

ALCOHOL USE AMONG BLACK FEMALE ADOLESCENTS IN A SOUTH AFRICAN COMMUNITY: A MIXED METHODS INVESTIGATION

J.S Phillips (PhD)

Associate Professor, Department of Physiotherapy, UWC

Correspondence Address:

J.S Phillips (PhD)
Department of Physiotherapy
University of the Western Cape
Private Bag X17
Bellville
7535
Ph: +27-21-959 2542
Fax: +27-21-959 1217
e-mail: jphillips@uwc.ac.za

Abstract

Background:

According to the World Health Organization global alcohol consumption has increased in recent decades, with most of this increase occurring in developing countries. Added to this is the concern of the increased social acceptability of alcohol use and the widespread experimentation with alcohol during adolescence.

Objectives:

The purpose of this study was to better understand health risk behaviors, specifically alcohol use, among black female high school learners in a designated research locale of a local community in the Western Cape, South Africa.

Study design:

The method of inquiry in the study was a mixed method sequential explanatory strategy.

Results:

A lifetime prevalence of alcohol use was reported by 57.8% of the study sample. All the participants agreed that drinking has a negative influence on adolescent health.

Conclusion:

Alcohol use in South Africa is an ever-increasing health problem and the current study provides evidence that the prevalence of this behaviour remain a public health concern.

Keywords:

Alcohol use, adolescent health; female high school learners

INTRODUCTION

Unlike the very young child and the elderly, adolescents suffer from few life-threatening conditions. Adolescence appears to be one of the healthiest periods of the life course with lower rates of morbidity and mortality due to disease than any of the other life periods (Call, Riedel, Hein, McLoyd, Petersen and Kipka, 2002; Burt, 2002). However,

adolescence is also a critical development period with a greater degree of exploration and experimentation than those of other age groups. The potential for risk taking during adolescence is thus greater with long-term implications for the health and well being of the individual and for the society as a whole. According to Geckova, Tuinstra, Pudelsky, Kovarova, Van Dijk, Grotthoff and Post

(2001) adolescence is also the period when young people establish concepts, attitudes and beliefs that may have long-term influences on their health. According to Holmberg and Berg-Kelly (2002), Irwin (2003), and Rail, Stanton, Wu, Li, Galbraith, Cottrell, Pack, Harris, D'Alessandri and Burns (2003), the adolescent period is thus extremely important from a public health point of view. Michaud (2003) alerted us to the fact that although somehow different in scale and scope, the main public health problems adolescents' faces around the world are quite similar in nature.

Alcohol has been consumed in human populations for centuries, but the considerable and varied adverse health effects have only been characterized recently (Rehm, Gutjahr and Gmel, 2001). According to the World Health Report 2002 (WHO, 2002), global alcohol consumption has increased in recent decades, with most of this increase occurring in developing countries. The increased social acceptability of alcohol use and the widespread experimentation with alcohol during adolescence are also great areas of concern (Ellickson, Tucker, Klein and McGuigan, 2001). Eaton et al. (2004) also emphasized that alcohol use continues to be one of the most significant risk behaviours engaged in by adolescents and it continues to grow in popularity in the youth culture. Of great concern are the results of analysis of the National Longitudinal Alcohol Epidemiology Survey in the United States of America (USA) that indicated that early age of drinking onset is associated with frequent heavy drinking in life (Hingson, Heeren, Jamarka and Howland, 2000). Furthermore Epstein, Griffin and Botvin (2004) expressed concern that the allure of alcohol for adolescents' remains strong and widespread alcohol use among adolescents remain common.

Roche and Deehan (2002) stated that there has been growing evidence in recent years that the levels and patterns of women's alcohol use have undergone substantial change. Female alcohol consumption has been noted to be steadily on the rise, particularly among women in younger age groups. These changes in women's levels and patterns of drinking are an international phenomenon (Bobak, McKee, Rose and Marmot, 1999; Neve, Diederick, Knibbe and Drop, 1993). Epstein et al. (2004) stated that it must be noted

that over the course of adolescence, girls and boys may initiate or increase alcohol consumption for different reasons. Research has indicated that girls tend to have lower overall self-esteem than boys. There is also evidence that self-esteem is an important factor in the epidemiology of girls' alcohol use (Bolognini, Plancerel, Bettschart and Halfon, 1996; Epstein et al., 2004; Chub, Fertman and Ross, 1997). Kumpulainen and Roine (2002) also found in their study on Finnish adolescents, that for girls the probability of being a heavy drinking more than doubled due to feelings of ineffectiveness or low-esteem.

