underrepresented in the study. As a lot of research is done into the drinking behaviour of youngsters below 16 (e.g. Kuipers et al 1997; Preventief Jeugdbeleid 1997), information about this subgroup is available from other studies. Much less attention has been paid to drinking behaviour of elderly people in the Netherlands (Garretsen et al 1987). As the elderly population is growing, it seems expedient to initiate research on the prevalence of (problematic) drinking and risk factors among elderly people. More research is also required with respect to ethnic minorities. Recently, an overview was published of the state of knowledge about ethnic minorities and addiction in the Netherlands (Braam & Verbraek 1998). The authors concluded that there is hardly any information about the kind and extent of alcohol problems among ethnic minorities.

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SUMMARY

SUMMARY

Background and purpose of the study

Alcohol consumption in The Netherlands has changed remarkably since 1960. During the 1960s and 1970s alcohol consumption per capita sharply increased from 2.8 litres in 1961 to 9.4 litres of pure alcohol in 1979. In the early 1990s, alcohol consumption slightly decreased and stabilised at a consumption level of about 8 litres per capita. Since the likelihood of alcohol-related harm increases as alcohol consumption increases, alcohol-related problems have become more pronounced over the last decades. The sharp increase in alcohol consumption and its related problems have triggered the awareness of the great impact that inappropriate alcohol use has on the individual drinker, his or her direct environment, and on society as a whole. The high level of consumption per capita provoked political discussion in the early 1980s, which eventually resulted in a political memorandum named 'Alcohol and Society' (WVC 1986). Given the developments with respect to alcohol use and its consequences, and given the fact that the last comprehensive studies on (problem) drinking among the general population were conducted in 1980-81, it seemed expedient to conduct a comprehensive study on alcohol use and problem drinking among the general population. In this thesis, insight is gained into the prevalences of (excessive) alcohol use and problem drinking and related factors among the general population of Rotterdam. The findings of the study are meant to serve as part of a scientific and empirical basis to be used in alcohol control policy. Furthermore, attention is paid to some methodological issues that may jeopardise alcohol survey results.

Design of the study

The results presented in this thesis are based on data from a large-scale general population survey called 'Risky Lifestyles in Rotterdam'. This survey was conducted in 1994. The study sample consisted of 3,537 inhabitants of Rotterdam between 16 and 69 years of age and with at least the Dutch nationality. The study is (partly) a repeated measurement of prevalences of excessive drinking and problem drinking in the general Rotterdam population. By using the same sampling frame and the same definitions and operationalisation of excessive drinking and problem drinking as applied in a survey in 1980-81, continuity is given to the data collection.

Methodology

This thesis deals with three methodological issues, each of which may jeopardize alcohol survey results. The first of these issues is non-response bias. The differential response probability model, a method to evaluate and correct for

indirect selective non-response, is explained extensively. With this method, differences can be determined in response probabilities by background variables that are related to the outcome variable of the study. Subsequently, the data can be weighted according to the response probabilities. By comparing the estimated outcome variables before and after weighting, insight is gained into the bias due to indirect selective non-response. Since the analyses showed that the response to the survey was selective in terms of sex and age, the results presented in this thesis are based on a data-set weighted for sex and age-specific response rates.

The second methodological issue that was assessed concerned the effect of data collection mode on self-reported alcohol use and problem drinking. No notable differences were found between mail survey and personal interviews for self-reported alcohol use, alcohol-related problems or problem drinking. This was true for both the total general population and for men and women separately. The overall response rate was somewhat higher for the personal interviews. No important significant differences were found in item nonresponse or background factors. The absence of notable differences in estimated self-reported drinking behaviour by mail survey and personal interviews indicates that both data collection methods yield comparable results.

Thirdly, insight was gained into the methodological issue of validity of self-reported drinking in the general population by comparing self-reported and non-self-reported drinking behaviour. Married and cohabiting respondents were asked about their own as well as about their spouse's drinking behaviour. Because the information on drinking behaviour as provided by the respondent concerned two different persons, i.e. spouse and respondent, self-reports and non-self-reports, could not be compared at the individual level. The comparison was therefore necessarily limited to aggregate comparisons of alcohol consumption between all respondents and all spouses. It was found that at the aggregate level, distribution of moderate drinking and usual frequency of drinking is similar between self-reports and non-self-reports. Self-reported 'heavy' drinking, however, is lower than non-self-reported heavy drinking, among women in general, and in particular among older women and lower educated women. Among men in general and older men in particular, however, self-reported occasional 'heavy' drinking was found to be higher. The similar distribution of 'moderate' drinking and usual frequency of drinking between self-reports and non-self-reports gives reassurance about the validity of self-reported drinking behaviour. The discordance in self-reported versus non-self-reported 'heavy' drinking, however, does question the validity of self-reports.

Results

With the groundwork laid out, this thesis continues with an assessment of the prevalences of alcohol use and problem drinking, and an assessment of social climate on alcohol and help-seeking behaviour. It was found that the majority of the general Rotterdam population consisted of 'light' or 'moderate' drinkers. Prevalences of excessive drinking, alcohol-related problems and problem drinking

king were 8%, 28%, and 9%, respectively. It appeared that young men had a relatively high prevalence of problem drinking and that being single, being unemployed, and being declared unfit to work were associated with problematic drinking.

Furthermore, it was found that women tend to report relatively many alcohol-related problems given their consumption pattern. Two hypothesis were tested to explain this result: 1) At a given level of drinking, women may report more problems of any type than men do; 2) At a given level of drinking, the number of problems or the severity of the reported problems may be lower among women than among men. The first hypothesis was rejected; drinking levels being the same, the extent of alcohol problems is the same or even lower for women than for men. As was hypothesised, men tend to have a greater accumulation of different kinds of problems than women have. However, the severity of the reported problems does not differ between men and women. The apparent excess prevalence of alcohol problems for women in relation to their drinking level appeared to be due to the presence of problems even among light drinkers and a greater preponderance of light drinkers among women than among men.

With respect to differences in drinking behaviour and its consequences by socio-economic status it was found that abstinence decreased significantly as educational level increased, for both sexes. The same pattern emerged for alcohol-related problems. However, only limited differences by educational level were found with respect to excessive drinking.

Subsequently, the development of alcohol consumption and problem drinking among the general Rotterdam population was assessed for the period between 1980-81 en 1994. The national trend of a slight decrease in consumption level does not seem to be reflected in the Rotterdam data. On the contrary, a slight decrease in the percentage of abstainers and a slight increase in the percentage of moderate and excessive drinkers could be seen. For the Rotterdam population as a whole it can be concluded that differences in drinking behaviour and its consequences were relatively minor between 1980-81 and 1994. However, larger differences were found for some subpopulations of the study population. The results of this study showed a sharp increase in excessive and problem drinking among young people between 16 and 24 years of age and middle-aged people between 45 to 54.

Despite the fact that problem drinking is prevalent particularly among some subgroups of the general population, alcohol-related problems are often either not treated at all or only at an advanced stage. Insight into help-seeking behaviour of problem drinkers is therefore of major importance for preventive and treatment activities. It appeared that 8% of the problem drinkers among the general population had, at some stage, sought help for alcohol-related problems. Severe alcohol-related health problems and social problems turned out to be the most important reasons to ask for help. After controlling for alcohol use and alcoholproblems, it emerged that married and highly educated problem drinkers were underrepresented in the group of help-seekers group.

Furthermore it was found that half the number of problem drinkers did not know of any agencies or people that could offer help for alcohol-related problems.

In addition to help-seeking behaviour at the individual level, insight into help-seeking behaviour at the aggregate level also yields valuable information. Insight into geographical differences in drinking patterns, alcohol-related harm, and in help-seeking behaviour between neighbourhoods will support local policy-makers in setting priorities and directing policy measures towards specific areas. The results in this thesis showed major differences between neighbourhoods with respect to the prevalence of drinking patterns, alcohol-related problems and problem drinking. The number of alcohol clients differed much less between neighbourhoods. The number of alcohol clients appeared not to be correlated with the percentage of excessive drinkers and problem drinkers at neighbourhood level. The higher the percentage of abstainers, however, the lower the rate of alcohol clients in a neighbourhood became. Besides knowledge about prevalences of alcohol use, problem drinking and help-seeking behaviour, knowledge about the social climate on alcohol is of major importance for alcohol-control policy. On the one hand, social climate on alcohol directly influences people's drinking behaviour and thereby alcohol-related problems. On the other hand, social climate on alcohol is the framework within which alcohol-control policy and its measures are to be placed. The results of this study showed that the social climate on alcohol in the Netherlands can be characterised by 'moderation'. Over the years, drinking without problems has become more acceptable (and is even encouraged at times) whereas excessive drinking and consequent problems are still disapproved of. Opinions on alcohol-control measures mirror this attitude. Measures such as the restriction of drinking in public places and raising the age limit are endorsed by the public. However, more people are now against restrictions on the general availability of alcohol. Although drink-driving has decreased over the years, its prevalence is still high, especially among those that are most at risk.

