Alcohol Use in South Africa: Findings from the First Demographic and Health Survey (1998)*

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ABSTRACT. Objective: This study formed part of the 1998 South African Demographic and Health Survey, which included questions assessing the extent of alcohol use, risky drinking and alcohol problems among South Africans to obtain up-to-date baseline estimates of consumption and risky drinking and to inform intervention efforts. Method: A two-stage random sample of 13,826 persons ages 15 or older (59% women) was included in the survey. Alcohol use was assessed through eight questions, including the CAGE questionnaire. Frequency analyses for different age groups, geographie setting, education level, population group and gender were calculated, as were odds ratios for these variables in relation to symptoms of alcohol problems. Results: Current alcohol consumption was reported by 45% of the men and 17% of the women. White men (71%) were most likely and Asian women (9%) least likely to be current drinkers. Urban residents were more likely than nonurban dwellers to report current drinking. One third of the current drinkers reported risky drinking over weekends, and 28% of the men and 10% of the women scored above the cutoff level on the CAGE questionnaire. Symptoms of alcohol problems were significantly associated with lower socioeconomic status, no school education in women and being older than 25 years of age. Conclusions: A comprehensive strategy is required to address the high levels of risky drinking and reported symptoms of alcohol problems. (J. Stud. Alcohol 66: 91-97, 2005)

In many developing countries, levels of alcohol consumption have increased in recent years as a result, in part, of a change in drinking patterns from traditional use of home-brews with low alcohol content to more frequent, recreational use of commercial alcoholic beverages (Gureje, 2000; Parry, 2000). A sustainable pattern of heavy drinking that was previously not possible has occurred in many developing societies as a result of increased availability and accessibility of commercial alcoholic beverages, new affluence and the introduction of high alcohol content industrial brews (Room et al., 2000). As the age distribution in most developing societies is skewed towards younger populations, many of the primary effects of alcohol misuse arise from episodes of acute alcohol intoxication (Parry, 2000), which is associated with increased mortality and morbidity that arise mainly from accidents and violence (Hartz et al., 1990; Peden et al., 2000). Alcohol use has also been associated with unsafe sexual practices and increased risk of contracting HIV (Zuma et al., 2003). In developing countries where infectious diseases remain an important cause of disability and death, alcohol misuse, combined with poor nutritional status, further increases susceptibility to opportunistic diseases by compromising the immune system (Room et al., 2000). The misuse of alcohol during pregnancy has been linked to fetal alcohol syndrome (FAS) in infants.

Research coming out of South Africa, a country of 45 million people (Statistics South Africa, 2003) that has recently celebrated 10 years of democracy, suggests a particularly high burden of harm associated with the misuse of alcohol. Alcohol has played a pivotal role in the history of South Africa, being directly linked both to the oppression of the black majority and to efforts aimed at resisting such oppression (Parry and Bennetts, 1998). With the normalization of political conditions in this nation, alcohol has continued to play a controversial role in society, being hailed on the one hand as stimulating employment for emerging, black entrepreneurs and condemned on the other for causing misery to many and placing an enormous burden on the country (Parry et al., 2003). In South Africa, a high proportion (46%) of mortality cases due to non-natural causes have had blood alcohol levels greater than or equal to 0.05 g/100 ml, the legal limit for driving (Matzopoulos, 2003). Research conducted in three large port cities in South Africa in 2001 found that 39% of trauma patients had breath alcohol concentrations greater than or equal to 0.05 g/100
ml (Plüddemann et al., in press). In South Africa, the rates of FAS are estimated to be 18 to 141 times greater than those for the various populations in the United States (May et al., 2000). Alcohol-related problems also constitute the largest proportion of admissions to specialist substance treatment centers monitored by the South African Community Epidemiology Network on Drug Use (SACENDU) (Parry et al., 2002). The emerging data on the link between alcohol use and risky sexual behavior are also of great concern, given the high-prevalence estimate of 12% for HIV/AIDS in South Africa among persons of all ages (Department of Health, 2003).

Very few representative national surveys of alcohol consumption have been conducted in South Africa. The last survey of this kind was conducted in 1985 (Rocha-Silva, 1989). This study found levels of alcohol misuse (as measured by the Khavari-Alcohol-Test) ranging between 0.0% (for white, urban women) to 14.6% (for African, urban men).

