

Risk-taking behaviour of Cape Peninsula high-school students

Part I. Introduction and methods

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Abstract In this study, risk-taking behaviour of Cape Peninsula high-school students was investigated. Suicidal behaviour, cigarette smoking, alcohol consumption, drug use, road-related behaviour, violent behaviour and sexual behaviour were included. This article, the first in a series, describes the rationale and methodology of the project. Sixteen schools were selected so as to yield a representative sample of schools in the three major education departments in the Cape Peninsula (administered by the Department of Education and Training and the Houses of Assembly and Representatives). The final sample size was 7 340 school students. A self-administered questionnaire was completed in a normal school period. Estimates for each education department were weighted to produce an overall estimate. The results are presented by standard and home language(s), and gender. Limitations of the study include its cross-sectional nature; the possibility of under- and over-reporting; the exclusion of important groups of adolescents such as absentees and dropouts, and those attending specialised and private schools; and not being able to present the results separately for each education department.

S Afr Med J 1993; 83: 469-473.

In recent times the recognition of the contribution of the behaviour of adolescents to their morbidity and mortality has been increasing.¹ Some of the reasons for this are as follows:

1. Adolescents constitute a significant proportion of the population. Using the definition of adolescence adopted by the World Health Organisation, viz. all people between the ages of 10 and 19 years,¹ it is estimated that the 7,75 million adolescents in South Africa in 1990 constituted 22% of the total population.²

2. Much of the mortality and morbidity of adolescents is preventable. A recent review of mortality in South African adolescents from 1984 to 1986 found that 56,8% of the deaths were due to external causes such as road traffic accidents, assault and suicide.³

3. The lifestyles of adolescents involve a greater degree of exploration, experimentation, and rebellion than those of other age groups; the potential for risk-taking behaviour is thus greater.⁴ Risk-taking behaviour is frequently adopted to define a social image or achieve social status, and it can thus fulfil important developmental functions.^{5,6} The effects of certain adolescent behaviour (for example, unsafe sexual practices) may

only become manifest after adolescence.⁷

4. Adolescents are particularly influenced by social factors as they attempt to develop a sense of identity.⁸ Adolescence is therefore a critical period for the acquisition of health-promoting behaviour and attitudes, in that their effects are multiplied by their persisting throughout adulthood, and preventive activities are likely to have maximal impact.⁹⁻¹¹

5. Political and economic changes, the diminution of the influence of the extended family, migration, and urbanisation¹² have resulted in adolescents growing up in an environment which is frequently very different from that to which their parents were exposed. The instability thus engendered may result in health-damaging behaviour (such as substance abuse).¹

6. The fact that increasing numbers of adolescents attend school implies the potential for the implementation of efficient health promotion efforts there. Although there have been some pilot studies with encouraging results,¹³ health promotion has received a low priority from South African education authorities^{10,14} and the development of appropriate intervention strategies for South African school students is thus long overdue.

As an initial step in designing effective interventions, estimates of the prevalence of a wide range of adolescent risk-taking behaviours are required. While studies in Europe,¹⁵ Australia¹⁶ and the USA¹⁷ have addressed this need, South African studies have tended to emphasise specific behaviours¹⁸⁻²⁰ and have not taken a comprehensive view. The aim of this study was to gather prevalence data regarding various aspects of risk-taking behaviour of high-school students in the Cape Peninsula, South Africa.

This article, the first in a series in which the study is reported, will describe the methodology employed, including some details of the final sample. Each of the other articles in the series will deal with a specific content area (Table I); the rationale for including that area will be presented in the relevant article before reporting and discussing the prevalence data.

TABLE I
Titles of articles in the series 'Risk-taking behaviour of Cape Peninsula high-school students'

Part	Title
I	Introduction and methods
II	Suicidal behaviour
III	Cigarette smoking
IV	Alcohol use
V	Drug use
VI	Road-related behaviour
VII	Violent behaviour
VIII	Sexual behaviour

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Methods

Sampling procedure

The study population was defined as all students attending high schools in the Cape Peninsula (defined as the 01 economic region of South Africa). High schools con-

sist of Standards 6 - 10 (equivalent to Grades 8 - 12). Students attending private schools or colleges were excluded for the following reasons: (i) they comprise a relatively small proportion of the total number of high school students in the Cape Peninsula (about 3 000 out of a total of about 170 000); (ii) it would be difficult to obtain a representative sample in the light of the relatively large number (about 20) and religious, language and pedagogical diversity of the schools; and (iii) any intervention programme informed by the data provided by the research would be likely to be organised and implemented through the various state education departments, and information regarding private schools is therefore not directly applicable. Special schools (which cater for those unable to cope with the academic demands of mainstream schools) were excluded from the sampling frame because a different methodology would be required to account for the particular circumstances pertaining to this group. Technical schools were included in the sampling frame along with the other schools.