Conclusions and policy recommendations

Based on the methodological findings in this thesis and the remaining uncertainties, it will be clear that more attention should be paid to methodological research with respect to alcohol surveys. The interpretation of the results, both scientifically and politically speaking, would be facilitated by more insight into methodological issues. As with all statistics, the figures in this thesis should not be viewed as the absolute 'truth' but rather as indications or estimates of this 'truth'. The overall conclusion that can be drawn from these methodological findings is that figures resulting from alcohol surveys are meaningful but will become even more meaningful when their limitations are taken into account.

In this thesis, knowledge is made available about the prevalences of (excessive) alcohol use and problem drinking in 1994, the changes in prevalences over time, the social climate on alcohol use, and about help-seeking behaviour in relation to alcohol use. This knowledge is gained for the total population and for several subpopulations. Parallel to other research, this study showed that alcohol consumption and its consequences are a great public health concern in

The Netherlands. Based on literature and on the findings of this study, the most expedient policy approach was discussed. In summary, it can be stated that a comprehensive alcohol-control policy should aim to prevent people from drinking excessively and to reduce the number of people with alcohol problems. The policy response should incorporate both preventive and treatment interventions and take into account social climate on alcohol in society. In order to cope with the continuum of drinking, a continuum of responses is advocated. On this continuum, prevention at the population level and the individual level, ranging from primary to secondary, and on to tertiary prevention, will contribute in a mutually supportive way to the reduction of alcohol-related harm.

SAMENVATTING

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Achtergronden en doel van het onderzoek

De alcoholconsumptie in Nederland is sinds 1960 opmerkelijk veranderd. De alcoholconsumptie per hoofd van de bevolking steeg sterk in de jaren '60 en '70, van 2,8 liter in 1961 tot 9,4 liter pure alcohol in 1979. In het begin van de jaren '90 daalde de alcoholconsumptie weer iets en stabiliseerde zich op een consumptieniveau per hoofd van de bevolking van ongeveer 8 liter. Aangezien de kans op alcohol-gerelateerde problemen stijgt met de toename in alcoholconsumptie, zijn de problemen die door alcohol veroorzaakt worden de laatste decennia steeds duidelijker geworden. Door de sterke toename in alcoholconsumptie en alcohol-gerelateerde problemen is men zich meer bewust geworden van de grote invloed die 'onverstandig' drankgebruik heeft op de drankgebruiker zelf, zijn of haar directe omgeving en op de maatschappij in haar geheel. De sterke toename in de consumptie per hoofd van de bevolking lokte begin jaren '80 een politieke discussie uit wat resulteerde in het politieke memorandum 'Alcohol en Maatschappij' (WVC 1986).

Gezien de ontwikkelingen in alcoholgebruik en de gevolgen ervan, en gezien het feit dat de laatste uitvoerige onderzoeken naar (probleem)drinken onder de algemene bevolking gehouden werden in 1980-81, lijkt het gewenst om weer een dergelijk uitvoerig onderzoek naar alcoholgebruik en probleemdrinken onder de algemene bevolking uit te voeren. In dit proefschrift wordt inzicht verkregen in de prevalenties van (overmatig) alcoholgebruik en probleemdrinken en de daarmee samenhangende factoren onder de algemene bevolking van Rotterdam. De bevindingen in deze studie zijn bedoeld om te dienen als deel van de wetenschappelijke en empirische basis van het alcoholbeleid. Verder wordt aandacht besteed aan een aantal methodologische kwesties die de betrouwbaarheid van resultaten van survey onderzoek kunnen ondermijnen.

Opzet van het onderzoek

De resultaten die in dit proefschrift worden gepresenteerd zijn gebaseerd op een grootschalig bevolkingsonderzoek genaamd 'Riskante Leefgewoonten in Rotterdam'. Dit onderzoek werd gehouden in 1994. De steekproef van het onderzoek bestond uit 3537 inwoners van Rotterdam tussen de 16 en 69 jaar en met tenminste de Nederlandse nationaliteit. De studie is (gedeeltelijk) een herhaalde meting van prevalenties voor overmatig drankgebruik en probleemdrinken onder de algemene bevolking van Rotterdam. Doordat dezelfde steekproef wordt gebruikt als in het onderzoek van 1980-81, evenals dezelfde definities en operationalisatie van excessief drankgebruik en probleemdrinken, wordt continuïteit gegeven aan de gegevensverzameling.

Methodologie

Dit proefschrift gaat in op drie methodologische aspecten die de betrouwbaarheid van de resultaten van survey onderzoek negatief kunnen beïnvloeden. Het eerste aspect is vertekening van de resultaten door non-respons. Het differentieële responskansmodel, een methode om indirecte selectieve non-respons te kunnen evalueren en corrigeren, wordt uitgebreid beschreven. Met deze methode kunnen verschillen worden bepaald in responskansen naar achtergrondvariabelen die gerelateerd zijn aan de doelvariabele van het onderzoek. Vervolgens kunnen de gegevens gewogen worden op basis van de responskansen. Door de geschatte doelvariabelen voor en na weging te vergelijken, wordt inzicht verkregen in de vertekening als gevolg van indirecte selectieve non-respons. Aangezien de analyses aantoonde dat de respons in het onderzoek selectief was naar geslacht en leeftijd, zijn de resultaten in dit proefschrift gebaseerd op een gegevensbestand dat gewogen is voor geslachts- en leeftijdsgebonden responscijfers.

Het tweede methodologische aspect dat wordt besproken is het effect van de dataverzamelmethode op zelfgerapporteerd alcoholgebruik en probleemdrinken. Duidelijke verschillen tussen de postenquête en face-to-face interviews wat betreft de zelfrapportage van alcoholgebruik, alcohol-gerelateerde problemen of probleemdrinken kwamen niet naar voren. Dit gold voor zowel de totale algemene bevolking als voor mannen en vrouwen apart. De respons was iets hoger bij de face-to-face interviews. Er werden geen noemenswaardige verschillen in item-non-respons of achtergrondvariabelen gevonden. De afwezigheid van duidelijke verschillen tussen de postenquête en de face-to-face interviews wat betreft de geschatte zelfgerapporteerde drinkgewoonten geeft aan dat beide dataverzamelmethoden vergelijkbare resultaten opleveren. Ten derde wordt inzicht verschaft in de geldigheid van zelfgerapporteerde drinkgewoonten in de algemene bevolking door zelfgerapporteerd drankgebruik te vergelijken met niet-zelfgerapporteerd drankgebruik. Getrouwde en samenwonende respondenten werd gevraagd naar zowel hun eigen drinkgewoonten als die van hun partner. Omdat de door de respondent gegeven informatie over drinkgewoonten betrekking heeft op twee personen, partner en respondent, konden de zelfgerapporteerde en niet-zelfgerapporteerde informatie niet op individueel niveau met elkaar vergeleken worden. Hierdoor werd de vergelijking beperkt tot een vergelijking op geaggregeerd niveau: de alcoholconsumptie van alle respondenten werd vergeleken met de alcoholconsumptie van alle partners. Het bleek dat op dit geaggregeerde niveau de verdeling van matig drinkgedrag en gemiddelde drinkfrequentie ongeveer gelijk is voor zelfgerapporteerde en niet-zelfgerapporteerde informatie. Voor vrouwen in het algemeen en voor oudere vrouwen en vrouwen met een lager opleidingsniveau in het bijzonder, geldt dat zelfgerapporteerd 'zwaar' drinken lager is dan niet-zelfgerapporteerd 'zwaar' drinken. Onder mannen in het algemeen en oudere mannen in het bijzonder was het zelfgerapporteerde 'zwaar' drinken juist hoger. De min of meer gelijke verdeling van 'zwaar' drankgebruik en gemiddelde drinkfrequentie voor zelfrapportage en niet-zelfrapportage geeft vertrouwen in de geldigheid van zelfgerapporteerde drinkgewoonten. De afwijking tussen

zelfgerapporteerd en niet-selfgerapporteerd 'zwaar' drinken plaatst echter een kanttekening bij de betrouwbaarheid.

Resultaten

Nadat de methodologische basis is gelegd, wordt in het proefschrift ingegaan op prevalenties van alcoholgebruik en probleemdrinken, op normen en waarden rondom alcoholgebruik en op hulpzoekgedrag. Het bleek dat de meerderheid van de Rotterdamse bevolking bestond uit 'lichte' of 'matige' drinkers. De prevalenties van excessief drankgebruik, alcoholgerelateerde problemen en probleemdrinken waren respectievelijk 8%, 28% en 9%. Het bleek dat jonge mannen een relatief hoge prevalentie van probleemdrinken hadden en dat het ontbreken van een partner, werkloosheid en arbeidsongeschiktheid geassocieerd was met problematisch alcoholgebruik.

Verder bleek dat vrouwen, gegeven hun consumptiepatroon, relatief veel alcoholproblemen rapporteren. Om dit te verklaren werden twee hypothesen getoetst: 1) op een bepaald niveau van drankgebruik rapporteren vrouwen meer problemen van elk type dan mannen; 2) op een bepaald niveau van drankgebruik is het aantal problemen of the ernst van de gerapporteerde problemen lager onder vrouwen dan onder mannen. De eerste hypothese moest worden verworpen; bij gelijk drankgebruik is de ernst van alcoholproblemen hetzelfde of zelfs lager voor vrouwen dan voor mannen. Conform de tweede hypothese, hebben mannen meer verschillende soorten problemen dan vrouwen. De ernst van de gerapporteerde problemen verschilt echter niet tussen mannen en vrouwen. De relatief hoge prevalentie van alcoholproblemen onder vrouwen lijkt veroorzaakt te zijn door de aanwezigheid van problemen zelfs bij lichte drinkers in combinatie met het feit dat er onder vrouwen meer lichte drinkers zijn dan onder mannen.