There is a substantial burden of illness associated with alcohol use among women. According to various researchers (Roman, 1988; Frezza, diPadova, Pozzate, Terpin, Baraona and Liebner, 1990) physical problems are experienced earlier in female drinking careers than males. They ascribed this in part to the fact that women have a lower body weight than men, less body water and a higher percentage of body fat. Furthermore women metabolize alcohol at a slower rate than men, so alcohol may remain in the tissue longer. In addition, Saunders, Davis and Williams (1981) stated that there is evidence that for equivalent doses of alcohol, women are more vulnerable than men to tissue damage and the onset of certain diseases such as cirrhosis of the liver and physical alcohol dependence. Alcohol use by women is also thought to be associated with an increased risk of osteoporosis and bone fractures (Baron, Bachman and Weiderpass, 2001). Women can also be more vulnerable to physical risks through violence or abuse when intoxicated (Jacobs, 1998).

For the purpose of this study, the former government's classification system of racial categories has been used: "African Black", "Colored", "White" and "Indian". The "Colored" population group is a population of mixed ancestry i.e. Afro-Euro-Malay-Khoisan ancestry (Temple, Steyn, Hoffman, Levitt and Lombard, 2001). Ellision, De Wet, Ijsselmuiden and Richter (1996) stated, that there are differences among the groups for many indicators of health, mediated by political and economic factors. Prior to 1994, fewer resources and funding had been allocated to the black population in South Africa. The inadequacies and inequalities in the system of "apartheid"

reflected and reproduced the socio-economic disadvantage that was experienced by the disenfranchised racial groupings. Therefore in this study the use of the race/ethnicity refers explicitly to the social conception of race.

The purpose of this study was to better understand health risk behaviors, specifically alcohol use, among black female high school learners in a designated research locale of a local community in the Western Cape, South Africa. The method of inquiry in the study was a mixed method sequential explanatory strategy.

METHOD

This study is not a multi-site epidemiological study and locates itself in the specific community in the Western Cape, South Africa for various reasons. Firstly, the community is demographically typical of the Western Cape in its proportion of "Black African" and "Colored" youth. Another reason for this particular setting is that good access to all the schools in the specific community could be negotiated. All the learners from the schools come from the community, in which the schools are situated, thus enabling the researcher to investigate the contextual factors implicating health risk behaviors. Another compelling reason for choosing this particular research setting is that it has a good distribution of different ethnic groupings but living and schooling in the same environment.

Permission was obtained from the Education Department in the Western Cape, South Africa to invite the female learners enrolled at the schools to participate in the study. Subsequently, permission was then obtained from the principals and the parent-teacher association at the respective high schools to conduct the study at their schools. The principals of the schools took the ethical responsibility of informing the parents of the learners beforehand through the parent-teacher-association. Parent-consent forms and learner-consent forms were distributed at the parent-teacher-association meetings at the school. Learners returned signed parent-consent and learner consent forms to their teachers who in turn submitted it to the researcher. The final sampling frame thus consisted of those black female learners who returned the signed parent and learner consent forms.

This study utilized a mixed method approach, specifically the sequential explanatory strategy. Creswell, Plano Clark, Gutmann and Hanson (2003) identified six major strategies of mixed methods. The sequential explanatory strategy has been deemed to be the most straightforward of the six major mixed methods designs and identified this as one of its main strengths. The strategy is characterized by the collection and analysis of quantitative data followed by collection and analysis of qualitative data (Creswell, 2003). The purpose of this strategy is typically to use qualitative data to assist in explaining and interpreting the findings of a primarily quantitative study (Creswell et al., 2003). Borkan (2004) also stated that "mixed methods give the researcher additional perspectives and insights that are beyond the scope of any single technique".