The present study formed part of the first South African Demographic and Health Survey (SADHS) in 1998 conducted by the Department of Health. The purpose of the alcohol component of the SADHS was to assess the extent of alcohol use, of risky drinking and of alcohol problems among South Africans to obtain up-to-date baseline estimates of consumption and risky drinking and to inform intervention efforts.

Method

Sample design and study population

The SADHS was a national household survey providing cross-sectional data on a representative sample of the noninstitutionalized population. The two-stage sample used the 1996 census demarcation as a sample-frame. The first stage consisted of selecting census enumeration areas (EAs) with the probability proportional to size based on the number of visiting points in the EA stratified into urban and nonurban areas of the nine provinces. The second stage involved a systematic sample of 10 visiting points in the selected urban EAs and 20 visiting points in the selected nonurban EAs. For inclusion in the adult health survey, all adults who were usual residents of every second household were selected. The overall response rate for participants in the adult survey was 90%.

Participants were asked to classify themselves in one of the four previously defined official South African population groups. “African” refers to black people whose place of origin is the African continent; “white” refers to Caucasian individuals with European ancestry; “coloured,” a uniquely defined South African group, includes people of mixed Khoi, San, Malay, European and African ancestry; and “Asian/Indian” defines those descendants from East Asia and the Indian subcontinent. These markers were chosen for their historical significance. Their continued use in South Africa is important for monitoring improvements in health and socioeconomic disparities, for identifying vulnerable sections of the population and in planning effective prevention and intervention programs.

Data collection

The questionnaires and clinical measurements were completed between January and September 1998. Respondents were asked about recent contact with the health care system, health insurance status, family medical history, personal medical history, medication use, occupational health and lifestyle/habits. Further demographic information, such as age, education level, province, geographic setting (“urban” or “nonurban”) and ownership of durable goods was recorded. The last was used to classify respondents in terms of their economic status.

Interviewers received intensive training over several weeks. Questionnaires were prepared in all the official languages of South Africa. The language of the questionnaire, interviewer and respondent, as well as use of a translator, were recorded.

Alcohol use and alcohol problems

The SADHS included four questions to assess lifetime and current use of alcohol (use in past 30 days) and weekend and weekday consumption. These were as follows: “Have you ever drunk alcohol?” “Do you drink alcohol now?” “How much alcohol do you drink on average during the week?” and “How much alcohol do you drink on average on weekends?” The response options for these questions were as follows: “no drinking during the week/weekend,” “1-2 drinks per day,” “3-4 drinks per day” “5 or more drinks per day” or “communal drinking.” In addition, the four-item CAGE questionnaire was used to screen for alcohol problems (Ewing, 1984). The questions ask if the participant has ever felt he or she should cut down on drinking, has been annoyed by being criticized for drinking, has felt guilty about drinking or has ever had a drink first thing in the morning to steady nerves or get rid of a hangover. Participants with affirmative answers to two or more questions were classified as screening positive for alcohol problems. Recent research continues to support the reliability and validity of the CAGE (Bell et al., 2003).

Statistical analysis of the data

Frequency analyses were conducted by gender for South Africa overall and for the various provinces of South Africa, with weights to make the sample nationally representative. Poverty was measured in terms of the ownership of
a number of consumer items (durable goods), dwelling characteristics (such as wall and flooring material), the source of drinking water and toilet facilities and whether anybody in the household ever went hungry. Using a principal component factor analysis, households were divided into wealth quintiles on the basis of the asset index developed by Booyse (2000).

Logistic regression analysis was used to calculate adjusted odds ratios (OR) and 95% confidence intervals (95% CI) for men and women separately for alcohol problems (CAGE >2) in relation to age (15-24 [reference group], 25-34, 35-44, 45-54, 55-64 and >65 years), place of residence (urban [reference group] and nonurban), measures of poverty using the asset index (poorest [reference group], followed by second poorest, middle, fourth poorest and richest groups), level of education (none [reference group], primary, secondary and tertiary) and population group (African [reference group], colored, white and Asian). Taking into account the survey design, the survey set option in the STATA statistical package was used (Stata Corporation, 1999). Fully adjusted predicted proportions for each condition, risk and lifestyle factor by income level were then calculated for men and women separately.

Ethical considerations

The Ethical Committee of the South African Medical Research Council approved the protocol of the study. Informed consent to participate was obtained.