Wat betreft verschillen in drankgebruik en de daaraan gerelateerde problemen naar socio-economische status bleek, zowel onder mannen als vrouwen, dat geheelonthouding aanmerkelijk verminderde naarmate het opleidingsniveau hoger werd. Hetzelfde patroon kwam naar voren voor alcohol-gerelateerde problemen. Er werden echter slechts minimale verschillen naar opleidingsniveau gevonden met betrekking tot excessief drankgebruik.

Vervolgens werden de ontwikkelingen in alcoholconsumptie en probleemdrinken onder de algemene bevolking van Rotterdam tussen 1980-81 en 1994 geëvalueerd. De nationale trend van een kleine daling in alcohol consumptie werd in de Rotterdamse gegevens niet teruggevonden. Integendeel, het aantal geheelonthouders nam iets af en het aantal matige en excessieve drinkers nam iets toe. Voor de Rotterdamse bevolking in zijn geheel kan worden geconcludeerd dat verschillen in drinkgedrag en de gevolgen daarvan relatief klein waren tussen 1980 en 1994. Voor sommige bevolkingsgroepen uit de totale bevolking werden echter grotere verschillen gevonden. De resultaten van deze studie tonen een scherpe toename aan in excessief drankgebruik en probleemdrinken onder jongeren (16 tot 24 jaar) en onder mensen van 45 tot 54 jaar.

Ondanks het feit dat probleemdrinken veel voorkomt met name onder bepaalde

bevolkingsgroepen worden alcoholproblemen vaak niet of pas in een laat stadium behandeld. Inzicht in het hulpzoekgedrag van probleemdrinkers is daarom zeer van belang in het kader van preventieve en behandelactiviteiten. Het bleek dat 8% van de probleemdrinkers ooit hulp hebben gezocht voor alcohol-gerelateerde problemen. Ernstige problemen met de gezondheid als gevolg van alcoholgebruik alsmede alcohol-gerelateerde sociale problemen bleken de grootste aanzet te geven tot het zoeken van hulp. Na controle voor drankgebruik en drankproblematiek bleken getrouwde en hoog opgeleide probleemdrinkers ondervertegenwoordigd te zijn in de groep mensen die om hulp zoeken. Verder bleek dat de helft van deze probleemdrinkers geen instanties of mensen kenden die hulp konden bieden voor alcohol-gerelateerde problemen.

Naast hulpzoekgedrag op individueel niveau kan ook inzicht in hulpzoekgedrag op geaggregeerd niveau waardevolle informatie verschaffen. Inzicht in geografische verschillen in drinkpatronen, in alcoholgerelateerde schade en in hulpzoekgedrag, kan de lokale politici helpen bij het stellen van prioriteiten en het richten van beleidsmaatregelen op specifieke gebieden. De resultaten in dit proefschrift tonen grote verschillen aan tussen wijken wat betreft tot de prevalentie van drinkpatronen, alcoholgerelateerde problemen en probleemdrinken. Het aantal alcoholcliënten verschilde veel minder tussen de wijken. Op wijkniveau bleek het aantal alcoholpatiënten niet gerelateerd te zijn aan het percentage excessieve drinkers en het percentage probleemdrinkers. Gevonden werd echter dat hoe hoger het percentage geheelonthouders in een wijk, hoe lager het aantal alcoholpatiënten.

Behalve inzicht in de prevalenties van alcoholgebruik, probleemdrinken en hulpzoekgedrag, is ook inzicht in de normen en waarden met betrekking tot alcoholgebruik van groot belang voor het alcoholbeleid. Aan de ene kant beïnvloeden de normen en waarden met betrekking tot alcoholgebruik de drinkgewoonten van mensen en daarmee ook de problemen die uit alcoholgebruik voortvloeien. Aan de andere kant schetsen deze normen en waarden het kader waarbinnen het alcoholbeleid en zijn maatregelen worden geplaatst. De resultaten van deze studie tonen aan dat de normen en waarden met betrekking tot alcoholgebruik in Nederland omschreven kunnen worden door 'gematigd'. Door de jaren heen is drankgebruik zonder problemen meer en meer geaccepteerd (en wordt het zelfs aangemoedigd) terwijl excessief drankgebruik en de hiermee verbonden problemen nog steeds sterk worden afgekeurd. Deze houding wordt weerspiegeld in de mening van de bevolking over beleidsmaatregelen. Maatregelen zoals bijvoorbeeld de restrictie van drankgebruik in openbare gelegenheden en het verhogen van de leeftijdsgrens worden door de maatschappij onderschreven. Meer mensen zijn nu echter tegen restrictie van de algemene beschikbaarheid van alcohol. Hoewel rijden onder invloed de laatste jaren is gedaald, is de prevalentie nog steeds hoog, vooral onder diegenen die het meeste risico lopen.

Conclusies en beleidsaanbevelingen

Op basis van de methodologische bevindingen en de nog steeds bestaande onzekerheden zal het duidelijk zijn dat er meer aandacht besteed zou moeten worden aan methodologisch onderzoek met betrekking tot alcohol surveys. De wetenschappelijke en politieke interpretatie van de resultaten zou vergemakkelijkt worden als meer inzicht in methodologische kwesties voorhanden was. Zoals voor alle statistieken geldt, moeten de cijfers in dit proefschrift niet opgevat worden als absolute 'waarheden' maar als indicaties of schattingen van de werkelijke cijfers. De algemene conclusie die uit de methodologische resultaten getrokken kan worden, is dat cijfers in alcohol surveys betekenisvol zijn, en dat deze nog betekenisvoller worden als men zich bewust is van de beperkingen.

In dit proefschrift wordt inzicht verschaft in de prevalenties van (excessief) alcoholgebruik en probleemdrinken anno 1994, de veranderingen in prevalentie door de tijd heen, in de normen en waarden met betrekking tot alcoholgebruik en in hulpzoekgedrag in relatie tot alcoholgebruik. Deze kennis geldt voor de totale bevolking en voor verscheidene bevolkingsgroepen. Dit onderzoek toont net als andere onderzoeken aan dat alcoholconsumptie en de gevolgen ervan een groot maatschappelijk probleem vormen in Nederland. Aan de hand van bestaande literatuur en de resultaten van dit onderzoek wordt de meest doelmatige beleidsbenadering besproken. Samengevat kan worden gesteld dat een allesomvattend alcoholbeleid zich zou moeten richten op het voorkomen van overmatig drankgebruik en het verminderen van het aantal mensen met alcoholgerelateerde problemen. Het alcoholbeleid zou zowel preventieve als behandelingsactiviteiten moeten inhouden en zou zich goed rekeningschap moeten geven van de normen en waarden met betrekking tot alcohol in de samenleving. Als antwoord op het continuüm van drankgebruik wordt een continuüm aan maatregelen voorgestaan. Binnen dit continuüm kan de combinatie van primaire en secundaire preventie, en ook tertiaire preventie, op bevolkings- en op individueel niveau, op een synergistische wijze bijdragen tot het beperken van alcoholproblematiek.

DANKWOORD

DANKWOORD

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Een proefschrift komt er ook niet zonder vrienden. Jullie belangstelling voor mijn proefschrift heb ik zeer op prijs gesteld. Belangrijker wellicht was de tijd en aandacht die we samen aan andere dingen dan werk hebben besteed. Daardoor heb ik niet het gevoel gehad dat ik leefde om te promoveren. Iets wat me niet goed bekomen zou zijn! Martin van Dijk verdient hier speciale vermelding. Ik heb eventjes jouw 'baas' mogen zijn: de verzending van die ò zo belangrijke vragenlijsten is door jou heel soepel verlopen waarvoor mijn dank.

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CURRICULUM VITAE

CURRICULUM VITAE

Inge Bongers werd op 11 december 1970 geboren te Rotterdam. Zij behaalde haar Gymnasium-B diploma in 1989 aan de Scholengemeenschap Spieringshoek te Schiedam. In 1989 begon ze met de studie Biomedische Wetenschappen aan de Rijksuniversiteit Leiden. In het collegejaar 1992-'93 maakte ze een uitstapje naar de Erasmus universiteit Rotterdam alwaar zij slaagde voor het propedeuse examen van de studie Beleid Management Gezondheidszorg. Na het cum laude behalen van het doctoraalexamen Biomedische Wetenschappen in 1994 startte ze haar promotieonderzoek aan het Instituut voor Verslavingonderzoek te Rotterdam. In 1996 behaalde ze de Master of Science graad in de Epidemiologie aan het Nederlands Instituut voor Gezondheidswetenschappen (NIHES) waarna zij werd geregistreerd als Epidemioloog A. Sinds januari 1998 werkt ze deels als onderzoekskoördinator en deels als onderzoeker bij het Instituut voor Verslavingonderzoek te Rotterdam.