The non-private schools in the Cape Peninsula are administered by four education departments: (i) the Department of Education and Training (DET), responsible for the education of those classified as black (13 schools); (ii) the Department of Education and Culture of the House of Assembly (HOA), responsible for the education of those classified as white (53 schools); (iii) the Department of Education and Culture of the House of Delegates, responsible for the education of those classified as Asian (2 schools); and (iv) the Department of Education and Culture of the House of Representatives (HOR), responsible for the education of those classified as coloured (75 schools). Schools falling under the House of Delegates were excluded from the study owing to: (i) not being able to make suitable arrangements for the administration of the questionnaire at the selected school; (ii) the small numbers of students; and (iii) refusal of permission to include items dealing with sexuality in the questionnaire. A total of 16 schools was selected, 4 from the DET and 6 from each of the other departments.

The schools in the latter two departments were stratified into three social classes according to the areas in which the schools are situated, and 2 schools were chosen from each social class; this is justified by the observation that social class is an important determinant of a variety of risk-taking behaviours.⁹ For the schools administered by the HOA, the social classes were derived from the composite indices of levels of living that have been developed for each suburb of Cape Town using the following indicators: income; occupancy rates; the extent of sharing of accommodation by different families; the proportion of people owning cars; workers' educational levels; the numbers of single mothers with more than 3 children; and unemployment levels.²⁷ It was not possible to use these composite indices for the schools administered by the HOR because they are based partly on data obtained in the 1980 census and are therefore not available for schools in Mitchell's Plain. The dependency ratio was therefore used to stratify the schools administered by the HOR according to social class; this ratio is a measure of the number of people in the 'active' age groups (15 - 64 years) as opposed to those in the 'dependent' age groups (0 - 14 years and 65 years and above).²⁸

The schools administered by the DET were divided into two strata according to level of urbanisation, viz. schools in the settled urban communities of Langa, Guguletu and Nyanga (7 schools) and schools in the more recently established areas of New and Old Crossroads and Khayelitsha (6 schools); 2 schools were randomly selected from each stratum. Level of urbanisation as opposed to social class was used as the stratification criterion for schools falling under the DET for two

reasons: (i) the indices of social class used for other departments are not available or valid for the areas in which the DET schools are situated;^{27,28} and (ii) the rapid urbanisation of blacks²⁹ is likely to have a considerable impact on risk-taking behaviour.^{30,31}

In the case of schools falling under the HOA and HOR the entire school was selected, but in the case of schools falling under the DET approximately 40% of the students in each school were selected; selection of a larger proportion would have resulted in a far larger proportion of students being selected from the DET than from the other departments. The schools were stratified according to standard, and the required number of classes randomly selected from each stratum. All the students in the selected classes participated.

Obtaining permission to conduct the study

Permission to conduct the study was obtained from the management of the three education departments. The DET gave unconditional permission to proceed. The permission granted by the HOA was conditional upon the researchers holding meetings with the parents and obtaining written permission from a parent or guardian of each student who participated. However, this was not necessary for an abbreviated version of the questionnaire in which all the questions dealing with sexuality (including sexual harassment) were excluded. Permission was granted by the HOR only after a meeting had been held with the principals of the selected schools, and they had in turn consulted with whatever interest groups they considered appropriate at their schools. Permission was granted only after it had been agreed that the results would not be presented by education department (which would to a large extent have corresponded to population group).

Having obtained permission from the education departments, permission was negotiated with the individual schools that were selected; the principals, staff (especially the guidance teachers), school committees, students' representative councils (SRCs) and parents-teachers-students associations were involved in this process.