Results

Alcohol consumption

The response rate for the adult health survey was 89.7% (86% men and 92% women). Of the 13,790 participants who completed questions on alcohol use, just under half of the men (45%, 95% CI: 42.9-46.4%) and one fifth of the women (17%, 95% CI: 15.6-18.1%) 15 years and older reported that they currently consumed alcohol (Table 1). For both genders, the rate was 28%, which translates to 8.5 million South Africans 15 years or older according to the 2001 national census (Statistics South Africa, 2003). Rates of current drinking differed substantially by population group and gender, with the highest levels reported by white men (71%), followed by white women (51%), and colored men (45%). The lowest rates were reported by African and Asian women (12% and 9%, respectively). For both men and women, higher rates of current drinking were recorded in urban areas. For both men and women, persons with either low or high levels of education were more likely to drink than those with moderate education (Grades 6-12). For men, the highest current drinking levels were reported in the Free State and Gauteng (50% or more), and the lowest levels were reported in the Northern Province (28%). For women, the lowest levels were also recorded in the Northern Province (9%), with the highest levels being in the Free State, Western Cape and Northern Cape (23%-25%). For both men and women, the highest levels of current alcohol use were recorded among persons in the 35-44 and 45-54 year age groups; the lowest levels were in the 15-24 year group.

Risky drinking

Risky drinking was defined as drinking five or more standard drinks per day for men and three or more drinks per day for women. These levels were based on “hazardous” or “harmful” levels of daily alcohol use defined by the Australian National Health and Medical Research Council (1992). Although communal drinking is often also risky, respondents who reported communal drinking were not classified as “risky drinkers.” Rates of risky drinking were very similar for men and women and were approximately 4-5 times greater on weekends than on weekdays, with one third of current drinkers drinking at risky levels over weekends (men, 95% CI: 30.0-34.7%; women, 95% CI: 28.9-35.1%) (Table 1). For both men and women, risky drinking on weekends appeared to be highest among persons in the middle age categories (35-44 years for men and 45-54 years for women), persons residing in nonurban areas, persons with a low level of education (Grade 1-7), and coloreds and Africans. Weekend risky drinking by men appeared to be highest in Mpumalanga, whereas for women the highest levels appeared to be in the Northern Cape.

Screening for alcohol problems (CAGE >2)

Over one quarter (28%, 95% CI: 25.9-29.3%) of the male participants and one tenth (10%, 95% CI: 9.0-10.7%) of the female participants in the survey scored above the cutoff level on the CAGE questionnaire (≥2), indicating that they had (in their lifetime) experienced symptoms of alcohol problems. The highest proportions of alcohol problems were found among men ages 35-44 years and women ages 45-54 years (Table 1). Symptoms of alcohol problems were significantly lower in men (OR = 0.654, p < .05) and women (OR = 0.551, p < .05) in the richest group compared with the poorest group (Table 2). Scoring 2 or higher on the CAGE questionnaire was strongly associated with a lack of school education in women, whereas men with a tertiary-level (>12 years) education had significant protection from such symptoms (Table 2). Symptoms of alcohol problems were significantly greater for men in the 25-34, 35-44, 45-54 and 55-64 year age groups compared with men ages 15-24 years. For women, symptoms of alcohol problems were found only among those in the 24-34, 35-44 and 45-54 year age groups (Table 2). With regard to
population group, it was found that white men had significantly lower levels of symptoms of alcohol problems than African men had. With regard to women, levels of symptoms of alcohol problems were found to be lower for Asians than Africans but higher for coloreds. A nonurban residence “protected” women from such symptoms (Table 2).

**Discussion**

Almost half of the male and almost one fifth of the female participants in this survey reported that they currently consumed alcohol. These figures are likely to be underestimates, given the nature of broad household surveys in which respondents may be dishonest about behaviors that may be stigmatized or discountenanced in certain communities and where inadequate attention may be given to setting respondents at ease in asking sensitive questions (Groer et al., 1997). Female drinking, in particular, is often disapproved of in many African communities and is therefore likely to be underreported (Mphi, 1994; Siegfried et al., 2001). It is also possible that some respondents did not consider the drinking of traditional beverages as constituting alcohol consumption. A lack of privacy in certain interview settings could also have influenced response rates of certain respondents, especially women.