APPENDIX

Vragenlijst over leefgewoonten van de Rotterdamse bevolking

EERST EEN PAAR ALGEMENE VRAGEN.

1. In welk jaar bent u geboren?

.....

2. Bent u man of vrouw?

- 1 ☐ man
- 2 ☐ vrouw

3. Waar bent u geboren?

- 1 ☐ Nederland
- 2 ☐ Overig E.E.G.
- 3 ☐ Overig Europa
- 4 ☐ Suriname of Nederlandse Antillen
- 5 ☐ anders, nl.:

4a. Volgt u **op dit moment** een dag- of avondopleiding?

- 1 ☐ ja
- 2 ☐ nee

4b. Welke schoolopleiding heeft u **het laatst** gevolgd of volgt u nu?

S.v.p. één antwoord aankruisen.

- | | |
|--|---|
| 1 <input type="checkbox"/> lager onderwijs | (basisonderwijs) |
| 2 <input type="checkbox"/> lager beroepsonderwijs | (LTS, LHNO, huishoudschool, LEAO, lager land- en tuinbouwonderwijs, enz.) |
| 3 <input type="checkbox"/> middelbaar algemeen onderwijs | (LAVO, ULO, MULO/MAVO, 3-jaars HBS, enz.) |
| 4 <input type="checkbox"/> middelbaar beroepsonderwijs | (MTS, MEAO, praktijkdiploma boekhouden, kleuterkweekschool, enz.) |
| 5 <input type="checkbox"/> voortgezet algemeen onderwijs | (HBS, MMS, gymnasium, HAVO, VWO, enz.) |
| 6 <input type="checkbox"/> hoger beroepsonderwijs | (HTS, HEAO, sociale academie, HHNO, lerarenopleiding, enz.) |
| 7 <input type="checkbox"/> wetenschappelijk onderwijs | (doctoraal/ingenieursexamen, enz.) |
| 8 <input type="checkbox"/> anders, nl.: | |

4c. Heeft u van deze opleiding het diploma gehaald?

- 1 ☐ ja
- 2 ☐ nee

5a. Heeft u kinderen?

- 1 ☐ ja
- 2 ☐ nee -----> door naar vraag 6a

5b. Hoeveel kinderen wonen nog thuis (tenminste 4 van de 7 dagen)?

..... kinderen

6a. Tot welk kerkgenootschap, godsdienstige gemeenschap of levensbeschouwelijke groepering behoort u of wenst u zich te rekenen?

- 1 ☐ geen
- 2 ☐ Rooms-katholieke kerk
- 3 ☐ Nederlands-hervormde kerk
- 4 ☐ gereformeerde kerken of gereformeerde kerken-vrijgemaakt
- 5 ☐ overige protestantse kerken of groeperingen, nl.:.....
- 6 ☐ islamitische groeperingen
- 7 ☐ anders, nl.:.....
- 8 ☐ weet niet

6b. Gaat u **wel eens** naar de kerk, moskee, gebedsdienst?

- 1 ☐ nee, nooit
- 2 ☐ ja, minder dan een keer per week
- 3 ☐ ja, 1 keer per week of meer

NU VOLGEN ENIGE VRAGEN OVER ROOK-, DRINK- EN ANDERE GEWOONTEN.

7. Rookt u?

- 1 ☐ ja
- 2 ☐ nee, maar vroeger heb ik wel gerookt -----> door naar vraag 9a
- 3 ☐ nee, nooit gcrookt -----> door naar vraag 9a

8a. Wat rookt u en hoeveel?

Meerdere antwoorden mogelijk; per soort rookwaren het aantal invullen.

- 1 ☐ sigaretten (uit pakje of zelf gerold) ± sigaretten per dag
- 2 ☐ sigaren ± sigaren per week
- 3 ☐ pijp ± pakje(s) pijptabak per week

8b. Op welke leeftijd bent u begonnen met roken?

Ik was toen jaar.

8c. Heeft u lange stopperiodes gehad (van 6 maanden of langer)?

- 1 ☐ ja, in totaal jaar gestopt, maar rook momenteel weer
- 2 ☐ nee

9a. Ondervindt u **wel eens** hinder van het roken door anderen in openbare ruimten van een van de volgende instellingen?

ja ja nee

	<i>vaak</i>	<i>soms</i>	<i>nooit</i>
1 overheidsinstellingen (bv. gemeentelijke diensten en gebouwen)	()	()	()
2 instellingen van gezondheidszorg (ziekenhuizen, consultatieburo's)	()	()	()
3 instellingen voor sociaal-cultureel werk (buurthuizen, wijkcentra)	()	()	()
4 instellingen voor sport (sporthallen, zwembaden)	()	()	()
5 onderwijsinstellingen (scholen, basiseducatie)	()	()	()
6 particuliere bedrijven	()	()	()
7 andere instellingen, nl.:.....	()	()	()

9b. Ondervindt u wel eens hinder van het roken door anderen in een van de volgende openbare ruimtes?

	<i>ja vaak</i>	<i>ja soms</i>	<i>nee nooit</i>
1 ruimten waarin zich loketten bevinden	()	()	()
2 wachtkamers of wachttruimten	()	()	()
3 vergaderzalen of vergaderruimten	()	()	()
4 ruimten voor recreatie e.d.	()	()	()
5 kantines	()	()	()
6 leslokalen	()	()	()
7 restaurants	()	()	()
8 openbaar vervoer	()	()	()
9 overige openbare ruimten, nl.:.....	()	()	()

10. Ondervindt u wel eens hinder van het roken door anderen op uw werk?

- 1 () ja, vaak
- 2 () ja, soms
- 3 () nee, nooit
- 4 () niet van toepassing, want ik heb geen werk

11. Hierna volgt een aantal uitspraken. Wilt u voor elke uitspraak aangeven in hoeverre u het met die uitspraak eens of oneens bent.

	<i>helemaal mee eens</i>	<i>tamelijk mee eens</i>	<i>tamelijk mee oneens</i>	<i>helemaal mee oneens</i>	<i>weet niet</i>
Om niet-rokers te beschermen is het een goede zaak dat in openbare gebouwen een rookverbod is ingesteld.	()	()	()	()	()
De overheid mag zich absoluut niet bemoeien met het rookgedrag van mensen.	()	()	()	()	()
In elke publieke en gemeenschappelijke ruimte moeten 'verboden te roken' bordjes worden opgehangen.	()	()	()	()	()
Mensen die ondanks een rookverbod in een bepaalde ruimte toch roken, moeten aangepakt worden.	()	()	()	()	()

12a. Heeft u ooit hasj of marihuana (stuf, wiet) gebruikt (gerookt, of gegeten in cake bv.)?

- 1 () ja
- 2 () nee, nooit -----> door naar vraag 13

12b. Hoe oud was u toen u voor de **eerste keer** hasj of marihuana gebruikte?

..... jaar

12c. **Hoeveel keer** in uw leven heeft u hasj of marihuana gebruikt?

- 1 ☐ minder dan 5 keer
- 2 ☐ 5 tot 25 keer
- 3 ☐ meer dan 25 keer

12d. Hoe lang geleden is het dat u **de laatste keer** hasj of marihuana gebruikte?

- 1 ☐ afgelopen maand
- 2 ☐ het afgelopen jaar -----> door naar vraag 13
- 3 ☐ langer dan een jaar geleden -----> door naar vraag 13

12e. Op hoeveel dagen heeft u **de afgelopen maand** marihuana of hash gebruikt?

..... dagen

12f. Hoe komt u **meestal** aan uw hasj of marihuana?

- 1 ☐ krijg het meestal van anderen
- 2 ☐ gebruik meestal uit eigen teelt
- 3 ☐ koop meestal in koffieshop
- 4 ☐ koop meestal bij iemand thuis
- 5 ☐ anders, nl.:.....

13. Welke van onderstaande alcoholische drank gebruikt u **meestal** als u drinkt?
S.v.p. één antwoord aankruisen.

- 1 ☐ bier
- 2 ☐ wijn, sherry, port of vermouth
- 3 ☐ likeur, advocaat, bessenjenever of citroenjenever
- 4 ☐ jenever, brandewijn, vieux, rum, cognac, whisky, wodka of ander gedestilleerd
- 5 ☐ frisdrank gemengd met alcoholhoudende drank
- 6 ☐ verschilt erg per keer
- 7 ☐ alcoholarm of alcoholvrij bier -----> door naar vraag 14d
- 8 ☐ ik drink nooit alcohol -----> door naar vraag 14d

14a. Uit onderzoek is gebleken, dat een belangrijk deel van de bevolking min of meer geregeld zes of meer glazen alcoholhoudende drank op een dag gebruikt.
Heeft u het **afgelopen halfjaar** wel eens zes of meer glazen alcoholhoudende drank op een dag gedronken?

- 1 ☐ ja, elke dag

- 2 () ja, 5 à 6 keer per week
- 3 () ja, 3 à 4 keer per week
- 4 () ja, 1 à 2 keer per week
- 5 () ja, 1 à 3 keer per maand
- 6 () ja, 3 à 5 keer in dit halfjaar
- 7 () ja, 1 à 2 keer in dit halfjaar
- 8 () nec, geen enkele keer dit halfjaar
- 9 () weet niet

14b. Hoeveel **dagen per maand** drinkt u gemiddeld genomen?

