

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

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Abstract — In 1980/1981 and in 1994, two surveys on problem drinking were conducted in the city of Rotterdam. This article presents data on changes in alcohol consumption and alcohol-related problems between 1981 and 1994. Special attention has been paid to possible shifts in groups at risk and to shifts in the kind of problems experienced. It was found that, in 1994, compared to 1981, problem drinking had become more prevalent amongst the young and the middle aged.

INTRODUCTION

The level of alcohol consumption in The Netherlands is, compared to other countries, moderate. In 1996, the consumption per capita was 8.0 l of pure alcohol (World Drink Trends, 1997). This is less than in neighbouring countries such as France (11.1 l), Germany (9.8 l) and Belgium (9.0 l), but more than in other western European countries, e.g. the UK (7.6 l) and more than in the USA (6.6 l).

There have been big changes in Dutch alcohol consumption over time. During the period 1960–1975, there was a sharp rise in alcohol consumption per capita from 2.6 to 8.7 l. 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, but later decreased slightly to 8.0 l in 1996. The decrease in alcohol consumption per capita over the period 1980–1995 can be quantified as a percentage change of 10%. These figures, based on alcohol sales data, show that ‘the Dutch’ have 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 prevalence of alcohol-related problems. Some general figures on changes in the prevalence of alcohol-related problems are available (for instance mortality and hospital figures), but these are not always reliable and have no background variables.

In order to obtain more insight into 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 1980/1981 in the city of Rotterdam and the province of Limburg (Garretsen, 1983, 1984; Knibbe, 1984; Garretsen and Knibbe, 1985*a,b*). The Rotterdam study was repeated in 1994 (van de Goor *et al.*, 1996; Bongers *et al.*, 1997*a*) and the study in Limburg in 1989 (Hajema *et al.*, 1997). Alcohol consumption in big cities, like Rotterdam, resembles the average consumption of the total Dutch population, whereas in southern provinces, like Limburg, people drink more than average (Garretsen and Raat, 1987; van Oers *et al.*, 1997). Some figures on changes in alcohol consumption in Rotterdam between 1987 and 1996, based on municipal health surveys, have been published in Dutch (Toet *et al.*, 1998).

In this article, data on changes in consumption and in alcohol-related problems in Rotterdam between 1980 and 1994 are presented. The study

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addressed the following questions: (1) what was the development of alcohol consumption over the period 1980–1994 in the total Rotterdam population and its subpopulations, defined by socio-demographic factors? (2) what was 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? The results are presented as shifts in (problem) drinking and kind of problems experienced. Furthermore, shifts in population groups at risk for (problem) drinking are also shown.

METHODS AND MEASUREMENTS

Data

The results are based on two cross-sectional general population surveys on (problem) drinking carried out in Rotterdam in 1980 and in 1994.

In 1980, data were collected by means of a structured face-to-face interview carried out at the homes of the respondents. In total, 2150 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 and Knibbe, 1985a). The sample included inhabitants of Rotterdam between 16 and 69 years of age. To avoid language problems, respondents had to be Dutch nationals. The response was hardly selective in terms of sex and age and so the use of a weighed data set was not necessary (Garretsen, 1983).

The survey conducted in 1980/1981 was repeated in 1994. This time a random sample of 8000 inhabitants of Rotterdam was drawn, again aged between 16 and 69 years and with Dutch nationality. Due to privacy reasons, it was not possible to interview the same respondents again. The 1994 questionnaire contained the same drinking and alcohol-related problem questions as in 1980/1981; however, more questions were asked on other 'risky life styles' e.g. smoking, the use of sleeping pills, the use of hashish and marijuana, and gambling. In 1994, data were collected by means of postal questionnaires ($n = 7500$) and by face-to-face interviews ($n = 500$). As no differences in self-reported drinking habits by data collection method were found (Bongers and van Oers, 1998), the total data

set for 1994 formed the basis for the comparison of the results of 1980–1981 and 1994.

Response rate

The overall response rate 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 (see Hox and de Leeuw, 1994). Non-response has increased sharply 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 1970s 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%.

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 (as has been done in this study) could be an efficient solution to this problem. A second and considerably bigger problem is the potential selectivity of non-response. Selective non-response may end in biased results, which will threaten the validity of the study. However, we have to use surveys, because self report is the only way to obtain this type of information. It is therefore very important for each survey to gain insight into the potential bias of results due to non-response selectivity.