All the schools selected in the DET agreed to participate. One of the HOA schools selected in the middle socio-economic group was not willing to participate and another school was substituted; in addition, both the schools selected in the high socio-economic group were not willing to participate, other schools were substituted, and 1 of the substitutes was also unwilling to participate, thus necessitating yet another substitution. The substituted schools were randomly selected from the remaining schools in that social class stratum. Four of the schools were willing to have the full version of the questionnaire administered to those students whose parents had given permission for this; the other students at these schools, as well as all the students in the other 2 schools, completed the abbreviated version of the questionnaire in which all the questions dealing with sexuality were excluded. All the schools selected in the HOR agreed to participate. However, 4 of the schools required a letter to be sent to the parents informing them of the project. In 3 of these cases, parents were required to sign a reply slip giving permission for their children to participate. In the remaining case, the parents were asked to contact the principal if there was any objection to the questionnaire being completed. Students whose parents refused permission did not complete any part of the questionnaire.

Details of the final sample

Both genders are taught at all the schools that participated. Of the schools falling under the HOA, 3 used

Afrikaans as a medium of instruction, 2 used English and 1 used both languages. Both the schools that allowed only the abbreviated version of the questionnaire to be administered used Afrikaans as the medium of instruction. Of the schools falling under the HOR, 1 used Afrikaans as the medium of instruction and the rest used English and Afrikaans.

All the students in the HOA participated, except in the case of 1 school where it was not practically possible for the entire school to complete the questionnaire; every 2nd student according to seating position in the register class participated. A total of 371 students in 3 schools in the HOR did not participate because their parents refused permission. The SRC of one of the DET schools refused permission for the Standard 6 class to complete the questionnaire.

The total number of students in the final sample was 7 340; of these, 3 269 were male, 3 981 were female, and the gender of 90 was not recorded. A breakdown of the sample by standard and language(s) spoken at home is provided in Table II, and the proportion of students selected from each education department is set out in Table III.

TABLE II.
Number of students in final sample by standard and language(s) spoken at home, and gender (N = 7 340)

	Males	Females	Gender unknown
Standard			
6	763	895	20
7	797	888	28
8	624	838	17
9	559	786	14
10	467	531	5
Standard unknown	59	43	6
Language(s)			
Afrikaans	1 301	1 487	25
Afrikaans and English	676	723	9
English	743	831	7
Xhosa	506	896	37
Any other			
combination	35	36	3
Language unknown	8	8	9

TABLE III.
Proportion of students selected from each education department

	No. of students in sample	No. of students in population	Percentage of students selected
DET	1 461	17 600	8,3
HOA	2 032	72 181	2,8
HOR	3 847	72 898	5,3
Total	7 340	162 679	4,5

The questionnaire

The questionnaire is divided into several parts. The preamble contains items eliciting basic demographic data such as gender, school standard, and language(s) spoken at home. Part 1 deals with suicidal behaviour, intentionally violent behaviour, and behaviour resulting in unintended accidents. Part 2 is concerned with cigarette smoking, alcohol consumption, and cannabis, methaqualone (Mandrax), solvent and injectable drug use. Part 3 involves certain aspects of sexual behaviour; the only behaviour included was that relevant for risk of pregnancy or spread of sexually transmitted diseases.

In order to check validity, the respondents were asked if they had ever used a fictitious drug (Lovar-25), and, if they had, to provide some details of frequency of use. Clearly, if a student answered positively to this item, the validity of all his or her other responses was open to question; that student's questionnaire was excluded from the study.

The instrument was designed so that it could be administered in a normal school period of 35 minutes. It is a self-administered instrument, mostly requiring 'yes' or 'no' answers. The emphasis is on observable risk-taking behaviour; items exploring attitudes and beliefs were not included to minimise the influence of cultural and linguistic variables. The various forms of behaviour were defined as clearly as possible so as to reduce the likelihood of ambiguity. This is most obvious in the section dealing with sexual behaviour; for example, in the first question in this section, the students were asked: 'Have you ever had heterosexual intercourse? This means intimate contact with someone of the opposite sex during which the penis enters the vagina (female private parts).' Care was taken to ensure that the level of language used was appropriate from Standard 6 to 10. The questionnaire was translated into Afrikaans and Xhosa by teams of translators and then back-translated by other people who had Afrikaans or Xhosa respectively as their home language. Pilot studies were carried out; groups of students from all the relevant education departments completed the questionnaire and were subsequently interviewed individually to detect inadequacies in the questionnaire (which was modified accordingly). In addition, the questionnaire was administered in a classroom to ensure that there were no problems pertaining to this context.

Administration of the questionnaire

The questionnaire was administered at the end of the 2nd school quarter and at the beginning of the 3rd school quarter in 1990.