In this study the priority is given to the quantitative data and the two methods are integrated during the interpretation phase of the study. The quantitative phase of the study incorporated a probability sample because every learner who was eligible for inclusion in the study had an equal chance of being selected for the study. This type of sample also enables the researcher to generalize the findings to the designated population. The study specifically employed a stratified sample using Grade level as the individual stratum. This means that a learner had to be enrolled for one grade only and inclusion in one stratum would necessarily mean exclusion from any other stratum. In other words, the sample was stratified into four strata corresponding to grades eight, nine, ten, and eleven respectively. In an attempt to minimize disruption in the academic program, it was decided to randomly select two classes from every school in every stratum or grade.

Twenty four classes in which 952 female learners were enrolled were randomly selected from grade 8-11 in the three participating schools for the quantitative phase of the study. Of the learners selected only 857 had signed parent-consent forms, the remaining 95 learners were thus excluded from the study. A self-administered questionnaire was administered to the learners to determine the prevalence of alcohol use and the relationship between alcohol use and socio-demographic variables. The questionnaire used was adapted from the Youth Risk Behavior

Surveillance Survey (YRBSS) developed by the Center for Disease Control and Prevention (CDC) in the USA. The questionnaire has demonstrated good reliability with kappas for the risk-behavior items ranging from .51 to .88. Approximately 72% of the items have "substantial" or higher reliability (Kann et al., 1999). The instrument has also been found to have both face and content validity.

A total of 801 learners submitted completed questionnaires. The overall response rate was thus 84.1%. The final sample thus consisted of 801 female high school learners ranging from age 13-19 years with a mean age of 15.75 years and a standard deviation of 1.57. The socio-demographic characteristics of the sample are illustrated in Table 1.

Table 1: Distribution of selected socio-demographic characteristics of the study sample (n=801)

Variable	n	%
Race/Ethnicity		
"African Black"	306	38.2
"Coloured"	449	56.1
Othera	26	3.2
Missing	20	2.5
Age (years)^b		
13	53	6.6
14	161	20.0
15	156	19.5
16	135	16.9
17	145	18.1
18 and older	148	18.5
Missing	3	0.4
School grade		
8	211	26.3
9	195	24.3
10	218	27.2
11	166	20.8
Missing	11	1.4
Education of head of household		
Never attended school	37	4.6
Some primary school	168	21.0
Some secondary school	470	58.7
Tertiary qualification	80	10.0
Missing	46	5.7
Employment status (head of household)		
Employed	527	65.8
Unemployed	196	24.5
Missing	78	9.7
Religious affiliation		
Yes	679	84.8
No	106	13.2
Missing	16	2.0

^a Other included Asian/Indian

^b Mean age = 15.75 years, (SD= 1.571), median age = 16 years.

In the second phase of the study, focus group discussions were conducted to further explore and examine the socially constructed views of adolescent learners on alcohol use. The purpose for choosing this method and strategy was primarily to use the qualitative data to assist in explaining and interpreting the findings of the quantitative data.

The researcher considered using group differences obtained from analysis of phase 1 to inform the composition of focus groups. The major advantage of this would be increased homogeneity of focus groups. However (Bergin, Tally and Hamer, 2003) states that knowledge is socially constructed and that the credibility of focus groups is enhanced when the group composition is reflective of the social context within which female learners are spending the majority of the time. In view of this, female learners spend 8 hours per day at school in classes that are mixed. That is, classrooms are not homogenous nor are they formed along predetermined socio- and or demographic grouping variables. Thus the present study incorporated focus groups that were heterogeneous (in terms of race, age, school grades and socio-demographic characteristics). To this end participants were allocated randomly to focus groups within their grade level. It became evident that phase 2 was not dependant on the results or findings of phase 1. Thus it was decided to conduct all analyses at the conclusion of phase 2. This served a further purpose of reducing researcher bias in the facilitation of the focus groups in phase 2. In addition, the integration of data, as urged by Creswell (2003), was deferred to the discussion.