In this study (indirect) non-response analyses have been carried out. These 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. The differential response probability model was used to evaluate and correct for the consequences of this non-differential non-response (Bethlehem and Kersten, 1986).

Earlier studies were directed to the question of whether non-respondents drink more. A follow-up study among non-respondents to a Dutch alcohol survey conducted by Lemmens *et al.* (1988) 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 to an alcohol survey in Rotterdam. 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 and Hak, 1996).

Measurements

In both the 1980/1981 and 1994 studies, the measurement and operationalization of the outcome variables were 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 four glasses or more on at least 21 days per month or six glasses or more on at least 9 days per month. The first cut-off point was chosen because four glasses a day is the lowest cut-off point used for alcohol-related health problems. Because infrequent heavy drinking can cause social problems (or acute health problems) the second cut-off point was chosen.

The measurement of alcohol-related problems is based on the work of Cahalan (1976). Five problem areas are defined: (1) psychological dependency on alcohol ('escape-drinking', drinking to forget one's worries etc.); (2) symptomatic drinking (loss of control and physical dependency, items such as black-outs, shaking hands, etc.); (3) social problems (problems with partner, friends, police, problems at work, etc.); (4) health problems and accidents caused by the use of alcohol; (5) frequent intoxications/hangovers.

Problems in each problem area were measured by a variable number of questions. On the basis of the number of problems reported, respondents were categorized as having no, moderate or severe problems in a problem area (score of respectively 0, 1 or 2 points). Subsequently, a problem index was formed by adding up the scores in 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 which is connected with somatic psychological or social problems for the problem drinker or for others — is operationalized as a combination of a certain level of alcohol use and alcohol-related problems (Garretsen, 1983; Bongers *et al.*, 1995). To be classified as a problem drinker, a respondent had to report at least moderate problems in one of the five 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. at the weekend) can also cause problems, for the categorization of problem drinkers, the definition of excessive drinking was extended with the category 'six or more glasses once or twice a week'.

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' was chosen because this problem area relates most to the core of the concept of addiction; 'social problems' was chosen because it can be expected that this area will 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 classified as being married, unmarried (and not cohabiting), divorced, widowed, or cohabiting without being married. Education was defined as the respondent's highest educational qualification. The variable daily activities categorized respondents as employed or house-keeping, unemployed, declared unfit for work, retired, 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 1980/1981 and 1994: abstinence, light, moderate, and excessive drinking, and problem drinking in general and with social or psychological problems. These comparisons were done for the total population and by sex and age.

The development of drinking behaviour and the (specific) consequences over time were 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.

RESULTS

Shifts in drinking behaviour and problem drinking

Table 1 presents the prevalence of drinking behaviour and problem drinking in 1980/1981 and 1994 for the total population and for men and women separately. No significant differences in prevalence were found between 1980/1981 and 1994. However, a trend was found in an increase in problem drinking in general (7.1 to 8.9%). The analysis by sex showed that this increase held particularly for men. Furthermore, the number of abstainers decreased slightly from 19.9 to 17.9%, whereas the number of excessive and very excessive drinkers increased slightly from 7.8 to 8.2%. The results for men and women showed the same weak trend: somewhat fewer abstainers and slightly 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 years of age drank significantly less excessively in 1994 compared to 1980/1981 (6.7 vs 13.1% excessive drinkers). Also a trend of less problem drinking was found within that age category (7.8 vs 11.6%). The opposite was true for the age categories 45–54 years and 16–24 years. The percentage of excessive drinkers and problem drinkers in the age group 45–54 years almost doubled respectively from 5.9 to 10.8% and from 4.0 to 7.7%. A similarly sharp rise was seen for the age group 16–24 years. There was a significant rise from 8.6% problem drinkers in 1980/1981 to 14.8% problem drinkers in 1994.

With respect to the variables educational level, marital status, and daily activities, there were some, but not 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 1980/1981 to 39% in 1984 and, in this same category the percentage of excessive drinkers also rose from 7 to 9%.

Within the categories with the highest educational level, an increase in the number of abstainers was also seen with a slight decrease in the number of excessive drinkers.

In both 1980/1981 and 1994, within the category married people, there were relatively few excessive drinkers (7.4 and 7.1% in 1980/1981 and 1994 respectively) and problem drinkers 5.1 and 4.8% respectively. Divorced, single and cohabiting people were more often excessive or problem drinkers. However, within the category of cohabiting people, the percentage of problem drinking decreased from 16 to 10%. Within the category single people, this percentage increased from 10 to 15%.