- 1 () 28 of meer
- 2 () 24 t/m 27
- 3 () 21 t/m 23
- 4 () 15 t/m 20
- 5 () 12 t/m 14
- 6 () 9 t/m 11
- 7 () 6 t/m 8
- 8 () 3 t/m 5
- 9 () 2 of minder

14c. Als u op een dag alcohol drinkt, hoeveel glazen drinkt u dan gemiddeld (halve glazen naar boven afronden)?

- 1 () 11 of meer glazen
- 2 () 7 - 10 glazen
- 3 () 6 glazen
- 4 () 4 - 5 glazen
- 5 () 3 glazen
- 6 () 2 glazen
- 7 () 1 glas

14d. Zijn er in de **afgelopen tien jaar** periodes geweest dat u beduidend meer of minder dronk dan nu?

- 1 () nee, mijn drinkpatroon is ongeveer gelijk gebleven -----> door naar vraag 15a
- 2 () ja, ik heb beduidend meer gedronken dan ik nu doe
- 3 () ja, ik heb beduidend minder gedronken dan ik nu doe

14e. Kunt u **globaal** aangeven hoe lang u beduidend meer of minder heeft gedronken?

..... jaren maanden

15a. Kunt u aangeven hoe vaak u het **afgelopen halfjaar** thuis heeft gedronken? (op uw woonadres)

- 1 () elke dag
- 2 () 5 à 6 keer per week
- 3 () 3 à 4 keer per week
- 4 () 1 à 2 keer per week
- 5 () 1 à 3 keer per maand
- 6 () 3 à 5 keer per halfjaar

- 7 () 1 à 2 keer per halfjaar
 8 () nooit
 9 () weet niet

15b. En hoe vaak het afgelopen halfjaar in een van de hierna genoemde plaatsen?
 S.v.p. aankruisen wat op iedere plaats het meest van toepassing is.

	<i>elke dag</i>	<i>5 à 6 keer per week</i>	<i>3 à 4 keer per week</i>	<i>1 à 2 keer per week</i>	<i>1 à 3 keer per maand</i>	<i>3 à 5 keer per halfjaar</i>	<i>1 à 2 keer per halfjaar</i>	<i>nooit</i>	<i>weet niet</i>
Bij familie, vrienden of kennissen thuis.	()	()	()	()	()	()	()	()	()
In een café, restaurant of disco.	()	()	()	()	()	()	()	()	()
In een kantine van een sportclub.	()	()	()	()	()	()	()	()	()
In een buurthuis, jongeren-centrum of wijkgebouw.	()	()	()	()	()	()	()	()	()
Op school of op uw werkadres.	()	()	()	()	()	()	()	()	()

15c. Waar drinkt u per keer het meest?

- 1 () op het woonadres
 2 () in een café, restaurant, dancing of disco
 3 () in een club- of buurthuis, jongeren- of gemeenschapshuis
 4 () in een kantine van een sportclub
 5 () bij familie, vrienden en kennissen thuis
 6 () op het werkadres of school
 7 () anders, nl.:.....
 8 () weet niet

16a. Heeft u het afgelopen halfjaar wel eens op fruitautomaten gespeeld?

- 1 () ja
 2 () nee -----> door naar vraag 19

16b. Hoe vaak per maand speelde u het afgelopen halfjaar gemiddeld op de fruitautomaat?

..... keer per maand

17. Waar speelt u meestal op fruitautomaten?
 Meerdere antwoorden mogelijk.

- 1 () café, restaurant
 2 () cafeteria, snackbar, koffiehuis
 3 () automatenhal
 4 () wijkcentrum of buurthuis
 5 () casino
 6 () sportkantine

7 () anders, nl.:

18a. Hoe lang speelde u de afgelopen maand gemiddeld per keer?

..... uur per keer

18b. Hoeveel geld besteedt u gemiddeld per maand aan het spelen op een fruitautomaat?

..... gulden per maand

18c. Leent u wel eens geld om op een fruitautomaat te kunnen spelen?

1 () ja

2 () nee

19. Heeft u het afgelopen halfjaar wel eens aan een van de volgende kansspelen meegedaan?
Meerdere antwoorden mogelijk.

1 () bingo of kienen

2 () loterijen

3 () wedden op paarden/Ladbroke

4 () voetbaltoto

5 () casinospelen

6 () Golden Ten

7 () ander kansspel, nl.:

8 () nee, geen enkel spel

20a. Heeft u het afgelopen halfjaar slaap- of kalmerende middelen (zoals valium, librium, seresta, rohypnol) gebruikt?

1 () ja

2 () nee -----> door naar vraag 21

20b. Hoe vaak gebruikte u het afgelopen halfjaar slaap- of kalmerende middelen?

1 () 5 à 7 keer per week

2 () 3 à 4 keer per week

3 () 1 à 2 keer per week

4 () 1 à 3 keer per maand

5 () minder dan 1x per maand

6 () weet niet

21. Komt het wel eens voor dat u onderstaande activiteiten tegelijkertijd doet (met tegelijkertijd bedoelen we op één dag of avond, vlak na elkaar)?

S.v.p. aankruisen hoe vaak de betreffende combinatie voorkomt.

	<i>vaak</i>	<i>soms</i>	<i>zelden</i>	<i>nooit</i>
1 () roken en drinken	()	()	()	()
2 () roken en hasj gebruiken	()	()	()	()
3 () drinken en spelen op fruitautomaat	()	()	()	()
4 () roken, drinken en spelen op fruitautomaat	()	()	()	()

- | | | | | | |
|---|--|--------------------------|--------------------------|--------------------------|--------------------------|
| 5 | <input type="checkbox"/> roken, drinken en hasj gebruiken | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6 | <input type="checkbox"/> drinken en slaap- of kalmerend middel gebruiken | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 7 | <input type="checkbox"/> een andere combinatie, nl.:..... | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

22a. Uit onderzoek is naar voren gekomen dat mensen veel op- en aanmerkingen maken wat betreft elkaars drinken.

Heeft uw partner (indien geen partner: uw ouders) het afgelopen halfjaar wel eens geklaagd dat u drinkt of heeft (hebben) hij/zij u aangeraden minder te drinken?

- 1 ☐ ja
2 ☐ nee

22b. Heeft uw partner ooit gedreigd weg te gaan of is hij/zij echt weggegaan vanwege uw drinken?

- 1 ☐ ja
2 ☐ nee
3 ☐ niet van toepassing

22c. Hebben familie, vrienden of kennissen het afgelopen halfjaar wel eens geklaagd dat u teveel geld opmaakt aan drinken?

- 1 ☐ ja
2 ☐ nee

22d. Hebben familie, vrienden of kennissen het afgelopen halfjaar wel eens geklaagd dat u door het drinken agressief wordt?

- 1 ☐ ja
2 ☐ nee

22e. Heeft u ooit wel eens (andere) op- en aanmerkingen op uw drinkgewoonten gekregen?

- 1 ☐ ja
2 ☐ nee

23. Bent u voor of tegen:

- | | <i>voor</i> | <i>tegen</i> |
|---|--------------------------|--------------------------|
| - een verbod op alcoholreclame | <input type="checkbox"/> | <input type="checkbox"/> |
| - dat een glas alcoholhoudende drank 50 cent duurder wordt | <input type="checkbox"/> | <input type="checkbox"/> |
| - beperking van gebruik van alcoholhoudende drank in openbare gelegenheden als scholen, treinen, zwembaden e.d. | <input type="checkbox"/> | <input type="checkbox"/> |

- verhogen van de leeftijdsgrens, waaronder men geen alcoholhoudende drank mag kopen () ()
- beperken van het aantal cafés () ()
- beperken van het aantal winkels waar alcoholhoudende drank verkocht wordt () ()

24. Bent u, sinds de allereerste keer dat u alcoholhoudende drank dronk, ooit aangeschoten of dronken geweest?

- 1 ☐ ja
 2 ☐ nee, nooit dronken of aangeschoten geweest -----> door naar vraag 28

25. Hoe lang geleden was u voor het laatst dronken of aangeschoten?

- 1 ☐ minder dan 1 week
 2 ☐ 1-3 weken
 3 ☐ 1-2 maanden
 4 ☐ 3-5 maanden
 5 ☐ 6-11 maanden -----> door naar vraag 28
 6 ☐ 1-2 jaar -----> door naar vraag 28
 7 ☐ 3 jaar of langer -----> door naar vraag 28
 8 ☐ weet niet -----> door naar vraag 28

26. Hoe vaak was u het afgelopen halfjaar dronken of aangeschoten?

- 1 ☐ elke dag
 2 ☐ 5 à 6 keer per week
 3 ☐ 3 à 4 keer per week
 4 ☐ 1 à 2 keer per week
 5 ☐ 1 à 3 keer per maand
 6 ☐ 3 à 5 keer per halfjaar
 7 ☐ 1 à 2 keer per halfjaar
 8 ☐ weet niet

27. Hoe vaak was u dronken of aangeschoten in de periode dat u het meest dronk?

- 1 ☐ elke dag
 2 ☐ 5 à 6 keer per week
 3 ☐ 3 à 4 keer per week
 4 ☐ 1 à 2 keer per week
 5 ☐ 1 à 3 keer per maand
 6 ☐ 3 à 5 keer per halfjaar
 7 ☐ 1 à 2 keer per halfjaar
 8 ☐ weet niet

28. Heeft u het afgelopen halfjaar wel eens last gehad van een kater als u opstond? Met kater bedoelen we een dof gevoel in het hoofd en nadorst hebben.

