

**THE RELATIONSHIP BETWEEN HEALTH
EDUCATION AND HEALTH
COMPROMISING BEHAVIOUR AMONG
SOUTH AFRICAN ADOLESCENTS
ATTENDING AN INSTITUTION OF
TERTIARY EDUCATION**

DISSERTATION

by

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of the Requirement for the Degree**

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DECLARATION

I declare that this dissertation is entirely my own work. All references to the research, philosophies and work of others have been acknowledged using the Harvard Referencing system (2002 Style Manual 6th edn.). This research is being submitted for the degree of Masters in Nursing (Community Health) at the University of KwaZulu Natal, Durban, South Africa. It has never been submitted before to this or any other university for any purpose.

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This dissertation has been read and approved for submission.

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Date *5th May 2006*.....

DR NG MTSHALI

DEDICATION

**I DEDICATE THIS DISSERTATION
TO ALL THOSE YOUNG PEOPLE IN SOUTH AFRICA
WHO ARE FACING THE COMPLEX CHALLENGES THAT THE
UNCERTAIN ROAD TO ADULTHOOD BRINGS.**

**LIKE DESERT FLOWERS WAITING FOR THE RAIN IN ORDER TO BLOOM,
THEY TOO ARE WAITING FOR THE RIGHT NOURISHMENT
IN ORDER TO AWAKEN, AND TO DISCOVER THEIR TRUE SENSE OF
SELF, EMERGING FROM WITHIN.**

**MAY THIS RESEARCH HELP TO ENRICH THE UNDERSTANDING NEEDED
BY ALL THOSE PEOPLE WHO ARE COMMITTED TO THE ENHANCEMENT
OF ADOLESCENT HEALTH AND WELL BEING.**

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ABSTRACT

In South Africa statistics of mortality and morbidity, pertaining to the consequences of risk-taking behaviour among the country's youth, remain unacceptably high. Many of these behaviours have long as well as short term consequences, thereby, giving rise to many illnesses, lifestyle diseases, and other problems. The risk-taking activities confining this study include those that are known to concur and co-vary namely: unprotected, indiscriminate sex; nicotine use; alcohol and other drug/substance abuse; and unsafe travelling practices.

The problem is that it is unknown whether South African adolescents are receiving health-education that reduces risk-taking tendencies, and if they are, whether they are benefiting from the exposure. Little is known about the relationship between health-education and health-compromising behaviour in South Africa; nor the influence of other variables on this relationship. The purpose of the study was to describe and explore this relationship, among South African adolescents, attending an institution of tertiary education in the province of KwaZulu Natal. All aspects of the research were underpinned by Rosenstock's Health Belief Model (1974).

The research was approached from a quantitative perspective using a descriptive/exploratory design. A sample of 155 students from all the main ethnic groups, of both sexes, aged between 17 and 24 years, who were raised and educated in South Africa, was taken from the Howard College Campus of the University of KwaZulu Natal. The sampling technique used was non-random quota sampling in order to meet the abovementioned inclusion criteria. The

data were collected using structured, self-developed, self-administered questionnaires using the short question format. They were encoded and analysed using the computer Statistical Package for Social Sciences (SPSS 11.5 for Windows). Descriptive and inferential statistics were used in the analysis. Attention was given to ethical issues of informed consent, confidentiality and anonymity.

Frequency counts were used in the descriptive analysis; and cross tabulations using Fisher's exact test, were computed for further exploration of the relationships between variables. Thus, the results were presented using both descriptive and exploratory tables and graphs.

The findings answered the demographic questions as well as the six objectives of the study.

These findings showed the relationship between health-education and health-compromising behaviour to be fairly fragile in many instances. In response to the problem statement health education/information is readily available to all ethnic groups, but despite this, is not meeting the needs of all young people. Parental proactivity in particular is lacking; health-education programmes need reviewing and certain areas of health-compromising behaviour such as safe travelling behaviour and binge-drinking need urgent attention. Equal attention needs to be given to all forms of health-compromising behaviour. Cognisance needs to be taken of issues such as race, gender and identity as well as the variables which play modifying and supportive roles. Thus, the influence of health-education has been shown to vary depending on the health-risk topic and the setting/context.

In conclusion, the overall aim of the research which was to gain a richer understanding of this relationship was achieved.

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Chapter 1

INTRODUCTION TO THE RESEARCH TOPIC

1.1 General Introduction

William Shakespeare in his play “The Winter’s Tale”, written in 1610 says:

I would there were no age between ten and three-and twenty, or that youth would sleep out the rest; for there is nothing in the between but getting wenches with child, wronging the ancients, stealing and fighting.

Historically the tendency of youth to take risks, thereby creating the potential to compromise their health, is thus, an age-old problem that does not seem to get better with the passage of time.

In fact, the twenty first century brings with it an even greater concern for the health of the world’s youth (Millstein et al. 1993). Many adolescent health risk behaviours of the twenty first century result from voluntary behaviours, such as unhealthy eating habits; lack of regular exercise; not maintaining a healthy weight; indiscriminate, unprotected sex; use of tobacco, alcohol and/or other drugs; and failure to use safety equipment for example, seat belts and helmets when travelling on the roads (American National Institute of Child Health and Human Development 2004). Consequently, lifestyle illnesses related to obesity, namely: diabetes, hypertension, cancer; renal, cardiac and vascular diseases, amongst others, persist, especially in the developed world. Despite access to contraception and condoms, teenagers continue to fall pregnant unintentionally and the number of young people with sexually

transmitted diseases and HIV/AIDS has reached alarming proportions (Aids Focus 2004); the number of young women taking up smoking cigarettes has exceeded that of men (Bateman 2002); and abuse of alcohol, drugs and other substances is a continuing worldwide problem (Gregg, Freeth & Blackie 1998). The morbidity and mortality of teenagers from motor vehicle accidents, as a consequence of reckless driving and failure to wear seatbelts, stresses economies of many countries throughout the world (Arrive Alive 2004).

These problems affecting the world's youth continue to be of enormous concern, not only to health professionals and parents; but also to governments, policy makers, teachers, religious and community leaders; as well as all those who are involved with the well being of young people. According to Millstein et al. (1993), mortality rates increase by more than 200% between early and late adolescence and the major sources of adolescent morbidity and mortality are as a result of these aforementioned health risk behaviours. In addition, many adult lifestyle illnesses outlined above, are associated with risk factors, which were initiated during adolescence.

At Alma Ata in 1978, the World Health Organisation's International Objectives for Health for All, by the year 2000, were set. This document established specific areas of concern, which pertained to health risk behaviours, namely: physical activity and fitness; nutrition; family planning; tobacco, alcohol and other drug use; HIV infection; sexually transmitted diseases; violent and abusive behaviour and unintentional injuries. During the 1990's in England, the Health of the Nation Document (1992) set targets for improvements in areas of unprotected sex; drug abuse and smoking in its teenage health agenda; however, none was

met. Currently, the International Healthy People 2010 objectives, with its focus on prevention, relate to improvements in physical inactivity; overweight and obesity; tobacco and other substance abuse; and injury and violence.

Why is it, then, that 400 years after William Shakespeare wrote those incriminating words, describing the state of seventeenth century youth, that the world still grapples with problems generated by adolescent behaviour and its health-compromising consequences; despite so many ongoing health resolutions?

1.2 Background Introduction

It is against this historical and global perspective that the state of South Africa's youth can be put into context. Globalisation has brought with it an expansion of adolescent, global drug markets to developing countries, such as South Africa. Consequently, in Durban, KwaZulu Natal, drug abuse is on the rise with 27% of patients in treatment programmes under the age of 20 years (Natal Mercury, SANCA Director 2004). "Not only have numbers increased (in Durban), but ages for treatment are getting younger" (SANCA Director 2004). Research by the South African Community Epidemiology Network on Drug Use (SACENDU 2004) also showed an increase in the number of youngsters under 20 years old who were in treatment. This is an 8% increase between 2000 and 2004 (Natal Mercury 2004). Physical, mental, social and economic consequences of drug use, abuse and addiction are well documented.

Durban has the highest figures for alcohol abuse in South Africa (43%) according to the findings of the above research (SACENDU 2004). The concern is that the road to alcoholism

often begins in the adolescent years. Experimental drinking associated with adolescence may become a more entrenched, habitual pattern of behaviour leading to acute and chronic lifestyle illnesses as well as to many detrimental social, psychological and economic problems. Obesity with its own health effects; poor nutrition and its consequences; gastritis; pancreatitis; polyneuropathy; hepatitis; liver failure and so forth, are all associated with the abuse of alcohol.

KwaZulu Natal also has the highest prevalence of HIV positive youth in South Africa, standing presently at 14.1% (Daily News 2004). The results of the largest survey ever conducted on youth in South Africa, show that one in every ten young South Africans between 15 and 24 years is HIV positive; and by age 22, one in four South African women has HIV (Reproductive Health Research Unit (RHRU) 2004). The Principal investigator and executive director, of the University of Witwatersrand's Reproductive Health Research Unit (RHRU), voiced great concern about these alarming statistics (Daily News 2004). Despite knowledge of how HIV is contracted the youth persist with risky sexual behaviour. Between 1997 and 1998 the HIV prevalence amongst young South Africans almost doubled from 12.7% to 21% (RHRU 2004). This survey does, however, show an increase in condom usage, in that 33% of the sample surveyed reported consistent condom use. Fifty two percent reported condom use at last intercourse. While still inadequate to halt the progress of HIV/AIDS, this is a welcome sign and may well have positive implications for health-education. According to this survey there is a great deal of denial regarding personal risk. Sixty two percent of those who thought they were not at any risk of contracting HIV, tested positive in the study. In South Africa, teenage pregnancies alone represent a third of all births

nationwide (RHRU 2004). This shows that sexual risk-taking behaviour continues to be a great problem and one that deserves attention if unwanted pregnancies are to be prevented and the health and long-term prospects of South Africa's youth improved.

Tobacco control remains one of the greatest challenges facing society. Worldwide, every country is threatened by tobacco and needs to protect its citizens from this global epidemic (Moxham 1995). Cigarette smoking is the primary preventable cause of death in the United States of America (NIDA 2004). Tobacco use in South Africa is an ever-increasing problem as globalisation brings with it expanding markets, which are targeting developing economies.

The 1994 estimates of economic costs of tobacco, in terms of lost productivity due to premature deaths and hospitalisation, exceeded R2, 5 billion (Medical Research Council of South Africa (MRC SA) 1998). Tobacco smoking usually begins in adolescence and persists into adulthood as a lifestyle. Research into the development of smoking behaviour has shown it to be a progressive and largely one-way process (Fergusson & Horwood 1995). Tobacco smoking leads to a vast number of preventable diseases ranging from several cancers to cardiac, arterial and peripheral vascular disease. Deaths from cardiovascular accidents, coronary artery disease, respiratory disease and sudden infant death syndrome often attribute cigarette smoking to be one of the most likely risk factors (Department of Health, KwaZulu Natal 2004).

In South Africa, between 9,600 and 10,000 people die on the roads every year. Almost

150, 000 people are injured in the approximately 500,000 crashes that occur each year. The cost to the state is an estimated R11, 9 billion (Department of Transport 2002). In KwaZulu Natal 1, 420 people lost their lives in almost 100 000 accidents. Almost half (47%) of all drivers killed and one third (36%) of those injured were under 30 years of age (Daily News 2004). The main reasons found for these accidents, is speeding, followed by drunken driving and a disregard for road rules and regulations (Daily News 2004). Safe driving and passenger habits, for example the use of seatbelts, are patterns of behaviour that should be learnt and internalised as early as possible in life. Dangerous combinations of using alcohol and driving are behaviours, which often begin in adolescence and continue into adulthood. Driving above the legal alcohol limit encourages speeding, reckless driving, delays responses and reduces the likelihood of making safe decisions, for example, using safety equipment, such as seatbelts and helmets.

As shown above, health-compromising behaviour in its broadest conceptualisation encompasses many different forms of risk-taking from poor nutrition to drug abuse. However, the researcher limited the area of study to those behaviours, which are voluntary and tend to cluster and co-vary, namely: unprotected, indiscriminate sexual practices; substance abuse and unsafe travelling behaviour.

At the present time in South Africa, health-education/information has the potential to reach adolescents through a wide variety of ways. This exposure can take place informally in the family setting (parent to child discussions); through the mass media (radio, television, films, newspapers, magazines, posters, pamphlets); by way of religious instruction; from

community leaders; doctors; nurses; significant others or in more formal settings such as in schools and /or health clinics where they can receive well constructed life-skills programmes. Health education campaigns, for example, 'Arrive Alive' have been conducted by the South African Department of Transport (Arrive/Alive 2004). The University of Natal Interdisciplinary Accident Research Centre is involved in a variety of educational strategies regarding road safety, as well as ongoing research into the high accident tolls on South African roads (UNIARC 2003). The Reproductive Health Research Unit is instrumental in organising a new lifestyle brand for young South Africans called 'loveLife', and other mass media educational programmes, pertaining to sexual health (RHRU 2004). The National Adolescent Friendly Clinic Initiative is an integral component of 'loveLife' and is still in its infancy. The Cancer Association of South Africa targets youth on tobacco and skin related cancers (CANSAS. 2004); and the South African Council on Alcoholism and Drug Dependence facilitates pro-active prevention programmes in schools and communities. It is further involved in a consultative capacity to Teenagers Against Drug Abuse and Youth Against Drug Abuse (SANCA 2004). The National Department of Health in South Africa is a co-partner in many of these initiatives as well as running its own educational strategies.

The Health Systems Trust, Planned Parenthood Association of South Africa and more than one hundred community-based non-governmental organisations across South Africa are also involved in initiatives to promote health-education, many of them targeting the country's youth. These are an example of some of the more developed educational programmes available to the South African adolescent.

Thus, during the growing years of adolescents in South Africa, it is possible that they could have been exposed to any one, or all of the above-mentioned methods of obtaining health-education/information. It is also possible that the health-education/information, which they come into contact with, may or may not deal with risk-taking behaviour and its short and long-term consequences.

1.3 Researcher's Assumption

The researcher assumed that the majority of South African adolescents that have reached tertiary education level have had some exposure to health-education/information at various times during their lives. It was further assumed that each individual's experience of this education could be different, in that health knowledge may have been acquired in a number of different ways and at different times during their lives, as already discussed. The content of the health-education/information would also differ among individuals.

1.4 Rationale for the Study

The rationale or reasons that motivated the researcher to study this topic rested on all of the above. Firstly, the literature showed that historically this is an age-old problem documented by Shakespeare, four hundred years ago, and yet still persists today. Secondly, it is a global phenomenon, prompting ongoing research in all corners of the world from Finland to South Africa, America and Taiwan. Thirdly, the alarming statistics relating to injury, disability, unintended pregnancy, disease and death as a consequence of adolescent voluntary behaviour, further promoted the researcher's concern with the problem.

It perplexed the researcher that despite this assumed exposure of young people to health-education/information, statistics suggested that South African adolescents were not reducing risk-taking activities, and were thus at risk of compromising their health in the short and/or long term. The researcher, thus, asked what role health-education was playing in adolescent health. The body of scholarship reviewed generally showed that health-education is valuable and does make a difference to risk-taking behaviour (Flay et al. 2004; Niederdeppe 2004; Kiragu 2001; UNESCO 2001). However, this was not consistently shown to be the case, and the effectiveness in many situations was shown to be short term and the results have been mixed (Zollinger et al. 2000). Providing factual information only, for example, had not been found to deter individuals from participating in high-risk health behaviour (American National Institute of Child Health and Human Development 2004).

In addition, there were further gaps in the literature regarding this research topic. While an overwhelming amount has been written on adolescents from all perspectives, comparatively less appeared to have been done on the influence of health-education on risk-taking behaviour, especially in South Africa. Many health risk behaviours have been found to concur and co-vary in segments of the population, although the basis of the co-variance is frequently unknown. This was a gap which the researcher hoped to address in this study. The programme announcement from the United States of America National Institute of Child Health and Human Development (July 6, 2004), relating to risk-behaviour research scope, said that “it is important to understand factors that contribute to the development of each risky behaviour independently, as well as the possible synergistic, additive, or dynamic interaction of these risk behaviours.” The researcher developed an interest in the role

independent variables may play in the relationship between health-education and health-compromising behaviour; hence the motivation to explore this relationship further.

This document further invites research to enhance understanding of the origin, evolution and termination of health risk behaviour. Interdisciplinary research is sought to explore the biological, genetic, physiological, psychological and social/environmental factors and mechanisms that influence health risk behaviour change.

It was also visually apparent to the researcher that in the streets, in the clubs, in the clinics, many teenagers in South Africa were continuing to compromise their health, despite possible exposure to various forms of health-education/information. This appeared to take place mainly in the form of one or more of the following risk-taking activities: cigarette smoking, alcohol abuse, neglecting to wear seatbelts, reckless driving and/or unsafe sexual practices. Taking of illicit drugs and other substances, further completed the picture in some instances. For the purpose of this research these abovementioned behaviours were clustered and referred to as health-compromising behaviour. Since these behaviours were of particular interest to the researcher, they were the scope and main focus of the study. They served to confine the research, in full knowledge of the fact that health risk behaviour among adolescents also encompasses poor eating habits; lack of exercise; and violence, as already described. The rationale for focusing on these particular health issues only becomes obvious when one examines the major sources of mortality and morbidity during adolescence and later in life. Much harm is done, often with irrevocable consequences (South African Statistics 2004).

Much of this risk-taking behaviour, beginning in the teenage years, persists into adulthood and may become a fixed mode of behaviour for varying periods of adult life (Elders & Hui 1993). The consequences of such behaviour have the potential to be very costly in terms of pain and suffering, as well as in draining countries' resources as already indicated. It was therefore, important to look at the status quo, regarding adolescent health-education in South Africa and explore if there was a relationship between the existing situation and the risk-taking tendencies of the country's youth.

Further motivation for this study lay with its significance in many areas, for nurses and for educators, both then and in the future. These issues have been addressed under the relevant section.

1.5 Problem Statement

Adolescence is a time of change and development which sometimes brings with it conflict and confusion. To re-iterate, "there are unacceptable levels of mortality, morbidity and risk-taking behaviours within this group and much of the consequences of these are preventable" (Bradshaw et al. 1990). These adolescent behaviours can also lead to a range of well-documented lifestyle-diseases, for example, hypertension, diabetes, cancers and vascular disease amongst others, because risk-taking activities may be perpetuated into adulthood. In addition, social problems and mental illness are well known complications of substance abuse (American Psychiatric Association 1995). Barnes (1996) shows that young people are the group most commonly affected by substance-induced mental illness.

psychological development and maturity; socio-cultural factors; peer-pressure; demographics; self esteem; socio-economics; competing priorities and emotional support, amongst others.

In support of the above, the American National Institute of Child Health and Human Development (2004) reports that, “little research has focused on understanding the mechanisms and contextual factors responsible for the process of behaviour change.” They go on to say that “limited research exists on isolating process variables and causal pathways, involved in the initiation, treatment and cessation of health risk behaviours.” This dearth of information further limited understanding of the problem.

Historically in South Africa, adolescent health and education seems to have been neglected. The clinics, in the past have not provided separate facilities for adolescents as they do for family planning; mother and child; geriatrics and diabetics, for example. Instead adolescent services have usually been dealt with as part of the busy family planning clinics (Schoeman 1990). As a consequence of this, the Government White Paper for the Transformation of the Health System in South Africa (Department of Health 1997) targeted adolescent health as an area that needed to be redressed. In response to this need, the National Adolescent Friendly Clinic Initiative was born. One of the national goals of the African National Congress Youth League Policy (2004) is to provide more equitable access to health, recreational and social services for adolescents.

While health-education was known to be given in some schools; in the media; through religious teachings and from some parents and/or significant others; the effectiveness of these interventions in preventing the onset of health-compromising behaviours, was questionable.

The problem statement thus asked what relationship could be found between exposure to health-education/information in South Africa, and the existing health-compromising tendencies of South African adolescents.

1.6 Purpose of the Study

The purpose of this study was to explore the relationship between exposure to health-education/information and health-compromising behaviour tendencies of South African adolescents, who were attending an institution of tertiary education in KwaZulu Natal.

1.7 Aim of the Study

The overall aim of this research was to gain a richer understanding of the relationship between health-education and health-compromising behaviour amongst South African adolescents. This understanding will ultimately assist in developing health programmes that are theory-driven.

1.8 Objectives of the Study

The objectives of this study were to:

1. Determine whether adolescents in South Africa are receiving health-education that deals with the issues of risk-taking behaviour.
2. Identify sources of health-education.
3. Establish if those adolescents who have been exposed to health-education take fewer risks.
4. Describe, and if relevant, further explore which variables are influencing the relationship between health-education and health-compromising behaviour.
5. Determine whether South African adolescents, who have been exposed to health-education/information, perceive themselves to be at risk as a consequence of their behaviour.
6. Establish whether health-education programmes are meeting the needs of adolescents, in terms of reducing their risk-taking behaviour tendencies.

1.9 Set of Research Questions

These research questions sought to answer the objectives as indicated in the brackets.

1. What percentage of students has received health-education/information that deals with risk-taking behaviour? (Objective 1)
2. What was the content of the health-education/information? (Objective 1)
3. Where did most students receive their health-education? (Objective 2)
4. How many seem to have benefited from this education, in that they do not take health risks? (Objective 3)

5. How many have not been influenced by it, in that they do take health risks? (Objective 3)
6. What is the most common form of risk-taking behaviour amongst this group? (Object.3)
7. At what age did the participants receive this education? (Objective 4)
8. Is there a difference in health risk-taking behaviour between males and females? (Objective 4)
9. Are there ethnic differences in the relationship between health-education and health-compromising behaviours? (Objective 4)
10. Did the participants receive ongoing support in relation to the prevention of risk-taking/health- compromising behaviour? (Objective 4)
11. If the participants received support, who gave it to them? (Objective 4)
12. Do the participants feel that their needs, regarding health-education on risk-taking behaviour, have been met? (Objective 4)
13. As a consequence of exposure to health-education, do the participants perceive themselves to be at risk of pregnancy, illness, injury, disability or death, in short or long term, if they engage in risky behaviour? (Objective 5)
14. If applicable, do the participants feel that their needs, regarding health-education programmes on risk-taking behaviour, have been met? (Objective 6)
15. Is the information, included in these programmes, linked to the desired behaviour outcomes which will lead to health-seeking behaviour? (Objective 6)
16. Is it easy to translate information from these programmes into the desired behaviour?
17. Is the information practical, adaptable and culturally sensitive? (Objective 6)
18. Are the programmes tailored to meet the sexual orientation, mental, physical and emotional needs of people at different stages of their lives? (Objective 6)

1.10 Research Hypothesis

Health-education reduces health-compromising behaviour in adolescents.