RESULTS

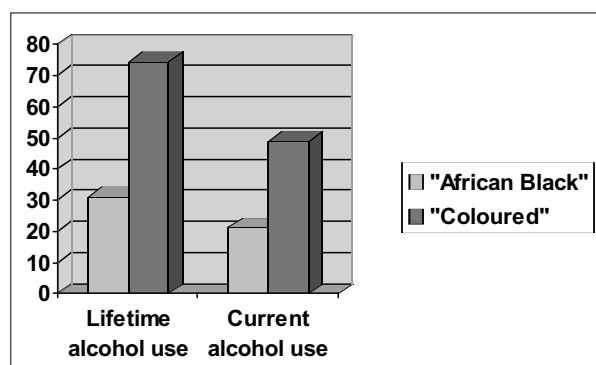
Phase 1: Quantitative data

A lifetime prevalence of alcohol use was reported by 57.8% of the sample [95%CI: 54.4 - 61.2]. More than one third of the sample (37.7%) reported current alcohol use [95% CI: 34.3 - 41.1]. Overall, 14% of the sample had drunk their first drink of alcohol before the age of 12 years [95% CI: 11.6 - 16.4].

Significantly more "Coloured" learners (74.6%) than "African Black" learners (31.1%) had reported lifetime alcohol use ($\chi^2 = 128.7866$, $p < 0.05$). There was also a significant difference between "Coloured" learners (48.9%) and "African Black"

learners (21.2%) in terms of current alcohol use ($\chi^2 = 53.0017$, $p < 0.05$). Significantly more "Coloured" learners (19.2%) than "African Black" learners (5.3%) had drunk their first drink of alcohol before the age of 12 years as illustrated in Figure 1.

Figure 1: Percentage of black female high school learners who used alcohol by race/ethnicity



Significantly more learners in Grade 9 (74.4%) compared to Grade 10 learners (40.5%) had ever used alcohol ($\chi^2 = 48.8850$, $p < 0.05$). The highest prevalence of learners classified as current alcohol users were in Grade 9 (50.0%) followed by those in Grade 8 (43.5%) ($\chi^2 = 22.3306$, $p < 0.05$). There was also a significant difference in the frequency of learners who had their first drink of alcohol before the age of 12 years grade. Significantly more Grade 8 learners (26.1%) compared to Grade 10 learners (4.6%) had their first drink of alcohol before the age of 12 years ($p < 0.05$) as illustrated in Table 2.

Table 2 further illustrates that the older learners, i.e. 17 year olds (46.9%) and 18 year olds (46.6%) were significantly less likely than the younger learners, i.e. 13 year olds (60.4%) and 14 year olds (66.3%) to report lifetime alcohol use ($\chi^2 = 15.666$, $p < 0.05$). There was also a significant difference in the frequency of current alcohol use by age ($\chi^2 = 11.0006$, $p < 0.005$). The highest prevalence of learners using alcohol in the 30 days preceding the study was the 15 year olds (46.0%) followed by the 16 year olds (42.2%). There was a significant difference in the frequency of learners who had their first drink of alcohol before the age of 12 years ($\chi^2 = 11.0006$, $p < 0.005$). A significantly higher prevalence of younger learners, e.g. 13 year olds (32.1%) had their first drink of alcohol before the age of 12 years when compared to older learners such as 17 year olds (3.4%) and 18 year olds (11%).

Table 2: Percentage (with 95%CI) of black female high school learners who use alcohol by selected demographic variables

Variable	Lifetime alcohol use ^a	Current alcohol use ^b	Initiation <12 years ^c
Grade			
8	61.4 (54.8 - 68.0)	43.5 (36.7 - 50.3)	26.1 (20.2 - 32.0)
9	74.4 (68.3 - 80.5)	50.0 (42.9 - 57.1)	16.4 (11.2 - 21.6)
10	40.5 (33.7 - 47.3)	28.4 (22.4 - 34.4)	4.6 (1.8 - 7.4)
11	63.2 (55.0 - 71.4)	32.5 (25.4 - 39.6)	9.0 (4.6 - 13.4)
Age			
13	60.4 (47.3 - 73.6)	38.5 (25.3 - 51.7)	32.1 (19.5 - 44.7)
14	65.8 (58.5 - 73.1)	42.8 (35.1 - 50.5)	31.1 (23.9 - 38.3)
15	66.0 (58.6 - 73.4)	46.0 (38.1 - 53.9)	12.8 (7.6 - 18.0)
16	62.2 (54.0 - 70.4)	42.2 (33.9 - 50.5)	3.0 (0.1 - 5.9)
17	46.9 (38.8 - 55.0)	33.8 (26.1 - 41.5)	3.4 (0.5 - 6.3)
18	46.6 (38.6 - 54.6)	25.7 (18.7 - 32.7)	11.0 (5.9 - 16.1)