- 1 ☐ ja
 2 ☐ nee -----> door naar vraag 30
 3 ☐ weet niet -----> door naar vraag 30

29. **Hoe vaak** heeft u het **afgelopen halfjaar** last gehad van een kater? Met kater bedoelen we een dof gevoel in het hoofd en nadorst hebben.

- 1 ☐ elke dag
 2 ☐ 5 à 6 keer per week
 3 ☐ 3 à 4 keer per week
 4 ☐ 1 à 2 keer per week
 5 ☐ 1 à 3 keer per maand
 6 ☐ 3 à 5 keer per halfjaar
 7 ☐ 1 à 2 keer per halfjaar
 8 ☐ weet niet

30. Hoe vaak heeft u het **afgelopen halfjaar** wel eens wat gedronken zonder dat iemand anders daarbij aanwezig was?

- 1 ☐ elke dag
 2 ☐ 5 à 6 keer per week
 3 ☐ 3 à 4 keer per week
 4 ☐ 1 à 2 keer per week
 5 ☐ 1 à 3 keer per maand
 6 ☐ 3 à 5 keer per halfjaar
 7 ☐ 1 à 2 keer per halfjaar
 8 ☐ nooit
 9 ☐ weet niet

31. Heeft u het **afgelopen halfjaar** wel eens het gevoel gehad dat het drinken van alcohol bij u schadelijke gevolgen had op één van de volgende gebieden?

S.v.p. per gebied het betreffende antwoord aankruisen.

	<i>ja</i>	<i>nee</i>	<i>weet niet</i>
- op uw vriendenkring, kennissen?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- op de situatie thuis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- op de contacten met de burens?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- op uw werk of op kansen om werk te krijgen?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

32a. Heeft uw alcoholgebruik **wel eens** geleid tot last met politie en/of justitie?

- 1 ☐ ja
 2 ☐ nee -----> door naar vraag 33a
 3 ☐ weet niet -----> door naar vraag 33a

32b. Hoe lang geleden was dat voor **het** laatste?

- 1 ☐ 0-5 maanden
 2 ☐ 6-11 maanden
 3 ☐ 1 tot bijna 2 jaar
 4 ☐ 2 tot 4 jaar
 5 ☐ 5 jaar of langer
 6 ☐ weet niet

33a. Kent u in Rotterdam instellingen of mensen die hulp verlenen bij problemen rond alcoholgebruik?

- 1 ☐ ja
 2 ☐ nee -----> door naar vraag 34

33b. Welke instellingen/wie kent u?

34. Hieronder volgt een lijst met uitspraken van mensen waarom zij drinken. Zou u bij deze uitspraken ook willen aanstrepen of dat voor u "waar", "een beetje waar" of "niet waar" is?

	<i>waar waar</i>	<i>een beetje waar</i>	<i>niet waar</i>
Ik drink voor de gezelligheid.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drinken helpt me mijn zorgen te vergeten.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drinken vrolijkt me op als ik in een slechte bui ben.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik drink omdat ik het lekker vind.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drinken helpt me om me beter te voelen als ik gespannen of nerveus ben.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik drink om speciale gelegenheden te vieren.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik drink omdat de mensen er vaak zo op aan dringen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drinken helpt me om beter te denken en te werken.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drinken geeft me meer zelfvertrouwen.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Door een drankje kan ik er beter tegen dat ik eenzaam ben.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ik neem een drankje aan omdat dat zo hoort in bepaalde situaties.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

35a. Stel, er is een feestje, hoeveel glazen alcoholhoudende drank mag een man van uw leeftijd dan volgens u drinken? Hij hoeft zelf geen auto meer te rijden.

- 1 ☐ zoveel als hij zelf wil
 2 ☐ 16 of meer glazen
 3 ☐ 11-15 glazen
 4 ☐ 7-10 glazen
 5 ☐ 5 of 6 glazen
 6 ☐ 3 of 4 glazen
 7 ☐ 2 glazen
 8 ☐ 1 glas
 9 ☐ 0 glazen
 10 ☐ weet niet

35b. En een vrouw van uw leeftijd? Ook zij hoeft zelf niet meer te rijden.

- 1 ☐ zoveel als zij zelf wil

- 2 ☐ 16 of meer glazen
- 3 ☐ 11-15 glazen
- 4 ☐ 7-10 glazen
- 5 ☐ 5 of 6 glazen
- 6 ☐ 3 of 4 glazen
- 7 ☐ 2 glazen
- 8 ☐ 1 glas
- 9 ☐ 0 glazen
- 10 ☐ weet niet

36. Als u ergens 3 of meer glazen alcoholhoudende drank drinkt, hoe gaat u dan meestal naar huis?
Meerdere antwoorden mogelijk.

- 1 ☐ rij zelf met auto, motor of bromfiets
- 2 ☐ fiets
- 3 ☐ neem een taxi, het openbaar vervoer of rij mee met partner/vriend(in)
- 4 ☐ loop naar huis
- 5 ☐ komt nooit voor, drink nooit (3 of meer glazen alcoholhoudende drank)
- 6 ☐ anders, nl.:.....

37. Zou u het erg vinden als iemand van uw gezin of naaste familie:
S.v.p. aankruisen wat bij elke uitspraak het meest van toepassing is.

	<i>ja</i>	<i>nee</i>	<i>weet niet</i>
- nu en dan aangeschoten was?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- elke week dronken was?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- uit principe helemaal niet drinkt?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

38. Het komt vaak voor dat mensen het gebruik van alcohol ervaren zoals op deze lijst staat aangegeven.
 Zou u zelf bij iedere uitspraak willen aanstrepen of u ook zo iets het afgelopen halfjaar heeft meegemaakt?

	<i>had deze ervaring</i>	<i>had deze ervaring niet</i>
Ik vond het wel eens moeilijk mijn werk te doen zonder zo nu en dan een paar glazen te drinken.	<input type="checkbox"/>	<input type="checkbox"/>
Ik sloeg zo nu en dan maaltijden over als ik aan het drinken was.	<input type="checkbox"/>	<input type="checkbox"/>
Ik ben wel eens wakker geworden nadat ik de dag ervoor gedronken had en ik wist niet meer wat ik tijdens het drinken had gedaan.	<input type="checkbox"/>	<input type="checkbox"/>
Als ik eenmaal begonnen was met drinken was het moeilijk voor me om te stoppen.	<input type="checkbox"/>	<input type="checkbox"/>
Ik dronk wel eens stiekem.	<input type="checkbox"/>	<input type="checkbox"/>

Ik kon mijn werk niet doen omdat ik de dag ervoor te veel gedronken had.	<input type="checkbox"/>	<input type="checkbox"/>
Voordat ik naar een feestje ging, nam ik gauw een paar glaasjes om zeker te zijn dat ik genoeg kreeg.	<input type="checkbox"/>	<input type="checkbox"/>
Ik begon 's morgens al te drinken, meteen nadat ik opgestaan was.	<input type="checkbox"/>	<input type="checkbox"/>
Ik had de ochtend nadat ik gedronken had trillende handen.	<input type="checkbox"/>	<input type="checkbox"/>
Ik ging soms door met drinken terwijl ik mezelf beloofd had dat niet te doen.	<input type="checkbox"/>	<input type="checkbox"/>
Door het gebruik van alcohol was ik de gangmaker op een feestje.	<input type="checkbox"/>	<input type="checkbox"/>
Mijn familie ergerde zich aan mijn drinken.	<input type="checkbox"/>	<input type="checkbox"/>
Vrienden vonden dat ik minder moest gaan drinken.	<input type="checkbox"/>	<input type="checkbox"/>
Mijn drinken was mede een oorzaak van het verlies van een vriendschap of een verwijdering tussen mij en mijn vrienden.	<input type="checkbox"/>	<input type="checkbox"/>
De burens zeiden dat ik minder moest gaan drinken.	<input type="checkbox"/>	<input type="checkbox"/>
Ik ben in een ziekenhuis of kliniek geweest voor een ziekte die verband hield met drinken.	<input type="checkbox"/>	<input type="checkbox"/>
Drinken bracht mij ertoe met mijn werk op te houden.	<input type="checkbox"/>	<input type="checkbox"/>
Ik ben mijn baan bijna of helemaal kwijtgeraakt door het drinken.	<input type="checkbox"/>	<input type="checkbox"/>
Ik ben op mijn werk dronken of aangeschoten geweest.	<input type="checkbox"/>	<input type="checkbox"/>
Ik heb wel eens een ongeval of ongeluk gehad nadat ik gedronken had.	<input type="checkbox"/>	<input type="checkbox"/>

39a. Heeft u ooit bewust geprobeerd te stoppen of te minderen met drinken van alcoholhoudende drank?

- 1 ☐ ja
- 2 ☐ nee -----> door naar vraag 41
- 3 ☐ weet niet -----> door naar vraag 41

39b. Hoe vaak heeft u geprobeerd te minderen of te stoppen?