1.11 Significance of the Study

Adolescence represents challenging targets for research aimed at understanding how health-risk behaviours form; how they differ by individual, by ethnicity, and by gender and the importance of genotype, phenotype and the environment (American National Institute of Child Health and Human Development 2004). Understanding factors that influence adolescents' decisions to take safety precautions has the potential to inform prevention and intervention strategies, and subsequently reduce unintentional injuries and deaths. In addition, discovering why some individuals are risk-takers and when this behaviour usually occurs, are also important areas in advancing the field of child and adolescent health-risk behaviour.

The significance of this study would be to use the findings from this and other empirical evidence-based research to impact on educational strategies, in an endeavour to reduce the incidence of risk-taking behaviour, thereby promoting the health of adolescents. According to the American Institute of Child Health and Human Development (2004), the development of effective prevention and intervention strategies for health-risk behaviours should include theory-driven models and hypotheses, and the identification and evaluation of mediators and moderators involved in the behaviour change process. The means to attaining these objectives would be to show those committed to adolescent health, that by using existing

scientific principles from which to proceed, they can then make progress, through the implementation of workable programmes and subsequent, sophisticated models of implementation and evaluation.

If this research finds there is a positive relationship between health-education and health-compromising behaviour, then it would be most useful to capitalise on this and put more time, energy and money into educating young people into not compromising their health. By looking for gaps and improving what is already being done one could make a huge difference to the health of South Africa's people. On the other hand, if no relationship is found, then as educators it will be necessary to review the existing health-education strategies, and look further a field to countries where their health-education policies have been successful. This would stimulate the need for further investigation and research.

By reviewing South Africa's existing health-education policies: their content, the quality of information, timing and method of delivery, much could be done to achieve positive results. Either way, the findings of this research should serve to direct health educators and community health nurses, in finding solutions for many of the health problems created by adolescent risk-taking behaviour. Such findings, therefore, should have the potential and justification to influence policy making in both departments of health and education. They could serve to direct national and regional policy makers into designing health-education policies, which prepare young people for the challenge of adolescence. Thus, these findings have the potential to influence curriculum development specialists, and authors, who prepare material for teaching health-education in the schools. In addition, this research could impact

in a positive way on other areas where adolescent health is of concern, for example, parents, religious organisations, health clinics, doctors, community health nurses, other allied health workers and the media.

Intervening during or prior to adolescence could give health educators the opportunity, not only to prevent the onset of health damaging behaviours, but also to intervene with existing health-compromising behaviours, that may be less firmly established as part of the person's present lifestyle. Intervention, if found to make a difference, could also provide an opportunity to introduce, reinforce and further establish healthy patterns of behaviour.

Thus, this research could do a great deal towards improving current practice, informing policy and enriching the present knowledge base. It will be of value to nurse-educators, community health nurses, consumers and researchers. In turn, this could create a responsible, healthy nation and a brighter future for many more South Africans.

It was for all of these reasons that the researcher deemed the research potentially, very worthwhile.

1.12 Operational Definitions

ADOLESCENCE

Defining adolescence is not an easy task, since there are many views on how to delineate this period. While there is general consensus that it is a transitional period between childhood and adulthood, age boundaries are found to be less certain. Many feel these are arbitrary and can be moved according to individual differences of maturation and development. Thus according to Petersen (1998), many scholars identify puberty (series of biological changes) as the beginning of adolescence.

According to Irwin (1993), adolescence spans the decade between 10 and 21 years and encompasses the biological changes of puberty, as well as psychological, cognitive and behavioural changes that take place within the organism; and social, environmental and legal transitions, external to the organism.

The World Health Organisation (WHO 1989) sees an adolescent/youth as a person between the ages of 15 and 24 years inclusive.

Macfarlane (1995) defined youth as a phase of development that begins at 10 years of age with the onset of puberty and ends between 18 and 24 years of age.

The Health of Youth Document published by WHO (1989) combines these two groups to extend from 10 to 24 years.

The extended nature of the transition to adulthood in these times, has led scholars to distinguish three sub-phases within the adolescent period namely: early, middle and late adolescence.

For the purposes of this study the group sampled were those adolescents attending an institution of tertiary education. This group, therefore, falls into the late adolescent phase and, thus, would include those students aged between 17 and 24 years.

BINGE-DRINKING

In this study, binge-drinking refers to the consumption of four or more tots/glasses of alcohol drunk in close succession. The alcohol is, therefore, consumed in an uncontrolled manner.

HEALTH

“A state of complete physical, mental and social well-being; not merely the absence of disease or infirmity” (WHO 1986a, p. 1).

HEALTH-SEEKING BEHAVIOUR

Health-seeking behaviour comprises of voluntary activities of an individual undertaken to prevent or detect disease, to promote or to enhance health, and to protect from risk of disease, injury or disability (Alonzo 1993).

HEALTH COMPROMISING BEHAVIOUR

For the purpose of this study, health-compromising behaviour refers to behaviour that is not directed at achieving a greater level of health. It is behaviour which impacts negatively on the health of the individual or groups of individuals. It usually involves some form of risk-taking. While many forms of health-compromising behaviour exist, this term referred specifically to those voluntary behaviours, which tend to cluster and co-vary, namely: unprotected/indiscriminate sex; nicotine, alcohol and other substance abuse; and unsafe travelling practices.

HEALTH EDUCATION

Any combination of learning experiences designed to facilitate adaptations of behaviour conducive to health were referred to as health-education. This included any form of health information regardless of its method of delivery.

HEALTH BELIEF MODEL

The Health Belief Model was developed to provide a framework to understand why some people take specific action to avoid illness, whereas others fail to protect themselves (Rosenstock 1974).

HEALTH PROMOTION

“The process of enabling people to increase control over and to improve their health” (WHO, Ottawa Charter 1986a, p.1). There are five major aspects of health promotion, in order of priority:

1. Building health promoting public policy.
2. Creating supportive environments.
3. Strengthening community action.
4. Developing personal skills.
5. Re-orienting the health services.

RISKY SEXUAL BEHAVIOUR

Risky sexual behaviour includes any sexual activities which may compromise an individual's health by exposing him or her to the risk of infection with sexually transmitted diseases and/or the human immunodeficiency virus. The risk of early pregnancy is related to these sexual behaviours (Brook et al. 2002).

RISK-TAKING BEHAVIOUR

Risk-taking behaviour refers to any behaviour that could compromise an individual's health by exposing him/her to one or more risks, for example, illness from smoking and/or abuse of substances; injury and/or disability from road accidents as a consequence of breaking the law; and infection and/or pregnancy from unprotected sex. This behaviour encompasses both short-term and long-term risks.

RISK MANAGEMENT

Interventions designed to induce and /or sustain changes in health-compromising behaviours, such as counselling, mass media campaigns, health promotion and health-education compromised risk management for the purpose of this study.

SOUTH AFRICAN ADOLESCENT

For the purpose of this study, a South African adolescent referred to the fact that this adolescent received the majority of his/her education within the borders of South Africa. This person was, therefore, raised and educated in South Africa.

Chapter 2

LITERATURE REVIEW

2.1 Introduction

The extensive body of scholarship that exists on adolescence and its related aspects revealed certain themes that were especially relevant to this research. The demarcation of the literature, therefore, aimed to cover the following pertinent topics:

- ❖ Characteristics and Dynamics of Adolescence
- ❖ Adolescent Development
- ❖ Risk taking and Health Compromising Behaviour
- ❖ The Impact of Health Education on Health Compromising Behaviour
- ❖ The Influence of Variables on the Relationship between Health Education and Health Compromising Behaviours
- ❖ The Health Belief Model as a Theoretical Framework

It was obvious that exploration of findings within the literature regarding the relationship between health-education and health-compromising behaviour was important, in order to place the results of this research into the context of the wider scholarship. So too, were the different forms of risk-taking found within adolescence and the numerous variables which have the potential to impact on adolescent behaviour. However, the researcher felt that it was not sufficient to look at these areas in isolation, without fully understanding the nature of the adolescent period, its characteristics, development and the various dynamics which take place during this critical phase of

human existence. Adolescence is a unique time in many ways and any research needs to be placed firmly in the context of the adolescent. Therefore, the researcher begins by giving an overview of the literature regarding the characteristics and dynamics of adolescence, followed by a comprehensive review of adolescent development. The latter was deemed extremely important as many aspects of this development, for example, the development of identity, sexuality, self-esteem and so forth, were also shown to be the variables which can, and often do impact on the relationship between health-education and health-compromising behaviour. Therefore, a broad and thorough understanding of adolescent development was deemed essential for interpreting the various health-education interventions.

2.2 Characteristics and Dynamics of Adolescence

There is much debate in the literature as to what time span actually constitutes adolescence and some researchers even question its existence at all (Petersen 1998). They feel that this is a man made division that has only come about in response to ongoing education. The resulting delay in entering the workplace is thought by some to promote the idea of an adolescent period (Petersen 1998). Such views, however, are in the minority and the general consensus in the body of scholarship under review shows that adolescence as a distinct stage does exist. The main dilemma seems to be how to demarcate it in terms of age limits. According to Irwin (1993, p.7), “Adolescence spans the decade between 10 and 21 years and encompasses the biological changes that take place within the organism and social, environmental and legal transitions, external to the organism.”

Macfarlane (1995) defined youth as a phase of development that begins at 10 years of age with the onset of puberty and ends between 18 and 24 years. The World Health Organisation in their Health of Youth Document (1989) extends adolescence from 10 to 24 years inclusively. In response to these varying definitions most scholars identify puberty (series of biological changes) as the beginning of adolescence (Petersen 1998). Since the onset of puberty varies according to individual developmental differences, these boundaries have to remain arbitrary. Setting age limits on the termination of adolescence is even more difficult since there are few defining biological factors that can be measured. In addition, there are many variables that are capable of lengthening or shortening this period, for example, political and economic circumstances (Coleman & Hendry 2002). The literature reflected these inconsistencies of definition in that there was a wide variation of opinion. Some authors gave definite age boundaries while others took the view that age of adolescence cannot be fixed.

However, there is wide consistency in the idea that adolescence is a period of transition. This is a particularly important concept in understanding how to intervene in terms of health education, and thus, of great relevance to this study. One of the main characteristics of adolescence, then, is that it is a transitional period between childhood and adulthood. Some literature, however, does doubt whether adolescence can be referred to as a stage or a transition, when it is questionable as to whether seven or eight years can be described as transitory (Kracke & Noack 1998). As a consequence of this, some social scientists prefer to see adolescence as a series of stages or transitions, for example, puberty, middle and late adolescence (Kracke & Noack 1998).

What seems to have universal consensus, however, is that adolescence has lengthened at both ends (Crocker 2000 cited in Crocker & Cuthbertson 2001, p.2). Children are maturing socially at an earlier age with an earlier awareness of sexuality, dating and other teenage behaviours, for example, interest in music, trends and clothes. Tertiary education and, therefore, late entry into the market place keeps adolescents at home longer and economically dependent on their parents into their twenties (Bynner et al. 1997). This delay in economic independence is a tangible sign of maturity and, therefore, the very nature of adolescent transition to adulthood is altered. Transition to economic independence seems to take a great deal longer than in previous generations.

Graber and Brooks-Gunn (1996, p.768) say that, “the fact that adolescence is a universal experience, leads to the position that it may reasonably be called a transition.”

Coleman and Hendry (2002) believe that it makes sense to consider adolescence as a transition, while at the same time acknowledging that within this stage there are many turning points, which have key significance for later adaptation. This view is supported by the fact that adolescent transition has all the characteristics of transition in general, namely:

- ❖ An eager anticipation of the future
- ❖ A sense of regret for the stage that has been lost
- ❖ A feeling of anxiety in relation to the future
- ❖ A major psychological adjustment
- ❖ A degree of ambiguity of status during the transition

Recent literature puts forward the notion that the nature of the adolescent transition from childhood to adulthood has changed. Coleman and Hendry (2002) feel that social and political events of the last two decades have significantly affected adolescents.

Changes in family structures and in labour markets as well as globalisation, and changing attitudes towards race and gender, have impacted on the nature of adolescence. These changes, in turn have altered our understanding of teenagers. Unemployment of young people between the ages of 16 to 24 years in the United Kingdom, for example, has increased by 20%.

It is changing circumstances, such as these, that have highlighted the need to understand adolescents in the context of their environment, and not in isolation, as was previously the norm. Thus, there is an increasing emphasis on the importance of “context” in making sense of the dynamics and characteristics of adolescence. Therefore, the influence of environments, such as family, neighbourhood and the wider society, on the lives of young people, have received greater recognition. It is against these backgrounds, and with the acknowledgement of teenage vulnerability, that we need to understand the nature of adolescence.

2.3 Adolescent Development

In order to interact with adolescents in an endeavour to ensure their good health, one must understand how they are travelling through time. Since they are transient beings, moving from the challenge of adolescence to the emerging adult and then to the young adult, it is important to know how they are using, comprehending and processing what they are taught. These ongoing changes need to be understood throughout the period of transition, because what makes sense to a twelve year old does not necessarily make sense at twenty. Adolescence is a time of many developmental changes, the understanding of which is crucial in determining and effecting behaviour change; or maintaining the existing desired behaviour. During adolescence there are cognitive

changes from concrete to abstract thinking, biological, psychological and geographical changes. There is re-defining of social bonds with the family and the development of intimate relationships.

2.3.1 Developmental Contextualism

As has already been described, the person and the context/setting are inseparable and, therefore, it is important to look at the theory of 'developmental contextualism' when trying to understand adolescent development (Muuss 1996). Adolescence is not to be viewed in isolation, but as a continuation of childhood and a precursor of adulthood. Both of these, therefore, are important parts of adolescence. This theory recognises the adolescents' resources and their potential for resilience, as well as the possible circumstances in which an individual may become vulnerable. Developmental contextualism also encourages exploration of the factors that assist teenagers in their transition to adulthood, rather than looking at the difficulties. This theory, therefore, has a more positive perspective on development.

2.3.2 Cognitive Development

Changes in the sphere of contextual development are occurring all the time, yet remain difficult to detect. In addition, alterations in intellectual function have implications for a wide range of behaviours and attitudes. These behaviours and attitudes include the move towards independence of thought and action; development of time perspective including the future; progress towards maturity in relationships; the development of communication skills and the individual's ability to take on adult roles in society (Coleman & Hendry 2002).

Piaget was the first to draw attention to the intellectual development that follows puberty. He said that there is a qualitative change in the nature of mental ability, rather than just a simple increase in cognitive skill. He argued that it is at this point in development that formal, operational thought finally becomes possible (Inhelder & Piaget 1958).

Over recent decades there have been a range of criticisms of Piagetian theory, questioning the existence of his discrete stages of cognitive development (Sutherland 1992). It is believed that Piaget was too optimistic in believing that all young people reach the cognitive stage of 'formal operational thought'. There is now consensus among scholars that up to the age of 16 years, only a minority reach the most advanced level of formal thought (Keating 1990; Muuss 1996; Shayer et al.1976; Shayer & Wylman 1978).

These findings have shifted the emphasis from the theories of Piaget to those that take on a more contextual approach as in 'Developmental Contextualism'; or those, which focus on the components of information processing in adolescence. Researchers have found that older adolescents are able to process information faster than younger adolescents (Siegler 1988). Improvements can also be seen in young people's organisational strategies, in that they are more able to look at plans of action objectively and to decide which might be the most effective (Siegler 1988). This ability is of considerable value in the realm of reasoning and has important implications for health-education.

2.3.3 Social Cognition

Despite criticism, it is important to remember that Piaget should be used as a starting point for an understanding of the development of thinking during the adolescent years. Elkind (1967) shows how it is possible to enlarge the work of Piaget while leading one into the field of social cognition. Elkind (1967) develops the idea of *egocentrism* in adolescence, where the teenager is either in actual or fantasized social situations, anticipating the reaction of others. The teenager, according to Elkind (1967), is continually constructing and reacting to an imaginary audience, which is either critical or admiring of them, as they are of themselves. This aspect of adolescent egocentrism explains a great deal about adolescent behaviour for example, self-consciousness and preoccupation with “looking good” and “looking cool.”

Another aspect of adolescent development is that of the creation of the *personal fable* (Elkind 1967). This is the individual’s belief about himself and his unique nature, which he sees as being very important to himself and, therefore, to others. The myth he creates may include fantasies of omnipotence and immortality. This understanding gives useful explanations for some aspects of cognitive behaviour at this stage of development. This self-belief is also a pertinent concept in the context of this research, because it explains much about risk-taking behaviour. Personal fables of immortality confirm to the adolescent that risk-taking cannot have bad consequences. The fable, therefore, gives them permission to take risks without fear of any repercussions. Some research (Goossens et al. 1992; Quadrel et al. 1993) even goes as far as saying that certain aspects of egocentrism, such as the personal fable, remain present throughout adolescence, and may still be present in adulthood. This may explain why some adults

continue to compromise their health. The perpetuation of the myth of immortality underpins this.

Selman (1977, 1980) in his four-stage theory of *social perspective taking* could also be useful in explaining adolescent behaviour. His work is well developed and has considerable implications for interventions with young people. Selman identifies four developmental levels:

- ❖ Differential or subjective perspective-taking (5-9 years old)
- ❖ Self-reflective thinking or reciprocal perspective taking (7-12 years old)
- ❖ Third person or mutual perspective-taking (10-15 years old)
- ❖ In-depth societal perspective-taking (15 years +)

Selman sees these stages as having application in four different domains, namely:

individual; friendship; peer-group and parent-child. These stages could have significant implications for health-education interventions. The child makes his first crucial cognitive advance when he is able to take into account the perspective of others. Being able to see all parties from a more generalized third-person perspective is the stage that is most prevalent during the teenage years. Lastly, co-ordinating the perspectives of society with the individual and the group, shows a high level of abstraction. The major shift in the early teenage years towards more abstract thought needs to be taken into account by those who interact with adolescents. A growing capacity for logical and scientific reasoning will affect the young person's skills in communication, decision-making and negotiation. These skills are crucial for making healthy choices.

2.3.4 Moral Development

A number of different theories exist which attempt to explain the development of 'moral thought.' Kohlberg (1981, 1984) has elaborated Piaget's theory of moral development to six stages. Despite intense criticism, the 'cognitive-developmental' approach of Piaget and Kohlberg has more relevance to adolescence than any other theory. These theories go a long way to explain the development of concepts of maturity in young people (Muuss 1996). Central to Kohlberg's theory is the fact that the six different stages of moral development have an invariant sequence. These stages progress in the following way:

Pre-conventional

- ❖ Stage 1 Punishment- Obedience Orientation
- ❖ Stage 2 Instrumental Hedonism

Conventional

- ❖ Stage 3 Orientation to Interpersonal Relationships
- ❖ Stage 4 Maintenance of Social Order

Post-conventional

- ❖ Stage 5 Social Contract and / or Conscience Orientation
- ❖ Stage 6 The Universal Ethical Principle

Sustained critics of these theorists, such as Gilligan and others (Gilligan et al. 1990), however, show that moral reasoning is subject to change in certain circumstances. These critics found that people can regress to less mature moral stages. Their research showed that moral reasoning is significantly higher when abstract dilemmas are being considered. However, when sexual relationship dilemmas are presented, adolescents of both genders showed lower levels of reasoning. It appears that when faced with

dilemmas which have direct personal relevance individuals are less able to apply their moral reasoning ability.

An understanding of moral thought has important implications for this research. Many adolescents behave in a way that they know does not fit with their own set of values. They seem to be prepared to compromise their own sense of morality. This behaviour could be supported by Gilligan's theory which says that people are able to regress to lower levels of moral reasoning under changed circumstances.

2.3.5 Self-Concept

Self-concept, in this review, will refer to an overall sense of self which encompasses body image, self-esteem and other dimensions of the self. According to Coleman & Hendry (2002), adolescence, in terms of the self-concept, is thought of as a time of both change and consolidation. The major physical changes are accompanied by an alteration in body image and thus, in a change of sense of self. The development of a more complex and sophisticated self-concept can be attributed to intellectual growth during adolescence. The self-concept continues to develop in response to increasing emotional independence and fundamental decision-making relating to values, sexual behaviour and friendships.

Further modifications of the self-concept can be attributed to the transitional nature of adolescence, and the role changes experienced at this time. "Adolescence is a time when individuals struggle to determine the exact nature of his or her self, and to consolidate a series of choices into a coherent whole, which makes up the essence of the person; clearly separate from parents and other formative influences" (Coleman &

Hendry 2002, p.75). Thus, young people need to make sense of the social world and find a place where they feel comfortable. It is this process of self-concept development that has relevance for this research, because it holds one of the keys to psychological maturation, which in turn determines behaviour.

The ongoing development of the self-concept heralds a pre-occupation with the self. Erikson (1968) and Rosenberg (1979) describe well the marked increase in introspection that develops during adolescence. The adolescent begins a new phase of trying to understand the emerging self, and in so doing becomes pre-occupied with their inner world. Egocentrism and introspection are closely linked. In considering egocentrism it can be seen that an understanding of the way adolescents think about themselves might be helpful to parents and educators. An awareness that egocentrism is a normal element of the cognitive development of adolescence could, therefore, assist adults to put this self-centred behaviour into perspective.

Self-esteem is that part of the self-concept which refers to the individual's self-evaluation or sense of worth. The classic study by Rosenberg (1965) illustrates the fact that low self-esteem is likely to be predictive of adjustment difficulties, while high esteem is likely to do well in a variety of areas. Self-esteem is a very important part of adolescence in that it often relates to how a person will behave. Attributes, which correlate most highly with global self-esteem, include body image satisfaction, followed by social acceptance by peers. Academic achievement and sporting success, also contribute, but to a lesser degree (Harter 1990). These findings explain the importance of getting accepted by the peer group even if it means behaving in a risky way in order to gain approval. Since this approval is linked to the teenager's feeling of

self-worth, it is easier to understand why health-compromising behaviours take place despite knowledge and education. The acquisition of a high self-esteem, while originally a product of achieving peer approval, ironically ends up being an attribute that provides a barrier to needing peer approval. A cross section of studies have noted that groups with either a consistently high self-esteem or those with a rising self-esteem, were more likely to resist peer-pressure and, therefore, were less likely to misuse alcohol and to become involved in deviant behaviour (Alsaker, 1992; Block & Robins, 1993; Hirsch & Du Bois 1991; Zimmerman et al. 1997). Difference in levels of self-esteem, have profound implications for intervention programmes. Zimmerman-Gembeck and Colleagues (1997) indicate that one programme design cannot be expected to fit all young people; therefore, different strategies may be necessary for different groups of adolescents.