^a Ever used alcohol in their lifetime

^b Used alcohol on one or more days in the 30 days preceding the study

^c Used alcohol for first time before the age of 12 years

Almost three-quarters (74.8%) of the learners knew what the effects of alcohol were on their health. There was a significant difference in the frequency of learners who reported lifetime alcohol use based on their knowledge of the consequences of alcohol use on their health ($\chi^2 = 10.599, p < 0.05$). 79.0% of the learners that reported lifetime alcohol use and 68.9% that reported no lifetime alcohol use were knowledgeable about the consequences of alcohol use on their health

Phase 2: Qualitative data

The groups were asked to generally discuss a broad question on alcohol use. The learners were relaxed, they laughed when they felt they wanted to and they used a fair amount of body language during talking. On further examination of factors that predispose and maintain the female high school learners' engagement in alcohol use, a variety of aspects were unearthed. The thematic analysis of the transcripts of the focus groups

yielded five main themes namely: sources providing information about the consequences of alcohol use; behavioural regulations imposed by significant others; peer group factors; environmental and/or community factors; and personal attitudes and beliefs about alcohol use.

Sources providing information about the consequences of smoking

A general awareness of the negative consequences of alcohol exists among the learners. Learners agreed that alcohol use has a negative effect on your health. The quotations below elucidate this:

...It pollutes you. Alcohol is just as bad as smoking.

Learner, 15 years

...It affects your liver.

Learner, 17 years

Behavioral regulations imposed by significant others

Participants thought there was an equal amount of parents who were aware of their children's drinking and those who were not aware. The quotations below elucidate this.

...They get pocket money. Then they tell their mothers they're going to visit that one, then the parents are sleeping by the time they come back home...

Learner, 15 years

...I come home from the club, she (mother) can smell that I was drinking, then she tells me, you must behave yourself then I say, I am safely at home, I came home totally healthy, why wouldn't I behave myself...

Learner, 18 years

There was generally a disapproving response from the learners with regard to parents who knew about adolescents' drinking as illustrated below.

...Many of the people know their children drink, but they don't pay attention to it...

Learner, 16 years

...Sometimes the children drink with their parents...

Learner, 17 years

...Yes they drink together, like here [in this community], three out of ten drinks with their parents too...

Learner, 18 years

Environmental and/or community factors

There seemed to be confusion about the legal age for buying alcohol as some participants suggested that it is sixteen years. It became clear from the discussions that purchasing alcohol at informal establishments in the community when under the legal age was not regarded as a problem. It was highlighted however that formal business like liquor stores requires some sort of proof of age when youngsters buy alcohol. The discussions seemed to indicate that the environment creates easy access to alcohol with the establishment of shebeens (informal pubs in the community).

...At the yards. Some of the shebeens don't worry, as long as they can make a profit... (in response to question on where people under

eighteen buy alcohol)...

Learner, 17 years

...At most shops they don't give children under the age of eighteen alcohol...

Learner, 16 years

Being under the legal age to purchase alcohol however does not seem to deter participants from obtaining alcohol. This is illustrated by the following statements.

...Send an older person...

Learner, 15 years

...There are adults who drink, who might not have money, then they think that a young child has money, then they drink with them, and so on...

Learner, 16 years

Peer group factors

There was mixed reactions to the acceptance of adolescent drinking at first glance. However all the participants agreed that drinking has a negative influence on the adolescent as highlighted by the following statement:

...It pollutes you. Alcohol is just as bad as smoking, the one is not better than the other...

Learner, 15 years

...I don't want to be there, I have better things to do...

Learner, 16 years

In general there seemed to be an acceptance of drinking but not of drunkenness and irresponsible behavior. There was an acceptance of drinking providing that "you know your limit" and stop drinking when they feel drunk. Drinking on special occasions was viewed as acceptable.

...I don't drink until I am drunk like other people in the street who fall, and such; I don't drink to make trouble...

Learner, 17 years

...And many people say, I can't understand it, many people say they drank the evening and the next day they can't remember what they did. It's impossible for me to believe, if I drink tonight then I will know everything that I did tomorrow...