The rates of “current drinkers” found in this survey were lower than those reported for other developing countries, including Mexico (men 77%, women 44%), Chile (men 77%, women 44%), Thailand (men 71%, women 46%) and Namibia (men 61%, women 47%) (Room et al., 2002). In all these countries, however, women were less likely than men to be “current drinkers.” Although risky drinking was fairly uncommon on weekdays, it increased significantly over weekends, a result that coincides with findings from
Table 2. Poverty and alcohol problems (positive responses to at least two questions on the CAGE questionnaire)

<table>
<thead>
<tr>
<th>Socioeconomic characteristics</th>
<th>Men: Alcohol problems (CAGE ≥2) = 1,712; normal (CAGE &lt;2) = 4,041</th>
<th>Women: Alcohol problems (CAGE ≥2) = 840; normal (CAGE &lt;2) = 7,233</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR</td>
<td>95% CI</td>
</tr>
<tr>
<td>Asset index (quintiles)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poorest</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Second poorest</td>
<td>1.059</td>
<td>0.816-1.373</td>
</tr>
<tr>
<td>Middle</td>
<td>0.820</td>
<td>0.629-1.070</td>
</tr>
<tr>
<td>Fourth poorest</td>
<td>0.927</td>
<td>0.681-1.261</td>
</tr>
<tr>
<td>Richest</td>
<td>0.654</td>
<td>0.452-0.947</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>1-7 years</td>
<td>0.991</td>
<td>0.782-1.256</td>
</tr>
<tr>
<td>8-12 years</td>
<td>0.802</td>
<td>0.625-1.030</td>
</tr>
<tr>
<td>&gt;12 years</td>
<td>0.593</td>
<td>0.402-0.875</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-24 years</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>25-34 years</td>
<td>2.587</td>
<td>2.116-3.163</td>
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<td>35-44 years</td>
<td>2.965</td>
<td>2.416-3.637</td>
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<td>45-54 years</td>
<td>2.275</td>
<td>1.754-2.950</td>
</tr>
<tr>
<td>55-64 years</td>
<td>1.813</td>
<td>1.375-2.391</td>
</tr>
<tr>
<td>≥65 years</td>
<td>1.314</td>
<td>0.973-1.774</td>
</tr>
<tr>
<td>Population group</td>
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<td></td>
</tr>
<tr>
<td>African</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Colored</td>
<td>1.263</td>
<td>0.930-1.714</td>
</tr>
<tr>
<td>White</td>
<td>0.377</td>
<td>0.249-0.572</td>
</tr>
<tr>
<td>Asian</td>
<td>0.761</td>
<td>0.491-1.180</td>
</tr>
<tr>
<td>Place of residence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Nonurban</td>
<td>0.864</td>
<td>0.695-1.074</td>
</tr>
</tbody>
</table>

Notes: OR = odds ratio; CI = confidence interval.

other developing countries, such as Zimbabwe (Room et al., 2002). It is interesting to note that male and female drinkers were equally likely to engage in risky drinking over weekends, which does not appear to be the case in other developing countries (Room et al., 2002), in most of which men are more likely than women to engage in risky drinking on weekends. The similarity in high levels of risky drinking between men and women found in this study also differs from what is found in most developed countries, where levels of risky drinking are much higher among men (Babor et al., 2003). The similar levels found in this study could result, in part, from the lower threshold for risky drinking that was used for women, but it could also be due to specific, local, individual or group factors that cause those women (particularly black African women) who choose to drink to consume alcohol at high levels. This is an area that deserves further research.

The fact that those living in nonurban areas were more likely to engage in risky drinking than those living in an urban setting is also significant and indicates that implementing interventions in nonurban areas should not be neglected. This finding confirmed earlier research conducted in South Africa by Rocha-Silva et al. (1996), which found 32% of men ages 10-21 years living in nonurban areas were classified as "risky drinkers" versus 19% of urban men, whereas 14% of women living in rural areas drank at risky levels compared with 10% of urban women. London (2000) also found high levels of alcohol consumption in a study of rural farm workers, which may be linked to a historic practice whereby farm workers were often partially "paid" for their labor in alcohol (especially wine). In South Africa (and many developing countries) there is currently a dearth of treatment and other interventions for reducing risky drinking in general and particularly in areas situated away from urban centers.