The venues and group sizes when administering the questionnaire varied between schools depending on the wishes of the principal and the staff and the circumstances pertaining to each school. In some cases, the questionnaire was administered in classrooms, while in other cases a larger room (e.g. the school hall) or the school playing fields were used. Examination circumstances were simulated in that the questionnaire was administered in a uniform and formal manner.

It was decided not to involve the school principals or the teachers in the administration of the questionnaire for the following reasons: (i) a standardised procedure was desirable, and this would not have been possible because different principals and teachers would have been involved with different classes and schools; (ii) the probability of gaining access to the schools was increased because minimal demands were being made on the resources of the schools; (iii) the students were less likely to regard the whole enterprise with suspicion because it was not directly associated with the education departments; and (iv) the validity of the responses was increased because there was no possibility of the school staff having access to the students' responses. Besides the students, the only people present in the classrooms when the questionnaire was being administered were members of the research team. However, for practical reasons it was unavoidable that in 2 of the schools falling under the HOA the teachers administered the questionnaire; in both these schools the questions dealing with sexual relationships were excluded, and there was a member of the research team present at the school while the questionnaire was being completed.

At the beginning of each session: (i) the rationale for the study was explained; (ii) instructions were given as

to how the questionnaire should be filled in; (iii) it was emphasised that the findings would be anonymous; and (iv) the students were told that they would receive a fact sheet giving some of the results of the survey and some advice about what could be done to reduce the extent of their risk-taking behaviour. All this information was available on the front cover of the questionnaire booklet. The students were asked if they had any questions before completing the questionnaire. They were instructed to place the completed questionnaire in the envelope supplied for this purpose; it was hoped that this would increase the validity of the responses. The level of discipline maintained in the venues in which the questionnaire was being completed was generally satisfactory. No student refused to complete the questionnaire.

Analysis

For each education department, the basic design was that of a cluster sample. Since the proportion of students selected from each department varied (Table III), an estimate for each department was weighted to produce an overall estimate. Ideally, weights should be based on the number of students in each education department for the particular gender/age/standard category. However, since only the total student numbers in each department were known, the number of students in each category was estimated from the data. The estimator used for estimating percentages was the ratio estimator.

In this series of articles, the data are reported by standard and gender, and language(s) spoken at home and gender. The format of the tables corresponds to that of Table II. It was decided not to report the data by standard, language(s) spoken at home, and gender because the smaller cell sizes would in some cases make the data difficult to interpret, and not to do so by age and by standard because similar trends would be revealed by either method. Standard was chosen in preference to age because it is more likely to be useful for planning interventions, since these would be targeted to particular standards and not particular ages. The ages corresponding to particular standards are not equivalent across the education departments; students in DET schools tend to be older than those in the other departments. As regards the language(s) spoken at home, students were asked to indicate which of the following languages were spoken at home: English, Afrikaans, Xhosa, and other. For the purposes of the analysis, it was decided to ignore the 'other' category; for example, students who reported that they spoke English plus a language in the 'other' category at home were grouped together with those who indicated that they spoke only English at home. Four language categories were then created: Afrikaans, Afrikaans and English, English, and Xhosa. Table II indicates that, of those who answered the question, only 74 students did not fall into one of these categories. As mentioned above, it was not permitted to report the data by education department, and students from different population groups could thus not be compared. The effects of this are mitigated by the fact that since the field work was carried out many schools have been admitting increasing numbers of students who would previously have attended schools administered by other departments.

Statistical tests to assess the significance of differences between population estimates were not performed for the following reasons: (i) in many cases, the assumption of independence of samples cannot be made and there is no way of measuring the extent of the dependence of the samples; and (ii) there are likely to be many confounding variables that would make comparison between different population estimates a misleading enterprise.

For each item, there were some missing values. For the purposes of the analysis, these missing values were regarded as 'no' responses.