- 1 ☐ 1 maal
- 2 ☐ 2 - 3 maal
- 3 ☐ 4 - 10 maal
- 4 ☐ 10 maal of meer
- 5 ☐ weet niet

39c. Wanneer heeft u dit voor de laatste maal geprobeerd?

- 1 ☐ minder dan 1 maand geleden
- 2 ☐ 1 - 6 maanden geleden
- 3 ☐ 7 - 12 maanden geleden

- 4 ☐ 1 - 5 jaar geleden
- 5 ☐ 6 jaar of langer geleden
- 6 ☐ weet niet

40a. Heeft u vroeger wel eens hulp gehad of krijgt u nu hulp i.v.m. uw drinken van alcoholhoudende drank?

- 1 ☐ ja, krijg nu hulp
- 2 ☐ nee, krijg nu geen hulp, maar vroeger wel gehad
- 3 ☐ nee, nooit hulp gehad -----> door naar vraag 40

40b. Wanneer heeft u voor het laatst hulp gekregen?

- 1 ☐ minder dan 1 maand geleden
- 2 ☐ 1 - 6 maanden geleden
- 3 ☐ 7 - 12 maanden geleden
- 4 ☐ 1 - 5 jaar geleden
- 5 ☐ 6 jaar of langer geleden
- 6 ☐ niet van toepassing
- 7 ☐ weet niet

40c. Van wie krijgt/kreeg u hulp?

Meerdere antwoorden mogelijk.

- 1 ☐ partner
- 2 ☐ ouders
- 3 ☐ andere familie
- 4 ☐ vrienden/kennissen
- 5 ☐ maatschappelijk werker
- 6 ☐ huisarts/specialist
- 7 ☐ Anonieme Alcoholisten
- 8 ☐ C.A.D.
- 9 ☐ psychiater/psycholoog
- 10 ☐ weet niet
- 11 ☐ anders, nl.:

NU VOLGT EEN AANTAL VRAGEN OVER UW GEZONDHEID.

41. Vindt u uw gezondheid over het algemeen goed, matig of slecht?

- 1 ☐ goed
- 2 ☐ matig
- 3 ☐ slecht

42. Hoeveel kilo weegt u?

..... kilo

43. Hoe lang bent u ?

..... cm

44. Hierna volgt een aantal uitspraken. Kunt u aangeven of deze uitspraken voor u in het algemeen "waar" of "niet waar" zijn?

	<i>waar</i>	<i>niet waar</i>
Ik voel me soms gepikeerd als ik mijn zin niet krijg.	()	()
Het is soms moeilijk voor me om met mijn werk door te gaan als ik niet wordt aangemoedigd.	()	()
Ik heb nooit een sterke hekel aan iemand gehad.	()	()
Zo nu en dan twijfel ik eraan of ik in het leven kan slagen.	()	()
Bij enkele gelegenheden heb ik er vanaf gezien iets te doen omdat ik dacht dat ik het niet aan zou kunnen.	()	()
Ongeacht met wie ik spreek, ik kan altijd goed luisteren.	()	()
Ik kan me herinneren me ziek gehouden te hebben om ergens vanaf te komen.	()	()
Als ik een fout maak, ben ik altijd bereid deze toe te geven..	()	()
Ik vind het niet bijzonder moeilijk om met mensen op te schieten die luidruchtig van aard zijn.	()	()
Ik ben altijd beleefd, zelfs tegen onprettige mensen.	()	()
Soms heb ik zin de boel kort en klein te slaan.	()	()
Ik heb me nooit geërgerd wanneer men ideeën tot uitdrukking bracht die erg verschillen van mijn opvattingen.	()	()
Ik ben soms erg jaloeers op het materiële geluk van anderen.	()	()
Ik heb nooit met opzet iets gezegd waardoor de gevoelens van een ander werden gekwetst.	()	()

45a. Heeft u in de afgelopen vijf jaar een ernstige ziekte of ernstige problemen met uw gezondheid gehad?

- 1 () ja, gehad
 2 () nee -----> door naar vraag 45c

45b. Om wat voor ziekte(n)/gezondheidsproble(e)m(en) gaat/ging het?

45c. Hoeveel dagen bent u het afgelopen halfjaar ziek geweest? Met ziek bedoelen we verzuimen van uw werk of niet uw dagelijkse bezigheden kunnen uitvoeren.

..... dagen of weken

46a. Heeft u het afgelopen halfjaar in of om het huis een ongeluk gehad? Bijvoorbeeld gesneden, gevallen, gebrand, gestoten of ander letsel opgelopen.

- 1 () ja
 2 () nee

46b. Zo ja, hoe vaak is dat gebeurd het afgelopen halfjaar?

..... keer

47a. Heeft u het afgelopen halfjaar een ongeluk gehad in een auto of met een ander voertuig, met de (brom)fiets of als voetganger? Het gaat om ongelukken waarbij u een verwonding heeft opgelopen of ergens last van heeft gekregen.

1 ☐ ja

2 ☐ nee

47b. Zo ja, hoe vaak gebeurde dat het afgelopen halfjaar?

..... keer

48a. Heeft u het afgelopen halfjaar contact gehad met uw huisarts (voor uzelf, dus niet voor anderen)?

1 ☐ geen enkele maal -----> door naar vraag 49

2 ☐ 1 maal

3 ☐ 2 of 3 maal

4 ☐ 4 of 5 maal

5 ☐ 6 maal of meer

48b. Wat was de reden voor het laatste contact met uw huisarts?

1 ☐ een klacht, nl.:

2 ☐ een herhalingsrecept

3 ☐ voorbehoedmiddelen

4 ☐ anders, nl.:

49. Heeft de huisarts wel eens een opmerking gemaakt over uw drankgebruik?

1 ☐ ja

2 ☐ nee

50. Wilt u per gebeurtenis aangeven of u deze het laatste jaar zelf heeft meegemaakt?

ja

nee

Verhuizing?

☐

☐

Belangrijke achteruitgang van uw financiële positie?

☐

☐

Slachtoffer worden van beroving, diefstal, mishandeling of verkrachting?

☐

☐

Werkloos worden?

☐

☐

Werkloos worden van uw partner of een ander gezinslid?

☐

☐

Een ernstige ziekte van uw partner of een lid van uw naaste familie?

☐

☐

Overlijden van uw partner?

☐

☐

Overlijden van uw (schoon)vader of -moeder, een kind, een broer of zus, een goede vriend of vriendin?

☐

☐

Echtscheiding of verbreken van de relatie met uw partner?

() ()

NU VOLGEN ENKELE ACHTERGRONDVRAGEN OVER U EN UW EVENTUELE PARTNER.

51. Welke omschrijving is op dit moment op uzelf het **meest** van toepassing?
S.v.p. één antwoord aankruisen.

- 1 () ik heb betaald werk -----> door naar vraag 53a
- 2 () ik ben werkloos
- 3 () ik ben arbeidsongeschikt
- 4 () ik ben rentenier
- 5 () ik ben gepensioneerd/vervroegd met pensioen (AOW, VUT, enz.)
- 6 () ik ben huisvrouw/huisman
- 7 () ik ben scholier/student -----> door naar vraag 56
- 8 () ik ben dienstplichtig militair -----> door naar vraag 56

52. Had u **vroeger** een baan of beroep waarmee u een inkomen verdiende?

- 1 () ja
- 2 () nee -----> door naar vraag 56

53a. Wat is uw beroep of functie? Of, als u nu geen betaalde baan heeft, wat was dan uw **laatste** beroep of functie?

Wilt u uw beroep zo nauwkeurig mogelijk omschrijven? Bijvoorbeeld: directie-secretaresse, metaallasser, hoofd boekhouding (en *niet* ambtenaar, manager, arbeider, etc.).

53b. Kunt u uw beroep/functie toelichten door te omschrijven wat uw voornaamste werkzaamheden zijn (waren)?

53c. Bij wat voor **soort bedrijf of instelling** werkt(e) u? Als u in een groot bedrijf werkt(e), wilt u dan ook het onderdeel of de afdeling vermelden?

54. In wat voor verband bent (was) u werkzaam?

- 1 () in loondienst
- 2 () als zelfstandige

- 3 () in een maatschap (combinatie van loondienst en zelfstandig)
 4 () als meewerkend gezinslid -----> door naar vraag 56

55. Heeft (had) u werknemers in dienst of geeft (gaf) u leiding aan personeel?
Personeel waaraan u via anderen leiding geeft (gaf) ook meetellen.

- 1 () nee
 2 () ja, 1 t/m 4 medewerkers
 3 () ja, 5 t/m 9 medewerkers
 4 () ja, 10 t/m 19 medewerkers
 5 () ja, 20 t/m 49 medewerkers
 6 () ja, 50 of meer medewerkers

56. Wat is uw burgerlijke staat?

- 1 () ik ben gehuwd
 2 () ik ben samenwonend
 3 () ik ben ongehuwd en nooit gehuwd geweest -----> door naar vraag 63
 4 () ik ben gescheiden/gescheiden levend -----> door naar vraag 63
 5 () ik ben weduwe/weduwenaar -----> door naar vraag 63

57. Bent u (momenteel) hoofdkostwinner?

- 1 () ja
 2 () nee

DE VOLGENDE VRAGEN GAAN OVER DE OPLEIDING VAN UW PARTNER.