Erikson (1968) in his *psychosocial theory* of development describes the “teens” as a stage of “Identity vs. Identity Confusion” It is the time when a young person is just beginning to form an identity. Adolescents begin to sense their individuality. They become aware of the power they have to control their own destinies and feel the need to define themselves and their goals. They want to take their place in society, either conventionally or in ways that challenge the establishment.

Adolescents are faced with many choices at this time and the decisions they take can have long-term consequences – good or bad. This scenario often leads to identity confusion. The young person may feel unprepared and ill equipped to make such decisions and fear mistakes and failure. It is at this time that negative identities can develop with a sense of unworthiness. Forming cliques confers a kind of collective

identity on the adolescents in which they stereotype themselves. These behaviours, according to Erikson (1968), are part of the teens' effort to understand themselves, and to formulate values. This collective identity means taking on the norms and values of the group with which they have identified, hence, conforming to certain behaviour patterns, for example, health-compromising behaviour and risk-taking.

What is interesting about Erikson's theory is that twenty-six years ago he claimed without any physiological evidence, that young people were not developmentally ready to resolve their identity crises. He felt that since they were unable to do this, they needed a period of delay called a period of '*psychological moratorium*'. This is a time during which adult commitments should be postponed. Presently, physiological research on the development of the teenage brain is being undertaken by Giedd and Colleagues (2004) in the United States of America. Results so far are pointing to physiological evidence that may support Erickson's view that the teenage brain, at this stage, is not developmentally ready to make certain decisions.

The outcome of this stage is the development of the virtue of *fidelity*. Erikson says that in order to be faithful one needs to be developing a firm sense of identity. Concurrently, fidelity supports a continuing sense of identity. This notion means that the more one adheres to one's values, no matter how they may be challenged, the more certain one becomes of one's identity.

Erikson believed that the ego qualities outlined in each stage of psychosocial development, develop and mature only through experience with the social environment. He proposed that our egos, our psychological characteristics, evolve out of an earlier

“ground plan.” This ego quality depends and builds on qualities developed in earlier stages. For Erikson puberty and adolescence precede the genital stage of adulthood. He further shows development in a framework of successive psychosocial crises which need to be resolved. Successful resolution of the crisis by the adolescent will prevent identity diffusion and help to establish a coherent identity. Each ego quality emerges in response to both the inner “ground plan” and the social environment. The ego, which has its roots in social organisation, has to establish and maintain itself against the challenges it confronts. These psychological crises are turning points when both potential and vulnerability are greatly increased. Thus, Erikson’s theory sees the ego as representing man’s capacity to unify his experience and his action in an adaptive manner (Erikson 1968).

It is important to note from subsequent research into identity formulation that the challenges of identity are not necessarily resolved at one point in time. Rather, these identity challenges should be seen as ongoing phenomena, which may re-emerge as the individual moves into late adolescence and early adulthood (Waterman & Goldman 1976). This scenario presents further considerations when planning health-education.

2.3.6 Development of Autonomy

The development of autonomy or independence in respect of family relationships is one of the key tasks for the adolescent (Coleman & Hendry 2002). It is the goal of most young people, to be free of parental restraint; and to have control over their own lives. Achieving full adult autonomy is very rarely a straight forward path, and is influenced by a number of variables, for example, gender, family circumstances, ethnic, cultural, social and economic factors, amongst others.

The adolescent stage involves a major change in the interaction patterns between parents and their teenagers. While much about this period can be difficult for teens and their parents, conflict is not inevitable and parents continue to play a central role. Research shows that teenagers do respect their parents' opinions (Fogelman 1976), and multiple studies have endorsed this (Hill 1993; Noller & Callam, 1991; Steinberg 1990). This interaction is most significant when it comes to the impact of parents on the health-education of their children. Guidance, support and mutual respect at this time is possible and essential if our youth are to pass through this multifaceted period of their lives with relative ease. Youniss and Smollar (1985) speak of *interdependence*, a stage during which both parents and adolescents work together to redefine their relationship. Grotevant and Cooper (1986, 1998) put forward the notion of *connectedness*, whereby the young person can move towards a state of individualisation, while remaining connected to the family. It is the opinion of the researcher that this 'connectedness' could be capitalised on by parents, in order to influence their teen's health behaviour in a positive way.

The work of Kracke & Noack (1998) carried out in Germany, distinguished between three stages of adolescence. Kracke and Noack feel that it is during the middle stage of adolescence that teens have the greatest desire to be free and establish their autonomy. Parents, however, are least ready to relinquish control at this time. Larson et al. (1996) show that close relationships with parents during adolescence continue to serve an essential function; in that while autonomy is important, so too is 'connectedness'.

Teens see choice as a matter of personal freedom (Kracke & Noack 1998). If they are able to choose what they want with no reference to convention, then that is a reflection

of their autonomy and maturity. Thus, helping teens to make healthy, informed choices should be the goal of parents, teachers, community health nurses, doctors, allied health workers, religious and community leaders as well as significant others.

2.3.7 Development of Adolescent Sexuality

Sexual development is central to the adolescent experience. Underpinning this is firstly, the biological maturation of puberty and secondly, growth and maturation in the social and emotional worlds of the adolescent.

Changing patterns of sexual behaviour are evident amongst the world's youth. Today more young people are sexually active at a younger age than in the 1960's and 1970's for example (Wellings et al. 1994). One cannot hope to understand adolescent sexuality unless one recognises the context in which it occurs, and unless one acknowledges the major influences of adult society. Parents are well known to be important role models for their children, and their influence extends to the degree they are prepared to monitor their children's activities (Larson et al. 1996). Parents, thus, have the potential to make positive or negative impacts on their children's sexual behaviour. Religion also has the potential to impact heavily on the way adolescents behave. Thus, good parental example, diligent monitoring and religion have the propensity to delay the onset of sexual activity (Larson et al. 1996).

For Erikson (1968) the resolution of the identity crisis depends partly on the ability to experience intimacy. This intimacy involves openness, sharing, trust and commitment. These changes in the sexual behaviour of adolescents have special implications for parents and educators; and underline the crucial importance of timing of effective sex

education. Early onset of sexual activities among the world's youth means health-education has to be introduced earlier rather than later, if one hopes to encourage the development of sexually healthy nations.

2.3.8 Physiological Development of the Adolescent Brain

Interesting discoveries have recently been made in the field of brain development and how they impact on the behaviour of adolescents. Professor Jay Giedd of the United States of America (2004) is currently conducting a longitudinal study on the brain physiology of 1,800 adolescents from ages 12 through to 18 years. This study on "Teen Brains" began in 1991, at the National Institutes of Health, Clinical Centre in Bethesda, Maryland, USA, and is still in progress fourteen years later.

Contrary to previous belief that the brain is fully developed by age twelve, Giedd's research is showing that this is far from the truth. Until, a few years ago there has been no safe way to study the developing brain, without invasive procedures, for example, the use of radiation. However, the advent of high-powered Magnetic Resonance Imaging (MRI) has made this possible. Giedd's study (1999), which is still in progress, shows that the pre-frontal cortex or executive lobe, as it is sometimes referred to, is still under development throughout the adolescent years. Giedd's scanning studies proved that not only is the brain far from mature, but both grey and white matter undergoes extensive structural changes well past puberty. This brain growth includes the proliferation of the support cells, which nourish the neurons; and myelination that permits faster neural processing. These changes in the brain are likely to stimulate cognitive growth and development, including the capacity for abstract reasoning. This process was originally expected by Giedd to be completed by age 18 years. However,

his study is showing otherwise and he is, therefore, considering following his sample through to 25 years. This corresponds with existing definitions of adolescence, which see it as a period extending to 24 years (Macfarlane1995; WHO 1989).

Researchers are now looking at how the newly detected physiological changes might account for the adolescent behaviour so familiar to parents: “emotional outbursts, reckless risk-taking, rule breaking and the impassioned pursuit of sex, drugs and rock’n’ roll” (Wallis 2004, p.165).

This study has important implications for understanding adolescent behaviour. Risk-taking behaviour, once blamed on ‘raging hormones’, is now being seen as the by-product of two factors: a surfeit of hormones and also a paucity of the cognitive controls needed for mature behaviour.

The brain undergoes two major developmental spurts, of which the first one is in the womb. Giedd’s long-term studies have documented that there is a second wave of proliferation and pruning later in childhood, and that the final, critical part of this second wave, affecting some of the highest mental functions, occurs in the late teens. This neural waxing and waning alters the number of connections and synapses between them. According to Giedd (2004), fewer but faster connections in the brain are visible during adolescence. The brain develops in stages, maturing in a sequence that moves from the back to the front. The final part of the brain to mature is the pre-frontal cortex, home of the so-called executive functions – planning, setting priorities, organising thoughts, suppressing impulses, weighing the consequences of one’s actions and

exercising sound judgement. These findings are critical in understanding adolescent behaviour.

There is, therefore, a time gap between when adolescents are propelled towards risk-taking early in adolescence, and when mechanisms that allow people to think before they act come into line. This corresponds with Erikson's (1968) psychosocial theory, which describes the period of "psychosocial moratorium" when adolescents are developmentally unable or not ready to resolve their identity crisis and adult commitments are postponed.

Recent discoveries show that the adrenal sex hormones are extremely active in the brain, attaching to receptors everywhere and exerting a direct influence on serotonin and other neuro-chemicals that regulate mood and excitability. According to Dahl (2004), adolescents tend to seek out situations and experiences, which create intense feelings. He feels that there is a particular hormone-brain relationship contributing to the appetite for thrills, strong sensations and excitement. This explains something of why some adolescents enjoy fast cars, illicit drug taking and dangerous liaisons. The regions of the brain that restrict risky, impulsive behaviour are shown by this study to still be under construction. Unfortunately, this thrill seeking which may have evolved to promote exploration and autonomy, now carries with it elements of serious risk.

Other researchers are exploring how the adolescent's propensity for uninhibited risk-taking propels teenagers to experiment with drugs and alcohol (Giedd 1999). Traditionally, psychologists have attributed this experimentation to peer-pressure, teenagers' attraction to novelty and their interest in loosening sexual inhibitions.

Researchers have raised the possibility that rapid changes in dopamine rich areas of the brain may be an added factor in making teens vulnerable to the stimulating and addictive effects of drugs and alcohol (Giedd 1999).

What is evident by findings such as these by Giedd and Associates, is that access to powerful new research tools and other scientific and technological advances, has given today's theories of adolescent development more chance of being supported by scientific evidence than in the past.

The significance of these findings to the health of adolescents is that they emphasise the need for increased support from all those who are concerned with adolescent well-being. It is important to help teenagers make up for what their brains still lack, by providing structure, organizing their time, and guiding them through tough decisions even when they resist. Furthermore, knowing that the part of the brain that makes teens more responsible has not yet finished maturing, should play an important part in the designing of health-promoting interventions.

Knowledge of child/adolescent development is essential if one is to understand why adolescents compromise their health. This knowledge in turn, will be helpful when deciding how to deal with the problem behaviour of adolescents. It will give insight into the value of different forms of education; and other means of help, such as support groups, given at critical stages of the developmental process.

2.4 Risk Taking and Health Compromising Behaviour

While it has been shown in the previous section that adolescence is a time of tremendous growth and potential, it can also be a time of considerable risk. There is widespread consensus in the literature that any form of health-compromising behaviour is dangerous and requires intervention (Eagle 1995). Some forms of risk-taking behaviour are more likely to compromise the health of adolescents than others, for example: abuse of drugs and alcohol, drinking and driving and having unprotected, indiscriminate sex. These behaviours should not be attributed to “going through a phase.” Petersen (1998) says that, when problems do arise during adolescence they should neither be considered as normal nor should they be ignored. Teenagers who exhibit these behaviours are in serious and imminent danger. Other forms, such as smoking might not pose an immediate threat, but do have long term, life threatening consequences.

Although the study of adolescents is becoming more sophisticated in nature; the current understanding and knowledge base of adolescent development and behaviour, remains limited. The research to date has been mainly descriptive in nature, has relied on cross-sectional data, and been undimensional in focus (Adolescent Workshop on New Research 1999). Until recently, according to findings from this workshop, research conducted to understand adolescent behaviour particularly risk-related behaviour, focused on the individual characteristics of teenagers and their families. In 1993, the National Research Council conducted a study that took a critical look at how families, communities and other institutions are serving the needs of youth in the United States of America. It was found that if all of these settings and social institutions are sufficiently enriched then teenagers could be helped to make a successful transition

from childhood to adulthood. This profound influence of settings on adolescents' risk-taking behaviour and development is one of the most important insights to emerge from scientific enquiry into adolescents in the past decade (Adolescent Workshop on New Research 1999).

Thus, research points to the fact that adolescents are not believed to be at increased risk because of biological or hormonal changes associated with puberty, but rather from a complex interaction among biological, environmental and social factors. There is mounting evidence that most biological changes interact with a wide range of contextual, psychological, social and environmental factors that affect behaviour (Brooks-Gunn et al. 1994; Buchanan et al. 1992 & Susman 1997). Graber (1997) states, that there is now an appreciation for the complex reciprocal relationship and interaction between biological and social environments, and the interaction between these environments and adolescent behaviour. Researchers are, therefore, concluding that behaviours associated with adolescence, including some high-risk behaviour, are influenced by the social milieu (Brooks-Gunn & Reiter 1990). These studies show that in contrast to children and adults, the most common causes of mortality among adolescents are associated with social, environmental and behavioural factors rather than genetic, congenital or biological diseases. The leading causes of morbidity and mortality are thus, entirely preventable.

According to the outcomes of the Workshop on New Research (1999), there is a need to better understand the decision making processes of adolescents and the factors that motivate them to engage in high-risk, rather than health-promoting behaviours. This is an important gap which the researcher attempted to address when investigating the

relationship that existed between health-education and health-compromising behaviour, among South African adolescents. Many questions pertaining to adolescent risk-taking behaviour were generated by this workshop. It was felt that insights drawn from other countries where adolescents were shown to take fewer risks should be shared. It is, therefore, the opinion of this researcher that countries need to know the status of the risk-taking tendencies of their youth, in order to be able to be part of this knowledge base. This was another gap in the body of scholarship addressed by this research.

The literature further suggested that there was a need to explore adolescents' attitudes and/or perceptions of risk, regarding their sexual behaviour. This was important because of their vulnerability to sexually-transmitted diseases which is linked to their health risk and problem behaviour (Durant, 1995; Friedland et al. 1991; Moreau-Gruet, Ferron, Jeanin & Dubois-Arber 1996). One of the objectives of the research was to look at risk-taking and health-compromising behaviour within this context, thus addressing this research gap.

A study conducted at the University of the Witwatersrand, found that while knowledge of AIDS was high, 74% of participants had engaged in unprotected sex in the previous six months. In addition, there were negative attitudes towards condom use and 80% of the sexually active students did not perceive themselves to be at risk of contracting the AIDS virus (Friedland et al. 1991).

Seven years later another study showed that approximately, 1.1 million Zimbabweans are expected to die of AIDS in the decade up to 2005 (Kapata 1998); and the average life expectancy will drop from 61 to 39 years (Kaiser Family Foundation 1998). The

study predicts that the lives of half of all 15 year old adolescents in Zimbabwe, South Africa and Botswana will be claimed by HIV/AIDS. Despite a variety of AIDS prevention programmes, adolescents in Zimbabwe continue to practise risky sexual behaviour (Watt 1998). Buga, Amoko and Ncancyiyana (1996) found that among school going adolescents in the rural Transkei in South Africa, 76% of girls and 90.1% of boys were already sexually experienced.

Theories of social control maintain that adolescents' initiation into experimenting with substances and/or other deviant behaviours, such as risky sexual activities, is caused by the lack of conventional attachments to societal values, its institutions and particularly the family. Maternal identification in contrast is thought to have a positive effect on risk-taking behaviour in adolescence (Brook et al. 2002).

Since, many variables are thought to impact on risk-taking behaviour these will be explored in the literature and discussed as part of a subsequent section.

According to a literature review by Bailey and Hubbard (1990), health-behaviours most commonly studied were: nutrition; exercise; hygiene practices; sleeping patterns; alcohol, drug and tobacco use; sexual and contraceptive behaviour; and seat belt use. It is also interesting to note that much of the research on adolescent behaviour is fragmented and remains hidden in scholarly journals of many different disciplines, for example, nursing, medicine, psychology, sociology, genetics, physiology, economics, social anthropology and so forth. Since very little interaction takes place between investigators, it is difficult to make use of all the available evidence in ways that will

truly benefit young people. “Just as adolescent health services are fragmented, so too is research on adolescents” (Millstein et al. 1993, p.9).

The huge body of literature on health-behaviour, that encompasses risk-taking and health-compromising behaviours, thus shows the complexity of the problem, and its multi-dimensional and multidisciplinary nature. However, few studies have been reported that systematically review health-behaviours of adolescents and associated factors (Spear & Kulbok 2001). Spear and Kulbok (2001), in their study, which looked at health-behaviour and related factors, recommended that more research be done to explore why certain health-behaviours are, or are not practised. This gap in the literature is particularly pertinent to the South African situation; and was one of the reasons why the researcher felt the need to investigate further.

According to the World Health Organisation (1995), the health-compromising behaviour problems of adolescents, which have gained attention in developed countries are mostly unintended pregnancies; abuse of alcohol and other substances; and sexually transmitted diseases. At the World Congress of General Medical Practitioners held in Durban, South Africa in 2001, the Surgeon General of the United States of America targeted tobacco addiction as a priority for attention during the next four years, carrying it forward as an area of precedence, to the next World Congress in Orlando, USA in October 2004 (Satcher 2001). This congress in Orlando (Surgeon General 2004) yet again made tobacco a matter of urgent priority, adding obesity as another lifestyle problem, to be the focus of health promotion until the next World Congress in 2008, in Singapore.

Alcohol continues to be the most common substance of abuse among United States of America adolescents. Nearly 80% of high school students report having used alcohol at some time of their lives (Spear & Kulbok 2001). Use of alcohol is associated with the major causes of death in adolescents and young adults. This form of risk-taking behaviour is particularly concerning because of its addictive nature. "Adolescents who drink become addicted to alcohol more rapidly than do adults who drink, especially when drinking begins before age 15 years" (Grant & Dawson 1997, p.103-110; Michigan Youth Risk Behaviour Survey, 2001). Likewise in South Africa, surveys point to high levels of alcohol misuse among high school students, with alcohol being the most common substance of abuse. Treatment demand for alcohol-related problems is consistently highest in Durban, KwaZulu Natal (Parry et al. 2002). This data puts South Africa in line with international findings on alcohol use among adolescents.

Similar addictive patterns exist for tobacco smoking. The onset of this addiction occurs primarily among children, at an average age of 12 years (Elders & Perry 1994, pp. 2-10). According to the Centre for Disease Control and Prevention, five thousand people under the age of 18 years try their first cigarette each day. Approximately 80% of adult smokers started smoking before the age of 18 years and almost no one begins smoking after the age of 25 years (Michigan Youth Risk Behaviour Survey 2001).

It is important to be mindful of the fact that abuse of alcohol has been linked to high-risk sexual behaviour, failure to wear seat belts and fast, reckless driving. Drug abuse, another highly addictive health-compromising behaviour, is related to HIV/AIDS through sharing of needles and indiscriminate, unprotected sex; as well as to early, unintended pregnancies; and delinquency.

Thus, despite much research concentrating on a specific, single set of behaviours, that is, tobacco use, sexual practices, alcohol and drug use; it is important to emphasize that any single behaviour is influenced by other health-risk behaviours among young people. Thus, there is an interrelationship among multiple behaviours as illustrated above (Luquis, Garcia & Ashford 2003). This is supported in the literature by many studies (Biglan et al.1990; Brook et al. 2002; Ford & Norris 1994b; Hingson et al. 1999; Hingson & Strunin 1992 & Lowry et al. 1994).

A limitation of the existing research on the association between illicit drug use and risky sexual behaviours and unintended pregnancy, was that almost all of it had been conducted in industrialized parts of the world, such as the USA and Western Europe. Thus, it was of value to have conducted this study on health-compromising behaviour in a different cultural context from most that have been done, thereby, adding to the existing knowledge base.

According to Bartoces (2002) health-behaviours tend to cluster and, therefore, it is not surprising to find results in studies that show that girls who practise fewer health-promoting behaviours, are at greater risk for early sex. According to Bartoces, clustering of problem behaviours has been explained by theorists as a manifestation of a single underlying propensity to deviance.

The most disturbing part of the characteristics of risk-taking and health-compromising behaviours is that, not only are they found to cluster, but many of them are also addictive in nature. The nature of risk-taking behaviour is furthermore, shown in a study by Papalia (1995) to be governed by priorities. For example, the willingness not

to take risks is overshadowed by the fact that at the time the desire for sex, drugs, nicotine or alcohol, takes priority over the fear of pregnancy, injury, disease, disability or death. These characteristics pose difficult problems for those who are attempting to reduce such behaviours – the adolescent and the educator. It is difficult enough to change human behaviour per se, but that much worse to try and change those behaviours that are addictive and tend to feed each other. Perhaps that is why the subject of adolescent behaviour has both fascinated and overwhelmed researchers, scholars, educators and parents for centuries.

2.5 The Impact of Health Education on Health Compromising Behaviour

On reviewing the literature from authors researching similar topics, it was found that current literature generally supports the hypothesis that health-promoting education does make a difference. Thus, health-education is usually found to impact positively on the risk-taking tendencies of adolescents (Cook, Anson & Walchli 1993, cited in Millstein et al. 1993, pp.339-371). These authors described health-promotion programmes in the United States of America that have been orientated towards adolescents with very successful results. According to Millstein, Petersen and Nightingale (1993, p.7), “Identifying adolescents’ unmet needs and setting the goals for health promotion are important steps that must be taken if we are to maximise the potential for health during this period.” As mentioned earlier, many principles of health-promotive education have historically remained hidden in scholarly journals, with little interaction, taking place between investigators from different disciplines.

A positive spin off of globalisation, however, is that there has recently been a greater sharing of research and resources than there has been in the past. There is also an increased co-operation between cultures on topics such as parenting, sex, sex education and other key issues for young people (Alsaker & Flammer 1998). Thus, globalisation has brought with it closer connections between countries and, therefore, each country is more affected by what happens in others.