With regard to the daily activities, traditionally most excessive and problem drinkers can be found in the categories unemployed and declared unfit for work. However, some large changes occurred in the period 1980/1981–1994. 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% were categorized as problem drinkers in 1980/1981 and 16% in 1994.

Shifts in specific problems

The figures discussed above show trends in problem drinking in general. However, it is also important, 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 separate problem areas: 'psychological dependency on alcohol' and 'social problems'. Although no significant differences in problem drinking with respect to social or psychological problems were found, a trend was seen in an increase in the percentage of problem drinkers for both specific problems (Table 1). This increase in problem drinking with psychological problems was limited to the male subpopulation.

The differences in problem drinking with psychological or social problems over time by age (Table 2) or by other socio-demographic factors (data not shown) were not significant. A few remarkable trends, however, were found. The increase in the prevalence rate of psychological dependency was the biggest for 16–24 year olds (from 2.4 to 4.1%). An increase was also found for people declared unfit for work (from 5.1 to 10.3%).

Table 1. Prevalence (%) of drinking behaviour and problem drinking by sex among the general Rotterdam population in 1980/1981 and 1994

Category	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)
<i>n</i>	1004	1104	2108	1685	1810	3496
Problem drinkers	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)
<i>n</i>	1024	1121	2145	1684	1812	3496
Problem drinkers with social problems	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)
<i>n</i>	1023	1121	2144	1663	1805	3469
Problem drinkers with problems regarding psychological dependence	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)
<i>n</i>	1024	1120	2144	1670	1807	3478

Data are presented as means and (95% confidence intervals) or numbers (*n*)

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%). With regard to social problems, there was a trend to an increase for every age group, except for 25–34 year olds. A big increase was also found for the divorced (from 2.8 to 5.8%) and for persons declared unfit to work (from 6.2 to 9.5%).

DISCUSSION

A limitation of this study was the low response rate particularly for the 1994 survey. The non-response issue was dealt with in the Methods and measurements section. Still, it is possible that figures presented are indications/estimates of true prevalences. However, there are no clues whatsoever that possible selectivity differed between 1980 and 1994.

In the period 1980–1996, alcohol 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 to a slight decrease in the percentage of abstainers and a slight increase in the percentage of moderate and excessive drinkers. There are a few explanations for this inconsistency. It may be possible that the average consumption within the categories moderate and excessive drinking has become lower between 1980/1981 and 1994. Furthermore, the results could be an effect of the fact that drinking behaviour is categorized in the analyses as in the questionnaire. Another possible explanation for this difference between nationwide per capita data and Rotterdam survey data is that there may be changes over time in the level of under-reporting in surveys. However, the comparable survey in Limburg showed lower percentages of drinkers, which is in agreement with the trend over time in per capita consumption. This renders the explanations mentioned above less likely. Perhaps we face real changes in the way that the situation in Rotterdam developed in the opposite direction to the Dutch average.

For the Rotterdam population as a whole, it can be concluded that differences between 1980 and 1994 are relatively small. However, looking at the differences within some categories of the population, it appears that differences were bigger. The amount of excessive and problem drinking rose in

some categories and dropped in others, which resulted in a levelling out of total numbers. The study results showed sharp rises in excessive and problem drinking for the categories 16–24 years and 45–54 years of age. The increase in psychological dependency was the biggest for 16–24 year olds. 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 males. These results are difficult to interpret. The increase in (problem) drinking among the young is indeed alarming. These results are, however, in accordance with results of nationwide school surveys (Kuipers *et al.*, 1997). Between 1984 and 1996, among school youths of 16, 17, and 18 years of age (and some older ones), a decrease in the prevalence of alcohol consumption was found, but also 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 years between 1987 and 1996 (results based on municipal health surveys). Neither Kuipers *et al.* (1997) or Toet *et al.* (1998) presented results on problem drinking.

The increase among the middle aged was unexpected. It is difficult to find explanations for the fact that the results are so different for those 45–54 years old compared to the age categories below 45 and above 54 years of age. Toet *et al.* (1998) found no substantial increase in heavy drinking for these age categories between 1987 and 1996. These high prevalence rates for the middle aged are less known and more in-depth research on this is necessary.

Another result with societal relevance is the fact that people declared unfit to work seem to be at risk — the study results show increases in the percentage 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 should be encouraged.

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