The screen for symptoms of alcohol problems (CAGE) found that, overall, almost a third of men reported symptoms of alcohol problems. This translated to almost two thirds of those who reported currently drinking alcohol. The proportion for women overall was significantly lower. When considering the current female drinkers, however, the proportion who scored 2 or higher on the CAGE screen was virtually equal to that of the men. Other studies in southern Africa have also used this screening tool and found similar or higher proportions of participants screening "positive" for symptoms of alcohol problems (London, 2000; Schoeman et al., 1994; Siegfried et al., 2001). Because the CAGE is merely a screening tool for alcohol problems, however, future studies should consider adding more items to assess alcohol dependence.
The apparent relationship between socioeconomic status and an increased risk of alcohol-related problems, with wealthier persons having lower levels of symptoms of alcohol problems, is confirmed by international studies (Khan et al., 2002). A study conducted in Nepal (Jhingan et al., 2003), for example, also found that lower levels of education were linked to higher scores on the CAGE questionnaire and that symptoms of alcohol problems seemed to peak in the older age groups (45-54 years for both genders in the Nepal study versus 35-44 years for men and 45-54 years for women in the present study). Although alcohol consumption is usually higher in men and women with a higher level of education, as was reported in a recent study undertaken in Cameroon (Mbanya, 2001), men with tertiary education were significantly less likely to report symptoms of alcohol problems than were those with no school education. This finding suggests that interventions should not simply focus on groups where the proportion consuming alcohol is the greatest but should also take into account areas where patterns of drinking are most harmful and where there is evidence of negative symptoms (Rehm et al., 2003).

As has been mentioned, population group is still intrinsically linked to socioeconomic status in South Africa. Population group differences in symptoms of alcohol problems must therefore be interpreted with caution. It is interesting to note, however, that findings appeared to differ markedly for men and women. Although white men were significantly less likely than African men to report symptoms of alcohol problems, colored women were significantly more likely than African women to report such symptoms, and Asian women were significantly less likely than African women to report alcohol-problem symptoms. It thus appears that certain groupings of the female population of South Africa may be less likely to develop alcohol-related problems as a consequence of particular cultural norms of accepted behavior. A greater understanding of the particular norms and other factors accounting for these differences may be of use in designing targeted intervention strategies.

In considering the implications of the findings of the present survey, it should be noted that, although levels of risky drinking (and symptoms of alcohol problems) were higher in the older age groups, intervention efforts must not neglect younger persons, among whom drunkenness continues to be a matter of concern (Parry et al., 2004). The introduction of brief interventions in primary health care settings to curb the exacerbation of alcohol-related problems must be considered. Brief intervention is a term used to describe a range of strategies, including screening, brief advice, referral to specialist support, counseling and brief motivational interviewing. These strategies can be delivered during one or more visits to primary care settings to persons who typically do not present with an alcohol problem. There is also a need to review the availability of appropriate and affordable treatment options for alcohol problems in all geographic areas of the country. A recent study conducted in Cape Town, South Africa, showed that both Africans and women are underrepresented in specialist treatment centers (Myers et al., 2004). The apparent lack of substance abuse prevention initiatives in the country also needs to be explored. Given the high levels of risky drinking, especially on weekends, this undertaking needs to be comprehensive in approach and needs to include job creation (including job creation for people forced to sell liquor as a means of survival), alternative recreation facilities/activities, regulation of the current abundance of unlicensed liquor outlets, and training and education of alcohol servers and the public at large (Parry and Bennetts, 1998).

In conclusion, although the proportion of the population consuming alcohol in South Africa is very low, at least in comparison with most developed countries (Room et al., 2002), many of those who do drink alcohol appear to engage in risky drinking regularly, particularly over weekends. They are thus at risk for developing alcohol problems. The potential negative effect of excessive alcohol-related problems cannot be overstated in a developing society in which the burden of alcohol-related problems in terms of trauma, violence, organ system damage, various cancers, unsafe sexual practices, injuries to the brain of the developing fetus and poor nutrition is very high (Parry, 2000). Although generally unknown, the economic costs associated with alcohol misuse to developing societies are likely to be enormous (Parry and Bennetts, 1998). The need to develop and implement a comprehensive strategy to curb the misuse of alcohol is clearly a matter of urgency in South Africa and in other developing countries with similar patterns of alcohol use and misuse.

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