Research has shown that young people, who are properly prepared for the arrival of puberty, adjust better than those who have had little preparation. This, therefore, leads to the need for more effective health-education in junior schools (Millstein et al. 1993). Summary findings from seventeen countries presented to the ADEA Biennial meeting held in Arusha, September 2001, showed that “countries want programmes to be proposed to students before they become sexually active” (ADEA 2001, p.7). This means that students should be introduced to HIV preventive programmes no later than middle primary school. However, consensus is that even earlier would be better and certainly well before puberty. While this sometimes brings concern to parents and community leaders in that such early exposure may serve to increase rather than to decrease sexual activity; sensitive reassurance is needed. Careful investigations in Africa have found that on the contrary, sex education contributes to a “delay in the onset of sexual activity, increased recourse to abstinence, reduction in the number of sexual partners, and a lessening of the incidence of sexually transmitted diseases and unwanted pregnancies” (Gachuhi 1999; UNAIDS 1999).

On the other hand certain studies have shown that sex education in schools has been unable to reach its full potential in helping young people protect and enhance their

sexual health (Ehrhardt et al. 1991). Findings from the Zimbabwean study by Schatz and Dzvimbo (2001) show that it is important for health-education programmes to collect information from adolescent psycho-social-economic environments, and then to link this to good governance and civil society strategies, in developing AIDS prevention programmes that involve the adolescent in making lifestyle decisions.

According to Coleman and Hendry (2002), an understanding of thinking and reasoning during the adolescent years may have application in practice. It is important to take into account some of the limitations in the thinking skills of the younger adolescent, and to recognise how such skills can grow with age, allowing older adolescents to develop a range of new capabilities. Manifestations of adolescent development, need not be seen as limiting, but rather should be capitalised on in a positive way. This could be done by shaping education strategies according to the developmental stage of the adolescent. Zimmer-Gembeck et al. (1997) indicate that one programme design cannot be expected to fit all young people. Therefore, different strategies may be necessary for different groups of adolescents.

Aiming to achieve self-esteem stability throughout adolescence should be an additional goal of health-education, as should be the teaching of decision-making and negotiating skills. Such interpersonal development will enhance the impact of health-education by enabling informed and considered decisions. Such education would be consistent with the principles of democratic living.

Studies show that some education programmes are directed towards knowledge improvement and only superficially address cultural factors in the context of practice

and not at all in the context of attitudes and beliefs (Nduat & Kiai 1997). This could explain why these programmes do not work in that they are not meeting the needs of the individual. Developmentally and culturally appropriate education based on accurate information, experiential learning, with the development of negotiation and refusal skills should rather be given via well trained committed co-ordinators and peer-educators (Nutbeam & Blakey 1990).

The role of peer education in attempting to reduce risk behaviour among teens is another avenue that is under review in the literature. Peer education usually involves structured programmes that stress experiential learning among participants and are trained and led by teens, often in the form of workshops. Review of the literature does show some positive results (Kiragu 2001). It is thought that these youth-centred, peer-led programmes can promote healthier, sexuality-related attitudes and behaviour in adolescents. This includes increasing knowledge and condom use and reduction in unprotected intercourse. Peer educators themselves show positive behaviour patterns. Effective peer education programmes generally exhibit the characteristics of other effective sexual health programmes, that is, they are developmentally and culturally appropriate, use accurate information, provide life-skills training and are based on the experiential learning model. Their goals are to inform, support and encourage the reduction of risky behaviours. Further goals include encouraging responsible decision-making, the development of healthy values and positive norms, as well as improving adolescent communication skills (Norman 1999).

Some programmes, especially those that target the underserved, expand their goals to increasing the accessibility of health care and other comprehensive services to the

youth. They also seek to expand the capacity of community support systems to serve young people. Such American programmes that have been evaluated include the following: 'Health Initiatives for Youth' (HIFY) (Bourbon et al. 1998); 'Students Together Against Negative Decisions' (STAND) (Smith 1997); 'Healthy Oakland Teens' (HOT); 'Teen Outreach and Primary Services' (TOPS) (Freudo et al. 1998).

An overview of these findings show increased knowledge, increased safer sexual behaviours, delay in first sexual experience, fewer acts of unprotected sexual intercourse, increased condom use amongst peer educators and improved communication skills. In addition, further findings reveal more positive attitudes about abstinence and condom use and more expressed values that include safer sexual practices and less sexual activity. Greater responsiveness, over time, to HIV prevention messages was also found (Norman 1999).

According to Michael & Kelly (2004) in their paper reviewing the prevention of HIV transmission, it is felt that such prevention depends very heavily on education:

A little reflection will show how every prevention effort, the majority of coping strategies, much of the activity directed towards the mitigation of impacts and virtually every programme designed to outwit and get ahead of HIV/AIDS depends in one way or another on education.

They go on to say that, "in the current state of scientific knowledge and development, the only protection available to society lies with the social vaccine of education."

Responding to it is not an optional extra but must be an integral and accountable part of concerns and programmes at all levels, from the office of the Minister down to the humblest village school.

According to the World Bank (cited in Michael & Kelly 2002, p 2), “formal and non-formal education offers a window of hope unlike any others for escaping the grip of HIV/AIDS.” It is felt that in reaching young people in their formative years, significantly important HIV prevention and other AIDS-related messages are transmitted to them in their most receptive developmental stage.

UNESCO’s strategy for HIV/AIDS preventive education speaks of prevention as “the most patent and potent response; that is, *changing* behaviour by providing knowledge, fostering attitudes and conferring skills” (UNESCO 2001, p10). Criticism of this strategy is the presumption that there are few sexually responsible young people around, since the emphasis is on ‘*changing*’ behaviour. There is no reference to the possibility of ‘*maintaining*’ existing good behaviour. Perhaps the latter should be included in a more comprehensive approach to meeting the objectives of educating the world’s youth about HIV/AIDS, and indeed, other health-risk behaviours.

If preventive education programmes are to be effective “they must be rooted in the context of the lives and circumstances of the target audience” (Michael & Kelly 2004). It is also thought that such programmes often focus too early on the knowledge, attitudes and skills involved in preventing risk-taking behaviour rather than embedding them in a more holistic approach. Such an approach would be to take into account the roots of human behaviour as well as the psycho-socio-economic environment in which

they find themselves. The holistic educational approach must not just include an awareness of the knowledge/information gap between school and home. Rather it must be acutely sensitive to the even deeper gap that exists between the values, attitudes and behaviours promoted in the schools and those embodied in the home and community. The failure of such programmes could, therefore, possibly be attributed to the lack of a more comprehensive approach to education. The school situation; culture of the home and community; poverty and gender are targeted in this literature as areas of contextual importance.

Thus, educating young people about the consequences of unprotected sex needs to fully engage the educators, as well as the learners, by going far beyond the realms of academic, intellectual knowledge. The literature shows that this type of education is different from all others in that it demands full commitment from all parties. It demands specific behaviour patterns and action because a world with AIDS can never again be treated in the same way as a world without AIDS (ADEA 2001).

There is general consensus in the literature that there is little room for passive learning when it comes to health-education (UNAIDS 1997; UNESCO 2001; World Bank 2002). The programmes should rather be interactive and participative. The challenges of sexual behaviour and its consequences are so all-encompassing that they call for an equally wide variety of preventative education strategies (Michael & Kelly 2004).

Such approaches should include formal classroom activities that are highly interactive; programmes for learners and/or educators provided by private organisations; extra-curricular school activities; youth-driven, purpose-designed programmes within

communities; broader community education activities and programmes organised by non-school bodies such as religious organisations, sports, youth and other social services.

In addition, it is important to use other approaches that capitalise on the power of the media and entertainment industries to reach large numbers of young people. These industries have the capacity to exert a significant influence on their audiences. The South African non-governmental organisation (NGO), Soul City, makes comprehensive use of the media, namely: television, radio and print presentations, to promote socially acceptable behaviour. This is not only in relation to HIV transmission but in other fields as well.

According to Kiragu (2001), the effectiveness of these multimedia campaigns appears to be greatest when they are combined with face-to-face communication, such as through peer education in small groups. Even street theatre and village drama have their place. If properly developed and conducted all these forms of communication can make a highly significant contribution to enhancing the knowledge, skills and positive attitudes of those who are less likely to participate in more organised programmes. In the Caribbean popular music has been used to excellent effect in their AIDS awareness campaign (Howe 2000, p. 88). This Caribbean experience is an example of how music, song and dance can provide rich channels of communication in spreading health-education messages. On 1st December, 2005 in Durban, South Africa, the 'loveLife' Consortium Awareness Campaign (2005) launched 'Dance4Life' as a way of spreading positive health messages regarding safer sex practices. It is a collaborative initiative, providing a platform for young people, governments, media, non-governmental

organisations, artists, role models and others to work together to break the silence and taboos around HIV/AIDS.

Thus, in light of the abovementioned literature, health-education should not only be left to teachers and health educators, but use should also be made of other significant formers of opinion within communities. Such people traditionally include civic, traditional, community and religious leaders. However, other less conventional health role models, such as politicians, entertainers and sports stars, should also be used. Comprehensive health-education programmes also need to encourage input and interaction from parents, other health professionals and economists, who have a good understanding of the devastating effects of preventable disease on economies, social services, individuals, families and countries. Exposure to those who have experienced the consequences of their risk-taking behaviour can also make an invaluable contribution to the education process.

A recent outcome evaluation of a peer-led drinking and driving primary prevention programme, among university students in South Africa, was conducted by Phaswana-Mafuya and Peltzer (2005) for the Human Sciences Research Council in Cape Town. The results of this study showed that the programme was generally effective in bringing about statistically significant positive changes in almost all knowledge measures. However, there was an apparent lack of a link between this knowledge and the required behavioural changes to control and prevent drinking and driving. Thus, this programme met some but not all of its objectives. This study goes on to say, that despite the findings, they believe that if students receive sufficient and accurate information on

drinking and driving and its consequences, as well as the appropriate skills to translate knowledge into behaviour; positive change will occur over a period of time.

Irwin (1987) says that it is important to remember that adolescence need not be an inherently turbulent time associated with negative outcomes and instability. If one continues to view it as such, as well as a 'temporary phase' that will pass; important opportunities for health-education will be lost.

2.6 The Influence of Variables on the Relationship between Health Education and Health Compromising Behaviour

While the aforementioned literature generally shows that health-education reduces health-compromising behaviour; many variables are known to have the potential to influence this relationship. Such variables can be classified according to Rosenstock's Health Belief Model (1974), namely: demographic, socio-psychological and structural. As mentioned in the introduction, many of these variables are directly related to the characteristics and dynamics of the adolescent and more importantly to adolescent development itself. It was for this reason that the researcher chose to read widely on those particular topics. These areas give one a richer understanding of the developing teenager and allow one to put the adolescent into context, in terms of levels of psycho-physical maturity and the socio-environmental influences.

The modifying factors include demographic variables of age, gender, ethnicity, religious affiliation and the setting or context of the young person. The nature of adolescence, personality, peer pressure, support, culture, self-esteem and timing of education contribute to the socio-psychological variables. The structural variables

comprise of health knowledge, content and delivery of education and prior contact with the consequences of risk-taking behaviour. The literature demonstrates the following findings in relation to the impact of some of these factors.

According to Irwin (1987, p.2), in order to foster health-promotion in adolescents, there needs to be a “prolongation of a supportive environment for adolescents with graded steps toward autonomy”. Such environments involve the participation of the family, schools, health care systems and communities which are responsive to the normative processes of adolescence. According to Irwin and Vaughan (1988), engaging the adolescent in a meaningful way in his own health and well-being is crucial. This gives the adolescent the opportunity to define his/her role as an important member of the family, school, community and/or voluntary organisation. Involvement in such environments by way of structured job experiences and volunteer activities gives the adolescent the opportunity to be productive and useful. This in turn nurtures the development of a sense of self, feelings of self worth and autonomy. According to Greenberger (1983), this engagement process may represent one of the most critical health-promoting activities for the adolescent. Absence of such support systems could impact negatively on the relationship between health-education and health-compromising behaviour.

Lau et al (1990) found parental influence on children’s health beliefs and behaviours to continue at least through the college years. Bailey and Hubbard (1990) state that parental and peer interactions affect marijuana use during mid adolescence. Overall, parents were shown to have more influence on their child’s health beliefs and behaviours than peers do. However, the older the adolescent the more the influence

shifted towards their peers. Then only do peer influences become a predictor of the initiation of substance abuse. Age alone, however, has not been shown to be an indicator of how adolescents will behave and interact with their social world. Adolescents were more likely to use seat belts if their parents or friends used them. Females' health behaviours were influenced more by parents than males were. Males were more influenced by their friends (Riccio-Howe 1991). Parental support as a modifying variable remained consistent in the literature as a significant protective factor against health-compromising behaviour (Simantov et al 2000). Strong parental support was significantly associated with reduced risks of smoking and drinking for both sexes. Adolescents who reported a 'connectedness' to their parents were found to be less likely to engage in risky behaviours.

Donovan et al (1991) found that adolescents who are more conventional are more likely to engage in health-maintaining behaviour and to regularly practise health-related behaviour such as seat belt use. Rebelliousness as a personality variable was found by Brook et al (2002) to underlie drug use and risky sexual behaviour.

Cognitive factors such as lack of social confidence were associated with tobacco use (Strachan 1990). Self-efficacy and positive expectations regarding the partner's support for condoms were significantly related to increased condom use intent. However, knowledge about AIDS and prevention were not (Jemmott et al 1992). Students with low self-efficacy were more likely to engage in risky sexual behaviour and were five times less likely to use condoms consistently (Kasen et al 1992). According to Mahon (1994), more variance in positive health promoting behaviours was explained by perceived health status than the other way around. In this correlational study the

promotion of health seeking behaviour, for example, the use of seatbelts and health compromising behaviour such as the abuse of substances, was found to be related to self-esteem, self control and perceived health status.

Lack of perception of the consequences of risk was found by Yeh (2002) to be a significant variable impacting on the relationship between exposure to health-education and health-compromising behaviour. This lack of perceived susceptibility emerged as a major reason for adolescents not using condoms.

Gender, grade and ethnicity were found by Kann et al (1991) to impact on the relationship between health-education and health-compromising behaviour. Seat belt use, tobacco use and sexual activity were found to be influenced by the above. The pattern of initiating tobacco, alcohol, marijuana and cocaine abuse was shown by Guerra et al (2000) to differ by ethnicity. Kann et al (1991) found ethnicity to be associated with promiscuity in that Black American students were more likely to report having four or more sexual partners. White students, on the other hand, were more likely to smoke cigarettes and to use seatbelts than Black students. Gender differences were found in the determinants of smoking behaviour with males reporting lower rates of smoking than females (Waldron et al. 1991). However, generally females were more likely to practise health promoting behaviours than males.

Turner et al (1993) found that adolescents who were encouraged by their parents to be autonomous were less likely to initiate sexual intercourse. This longitudinal study also found that children who were emotionally detached from their parents were more likely to engage in substance abuse.

The modifiable variable of 'timing of health-education' has been shown in the literature to have important implications for the relationship between health-education and health-compromising behaviour. According to Siegel et al (2001), the Rochester AIDS Prevention Project for Youth (RAPP) has shown that the most appropriate time for intervention implementation is earlier in adolescence, before the onset of risky behaviours. Throughout the literature, timing has been shown to be a critical variable.

Thus, it can be seen from this literature, that socio-demographic characteristics such as gender, age, family structure and ethnicity were important factors influencing health behaviour. Social cognitive and psychological factors such as self-esteem, locus of control, and self-efficacy were frequently cited as factors related to health behaviours. In addition, parental influences were shown to impact on young people's health beliefs and behaviours, as were peer relationships, personal knowledge and perceived susceptibility and vulnerability. While the findings of these studies were quite consistent, little attention was given in the literature to the salient developmental issues of adolescence, such as, autonomy, individuation, personal beliefs, values and self-actualisation (Spear & Kulbok 2001). Spear and Kulbok (2001) feel that more research is needed to address the health behaviours of adolescents from a variety of ethnic and cultural backgrounds. It is especially necessary to research autonomy, decision making and self-reliance because these are important factors that can impact on health behaviour.

2.7 The Health Belief Model as a Theoretical Framework

There are a number of theoretical models relevant to health and risk behaviour. They include the following, namely: Self Regulation Theory (Kanfer 1970); Health Belief Model (Rosenstock 1974); Theory of Reasoned Action (Fishbein & Ajzen 1975) and Protection Motivation Theory (Maddux & Rogers 1983). The researcher, however, favoured the Health Belief Model to underpin this study since it relates well to the feelings and/or beliefs of immortality and invulnerability or fatalistic attitudes, experienced by many adolescents.

The Health Belief Model (HBM) was developed by Rosenstock (1974) to provide a framework for understanding why some people take specific actions to avoid illness, whereas others fail to protect themselves. This is especially pertinent for risk-taking behaviours. Some people do not take health risks, while others do so quite readily. As is illustrated in Figure 2.1 overleaf, this model has been modified by the researcher to explain this research.

According to Barnes et al. (1996), youth often do not perceive the issue of health as an immediate priority. This, perception is underpinned by the Health Belief Model. This model was, therefore, used to guide the research process of the study. It provided a theoretical framework to determine why some adolescents practise health-seeking behaviour, while others practise health-compromising behaviour.

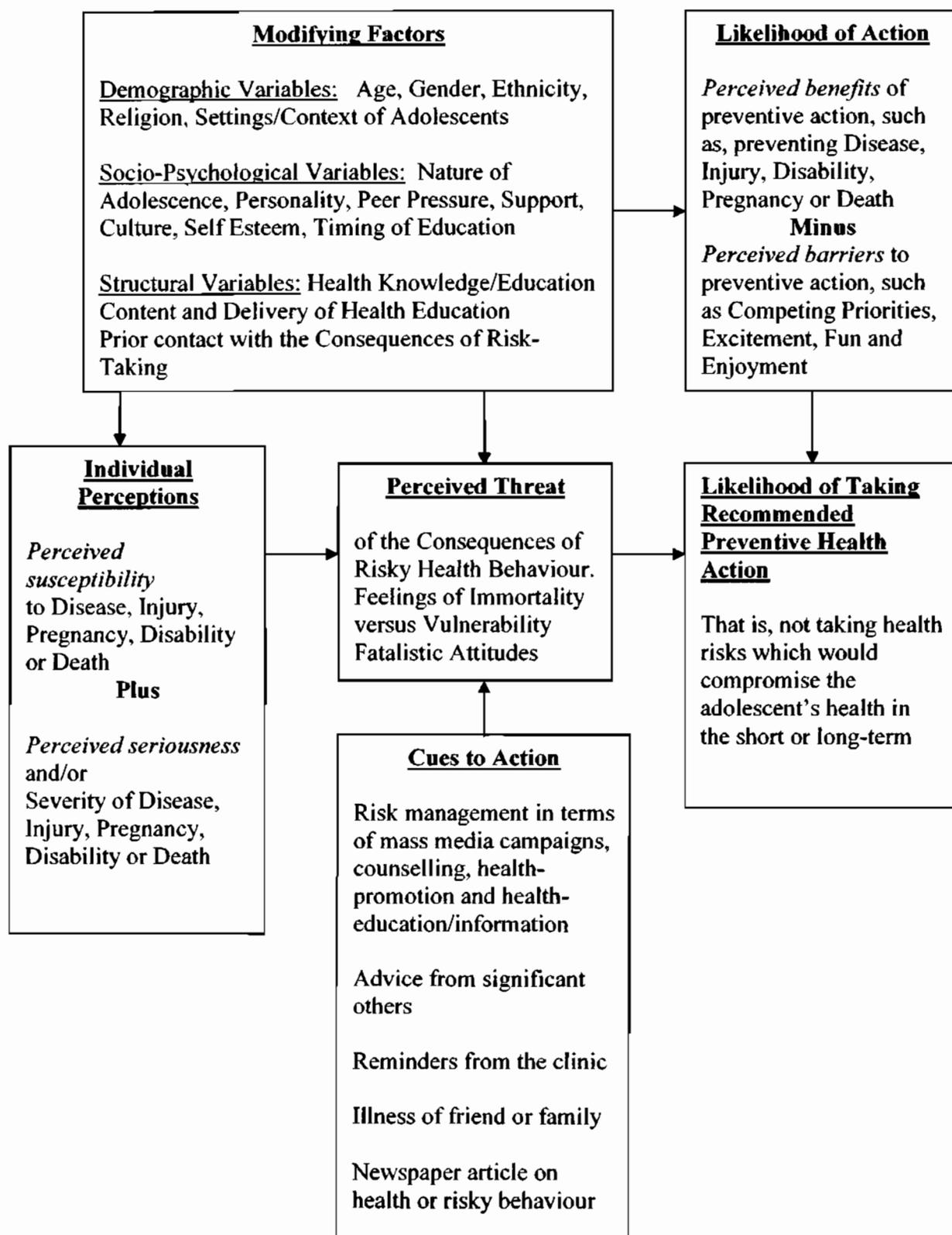


Figure 2.1: Rosenstock's Health Belief Model (1974) – Modified for this Research

The model according to Rosenstock (cited in Becker et al.1997, p. 27) described that:

Persons will generally not seek preventive care or health screening unless they possess minimal levels of relevant health motivation and knowledge; view themselves as potentially vulnerable and the conditions as threatening; are convinced of the efficiency of interventions; and see few difficulties in undertaking the recommended action.

The assumption of the HBM is that people rationally evaluate their risk of disease and engage in risk-reduction action to change their behaviour. There are three major components of the health belief model:

1. Individual Perceptions

Person's belief about his own susceptibility to disease, plus the seriousness with which he views the disease equals the perceived threat of an illness for each person.

2. Modifying factors

The following factors are thought to modify behaviour:

- ❖ Demographic variables of age, gender, race and ethnicity.
- ❖ Socio-psychological variables of personality, social class and peer pressure.
- ❖ Structural variables: knowledge of the disease and prior contact with the disease.

3. Variables affecting the likelihood of initiating action

Person's perceived benefits of action minus his perceived barriers to accomplishing action, equals the likelihood that a person will take action to change his behaviour.

Thus, the model allows for measurement of risk, at both cognitive and behavioural levels. The cognitive level examines the individual's perceptions of risk, while the behavioural level looks at the history of health-compromising behaviours. According to Becker et al. (1997) and Cochran and Peplau (1991), variables such as demographic, personal, structural and social factors, impact on an individual's motivations and perceptions. These variables provide modifiable links between demographic background, resource variables and the ultimate utilisation of medical services.