58a. Volgt uw partner op dit moment een dag- of avondopleiding?

- 1 () ja
 2 () nee

58b. Welke schoolopleiding heeft uw partner het laatst gevolgd of volgt hij of zij nu?
S.v.p. één antwoord aankruisen.

- | | |
|-------------------------------------|---|
| 1 () lager onderwijs | (basisonderwijs) |
| 2 () lager beroepsonderwijs | (ITS, LHNO, huishoudschool, LEAO, lager land- en tuinbouwonderwijs, enz.) |
| 3 () middelbaar algemeen onderwijs | (LAVO, ULO, MULO/MAVO, 3-jaars HBS, enz.) |
| 4 () middelbaar beroepsonderwijs | (MTS, MEAO, praktijkdiploma boekhouden, kleuterkweekschool, enz.) |
| 5 () voortgezet algemeen onderwijs | (HBS, MMS, gymnasium, HAVO, VWO, enz.) |
| 6 () hoger beroepsonderwijs | (HTS, HEAO, sociale academie, HHNO, lerarenopleiding, enz.) |
| 7 () wetenschappelijk onderwijs | (doctoraal/ingenieursexamen, etc.) |
| 8 () anders, nl.:..... | |

58c. Heeft uw partner van deze opleiding het diploma gehaald?

- 1 () ja
 2 () nee

De VOLGENDE VRAGEN GAAN OVER HET *BEROEP* VAN UW PARTNER.

59. Welke omschrijving is op uw partner het **meest** van toepassing
(één antwoord aankruisen)?

- 1 ☐ hij/zij heeft betaald werk -----> door naar vraag 61a
- 2 ☐ hij/zij is werkloos
- 3 ☐ hij/zij is arbeidsongeschikt
- 4 ☐ hij/zij is rentenier
- 5 ☐ hij/zij is gepensioneerd/vervroegd met pensioen (AOW, VUT, enz.)
- 6 ☐ hij/zij is huisman/huisvrouw
- 7 ☐ hij/zij is scholier/student -----> door naar vraag 63
- 8 ☐ hij/zij is dienstplichtig militair -----> door naar vraag 63

60. Had uw partner vroeger een baan of beroep waarmee hij/zij een inkomen verdiende?

- 1 ☐ ja
- 2 ☐ nee -----> door naar vraag 63

- 61a. Wat is het beroep of de functie van uw partner? Of, als deze nu geen betaalde baan heeft, wat was dan zijn/haar **laatste** beroep of functie?

Wilt u dit beroep zo nauwkeurig mogelijk omschrijven? Bijvoorbeeld: directie-secretaresse, metaallasser, hoofd boekhouding (en *niet* ambtenaar, manager, arbeider, etc.)

- 61b. Kunt u dit beroep/deze functie toelichten door te omschrijven wat de voornaamste werkzaamheden van uw partner zijn (waren)?

- 61c. Bij wat voor soort bedrijf of instelling werkt(e) uw partner? Als hij/zij bij een groot bedrijf werkt(e), wilt u dan ook het onderdeel of de afdeling vermelden?

- 62a. In wat voor verband is (was) uw partner werkzaam?

- 1 ☐ in loondienst
- 2 ☐ als zelfstandige
- 3 ☐ in een maatschap (combinatie van loondienst en zelfstandig)
- 4 ☐ als meewerkend gezinslid in eigen bedrijf -----> door naar vraag 62

- 62b. Heeft (had) uw partner werknemers in dienst of geeft (gaf) hij/zij leiding aan personeel?
Wilt u personeel waaraan hij/zij via anderen leiding geeft (gaf) ook meetellen?

- 1 ☐ nee
- 2 ☐ ja, 1 t/m 4 medewerkers
- 3 ☐ ja, 5 t/m 9 medewerkers
- 4 ☐ ja, 10 t/m 19 medewerkers
- 5 ☐ ja, 20 t/m 49 medewerkers
- 6 ☐ ja, 50 of meer medewerkers

DE VOLGENDE VRAGEN GAAN OVER *HET DRINKGEDRAG* VAN UW PARTNER.

63. Welke van onderstaande alcoholische drank gebruikt uw partner **meestal** als hij of zij drinkt?
S.v.p. één antwoord aankruisen.

- 1 ☐ bier
- 2 ☐ wijn, sherry, port of vermouth
- 3 ☐ likeur, advocaat, bessenjenever of citroenjenever
- 4 ☐ jenever, brandewijn, vieux, rum, cognac, whisky, wodka of ander gedestilleerd
- 5 ☐ frisdrank gemengd met alcoholhoudende drank
- 6 ☐ verschilt erg per keer
- 7 ☐ alcoholarm of alcoholvrij bier -----> door naar vraag 65
- 8 ☐ ik drink nooit alcohol -----> door naar vraag 65

- 64a. Uit onderzoek is gebleken, dat een belangrijk deel van de bevolking min of meer geregeld zes of meer glazen alcoholhoudende drank op een dag gebruikt.

Heeft uw partner het afgelopen halfjaar wel eens zes of meer glazen alcoholhoudende drank op een dag gedronken?

- 1 ☐ ja, elke dag
- 2 ☐ ja, 5 à 6 keer per week
- 3 ☐ ja, 3 à 4 keer per week
- 4 ☐ ja, 1 à 2 keer per week
- 5 ☐ ja, 1 à 3 keer per maand
- 6 ☐ ja, 3 à 5 keer in dit halfjaar
- 7 ☐ ja, 1 à 2 keer in dit halfjaar
- 8 ☐ nee, geen enkele keer dit halfjaar
- 9 ☐ weet niet

- 64b. Hoeveel dagen per maand drinkt uw partner gemiddeld genomen?

- 1 ☐ 28 of meer
- 2 ☐ 24 t/m 27
- 3 ☐ 21 t/m 23
- 4 ☐ 15 t/m 20
- 5 ☐ 12 t/m 14
- 6 ☐ 9 t/m 11
- 7 ☐ 6 t/m 8
- 8 ☐ 3 t/m 5
- 9 ☐ 2 of minder

- 64c. Als uw partner op een dag alcohol drinkt, hoeveel glazen drinkt hij of zij dan gemiddeld (halve glazen naar boven afronden)?

- 1 ☐ 11 of meer glazen
- 2 ☐ 7 - 10 glazen
- 3 ☐ 6 glazen

- 4 () 4 - 5 glazen
- 5 () 3 glazen
- 6 () 2 glazen
- 7 () 1 glas

NOG TWEE VRAGEN OVER UW HUISHOUDEN.

65. Kunt u ongeveer aangeven hoe hoog het **netto jaarinkomen** (maandinkomen x 12, plus vakantie-uitkering en/of dertiende maand) is van het **huishouden** waartoe u behoort? Het gaat hier om uw eigen inkomen **plus** dat van uw eventuele partner. We bedoelen met netto-jaarinkomen wat u 'schoon', na aftrek van belastingen en premies, in handen krijgt.
Wij begrijpen goed dat u deze vraag wellicht als persoonlijk beschouwt. Daarom vragen wij ook geen exact bedrag, maar hoeft u slechts aan te geven in welke categorie uw inkomen ligt. Wij zouden het zeer op prijs stellen als u ook deze vraag zou willen beantwoorden.

netto- inkomen per jaar

- 1 ☐ minder dan f 12.500,--
 - 2 ☐ f 12.500 tot f 25.000,--
 - 3 ☐ f 25.000 tot f 45.000,--
 - 4 ☐ f 45.000 tot f 65.000,--
 - 5 ☐ f 65.000 tot f 85.000,--
 - 6 ☐ f meer dan 85.000,--
 - 7 ☐ weet absoluut niet
66. Hoe is op dit moment de financiële situatie van uw huishouden?
- 1 ☐ moet schulden maken
 - 2 ☐ moet spaarmiddelen enigszins aanspreken
 - 3 ☐ kan precies rondkomen
 - 4 ☐ kan een beetje geld overhouden
 - 5 ☐ kan veel geld overhouden
 - 6 ☐ weet niet

TOT SLOT TWEE VRAGEN OVER UW EVENTUELE DEELNAME AAN VERVOLGONDERZOEK.

65. De door u verstrekte gegevens worden door ons zodanig bewaard, dat slechts het onderzoeksteam er toegang toe heeft. Met uw gegevens zal zeer zorgvuldig worden omgegaan. Wij willen uw gegevens bewaren omdat wij in de toekomst mogelijk nog een vervolg aan dit onderzoek willen geven.

Heeft u er bezwaar tegen als u over een aantal jaren nogmaals door ons wordt benaderd voor een vervolgonderzoek?

1. ☐ nee
 2. ☐ ja
66. Ook de Universiteit van Amsterdam verricht onderzoek op dit terrein. Heeft u er bezwaar tegen dat u eventueel over enige maanden benaderd wordt door medewerkers van de Universiteit van Amsterdam in verband met een vervolgonderzoek?
1. ☐ nee
 2. ☐ ja

Wij danken u hartelijk voor uw medewerking!