Learner, 16 years

Personal attitudes and beliefs about health risk behaviors

Participants came to the conclusion that some learners drink because they have problems at home and see it as a solution.

...Some teenagers who drink have problems at home, so they run towards the wrong thing. It is the only solution they can think of...

Learner, 15 years

...They drink to forget their problems, but it doesn't help, the day after tomorrow you still sit with those very same problems...

Learner, 17 years

A lot of the participants were convinced that you have to use alcohol if you want to enjoy yourself at social functions as illustrated below.

...Now as I was saying, to enjoy myself, I just felt like drinking...

Learner, 16 years

... I don't drink daily, but if I go to special occasions, like the last time when the school had a dance, then I drank...

Learner, 16 years

DISCUSSION

Alcohol use in South Africa is an ever-increasing health problem and the current study provides evidence that the prevalence of this behaviour remain a public health concern. This study shows that the overall prevalence for lifetime and current alcohol use in the study were 57.8% and 37.7% respectively.

In this study a number of factors in the environment could also be seen as contributing to adolescent alcohol use. Some of these factors are the easy access to alcohol for under-aged learners at local shebeens (informal pubs in the community).

Numerous researchers have highlighted the fact that living in impoverished family and neighbourhood environments are associated with behaviours such as smoking, alcohol and drug use. These researchers argue that the effect of poverty and adolescents' risk taking is often indirect through its impact on their parents, who become anxious or hopeless and have little energy to focus on effective parenting and monitoring of their adolescent

children (Jessor et al., 1995; McLoyd, 1990; Elder, Van Nguyen and Caspi, 1985). This notion is emphasized by the learners in the present study. Learners were in agreement that some parents and other adults are aware of their children's alcohol use.

"...They (adults) think that a young child has money, then they drink with them, and so on..."

Research has also indicated that adults play an important role in socialization of adolescents on the issue of alcohol use. Research has indicated that providing alcohol to an adolescent explicitly indicated approval of underage alcohol use, which may lead to future substance abuse (Foley, Atلمان, DuRant and Wolfson, 2004; Baumrind, 1991).

The study clearly highlights that multiple strategies are needed to deal with the health and economic consequences of alcohol use among black female high school learners. The lack of legal regulation of the retail of alcohol at informal establishments such as "shebeens" should be addressed by government. This should include alcohol distribution and availability to minors.

REFERENCES

- Baumrind D (1991). The influence of parenting style on adolescent competence and substance use. *Journal of Early Adolescence* 11: 55-95.
- Bergin C, Tally S and Hamer L (2003). Prosocial behaviours of young adolescents: a focus group study. *Journal of Adolescence* 26: 13-32.
- Bobak M, McKee M, Rose R and Marmot M (1999). Alcohol consumption in a national sample of the Russian population. *Addiction* 94: 857-866.
- Bolognini M, Plancherel B, Bettschart W and Halfon O (1996). Self-esteem and mental health in early adolescence: Development and gender differences. *Journal of Adolescence* 19: 233-245.
- Baron J, Bachman Y and Weiderpass E (2001). Cigarette smoking, alcohol consumption and risk of hip fracture in women. *Archives of Internal Medicine* 161: 983-990.
- Burt R (2002). Reasons to invest in adolescents. *Journal of Adolescent Health* 31: 136-152.
- Call K, Riedel A, Hein K, McLoyd V, Petersen A and Kipke M (2002). Adolescent Health and Well-being in the Twenty-first century: A global perspective. *Journal of Research on Adolescence* 12: 69-98.