Becker et al (1997) argue that the model is eclectic in that its core dimensions are derived from well-established psychological and behavioural theories. It was originally developed to focus on preventive health action, which further explains illness and sick role behaviours.

This model is beneficial in assessing health protection or disease prevention behaviours. It is also useful in organising information about clients' views of their state of health and what factors may influence them to change their behaviour. When used appropriately the HBM provides organised assessment data about clients' abilities and motivation to change their health status. Health education programmes can then be developed to better fit the needs of clients (Salazar 1991).

While the HBM specifically looks at the individual's perceived threat of disease; in the context of this study, the model can be utilised by looking at the perceived threat of the consequences of risk-taking behaviour. These consequences encompass any of the following, namely: pregnancy, injury, disease, disability and/or death. This threat may be

disguised by feelings of immortality and invulnerability or fatalistic beliefs. Such perceptions are common during adolescence and may even perpetuate into adulthood.

Impacting on this threat, is the individual's perceived susceptibility of succumbing to any of these consequences, such as acquiring HIV/AIDS, falling pregnant unintentionally, becoming ill, disabled, getting injured or dying. In addition, the perceived seriousness of these consequences further influences the relationship, for example, whether falling pregnant unintentionally would be a disgrace to the family and community, or whether it would be accepted.

Modifying factors, for example, demographic variables of age, sex, race and culture; sociological variables, such as, the nature of adolescence, social class, the individual's personality (for example, whether or not, they are thrill-seeking, conservative or fatalistic), and the influence of peers and/or their reference-group, influence the individual's perceived susceptibility and perceived seriousness of their risk-taking behaviour. Structural variables, such as, knowledge about the consequences of their behaviour through exposure to health-education/information or as a result of prior contact with the results of such behaviour are further modifying factors. This prior contact could encompass personal experience or first hand involvement with significant others who have reaped the consequences of their actions. These variables, according to the HBM, also impact on the individual's perceived threat of the consequences of risk-taking behaviour.

These modifying factors or variables influence the individual's likelihood of action. They may encourage the person to see the benefits of preventive action. This perception will motivate the adolescent to keep healthy, by preventing early, unintentional pregnancy; by not engaging in voluntary, risky health behaviours that may lead to injury, disability, disease or death. However, the 'likelihood of action', is further determined by the 'perceived barriers to preventive action'. In the context of this study, these 'perceived barriers' would be competing priorities, such as excitement, fun, and enjoyment or the belief that health is not an immediate priority. The individual would weigh up the perceived benefits of preventive action minus the perceived barriers to preventive action. In terms of this study, the desire to have sex at that moment could be seen to be more pressing than the possible consequences of pregnancy or the chance of contracting a sexually transmitted disease. Likewise, this prioritisation can be applied to most risk-taking behaviours. It is more fun to drink, smoke, take drugs or drive fast than to worry about what might happen in the future. The conditions at the time are not seen as being threatening enough to discourage or serve as a barrier to preventive action. Further barriers to preventive action could be the lack of conviction that the interventions are efficient and that there are few difficulties in undertaking the recommended action. Such an example would be the lack of conviction that condoms are effective in preventing sexually transmitted diseases, in that they have been known to burst and that they are difficult and embarrassing to use.

The likelihood of action, therefore, directly impacts on the likelihood of taking the recommended preventive health action. In this study, this would relate to the likelihood of not engaging in risk-taking behaviour that would ultimately compromise the adolescent's health.

Other factors, which would impact on this 'likelihood of action', would be the perceived threat of the consequences of risk-taking behaviour. In turn, this perceived threat would be influenced by certain 'cues to action'. In this study, these 'cues to action' would include mass media health-education campaigns; advice from others in the field of health-education/information; reminder postcards from the doctor, clinic or community health nurse; direct observation of a family member or friend who is suffering as a result of their risk-taking activities and/or a newspaper or magazine article on health-education or risk-taking behaviour and its health-compromising consequences.

Thus, this HBM serves as a very suitable framework to underpin this research, since it is most relevant to the nature and characteristics of the adolescent, as well as to the dynamics of the adolescent period. It is appropriate in that it explains the relationship between health-education and risk-taking behaviour as well as the impact of modifying factors, perceptions of risk, susceptibility and cues to action in influencing the likelihood of taking or not taking the recommended preventive health action.

Chapter 3

RESEARCH METHODOLOGY

3.1 Research Strategy

3.1.1 Research Approach: Quantitative

According to Polit and Beck (2004), the traditional, positivist 'scientific method' refers to a general set of orderly, disciplined procedures used to acquire information. This study was conducted within the positivist paradigm, using quantitative research methods, because the research question dictated that the data collected would best be analysed from a statistical perspective. The design was, therefore, structured. This method gave a solid statistical result from which inferences could be made. The emphasis then was on measurable quantitative information, which generated findings that were grounded in reality. Quantitative description focuses on the prevalence, incidence, size and measurable attributes of phenomena (Polit & Beck 2004). Furthermore, quantitative research was a suitable method to use because it answered the type of research questions which needed to be asked; as described in chapter one.

3.1.2 Research Design: Descriptive/Exploratory ; Non-Experimental Survey

This research design incorporated a non-experimental survey in that there was no manipulation of the independent variable of health-education.

While part of the purpose of the study was to simply describe the relationship between exposure to health-education and health-compromising behaviour among South African adolescents, the researcher proposed to go further by exploring the underlying reasons for risk-taking. In addition, exploration of the relationship between certain independent variables and the research problem, for example gender and ethnicity, was an important part of this investigation.

Polit and Beck (2004, p.20) differentiate descriptive research from exploratory research, in that, while both begin with a phenomenon of interest, the former seeks to simply observe and describe it. The final result of a descriptive investigation is a list, catalogue, classification or some type of description. Exploratory research, on the other hand, 'investigates the full nature of the phenomenon, the manner in which it is manifested, and the other factors to which it is related.' It asks what factors influence, effect, cause or relate to this phenomenon. Since it was the purpose of this study to look at relationships between variables, it made sense to use exploratory as well as descriptive research as part of this research design. Exploratory research is an extension of descriptive research that focuses more directly on the discovery of relationships.

Descriptive research attempts to answer questions relating to whether or not independent variables impact on the dependent variable of the study. In this research, it was of interest as to how the independent variable of health-education/information related to the dependent variable of health-compromising behaviour. In addition, there were other independent variables of interest, which may have a relationship with the dependent variable of the study.

Thus, descriptive/exploratory research had the potential to provide promising insights into the problem being addressed.

The independent variable of health-education was not controlled since the education had already taken place; therefore, this was Ex Post Facto research. The study was, thus, conducted after variations in the independent variable had happened. This research, therefore, attempted to understand relationships among phenomena as they presently occur without any intervention.

3.1.3 Research Perspective: Basic

Basic research, according to Polit and Beck (2004) can be traditionally defined as that research which extends the base of knowledge within a discipline; or to formulate or re-define a theory. It was not necessary to have specific applications in mind, as is the case with applied research. It was the goal of the researcher in this study to add to the community health knowledge base, and to discover basic principles relating to the behaviour of the chosen population. It was thus, appropriate for this investigation to be undertaken from a basic research perspective.

3.1.4 Reliability

According to Polit and Beck (2004), reliability can be assessed in different ways. The method chosen depends to a certain extent on the nature of the instrument, but also on the aspect of the reliability concept that is of greatest interest. Three aspects that have achieved major quantitative attention are: stability, internal consistency and equivalence.

In this study, stability was used to assess reliability. As stated in Polit and Beck (2004), stability refers to the extent to which the same results are obtained on repeated administration of the instrument. Assessment of the stability of the tool was conducted through procedures that evaluate test-retest reliability. The researcher administered the same instrument to a sample of ten individuals on two separated occasions, and then compared the scores obtained. The comparison procedure was performed objectively, by computing a reliability co-efficient, which is a numerical index of the magnitude of the test's reliability. In practice, reliability co-efficients normally range between 0.0 and 1.00. The higher the co-efficient the more stable the measure. For most purposes, reliability co-efficients above 0.70 are considered satisfactory (Polit & Beck 2004). On analysis, the instrument was found to be reliable with an alpha coefficient of 0.88.

The researcher desired to look at the reality of the situation while remaining independent from those being researched. It was important that the findings were not influenced by the researcher's personal experiences with the problem. This was assured by the use of self-administered questionnaires, thereby putting distance between the researcher and the participants. Objectivity and bias free results were, thus, sought. The emphasis of the proposed research was on discrete, specific concepts such as behaviour and perceptions of risk; as well as on a number of independent variables, which may influence this behaviour. This required deductive reasoning and tight controls over the context of the study. The problem of objectivity was, therefore, addressed by checking the reliability of the instrument.

3.1.5 Validity: External; Design and Content.

The desire of the researcher was not merely to understand the problem in the isolation of the specific sample and situation chosen, but in a broad general sense. The researcher sought generalisations from this research sample to the wider adolescent population of South Africa. The degree to which research findings can be legitimately generalised to other similar contexts is determined by the 'representativeness' of the research participants; and the measures used in the research. In order to ensure this external validity the researcher used sampling techniques to achieve this end.

While the researcher aimed to control certain variables, for example, nationality, ethnicity, gender and age group of the participants, other variables also made up an important part of the study. According to Terre Blanche and Durheim (1999), design validity is achieved by observing the influence of other independent variables. Thus, in this study, variables of peer-pressure, culture, gender and so forth were observed and measured to determine their influence on the dependent variable of health-compromising behaviour.

Content validity, as shown in Table 3.1, is concerned with the sampling adequacy of the content area being measured. Expert judgements can be used to compute a content validity index (CVI), which "provides ratings across experts of relevance of items on a scale (Polit & Beck 2004, p. 423)." This method was utilised by procuring the expertise of a panel from the School of Nursing, to ensure that the instrument was measuring what it intended to measure. Content validity is relevant for both affective and cognitive measures. Cognitive measures look at the representativeness of the questions on the topic. Affective measures, on the other

hand, depend on a thorough conceptualisation of the construct. In this way, the instrument can capture the entire content domain. To this end the instrument was the product of an extensive literature review and firsthand experience, as well as being guided by the principles of the Health Belief Model (Rosenstock 1974).

The following table outlines the relationship between the objectives, the research questions and the tool:

Table 3.1: Content Validity of the Instrument in Relation to the Research Objectives and the Research Questions

OBJECTIVES	RESEARCH QUESTIONS	QUESTIONNAIRE ITEMS
1	1 & 2	1
2	3	3
3	4, 5 & 6	4 & 5
4	7, 8, 9, 10, 11 & 12	2, B, C, D, 7, 8, 10, 11, 12, 15, 16, 17, 18
5	13	6 & 9
6	14, 15, 16, 17, 18	13 & 14

Thus, it is shown in this research strategy that attention was given to all aspects of the research design, including appropriate paradigms, research methods and perspectives; awareness of problems such as subjectivity and bias, as well as the desirable outcomes of generalisability, reliability and validity.

3.2 The Research Setting

Research settings are more specific places where data collection occurs. The nature of the research question and the type of information needed to address the problem dictates the suitability of a research setting (Polit & Beck 2004). Based on this premise, the University of KwaZulu Natal (UKZN), Howard College Campus in Durban, South Africa, was used as the research setting. This campus is one of five separate campuses, which make up this vibrant, coastal city's university. UKZN aims to be a truly South African university that reflects the society in which it is situated (UKZN Prospectus 2004). It is to be the largest contact tertiary institution in South Africa with a total enrolment of 44,756 students. The total number of registered undergraduate and postgraduate students on the Howard college campus was 20,251 people at the time the sample was drawn.

3.3 Population

The population under survey were students who were educated somewhere in South Africa and were presently attending this tertiary institution. They were between the ages of 17 and 24 years, so as to fulfil the predetermined age criterion. These people were more likely to have been exposed to health-education during their growing years than adolescents found in more disadvantaged situations. Since it was the purpose of the study to explore the

relationship between health-education and health-compromising behaviour, it was important that the sample was one that had an accessible population that would meet these needs. This university draws students from diverse backgrounds, so it was likely that the sample would also include those who have had very little exposure to health education. This gives a more balanced representation of the entire target population, as well as more insight into the impact of education per se. The university has a mix of gender, culture and race as well as a large proportion of adolescents in one place. This further served to give a representative sample and logistically assisted the sampling procedure.

3.4 Sampling Technique

“The overriding consideration in assessing a sample in a quantitative study is its representativeness” (Polit & Beck 2004, p.291). A representative sample is one whose key characteristics closely resemble those of the population. If this is not the case, then the external validity of the study is at risk. It would have been of value, if the sample in this study could be generalised to the wider adolescent population of South Africa, in order to have a meaningful impact on the existing knowledge base.

In order to achieve the abovementioned aims, subjects who participated in this study were selected using the quota sampling technique. Quota sampling is classified under non-probability samples, that is, elements that are selected by non-random methods. A quota sample, according to Polit and Beck (2004, p. 293), is one in which “the researcher identifies population strata and determines how many are needed from each strata.” Thus, by using population demographics researchers can ensure that the sample is proportionately

representative of the larger population. Stratification is based on variables that reflect important differences in the dependent variable under study.

Therefore, as mentioned, distinguishable subgroups of individuals in the population were identified, for example, males; females; representatives of different race groups; and individuals between the ages of 17 and 24 years old. Non-random samples were selected from each group. It was very important to ensure that racially, the proportion of students chosen were representative of the South African population, so that the results would not be biased in favour of one group. The sample was only taken from registered students. The quota of males, females and different ethnic groups was predetermined by the researcher according to the demographics of the student population on the above campus. Geographical distribution from all the provinces was not used as an inclusion criterion, only that the students must have been raised and educated in South Africa.

Thus, by pre-determining the subgroups and the proportions, a diverse range of groups was represented in the eventual sample which was representative of the province's racial distribution. This ensured that key demographic characteristics of the population, related to the matter being investigated, were represented in the sample.

3.5 Sample Size

Sample size can be determined by the rule of sampling ratios; that is the sample size/ population size, multiplied by 100. However, this would have given a very large and unmanageable number of participants. The researcher was guided by the literature and,

therefore, felt that a sample of approximately 150 participants would be adequate for this type of study. It would also be expedient to increase this number slightly to accommodate sample attrition. The larger the sample, the more representative of the population it is likely to be. Statistically this translates to the fact that the larger the sample, the smaller the sampling error. Large samples, however, are no assurance of accuracy. When non-probability-sampling methods are used, even a large sample can produce bias. It was the plan of the researcher to use the largest possible sample allowed for, taking into consideration practical and time constraints. The final sample size was, therefore, 155 participants.

3.6 Sample Access

The sample was accessed by gaining permission from the relevant university departments. Practical aspects of questionnaire distribution and collection were first discussed with the university authorities because the researcher intended to personally distribute and collect the questionnaires from the participants. The data were collected over a period of two consecutive weeks by the researcher. The researcher distributed the questionnaires in small quantities; and then returned to collect them after approximately twenty minutes. The participants posted the completed questionnaires into a sealed box. This ensured that the majority of the questionnaires were returned and anonymity was honoured.

The self-administered questionnaires were only given to those students who fitted the inclusion criteria, as described in the preceding section. The sample was drawn from a wide range of disciplines. This variety was achieved by distributing the questionnaires in areas on the campus where students from all faculties gather, for example, the general library as well

as the science and law libraries. The various local area network computer laboratories, refectories and other places in the grounds where different students work, relax and socialize were also targeted. The students were advised of the inclusion criteria, as well as of the need to give their written consent, and were assured of anonymity. Thus, the consent was recorded on a separate piece of paper not attached to the questionnaires, to ensure the anonymity and confidentiality of the data. This register of names and written consent forms prevented the duplication of participants in the study.

3.7 Data Collection: Method, Process and Instrument

Evidence for a study in the positivist paradigm, according to Polit and Beck (2004), is gathered by conforming to a specified plan, using formal instruments to collect the necessary information. The data were, therefore, collected by using a well structured and ordered questionnaire format as presented in Annexure E. The advantage of using questionnaires in this study was that confidentiality could be ensured, especially since sensitive questions had been included. It was quicker and easier to collect large amounts of information from a reasonably large sample using this format. The questionnaire incorporated the short-question format, for example, check lists, dichotomous questions, and multiple choice. All of these were easily transferred into numerical data. Closed questions, such as these, have the advantage of eliciting a standardized set of responses, and thus allow for easier comparative data analysis. Related constructs were clustered into separate sections, for example, demographical information and questions relating directly to the topic under study. Attention was given to sequencing of the questions within the different sections. General questions

were included first to minimise bias and avoid “coaching.” Certain repetitive questions with slightly different phraseology were included to further enhance the reliability of the tool.

The questions pertained to the following health-risk behaviours, namely: unprotected, indiscriminate sex; use of nicotine; abuse of drugs, alcohol and other illicit substances; failure to use safety devices such as seat-belts when travelling; and driving under the influence of alcohol.

In describing the instrument the demographic responses B, C & D were concerned with possible confounding variables. The research topic questions 1, 2, 3, 4, 7, 11, 13, 14, 16 and 17 pertained to health-education exposure and issues; questions 5, 6, 9, 12 and 18 involved aspects of risk-taking behaviour; question 8 looked at perceptions of health; and questions 10 and 15 related to variables which could impact on the relationship between health-education and health-compromising behaviour.

The instrument was prefaced by introductory comments relating to the nature and purpose of the study. This took the form of a covering letter, and an informed consent form was incorporated as shown in Annexure C and D, respectively.

In reference to Annexure E, the questionnaire was designed in such a way that the respondents were asked to tick the applicable responses (categories) only. This made the questionnaire user-friendly and enhanced compliance, in that it was easy and relatively quick to complete. When the data were encoded and entered into the computer, all the answers

which had been ticked were recorded as positive categories (Yes = 1) and those which had non-responses were taken as negative ones (No = 2). If the students wrote 'not applicable' next to a response, this was recorded in a third category (3) and labelled as such. When an entire question was not answered the responses were recorded in a fourth category (4), named 'missing'. The demographic data were encoded by allocating numbers to each open ended question and labelled accordingly. These categories were, thereby, converted into numerical data in order to capture the data onto the computer. Data editing was done and those questionnaires which did not meet the inclusion criteria or were incomplete were discarded. One hundred and sixty questionnaires were distributed, of which only one was not returned and four could not be used. Over and above this, ten questionnaires were used for the pilot study but not included in the final sample. Thus, in all a total of 170 questionnaires were distributed.

Since the questionnaire was developed by the researcher, the pilot study was done to test the reliability of the instrument and feasibility of the study. The pilot study was described under the sections on reliability and validity.

3.8 Data Analysis

The aim of data analysis is to transform information (data) into an answer to the original research question. Statistical procedures are used to analyse quantitative data. Therefore, in order to capture the data, a good computer statistical package was used, which was endorsed by the university. The collected data were encoded and captured using a statistical package for the Social Sciences (SPSS) Version 11.5 for Windows; and then subjected to analysis

using the same computer software package. Descriptive and inferential statistical analysis was used. This made it possible to arrange numerical data in an orderly and readable manner, as well as to estimate population parameters; and to test the hypothesis, in order to decide whether certain variables were related to one another. This suited the nature of the proposed research and answered the research questions. Using these methods served to influence the outcome of a principled argument.

Various tests are available to the researcher to measure relationships between variables. Fisher's exact test was used to test the significance of differences in proportions ($p < 0.05$). As indicated in parenthesis above, the findings throughout the study were taken as statistically significant at the 0.05 level of confidence. This is a non-parametric statistical test which is useful when the total sample size is small (total N of 30 or less) or when there are cells with 0 frequencies (Polit & Beck 2004). Frequency counts were used in the descriptive analysis. The analysed data were reported as frequencies and row percentages in all the tables; and percentages only, were shown in the bar graphs. In the latter, inset percentages were rounded off to the nearest percentage for clarity. Thus, the results were presented using both descriptive and exploratory tables and graphs.

3.9 Ethical Considerations

Ethical clearance to conduct the study was obtained from the University of KwaZulu Natal Ethics Committee (Annexure A). Permission to conduct the research on the Howard College, Durban campus of the University of KwaZulu Natal was granted by the Dean of Students (Annexure B).

Informed consent is an ethical requirement for all research studies. The participants gave their written consent on a separate consent form (Annexure C), after having read the attached explanatory letter from the researcher (Annexure D). Taking part in the research was completely voluntary, and any questions that the student did not feel comfortable answering could be omitted. Confidentiality was assured and no identifying information, apart from race, religious affiliation, age and gender, was asked for in the questionnaire (Annexure E), thus ensuring anonymity.

3.10 Strengths and Limitations of the Research Design

There are multiple overlapping perspectives on health, based on personal beliefs, cultural expectations and ideological differences. This suggests that it was unlikely that a consensus about the goals and objectives of health promotion education would be obtained from this research.

For successful intervention to take place, one needs to develop a clear sense of what one hopes to accomplish, in the light of these multiple perspectives. Despite the above limitations of the research design, it is felt that it was generally coherent with the various elements fitting together well within the framework, provided by the research paradigm.

It is believed that the research practices fitted the quantitative paradigm. It is also believed that while this research design produced findings that were valid, reliable, and conclusive; one must not lose sight of the impact of other factors, which influence and modify behaviour. These variables were identified in advance and controlled for by using various

statistical techniques, and other measures to ensure that accurate conclusions could be drawn from the research.

It is believed that the research design did take into consideration the importance of ethical issues. Attention was given to obtaining voluntary and informed consent from the university, and the participants; as well to the importance of confidentiality. As had been predicted, a small attrition rate was realised, owing possibly to the sensitivity of some of the questions; and failure to correctly complete all the questionnaires. Freedom to withdraw at any time reinforced the researcher's attention to autonomy. By using the questionnaire format, autonomy was ensured and embarrassment of a face-to-face interview was avoided.

A further possible limitation of the study could be the researcher's personal interest in and experience with the problem. This possible subjectivity could have biased the results. However, the use of the abovementioned self-administered questionnaires and *yes/no* answers, would have ensured distance between the researcher and the participants, and thus, maintained objectivity. This would have overcome the problem of personal bias.