Methodological limitations

The cross-sectional approach

A problem implicit in many cross-sectional studies is that changes over time cannot be predicted.³² An individual currently engaging in a form of risk-taking behaviour will not necessarily continue to do so. Therefore, without longitudinal data, caution should be exercised in interpreting the results of a cross-sectional study.³³ This is particularly relevant when the study involves adolescent behaviour, much of which is of experimental and thus transient nature.⁴

Validity of self-report measures

The issue in this regard is whether adolescents provide accurate and honest answers to the questions. This is particularly pertinent in this study, since much of the information sought is considered to be socially deviant or illegal.³⁴ Threats to validity stem from two sources: (i) under-reporting, arising out of the fear of being exposed and the subsequent embarrassment and possible legal repercussions; and (ii) over-reporting. There were no items in the questionnaire to assess under-reporting and biological markers³⁵ were not used. However, the researchers made every effort to stress confidentiality and anonymity. With regard to over-reporting, an item concerning the use of a fictitious drug (Lovar-25) was inserted in the questionnaire. By excluding 43 students who answered affirmatively to this question, the effect of this bias may have been reduced. However, those who over-reported with respect to other forms of risk-taking behaviour may not have been detected by this method.

Sampling issues

A limitation of school-based studies is the exclusion of important subgroups of adolescents. These include: (i) those who were absent on the day the questionnaire was administered; (ii) adolescents who have left school prematurely; and (iii) students who attend specialised schools. Prevalence rates for a variety of forms of risk-taking behaviour have been shown to be higher for these groups.³⁶⁻³⁸ The behavioural profiles derived in this study may thus reflect a *healthy student* effect. It has been argued that individuals excluded in one of these ways constitute a small proportion of the adolescent population and that their exclusion should not significantly influence the overall findings.³⁶ However, in South Africa this may not be applicable because the rate of premature school-leaving is known to be high among specific subgroups of the population. A community-based study is underway which has as one of its aims documentation of prevalence rates for various forms of risk-taking behaviour in this group.³⁹

Restriction on interdepartmental comparisons

Permission to proceed with the study was granted by one of the education departments only after agreement that the results would not be presented according to education department. In the South African context, this is equivalent to prohibiting comparisons based on racial classification. Analysis of the data reveals that much of the variation ascribed to the language variable is not accounted for by this variable alone; it is probable that population group is also an important contributory variable. Classification according to population group has been practised to maintain oppressive social policies

and is devoid of anthropological or scientific validity.⁴⁰⁻⁴³ However, the impact of racial segregation on the lives of South Africans cannot be denied.⁴³ Until geographical, economic and political inequities due to discriminatory policy are redressed, this impact will be manifest in much epidemiological research in South Africa. While the necessity for a critical definition of racial terms is endorsed,⁴⁰ it would appear that the precondition set by one education department impeded a more accurate identification of subgroups most at risk.

Concluding comments

Previous studies have demonstrated an association between various forms of risk-taking behaviour such as alcohol consumption, smoking, and unsafe sexual practices. Conversely, it has been shown that there is an association between various forms of health-enhancing or preserving behaviour such as physical exercise, use of seat belts, and healthy eating habits.¹⁵ These findings have contributed to the development of a *lifestyles* approach in understanding adolescent health-related behaviour. This approach recognises the interrelated nature of various forms of health-related behaviour. Furthermore, it emphasises the need for a comprehensive theoretical framework incorporating the psychological, social, and environmental dimensions to adolescent health-related behaviour. An implication with respect to intervention is that programmes should not address one form of health-related behaviour (for example, sexual behaviour), but rather the lifestyle in which the behaviour is embedded. Various aspects of behaviour (in their psychological, social, and environmental contexts) would thus be included.⁵

There is the danger that presenting the results of each form of risk-taking behaviour in a separate article will obscure the above implications for intervention. However, a multivariate analysis of the data is in progress with the aim of documenting the extent of the associations between the various forms of risk-taking behaviour included in this project. It is hoped that this will inform the development of intervention strategies using a *lifestyles* approach.

The authors would like to thank the following people for their contribution to the series of articles of which this article comprises the first part: Derek Yach, of the Medical Research Council, for providing an enormous amount of encouragement and advice at all stages of the project and for facilitating the acquisition of funding; Debbie Bradshaw, Alex Butchart, Blanche de Wet, Theunis Kotze, Cathy Mathews, Mehrunisha Mohamed, Charles Parry, Malcolm Steinberg, and Hester van der Walt, for comments on the protocol or one or more of the manuscripts; the many people who assisted in the piloting, data gathering, coding, punching, and cleaning (especially Margie Joyi, Abe Koch, and Merieth Plaatjies of the Department of Psychiatry of the University of Cape Town); Donald Berry, Sharlene Heath, and John Seager, of the Medical Research Council, for contributing in the initial stages of the analysis; Paul Leger, for contributing to the manuscript of the first article in the series; and the educationalists and students involved with the project, for co-operating with the researchers.

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