- Chubb N, Fertman C and Ross J (1997). Adolescent self-esteem and locus of control: A longitudinal study of gender and age differences. *Adolescence* 32: 113-129.
- Creswell J (2003). *Research design: Qualitative, quantitative, and mixed approaches*. Thousand Oaks, CA: Sage.
- Cresswell J, Plano Clark V, Guttman M and Hanson E (2003). Advanced mixed methods research design. In A. Tashakkori and C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (209-240). Thousand Oaks, CA: Sage.
- Eaton D, Forthofer M, Zapata L, McCormack Brown K, Bryant C, McDermott R and Reynolds S (2004). Factors related to alcohol use among 6th through 10th graders: The Sarasota County Demonstration Project. *Journal of School Health* 74 (3): 95-104.
- Elder G, Van Nguyen T and Caspi A (1985). Linking family hardship to children's life. *Child Development* 56: 361-375.
- Ellickson P, Tucker J, Klein D and McGuigan K (2001). Prospective risk factors for alcohol misuse in late adolescence. *Journal of Studies on Alcohol* 62: 773-782.
- Ellison G, De Wet T, Ijsselmuiden C and Richter L (1996). Desegregating health statistics and health research in South Africa. *South African Medical Journal* 86: 1257-1262.
- Epstein J, Griffen K and Botvin G (2004). Efficacy, self-derogation, and alcohol use among inner-city adolescents: gender matters. *Journal of Youth and Adolescence* 33: 159-166.
- Foley K, Altman D, DuRant R and Wolfson M (2004). Adults' approval and adolescents' alcohol use. *Journal of Adolescent Health* 35: 345-346.
- Frezza M, di Padova C, Pozzato G, Terpin M, Baraona E and Lieber CS (1990). High blood alcohol levels in women. The role of decreased gastric alcohol dehydrogenase activity and first pass metabolism. *New England Journal of Medicine* 322: 95-99.
- Geckova A, Tuinstra J, Pudelsky M, Kovarova M, Van Dijk J, Groothoff J and Post D (2001). Self-reported health problems of Slovak adolescents. *Journal of Adolescence* 24 (5): 635-645.
- Hingson R, Heeren T, Jamarka A and Howland J (2000). Age of drinking onset and unintentional injury involvement after drinking. *Journal of American Medical Association* 284: 1527-1533.
- Holmberg L and Berg-Kelly K (2002). Health, health-compromising behavior, sexuality and involvement in pregnancy among 18-year-old Swedish males: A cross-sectional survey. *Acta Paediatrica* 91: 838-848.
- Irwin C (2003). Adolescent health at the crossroads: where do we go from here? *Journal of Adolescent Health* 33 (1): 51-56.
- Jessor R, Boss J, Vanderryn J, Costa F and Turbin M (1995). Protective factors in adolescent problem behavior: moderator effects and developmental change. *Developmental Psychology* 31: 923-933.
- Kann L, Kinchen S, Williams B, Ross B, Lowry R, Grunbaum J and Kolbe L (1999). *Youth Risk Behavior Surveillance - United States 1999*. Morbidity and Mortality Weekly Report 49 (SS-5): 1-95.
- Kumpulainen K and Roine S (2002). Depressive symptoms at the age of 12 years and future heavy alcohol use. *Addictive Behavior* 27: 425-436.
- McLoyd V (1990). The impact of economic hardship on black families and children: Psychological distress, parenting, and socioemotional development. *Child Development* 61: 311-346.
- Michaud P (2003). Prevention and health promotion in school and community settings: a commentary on the international perspective. *Journal of Adolescent Health* 33: 219-225.
- Neve R, Diedericks J, Knibbe R and Drop M (1993). Developments in drinking behavior in the Netherlands from 1958 to 1989, a cohort analysis. *Addiction* 88: 611-621.
- Rail A, Stanton B, Wu Y, Li X, Galbraith J, Cottrell L, Pack R, Harris C, D'Alessandri D and Burns J (2003). Relative influences of perceived parental monitoring and perceived peer involvement on adolescent risk behaviors: an analysis of six cross-sectional data sets. *Journal of Adolescent Health* 33: 108-118.
- Rehm J, Gutjahr E and Gmel G (2001). Alcohol and all-cause mortality: a pooled analysis. *Contemporary Drug Problems* 28: 337-361.
- Roche A and Deehan A (2002). Women's alcohol consumption: emerging patterns, problems and public health implications. *Drug and Alcohol Review* 21: 169-178.
- Saunders J, Davis M and Williams R (1981). Do women develop alcoholic liver disease more readily than men? *British Medical Journal* 282: 1140-1143.
- Temple N, Steyn K, Hoffman M, Levit N and Lombard C (2001). The epidemic of obesity in South Africa: a study in a disadvantaged community. *Ethnicity and Disease* 11: 431-437.
- World Health Organization (2002). *The World Health Report 2002. Reducing Risks, Promoting Health Life, 2002*. Geneva: World Health Organization.