Obtaining the sample of the population from a tertiary institution could have limitations in that it is drawing on those individuals who are more likely to have been exposed to health education. It was the objective of the research to look at the relationship between health-education and health-compromising behaviour, therefore, it was very important to have a sample that has had exposure to health education. However, this research design had the potential not to tell us about the behaviour of those adolescents who have not had such an

education. Perhaps, this should be an area for further research. The extent of exposure of the proposed population to health education was unknown to the researcher, but it was presumed that it would vary from student to student, and hence should be a representative sample. The advantage of having used this institution, however, is that there is cultural and religious diversity and it is not gender specific. It was also pragmatic to collect the data from a place where there is a concentration of adolescents that fall within the required age group and demographics.

It had been considered that if the sample did not include students from every province the sample could not be generalised to the whole country. This generalisation would then be limited to those areas where these students had received their education.

3.11 Conclusion

In conclusion, the proposed research strategy and the methodological process were implemented with relative ease. They met the requirements of the study, giving rise to a sound set of data. The subsequent data analysis produced findings that were relevant to the objectives of the research. These results are presented in the following chapter.

Chapter 4

PRESENTATION OF THE RESULTS

4.1 Introduction

This chapter presents the results of the research, firstly, by giving the demographic findings and then the findings according to the six research objectives. These results are stated and where necessary brief clarification is given. Further explanation, discussion and interpretation of these results are to be found in the following chapter.

4.2 Sample Realisation

One hundred and sixty questionnaires were distributed with a response rate of 155, thus $N = 155$ (total number of sample members). The response was positive, with the majority (96.6%) of those asked, agreeing to complete the questionnaire. A small number of students were unable to take part because they did not have sufficient time available when they were approached. This constituted less than 1% of all students who were invited to take part. For the purpose of this thesis $N = 155$, unless otherwise stated. In cases where there are missing answers, the adjusted valid 'N' value has been given, as well as the adjusted valid percentage. The number of sample members in a subgroup of the sample has also been stated, where applicable, using the value 'n'. This indicates that all percentages quoted have been calculated on the number of actual answers given, rather than on the total number of questionnaires returned (total number of sample cases).

For all Fisher's exact tests an alpha of 0.05 was designated a priori for significance. This then, was the specified level of probability throughout the research. A combination of tables and bar graphs were used in presenting the results. As well as showing the exact percentages on the left axis of the bar graphs, inset percentages automatically rounded off by the computer, were shown for easy reading. All tables reported frequencies and row percentages.

4.3 Demographic Findings

The sample characteristics are demonstrated in Table 4.1 showing the demographic factors of age, gender, ethnic group, religion, type of schooling, level of education completed, home language and province where raised and educated. The category 'Other' was selected to include both the Coloured population of South Africa and any other person who did not fit into the Black, White or Asian ethnic group. This was necessary for the quota sampling strategy because the number of Coloured people on this campus is too small to be in a separate category. Such small sub-groups would not have given statistically significant results.

4.3.1 Age

The majority of the participants, 71% (n = 110) fell into the 17 to 21 year age group, while 29% (n = 45) fell into the 22 to 24 year age group. When taken separately, most students 25.8% (n = 40) were 20 years old, followed closely by 19 year olds, 23.9% (n = 37). The lowest count being students aged 17 years old, 0.6% (n = 1). The mean age of the sample was 20.58 years (SD = 1.643); the median and mode was 20 years. Thus, the sample fell almost in the middle of the inclusion criteria for age.

4.3.2 Gender Distribution

The gender of the participants, was made up of a slightly larger number of females, 56.8% (n = 88) compared to males, who made up 43.2% (n = 67). This campus does have a higher percentage of females.

4.3.3 Ethnicity

The ethnic groups of the participants (N = 154), were also representative of the campus population in that there were 44.2 % (n = 68) Black participants; 29.2 % (n = 45) Asians; 24% (n = 37) Whites; 2.6% (n = 4) "Other" groups. Unlike the demographics of South Africa, the Asian population does exceed that of Whites on this campus.

4.3.4 Religion

Religious affiliation was divided into five groups, namely: Christian, Hindu, Muslim, Other and None. 'Other' incorporated any other religion, for example Judaism, Zionism and so forth; while 'None' pertained to those who did not believe in any form of religion. The largest group was made up of Christians, 54.5% (n = 84); followed by 'Other' at 24% (n = 37); Hindu, 13.0% (n = 20); Muslim 6.5% (n = 10) and lastly 'None', which made up 1.9% (n = 3) of the sample. It is interesting to note that out of all the respondents (N = 154) only three said they were non-religious.

4.3.5 Schooling

The type of schooling the participants had experienced was divided into the following categories: government school, private school, home schooling and a combination of both government and private schools. Seventy three and a half percent (n = 114) had been to government schools, while 18.7% (n = 29) had attended private schools. Students who had

been exposed to both of these made up 7.1% (n = 11) of the sample. The smallest group, were those who had been home schooled, being 0.6% (n = 1) of the participants.

4.3.6 Level of Education

The level of education attained was divided into secondary, tertiary and postgraduate. The majority of students, 70.3% (n = 109), had only completed secondary education and, therefore, were in the process of obtaining their undergraduate degrees. Twenty five point eight percent (n = 40) had completed their first degrees, while 3.9% (n = 6) had completed a postgraduate degree.

4.3.7 Home Language

In response to this question, the languages spoken at home by the participants fell into the following sub-categories: English, 54.2% (n = 84); both Zulu & Xhosa, 37.4% (n = 58); Other, 3.9% (n = 6); both English & Zulu, 2.6% (n = 4); both English & Afrikaans, 0.6% (n = 1); both Zulu and Sesotho, 0.6% (n = 1); Afrikaans, 0.6% (n = 1). In viewing the languages separately, English remained the most spoken language with 57.4% (n = 89); then Zulu 40.6% (n = 63); Xhosa 37.4% (n = 58); 'Other' 3.9% (n = 6); Afrikaans 1.3% (n = 2) and lastly Sesotho with 0.6% (n = 2). N > 155 owing to some participants being bilingual at home.

4.3.8 Province

The vast majority of the participants 88.3%, (n = 136), were raised and educated in KwaZulu Natal. Those from the Eastern Cape made up 3.9% (n = 6) of the total sample (N = 154), while 1.9% (n = 3) grew up in KwaZulu Natal and Gauteng. Limpopo Province also contributed 1.9% (n = 3) to the sample. Mpumalanga had 1.3% (n = 2) of the participants, as did the North West Province. Gauteng had the smallest representation with 0.6% (n = 1), along with Northern Province, who had the same.

Table 4.1: Characteristics of the Sample

DEMOGRAPHICS	CATEGORIES	FREQUENCY	PERCENTAGE
AGE in YEARS	17 – 21	110	71%
	22 - 24	45	29%
GENDER	Males	67	43.2%
	Females	88	56.8%
ETHNICITY	Black	68	44.2%
	Asian	45	29.2%
	White	37	24%
	Other	4	2.6%
RELIGION	None	3	1.9%
	Christian	84	54.5%
	Hindu	20	13%
	Muslim	10	6.5%
	Other	37	24%
SCHOOLING	Government	114	73.5%
	Private	29	18.7%
	Home-school	1	0.6%
	Govt.& Private	11	7.1%
EDUCATION	Secondary	109	70.3%
	Tertiary	40	25.8%
	Postgraduate	6	3.9%
HOME LANGUAGE	Zulu	63	40.6%
	Sesotho	1	0.6%
	Xhosa	58	37.4%
	English	89	57.4%
	Afrikaans	2	1.3%
	Other	6	3.9%
PROVINCE	KZN & Gauteng	3	1.9%
	KZN	136	88.3%
	Gauteng	1	0.6%
	Mpumulanga	2	1.3%
	Eastern Cape	6	3.9%
	Northern Province	1	0.6%
	Limpopo Province	3	1.9%
	North West	2	1.3%

4.4 Research Objective Findings

In accordance with the problem statement, the relationship between the health-education, which the students had been exposed to during their growing years, and their present behaviour, in terms of the health risks they now take, was analysed. This was done in terms of what health knowledge they possess, as well as what motivates their behaviour.

The analysis attempted to discover whether the students perceive themselves as potentially vulnerable to the possible consequences of their behaviour. It also looked at their perceived seriousness of these consequences. According to Rosenstock's Health Belief Model (1974), the perception of personal vulnerability and seriousness of the consequences impacts directly on the perceived threat to the individual.

Risk taking behaviour was compared with the demographic factors of age, gender, ethnicity, religious affiliation, type of schooling and level of education. Other potentially modifying factors, according to Rosenstock's model, were also analysed. They included socio-psychological variables, for example, personality, self esteem, the nature of adolescence as well as peer and reference-group pressure.

The structural variables included knowledge of the consequences of risk-taking behaviour, given in the form of health-education/information, and/or prior contact with these consequences. The analysis looked further at the likelihood of students not taking part in health risks, in terms of their perceived benefits of taking preventive action minus their perceived barriers to preventive action. These barriers included competing priorities such as excitement, fun and enjoyment.

Factors, known as “cues to action” in Rosenstock’s Health Belief Model (1974), which could influence the relationship between health education and risk-taking behaviour, were also analysed. These included: possible exposure of students to mass media, health-education campaigns; health advice from significant others; attending health clinics and/or consulting doctors for advice or treatment; contact with friends or family members with whom they can identify; and the influence of the media on their health knowledge and consequences of risk-taking. Thus, according to Rosenstock (1974), the individual needs to be convinced of the efficiency of the interventions available; and to see few difficulties in taking the recommended action, in order to pursue healthy habits or as is applicable here, not to engage in behaviour that poses health risks.

4.4.1 OBJECTIVE 1: EXPOSURE TO HEALTH EDUCATION

The first objective was to establish whether adolescents in South Africa are receiving health-education that deals with the issues of risk-taking behaviour. According to the findings, illustrated in the accompanying bar graph, Figure 4.1, the majority of students have received health-education on the topics of smoking, alcohol abuse, drug abuse, sex and the wearing of seatbelts. Sex education had been given to 98.7% (n = 153) of the participants, followed by drugs to 91% (n = 141), alcohol to 83.2% (n = 129), smoking to 82.5% (n = 127, N = 154) and lastly seatbelts to 67.7% (n = 105). It is, thus, apparent that all the participants have been exposed to some form of health-education. There was only one missing value in response to the question on smoking (N = 154) and the interpretation of these results was adjusted by giving the valid percentage.

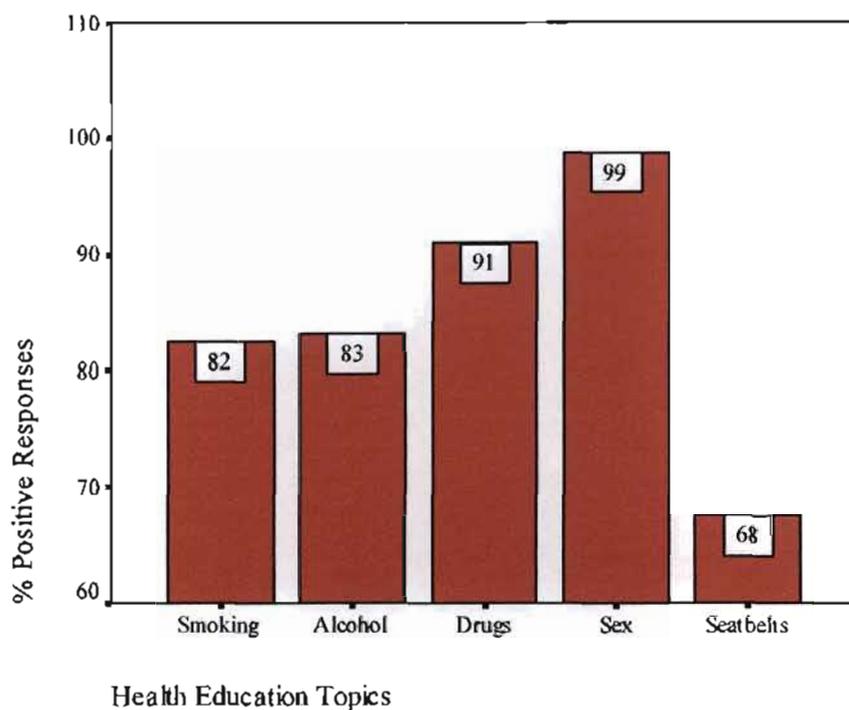


Figure 4.1: Exposure of Participants to Selected Health Education Topics

4.4.2 OBJECTIVE 2: SOURCES OF HEALTH EDUCATION

Objective two was to discover where or from whom the adolescents had received this health-education. Analysis of the results (Figure 4.2) showed the sources to be varied with the greatest percentage, 92.3% ($n = 143$; $N = 154$), attributing their health-education to the schools. The media were credited with 81.3% ($n = 126$), followed by parents with 68.4% ($n = 106$). Friends contributed 49% ($n = 76$); the clinics (nurses) 47.1% ($n = 72$, $N = 154$); religious organizations 41.3% ($n = 64$); doctors 27.1% ($n = 42$) and significant others 11% ($n = 17$).

Thus, it is interesting to note that schools appear to be far more pro-active than parents. The media is commonly known to have an effect on people in general, both positively and negatively. These results show that the media is also using its influence positively to reach the youth in areas of health and that 81.3% of this sample acknowledge the media as their source of health-education. The clinic nurses contributed more than doctors, but were almost on par with the influence of friends and religious organizations.

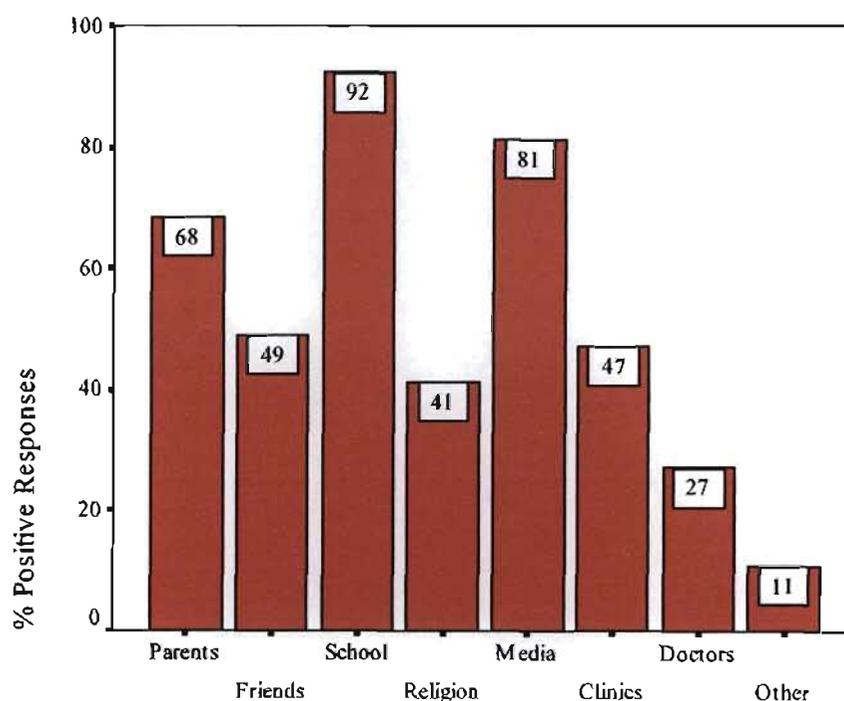


Figure 4.2: Sources of Health Education

4.4.3 OBJECTIVE 3 (A): BENEFITS OF HEALTH EDUCATION

The main goal of objective three was to establish whether adolescents, previously exposed to health-education, have actually benefited in that they do not take health risks.

As an introduction to understanding this relationship between health-education and risk-taking behaviour, the researcher first wanted to know if the students in this sample felt they had benefited from their health-education. In response to this question, 79.1% (n = 121, N = 153) felt that their needs had been met in terms of the health-education they had received; while 20.9% (n = 32) said it had not met their needs.

While it is possible to feel that education has been beneficial, on closer inspection it is sometimes discovered that the evidence to support those feelings is not there. The following results were obtained, according to the answers of whether or not this sample indulges in risky behaviour. These findings also serve to describe which the most common forms of risk-taking are amongst this group, as illustrated in Figure 4.3.

Risk-taking Behaviours

In relation to whether the participants drink three or more tots of alcohol every day, there was a 100% (n = 152, N = 152) negative response. It is possible that the missing values of three participants, persistently occurring in the questions dealing with cigarettes, alcohol and drugs; and missing values of four participants on the subject of unprotected sex and unsafe driving, could be attributed to the sensitive nature of the questions. It is for this reason that the researcher chose to indicate the valid, total-number of cases (N) where applicable. It thus, becomes clear which and how many questions, have not been answered.

Ninety two point one percent of the sample ($n = 140$, $N \approx 152$) said they do not abuse drugs, while 84.1%, ($n = 127$, $N = 151$) said they do not drive over the legal limit of alcohol. Seventy eight point eight percent, ($n = 119$, $N = 151$) said they do not indulge in unsafe sex; while 74.3%, ($n = 113$, $N = 152$) said they do not smoke. Drinking four or more tots of alcohol in succession gained a negative response of only 55.9%, ($n = 85$, $N = 152$) thereby, indicating that as many as 44.1% of this sample drink in excess of what is considered to be healthy. Those who do not risk their lives by driving within the speed limit, only amounted to 50.3% ($n = 75$) of the valid sample, ($N = 149$). Taking into consideration the two participants who said the question was not applicable (presumably because they do not drive), 49.7% ($n = 74$) of this sample drive outside the legal speed limit. The valid percent of those who do not buckle up when traveling in vehicles, even though belts are available, amounts to 55.7% ($n = 83$, $N = 149$). Thus, only 44.3% ($n = 68$) of the sample members wear seatbelts when they travel in vehicles.

It is, therefore, apparent from these results that risk-taking is more common in certain areas than others. Risk-taking behaviour is most evident in the failure to be self protective while travelling on the roads. Not only is there a reluctance to wear seatbelts by just under half the participants; but also, almost half admitted to driving outside of the speed limit. It is interesting to note, however, that only 14.6% confessed to driving above the legal alcohol limit. On the subject of alcohol, continuous daily drinking did not feature at all as a problem area, whereas binge drinking did, with nearly half the participants admitting to it. Only 7.9% ($n = 12$) of the participants said they abused drugs, while 1.3% ($n = 3$) failed to answer that question. Twenty five point seven percent ($n = 39$) of the sample smoke cigarettes, and 21.2% ($n = 32$) have unprotected sex.

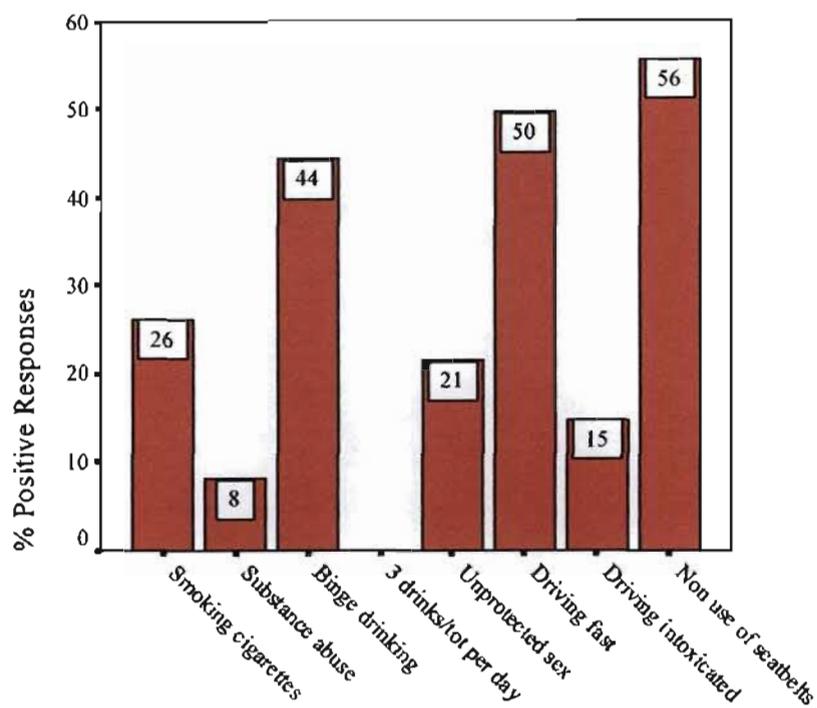


Figure: 4.3 Risk-Taking Behaviour Trends amongst the Participants

4.4.3.1 OBJECTIVE 3 (B): THE INFLUENCE OF HEALTH EDUCATION ON RISK TAKING BEHAVIOUR

Since objective three sought to discover the influence of health-education on risk-taking behaviour, the researcher tested further using Chi-Square tests to explore this relationship.

Fisher's Exact Test was used to analyse the data. More specifically, this objective aimed to establish if those adolescents who have been exposed to health-education take fewer health risks.

Smoking

In analysing the relationship between those who have had health-education on smoking and the incidence of smoking within this group, the following results were found. Of those who have received health-education on smoking, more people do not smoke (69.9%, $n = 86/123$; $N = 149$) than do. Therefore, on the surface it would appear that education is making a difference in the educated group. However, on further inspection it is found that there are even more people in the group, who have not received smoking health-education, who do not smoke (92.3%, $n = 24/123$; $N = 149$). Therefore, education may not have played a role in reducing the incidence of smoking within this sample. Fisher's Exact Test demonstrates a significant result ($p = 0.025$). This means that the null hypothesis, which states that there is no relationship between exposure to health-education and the incidence of risky behaviour, can be rejected. These results are interesting, in that although there is a difference between the two groups, it is not in the way one would have expected. There are more smokers in the group who have been exposed to health-education than in the group who have not received this education.

It is also interesting to note that in this cross tabulation $N = 149$ (total number of responses) and not 154 as is found in the frequency tables relating to smoking education, and $N = 152$ in relation to the question on incidence of smoking. Thus, this shows that only 149 students answered both questions. Even though fewer people answered both questions the attrition rate is very small and, therefore, should not be influencing these results.

Alcohol

In the cross-tabulation between health-education on alcohol use and whether this education reduces the incidence of alcohol abuse, the findings were as follows. Of those who have received health-education on alcohol, only slightly fewer, 54.8% ($n = 68/124$; $N = 150$), said they did not drink more than four tots of alcohol in succession. Interestingly, in the non-educated group a similar result is found in that 57.7% ($n = 15/26$) do not practise risky drinking habits. As with smoking, more people in the group who have not received health-education do not abuse alcohol compared to those who have received health-education on alcohol abuse. These results, however, are not significant ($p = 0.831$). Since there is a very small difference between the educated and the non-educated group, the results are most likely due to chance.

None of the sample admitted to drinking three or more tots of alcohol everyday, so no statistics were computed because the findings were constant. It can, therefore, be assumed that continuous daily drinking is not a problem amongst these students, while binge-drinking is. Education has not been shown to make a difference in the educated binge-drinking group, in that 45.2% ($n = 56/124$) do binge and 54.8% ($n = 68/124$) do not. The results are almost the same in the non-educated group with 42.3% ($n = 11/26$) bingeing and 57.7% ($n = 15/26$) who do not. Fisher's Exact Test shows these results to be insignificant ($p = 0.831$).

Looking at whether health-education has had an impact on students driving over the legal alcohol limit, the following results were found. Of those who have received the appropriate education 83.7% ($n = 103/123$; $N = 149$) do not drive when over the limit. This indicates that

health-education is making a difference. However, amongst those who have not received such education, an even greater number 92.3% ($n = 24/26$) do not drive when above the legal limit. While these results seem to endorse that lack of health-education is favourable, in that fewer people who have not received health education drive when under the influence of alcohol; Fisher's Exact Test shows these result to be insignificant ($p = 0.369$). Therefore, education probably does not play a significant role.

Drug Abuse

In the drug-educated group, 91.2% do not abuse drugs ($n = 125/137$; $N = 150$). Only thirteen students out of the total valid sample ($N = 150$) said they had never received health education pertaining to drug abuse. It is interesting to note that despite never having been educated on the subject, none of them admit to having taken drugs. Fisher's Exact Test shows a non-significant result in terms of comparing the educated and non-educated groups ($p = 0.601$). The non-educated group is very small and, therefore, too small to make a meaningful comparison.

Sexual Behaviour

In analysing the relationship between health-education on sex and having unprotected sex, 78.2% ($n = 115$; $N = 147$) of the educated students said they do not have unprotected sex. Only two people said they had never had sex-education and despite that they do not have unprotected sex. The Fisher's Exact Test shows this result to be insignificant in terms of comparing the educated and non-educated group ($p = 1.000$). It is obvious that the non-educated group is too small to be statistically significant ($n = 2$; $N = 2$) and, therefore, the results are most likely to be due to chance. However, as previously stated, it is of interest to the researcher to discover whether those who have received health-education are less likely

to compromise their health by not indulging in risky behaviour. The above findings support this, since the majority of the educated group practise safe sex.

Seatbelt Use

In relation to the influence of health-education on whether the student wears a seatbelt or not, an insignificant result ($p = 0.489$) is shown. This means that there is no real difference between the educated and the non-educated groups. Amongst those who have received safe travelling education, only 46.5% ($n = 46/99$; $N = 149$) wear a seatbelt, showing that more than half (53.5%) do not protect themselves, even though they have received health-education on the subject. Of those who have not been exposed to the importance of seatbelts, only 40% ($n = 20/50$) buckle up leaving 60% ($n = 30/50$) travelling unprotected.

Illustrative data have not been included for the above results, since confounding variables are thought to be playing a role and, therefore, the analysis has been taken one step further. It was decided to cross tabulate these risk-taking behaviours, controlling for gender and ethnicity and to report these findings using the appropriate graphs and tables.

4.4.4 OBJECTIVE 4: POSSIBLE CONFOUNDING VARIABLES

The fourth objective of this study was to describe which variables could influence the relationship between health-education and health-compromising behaviour. In order to discover these, the demographic variables of gender, religion and ethnicity were analysed. The socio-psychological variables of personality, self-esteem, the nature of adolescence (feeling immortal, conflicting priorities, and differing norms pertaining to risk); the influence of supportive individuals and peer and reference group pressure; as well as the timing of

exposure to health-education, were also analysed. In addition the structural variables pertaining to satisfactory content and delivery of health knowledge, as well as knowledge of the consequences of risk, were investigated.

Demographic Variables

a) Gender

The demographic variable of gender was analysed using Fisher's Exact Test to see if there was a difference in health risk-taking behaviour, between the males and females in this sample. There was an insignificant difference ($p = 0.408$) between males 51.5% ($n = 34/66$) and females 59% ($n = 49/83$; $N = 149$) who do not wear seatbelts. More males 60.6% ($n = 40/66$) than females 41.0% ($n = 34/83$) drive above the speed limit, thus giving a statistically significant result ($N = 149$, $p = 0.021$). A very significant difference ($p < 0.001$) exists between males 28.8% ($n = 19/66$) and females 3.6% ($n = 3/83$), who drive over the legal limit of alcohol. Binge-drinking showed a statistically significant result ($p < 0.001$) in that 65.7% ($n = 44/67$) of males do, as against 27.7% ($n = 23/83$) of females ($N=150$). Males who admit to unprotected sex include 13.6% ($n = 9/66$) of the sample ($N = 149$), while the number of females is greater at 27.7% ($n = 23/83$). This constitutes a significant difference ($N = 149$; $p = 0.045$). Thirty two point eight percent of males ($n = 22/67$) smoke cigarettes and those females who do, comprise a lower percentage at 20.5% ($n = 17/83$). However, this was not a statistically significant difference ($p = 0.095$), which indicates only a borderline difference and, therefore, some relationship might exist but it could also be due to chance and, therefore, is not definite. Fewer females 3.6% ($n = 3/83$) take illegal substances than males, who account for 13.4% ($n = 9/67$) of the sample ($N = 150$) who do. This constitutes a

statistically significant difference between the genders ($p = 0.035$). The above results are illustrated below in Table 4.2.

Table 4.2 Risk-Taking Behaviour in Males and Females

		Gender of the participants				p value
		Male		Female		
		Frequency	%	Frequency	%	
Smoking cigarettes	Yes	22	32.8%	17	20.5%	0.095
	No	45	67.2%	66	79.5%	
Taking illegal substances	Yes	9	13.4%	3	3.6%	* 0.035
	No	58	86.6%	80	96.4%	
Drinking alcohol in succession (Binge-drinking)	Yes	44	65.7%	23	27.7%	* < 0.001
	No	23	34.3%	60	72.3%	
Drinking 3 tots/glasses every day	Yes	0	.0%	0	.0%	
	No	67	100.0%	83	100.0%	
Having unprotected sex	Yes	9	13.6%	23	27.7%	* 0.045
	No	57	86.4%	60	72.3%	
Driving above speed limit	Yes	40	60.6%	34	41.0%	* 0.021
	No	26	39.4%	49	59.0%	
Driving over legal limit of alcohol	Yes	19	28.8%	3	3.6%	* < 0.001
	No	47	71.2%	80	96.4%	
Travel in vehicles without buckling up	Yes	34	51.5%	49	59.0%	0.408
	No	32	48.5%	34	41.0%	

*statistically significant ($p < 0.05$)

b) Ethnicity

In analysing the influence of ethnicity on the different risk-taking behaviours, as illustrated in Table 4.3 below; the following results were found. Fifty percent, of the group named 'Other' ($n = 2/4$) smoke cigarettes; 28.1% of the Black ($n = 18/64$) and similarly 29.5% of the Asian groups ($n = 13/44$) do; while 16.2% of the White group smoke ($n = 6/37$).

In relation to the abuse of illegal substances, 25% of the 'Other' group ($n = 1/4$) abuse drugs; as do 8.1% of the Whites ($n = 3/37$); 7.8% of the Black group ($n = 5/64$); and 6.8% of the Asians ($n = 3/44$). Binge drinking more than four tots of alcohol in succession, involves 75% of the 'Other' group ($n = 3/4$); 56.8% of the Whites ($n = 21/37$); 42.2% of the Black group ($n = 27/64$); and 36.4% of the Asian group ($n = 16/44$).

The largest number admitting to unprotected sex is within the Black group (36.5%, $n = 23/63$); while Asians and Whites had similar results: Asians making up 11.4% ($n = 5/44$) and Whites with 10.8% ($n = 4/37$). No one in the 'Other' group ($n = 0/4$) said they had unsafe sex.

The greatest number of students, acknowledging driving above the speed limit, is amongst the Whites (81.1%, $n = 30/37$); followed by the Asian group (59.1%, $n = 26/44$); and then the other two groups with fairly similar results, namely, 27% of the Blacks ($n = 17/63$) and 25% of the 'Other' group ($n = 1/4$). In terms of driving over the legal limit of alcohol, the White group, once again, were in the majority with 29.7% ($n = 11/37$) admitting to this. The 'Other' group included 25% ($n = 1/4$), the Blacks 11.1% ($n = 7/63$) and the Asians 6.8% ($n = 3/44$).

In response to whether seatbelts are worn, 65.9% of the Asians ($n = 29/44$) do not buckle up when travelling on the roads. This is followed by, 60.3% of the Black group ($n = 38/63$), 50% of the 'Other' group ($n = 2/4$), and 37.8% of the White group ($n = 14/37$).

It is evident from the above results that different risk-taking behaviours are more evident within certain ethnic groups. It is, however, difficult to comment scientifically on the 'Other' group, since this group is too small and, therefore, the results are not significant.

Amongst the other three ethnic divisions, the incidence of drug abuse is similar, whereas, smoking cigarettes is lower in the White group than in the Black and Asian groups, which have the same percentages. Binge-drinking and driving when over the legal limit of alcohol is the highest amongst the Whites, followed by the Blacks and then the Asians. Driving above the speed limit is also highest amongst the White group, followed by the Asians and then the Blacks. Having unprotected sex is the highest amongst the Blacks, and then the Asian and White groups almost shared the same percentage. Failure to wear seatbelts is most prevalent amongst the Asians, followed closely, by the Blacks. The Whites who do not buckle up make up the lowest percentage.

Table 4.3: Risk-Taking Behaviour in Different Ethnic Groups

		Ethnic group of the participants							
		Black		Asian		White		Other	
		Frequency	%	Frequency	%	Frequency	%	Frequency	%
Smoking cigarettes	Yes	18	28.1%	13	29.5%	6	16.2%	2	50.0%
	No	46	71.9%	31	70.5%	31	83.8%	2	50.0%
Taking illegal substances	Yes	5	7.8%	3	6.8%	3	8.1%	1	25.0%
	No	59	92.2%	41	93.2%	34	91.9%	3	75.0%
Drinking alcohol in succession (Binge-drinking)	Yes	27	42.2%	16	36.4%	21	56.8%	3	75.0%
	No	37	57.8%	28	63.6%	16	43.2%	1	25.0%
Drinking 3 tots/glasses every day	Yes	0	.0%	0	.0%	0	.0%	0	.0%
	No	64	100.0%	44	100.0%	37	100.0%	4	100.0%
Having unprotected sex	Yes	23	36.5%	5	11.4%	4	10.8%	0	.0%
	No	40	63.5%	39	88.6%	33	89.2%	4	100.0%
Driving above speed limit	Yes	17	27.0%	26	59.1%	30	81.1%	1	25.0%
	No	46	73.0%	18	40.9%	7	18.9%	3	75.0%
Driving over legal limit of alcohol	Yes	7	11.1%	3	6.8%	11	29.7%	1	25.0%
	No	56	88.9%	41	93.2%	26	70.3%	3	75.0%
Travel in vehicles without buckling up	Yes	38	60.3%	29	65.9%	14	37.8%	2	50.0%
	No	25	39.7%	15	34.1%	23	62.2%	2	50.0%

c) Exposure to Health-Education and Ethnicity

It is of interest to know whether exposure to health-education has modified these results. Looking at whether certain ethnic groups have had a greater exposure to health-education than others, the following results were found as illustrated in Figures 4.4.1 to Figure 4.4.5.

Ninety one point six percent of Whites ($n = 33/36$), 91.1% of Asians ($n = 41/45$), 75% of 'Others' ($n = 3/4$) and 72% of Blacks ($n = 49/68$) have had education on smoking (Figure 4.4.1). Ninety four point five percent of the Whites ($n = 35/37$), 91% of the Asians ($n = 41/45$), 75% of the 'Other' group ($n = 3/4$) and 73% of the Black group ($n = 49/68$) have had health-education on alcohol (Figure 4.4.2).

In relation to health-education on drug abuse, 100% of the Asians, Whites and 'Other' group have received it, while only 79.4% of the Blacks ($n = 54/68$) have (Figure 4.4.3). The entire Black, White and 'Other' groups have been educated about sex and its consequences; while a slightly smaller percentage of the Asian group have had such exposure (95.5%, $n = 43/45$) (Figure 4.4.4). Education regarding the importance of wearing of seatbelts has not been as high with 78.4% of the Whites ($n = 29/37$) 73.3% of the Asians ($n = 33/45$) and only 58.5% of the Blacks ($n = 40/68$) having been exposed. On the other hand, 100% of the 'Other' group has had this form of health-education (Figure 4.4.5).

Thus, what is apparent is that while there are ethnic differences in the number of people exposed to different health-education topics, they are not vast. Generally, the White, Asian and 'Other' group seem to have a higher rate of health-education overall, with the Black group lagging behind, except on the issue of sex education, where they have demonstrated

100% exposure to this subject. The biggest difference in health-education exposure exists regarding the use of seatbelts, with 100% of the 'Other' group having been educated, while only 58.8% of the Black group having had such exposure. Apart from this result regarding seatbelts, no ethnic group falls lower than 72% on any other topic of health-education covered by this research. It is encouraging to note that exposure to education pertaining to risk-taking behaviour and its consequences, has reached all the ethnic groups who are attending this institution of tertiary education. The following five graphs below show the relationship that exists between the selected health-education topics and ethnicity.

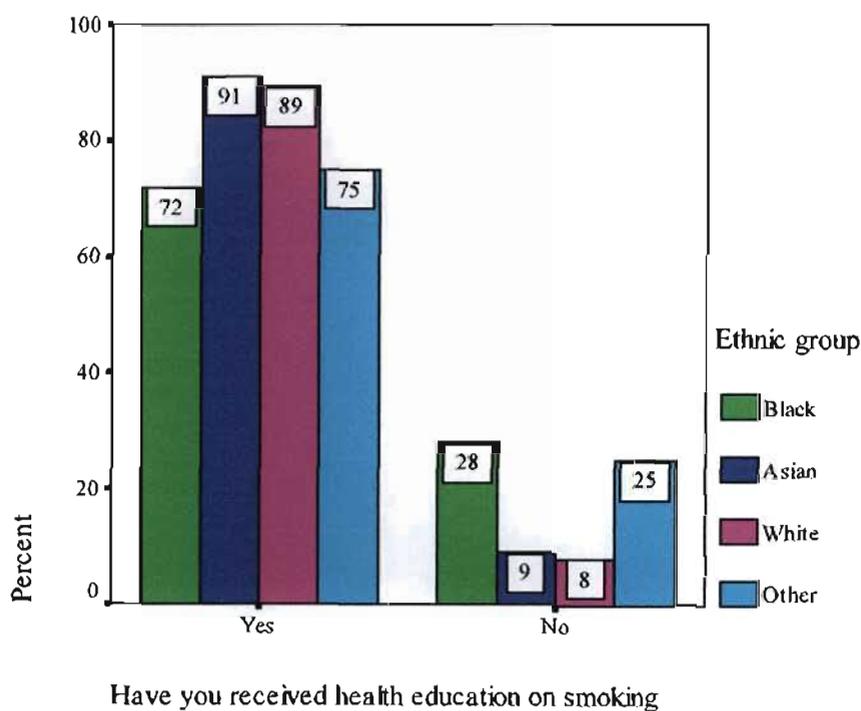


Figure 4.4.1: Exposure to Smoking Education and Ethnicity

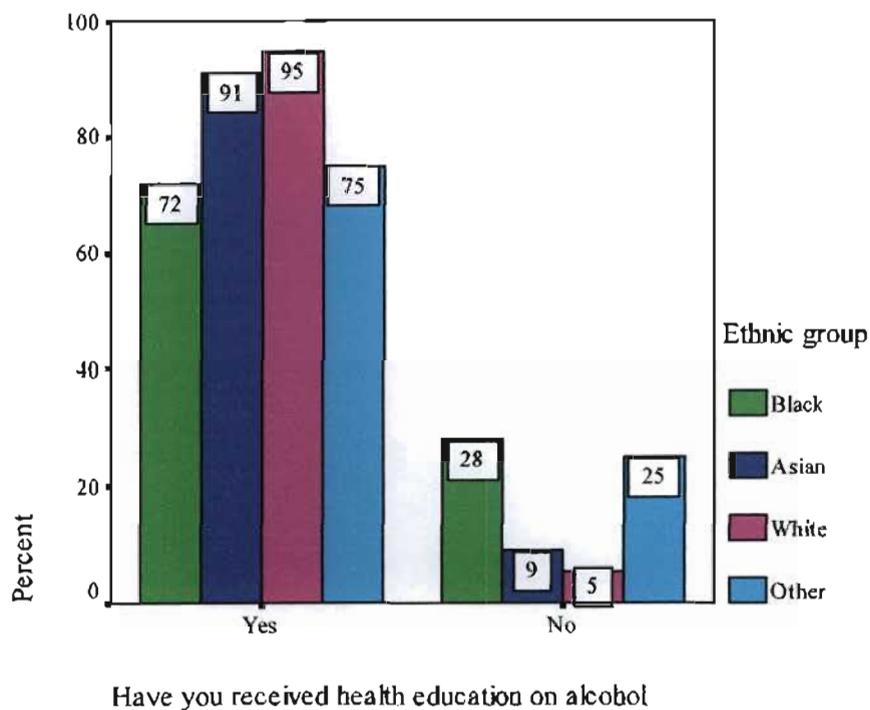


Figure 4.4.2: Exposure to Alcohol Education and Ethnicity

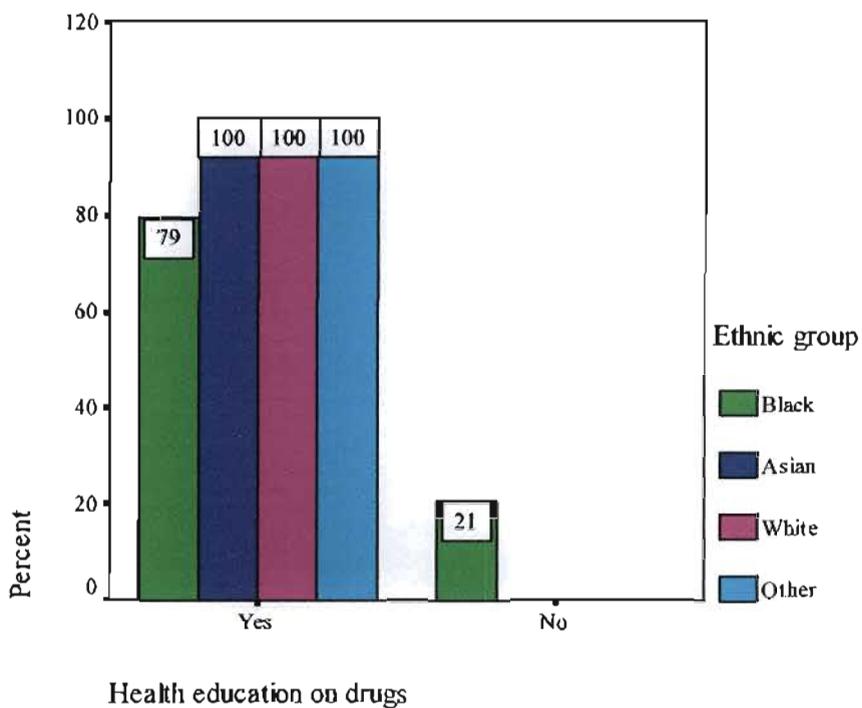


Figure 4.4.3: Exposure to Drug Abuse Education and Ethnicity

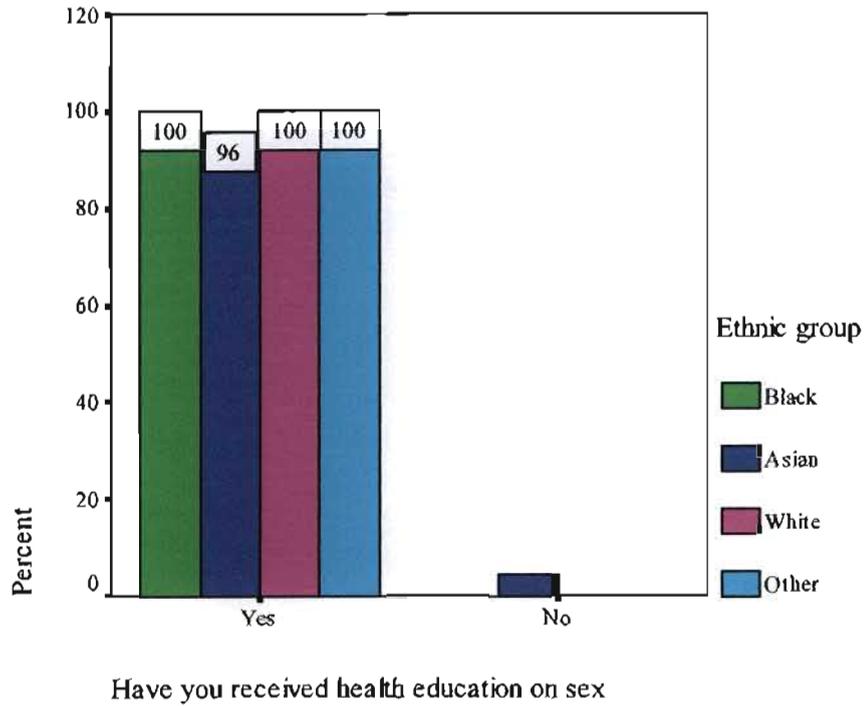


Figure 4.4.4: Exposure to Sex Education and Ethnicity

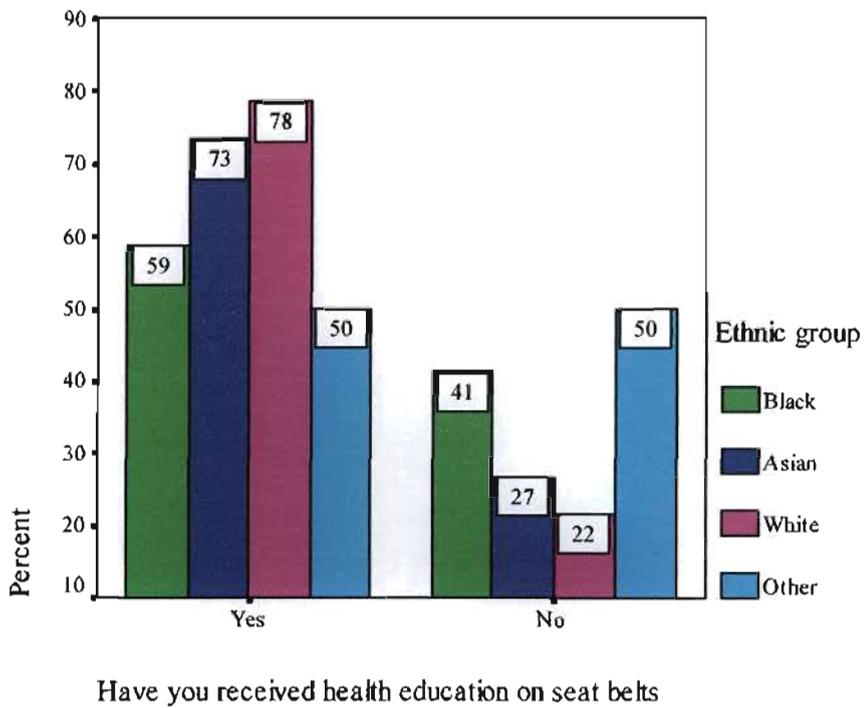


Figure 4.4.5: Exposure to Seatbelt Education and Ethnicity

d) Ethnicity, Health-Education and Risk-Taking Behaviour

What would make these differences relevant would be if the risk-taking behaviours exercised by these various ethnic groups related in some way to the areas in which they have or have not received health-education. It was, therefore, of great interest to the researcher to analyse these relationships further, to find out whether ethnicity may be confounding demographical variables. The results, as shown below in Tables 4.41 to 4.45, were as follows.

Smoking

If one looks at the cross-tabulation in Table 4.41 between ethnicity, smoking education and the incidence of smoking behaviour using Fisher's Exact Test ($N = 148$), there is a significant result in the Black group ($p = 0.013$). This shows that there is a significant difference in smoking behaviour between the educated and non-educated groups. Despite not having received health-education on smoking, fewer people smoke in this group (94.4%, $n = 17/18$) than in the educated group (63%; $n = 29/46$). From these results it appears that health-education encourages smoking.

If one looks within the other ethnic groups for levels of significance the Asians ($p = 0.302$), the Whites ($p = 1.000$) and 'Other' ($p = 1.000$); none of these results demonstrate significant differences in smoking behaviour between those who have received health-education and those who have not. For that reason one has to accept the null hypothesis that no difference exists between the educated and non-educated groups, and that any differences are most likely due to chance.

In cross-tabulating the gender of the participants with smoking cigarettes and ethnicity, it is found that in the Black group many more men (41%; $n = 13/32$) than women (16%; $n = 5/32$) smoke. However, what is more concerning is that despite 91% of the Asians having received health education on smoking, 29.5% still smoke. There is a very small gender difference in this group, namely 33% male ($n = 4/12$) and 28% female ($n = 9/32$).

Alcohol

In looking at the relationship between ethnicity, health-education on alcohol use and binge – drinking in Table 4.4.2, the following results were found ($N = 149$). Amongst the Blacks and the Asians slightly fewer people abuse alcohol if they have been exposed to education on that subject. However, in the White and ‘Other’ groups, more people drink if they have been exposed to alcohol education. However, using Fisher’s Exact Test, all the levels of significance range between $p = 0.4$ to 0.1 and, therefore, the null hypothesis that there is no difference between the educated and non-educated groups, has to be accepted. The number of non-educated students, in the naturally occurring control groups, was too small to give a meaningful result in these instances.

The same scenario exists in terms of the relationship between alcohol education, ethnicity and driving over the legal limit of alcohol ($N = 148$), whereby, all the results show levels of significance ranging between $p = 0.5$ to 1.000 and, therefore, a scientific comparison cannot be made between the educated and non-educated students, because the non-educated group is too small. However, in all four ethnic divisions the results show that those who have been exposed to health-education are less likely to drive over the legal limit of alcohol. Eighty six percent of the Black group ($n = 38/44$) do not drive when over the limit, neither do 92.5% of the Asians ($n = 37/40$), 71.4% of the Whites ($n = 25/35$) and 66.7% of the ‘Other’ group.

Drug Abuse

Cross-tabulating health-education on drugs and taking illegal substances with the ethnic group of the participants (N = 149), the following results were found as shown in Table 4.4.4. In all the ethnic groups except for the 'Other' group, the incidence of drug taking was low. Twenty five percent (n = 1/4) of the 'Other' group take drugs, however, its small size makes the results non-scientific. This result is followed by 9.8% of the Blacks (n = 5/51), 8.1% of the Whites (n = 3/37), and 6.8% of the Asian group (n = 3/44). Further statistical computation was not possible with the White, Asian and 'Other' group, since in these groups health-education was a constant, in that everyone has had health-education on drugs. In the Black group 20.3% (n = 13/64) have not had such education. There was no one in the non-educated group who takes drugs. The level of significance between the educated and non-educated groups was $p = 0.574$, therefore, the null hypothesis was accepted and any differences were considered to be due to chance.

Sexual Behaviour

Looking at the relationship between health-education on sex, having unprotected sex and the ethnic group of the participants (N = 148) (Table 4. 4.5), the majority in all instances said no to unprotected sex. Everyone in the Black group has had sex health-education and yet 36.5% (n = 23/63) still have unprotected sex. No further statistics could be computed in this group because having received health education on sex is a constant, in that there was no one who did not receive health education in this group. Two people out of the forty- four Asians said they had never had sex-education and yet did not partake of unprotected sex. This non-educated group was too small to be statistically significant ($p = 1.000$) thus, nothing more was explored statistically.

Amongst the Whites, no statistics were computed because having received health-education on sex was also a constant in that everyone had received sex education. The 'Other' group also did not allow for further statistical computation because having received health education on sex and having unprotected sex were constants, that is, everyone in this group had been exposed to sex education and no one had had unprotected sex.

Seatbelts

Analysing the relationship between health-education on the wearing of seatbelts and whether the participants buckle up in vehicles and the ethnic groups of the sample, the findings (shown in Table 4.46) were as follows. The valid percentage of this was 95.5% with 148 people answering all three questions. Among the Black group, 54.3% of the students ($n = 19/35$) do not wear seatbelts, despite having received health-education on this topic. In the non-educated group 67.9% ($n = 19/28$) do not buckle up. Although slightly more of the educated group buckle up than the non-educated group the difference is not very great. According to Fisher's Exact Test the level of significance ($p = 0.310$) means that the results lack confidence and that any difference between these groups is probably due to chance.

Among the Asians, 68.8% ($n = 22/32$) do not buckle up, despite having received such education. In the non-educated group 58.3% ($n = 7/12$) do not wear seatbelts. Thus, in this group education seems to encourage the non-wearing of seatbelts. However, the level of significance was $p = 0.722$ which shows no scientific basis for the difference in the two groups.

As with the Black group, the White group does seem to have benefited from the education received, since 62.1% ($n = 18/29$) of those who have received education do wear seatbelts, against 37.9% ($n = 11/29$) who do not. However, when one compares the educated group with the non-educated group the results are almost identical, in that 37.8% ($n = 3/8$) of the non-educated do not wear seatbelts while 62.2% ($n = 5/8$) do. The level of significance according to Fisher's Exact Test is $p = 1.000$, which shows that these results are probably due to chance and, therefore, not significant.

No confidence is shown in the results found in the 'Other' group either, since the level of significance is also $p = 1.000$. In this group all the results are identical in that 50% ($n = 1/2$) do and do not wear seatbelts in both groups. It is obvious, as previously stated, that the samples here are too small to make scientific comment.

Table 4.4.1: The Relationship between Ethnicity, Health Education and Smoking

Ethnic group of the participants	Health Education topics		Smoking cigarettes		Total	
			Yes	No		
Black	Have you received health education on smoking?	Yes	Frequency	17	29	46
			%	37.0%	63.0%	100.0%
		No	Frequency	1	17	18
			%	5.6%	94.4%	100.0%
	Total		Frequency	18	46	64
			%	28.1%	71.9%	100.0%
Asian	Have you received health education on smoking?	Yes	Frequency	13	27	40
			%	32.5%	67.5%	100.0%
		No	Frequency	0	4	4
			%	.0%	100.0%	100.0%
	Total		Frequency	13	31	44
			%	29.5%	70.5%	100.0%
White	Have you received health education on smoking?	Yes	Frequency	6	27	33
			%	18.2%	81.8%	100.0%
		No	Frequency	0	3	3
			%	.0%	100.0%	100.0%
	Total		Frequency	6	30	36
			%	16.7%	83.3%	100.0%
Other	Have you received health education on smoking?	Yes	Frequency	1	2	3
			%	33.3%	66.7%	100.0%
		No	Frequency	1	0	1
			%	100.0%	.0%	100.0%
	Total		Frequency	2	2	4
			%	50.0%	50.0%	100.0%

Ethnicity	p value
Black	*0.013
Asian	0.302
White	1.000
Other	1.000

* Statistically significant ($p < 0.05$)

Table 4.4.2: The Relationship between Ethnicity, Health Education and Binge-Drinking

Ethnic group of the participants	Health Education topics		Drinking alcohol in succession			Total
			Yes	No		
Black	Have you received health education on alcohol?	Yes	Frequency	21	24	45
			%	46.7%	53.3%	100%
		No	Frequency	6	13	19
			%	31.6%	68.4%	100.0%
	Total	Frequency	27	37	64	
		%	42.2%	57.8%	100.0%	
Asian	Have you received health education on alcohol?	Yes	Frequency	14	26	40
			%	35.0%	65.0%	100.0%
		No	Frequency	2	2	4
			%	50.0%	50.0%	100.0%
	Total	Frequency	16	28	44	
	%	36.4%	63.6%	100.0%		
White	Have you received health education on alcohol?	Yes	Frequency	19	16	35
			%	54.3%	45.7%	100.0%
		No	Frequency	2	0	2
			%	100.0%	.0%	100.0%
	Total	Frequency	21	16	37	
	%	56.8%	43.2%	100.0%		
Other	Have you received health education on alcohol?	Yes	Frequency	2	1	3
			%	66.7%	33.3%	100.0%
		No	Frequency	1	0	1
			%	100.0%	.0%	100.0%
	Total	Frequency	3	1	4	
	%	75.0%	25.0%	100.0%		

Ethnicity	p value
Blacks	0.406
Asians	0.614
Whites	0.495
Other	1.000

Table 4.4.3: Relationship between Ethnicity, Health Education and Driving over the Legal Alcohol Limit

Ethnic group of the participants	Health Education topics		Driving over legal limit of alcohol		Total	
			Yes	No		
Black	Have you received health education on alcohol?	Yes	Frequency	6	38	44
			%	13.6%	86.4%	100.0%
		No	Frequency	1	18	19
			%	5.3%	94.7%	100.0%
	Total		Frequency	7	56	63
			%	11.1%	88.9%	100.0%
Asian	Have you received health education on alcohol?	Yes	Frequency	3	37	40
			%	7.5%	92.5%	100.0%
		No	Frequency	0	4	4
			%	.0%	100.0%	100.0%
	Total		Frequency	3	41	44
			%	6.8%	93.2%	100.0%
White	Have you received health education on alcohol?	Yes	Frequency	10	25	35
			%	28.6%	71.4%	100.0%
		No	Frequency	1	1	2
			%	50.0%	50.0%	100.0%
	Total		Frequency	11	26	37
			%	29.7%	70.3%	100.0%
Other	Have you received health education on alcohol?	Yes	Count	1	2	3
			%	33.3%	66.7%	100.0%
		No	Frequency	0	1	1
			%	.0%	100.0%	100.0%
	Total		Frequency	1	3	4
			%	25.0%	75.0%	100.0%

Ethnicity	p value
Black	0.664
Asians	1.000
White	0.512
Other	1.000

Table 4.4.4: The Relationship between Ethnicity, Health Education and Drug Abuse

Ethnic group of the participants	Health Education topics		Taking illegal substances		Total	
			Yes	No		
Black	Health education on drug abuse?	Yes	Frequency	5	46	51
			%	9.8%	90.2%	100.0%
		No	Frequency	0	13	13
			%	.0%	100.0%	100.0%
	Total	Frequency	5	59	64	
%	7.8%	92.2%	100.0%			
Asian	Health education on drug abuse?	Yes	Frequency	3	41	44
			%	6.8%	93.2%	100.0%
		Total	Frequency	3	41	44
	%	6.8%	93.2%	100.0%		
White	Health education on drug abuse?	Yes	Frequency	3	34	37
			%	8.1%	91.9%	100.0%
		Total	Frequency	3	34	37
	%	8.1%	91.9%	100.0%		
Other	Health education on drug abuse?	Yes	Frequency	1	3	4
			%	25.0%	75.0%	100.0%
	Total	Frequency	1	3	4	
%	25.0%	75.0%	100.0%			

Ethnicity	p value
Black	0.574
Asians	x
Whites	x
Other	x

x Statistics could not be computed because there was no one who had not received health-education on drug abuse in those ethnic groups.

Table 4.4.5: The Relationship between Ethnicity, Health Education and Sex

Ethnic group of the participants	Health Education Topics			Having unprotected sex		Total
				Yes	No	
Black	Have you received health education on sex?	Yes	Frequency	23	40	63
			%	36.5%	63.5%	100.0%
	Total		Frequency	23	40	63
			%	36.5%	63.5%	100.0%
Asian	Have you received health education on sex?	Yes	Frequency	5	37	42
			%	11.9%	88.1%	100.0%
		No	Frequency	0	2	2
			%	.0%	100.0%	100.0%
	Total		Frequency	5	39	44
			%	11.4%	88.6%	100.0%
White	Have you received health education on sex?	Yes	Frequency	4	33	37
			%	10.8%	89.2%	100.0%
	Total		Frequency	4	33	37
			%	10.8%	89.2%	100.0%
Other	Have you received health education on sex?	Yes	Frequency		4	4
			%		100.0%	100.0%
	Total		Frequency		4	4
		%		100.0%	100.0%	

Ethnicity	p value
Blacks	1.000
Asians	x
Whites	x
Other	x

x Statistics could not be computed because there was no one who had not received health-education on sex in those ethnic groups.

Table 4.4.6: The Relationship between Ethnicity, Health Education and Seatbelt Use

Ethnic group of the participants	Health Education Topics		Travel in vehicles without buckling up		Total	
			Yes	No		
Black	Have you received health education on belts?	Yes	Frequency	19	16	35
			%	54.3%	45.7%	100.0%
		No	Frequency	19	9	28
			%	67.9%	32.1%	100.0%
	Total		Frequency	38	25	63
			%	60.3%	39.7%	100.0%
Asian	Have you received health education on belts?	Yes	Frequency	22	10	32
			%	68.8%	31.3%	100.0%
		No	Frequency	7	5	12
			%	58.3%	41.7%	100.0%
	Total		Frequency	29	15	44
			%	65.9%	34.1%	100.0%
White	Have you received health education on belts?	Yes	Frequency	11	18	29
			%	37.9%	62.1%	100.0%
		No	Frequency	3	5	8
			%	37.5%	62.5%	100.0%
	Total		Frequency	14	23	37
			%	37.8%	62.2%	100.0%
Other	Have you received health education on belts?	Yes	Frequency	1	1	2
			%	50.0%	50.0%	100.0%
		No	Frequency	1	1	2
			%	50.0%	50.0%	100.0%
	Total		Frequency	2	2	4
			%	50.0%	50.0%	100.0%

Ethnicity	p value
Blacks	0.310
Asians	0.722
Whites	1.000
Other	1.000

Socio-Psychological Variables

a) Support

Socio-psychological variables that could impact on the relationship between health-education and health-compromising behaviour include the influence of supportive individuals. Those who felt they had been encouraged to live a healthy lifestyle made up 90.3% (n = 140) of the total sample (N = 155). However, only 67.7% (n = 105) felt they do live a healthy lifestyle.

Looking further at support as a variable, which may be influencing this relationship, the following was found. The valid percentage (98.7%, N = 153) shows a very small attrition rate. Of these, 98% (n = 150) said they had received ongoing support in relation to the prevention of risk-taking and/or health-compromising behaviour. In response to the source of this support, the majority 77.3% (n = 119) said it was parental, followed closely by teachers with 76% (n = 117). Peers were next with 50% (n = 77), then health-educators (40.9%, n = 63), community leaders (38.3%, n = 55), nurses (37%, n = 57), other members of the family (35.7%, n = 55), doctors (31.8%, n = 49), siblings (29.9%, n = 46), and lastly 'others' not specified (4.5%, n = 7). Of those who compensate their health by partaking in risky health behaviour, only 9.7% (n = 15) said they do not get emotional support from those who gave them the health-education. The same results were attributed to those who said they grew up in an unhappy home and to those who said they did not grow up in a supportive environment (9.7%, n = 15). Thus lack of support does not seem to be a confounding variable.

b) Cultural Norms

Differing cultural norms pertaining to risk were considered by 12.9% (n = 20) to be playing a role and supporting the risky health behaviour.

c) Personality

Personality as a modifying variable amongst those who take risks was investigated with 14.2% (n = 22) admitting to being the rebellious type, and 27.7% (n = 43) saying that they enjoy taking risks. Both these questions were deemed to be non-applicable by 9.7% (n = 15) of the total sample (N = 155), since they do not think they take risks.

d) Self-Esteem

Other socio-psychological variables such as self-esteem, the nature of adolescence and the influence of peer pressure were also explored. In connection with those who feel they do not live a healthy life, only 5.2% (n = 8) feel that not having a good self-image has influenced this behaviour. However, among those who acknowledge taking specific risks, 16.1% (n = 25) feel that a poor self-esteem is playing a role. Those who have a poor self esteem because they feel inadequate financially include 12.9% of the sample (n = 20, N = 155).

e) Nature of Adolescence

In response to the questions relating to the nature of adolescence, 28.4% (n = 44) said they would rather have fun now and not worry about what might happen in the future. Twenty nine point seven percent of the students (n = 46) do not believe that anything bad will happen to them, while 12.3% (n = 19) feel that how they are behaving will not harm them. Thirty four point eight percent of the students (n = 54) feel it is natural for young people to take health-risks. Nine percent of the participants (n = 14) felt that their destiny has already been decided and that nothing they do can influence that outcome.

f) Peer Pressure

The influence of peer pressure on the unhealthy behaviour of the participants was acknowledged by 14.2% (n = 22) of them. Twenty one point three percent (n = 33) said they

behave in a way that is risky to their health in order to be accepted by their friends and 9.7% (n = 15) to be accepted by their family.

g) Time of Exposure to Health-Education

In response to when this health-education was received in the participants' lives, the vast majority, 91% (n = 141) said it had been during their high school years, followed by the senior primary phase with 61.9% (n = 96). Health-education received during tertiary education amounted to 58.1% (n = 90) of the sample, 32.9% (n = 51) of the students during junior primary and 11% (n = 17) in the pre-school years. The latter period may be underestimated since many people do not have clear memories of those early years.

Structural Variables

a) Content and Delivery of Health Knowledge

The structural variables that could possibly be impacting on this relationship between health-education and health-compromising behaviour were analysed. Firstly, the content and delivery of health knowledge was explored by asking the students to describe their personal health experiences. Eighty-nine participants (58.9%, N = 151)) said they received information only, while 39.1% (n = 59) said their education involved an interactive approach. A small percentage (21.2%, n = 32) said they were given dry facts only and 25.8% (n = 39) said they were personally involved in their education process. In response to what approach they felt would be the most suitable, 84.3% (n = 129, N = 153) said they did not want information only. This was supported by a response of 85.6% (n = 131) of the participants, who felt that the most suitable approach would be to be involved in the education process, through interaction with the educator. When asked whether the health-education/information

they had received was good in terms of content and method of delivery, 81.2% (n = 125, N = 154) said it was.

b) Knowledge of Consequence of Risk

The second structural variable is the knowledge that the person has of the consequences of risk. In response to this question 89.5% (n = 137, N = 153) acknowledged smoking as having negative health consequences; alcohol was acknowledged by 75.8% (n = 116); illicit drugs by 90.2% (n = 138); driving recklessly by 83% (n = 127); not wearing a seatbelt or helmet by 64.7% (n = 99) and having unprotected sex by 96.1% (n = 147).

Thus, as highlighted in Figure 4.4.6, unprotected sex is seen as the behaviour with the most negative consequences followed by illicit drugs; smoking nicotine; driving recklessly; drinking alcohol and lastly, not wearing a seatbelt or helmet.

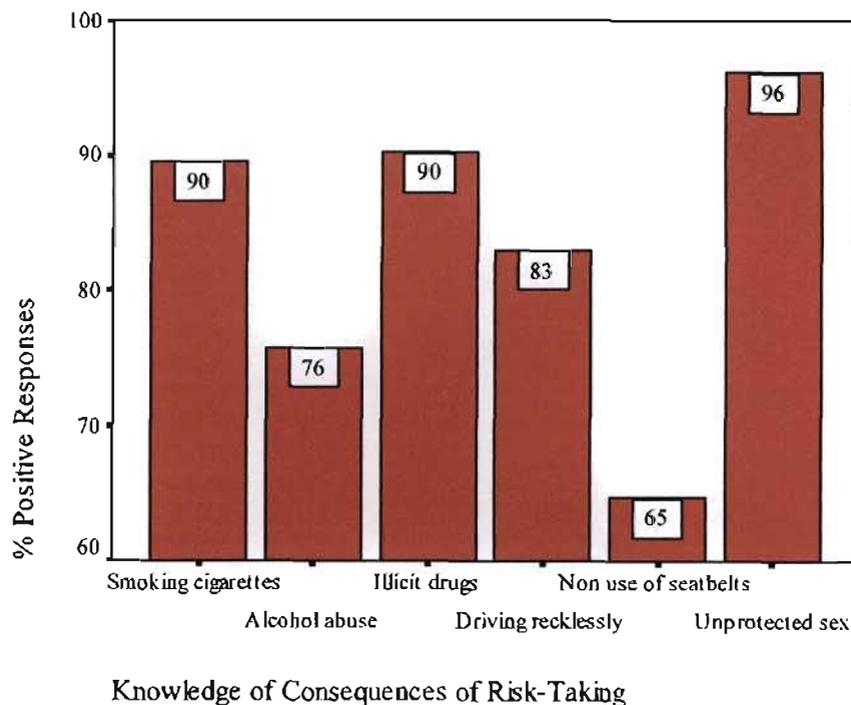


Figure 4.5: Knowledge of the Consequences of Risk-Taking pertaining to the Different Behaviour Topics

4.4.5 OBJECTIVE 5: PERCEPTION OF RISK

Objective five sought to determine whether South African adolescents perceived themselves to be at risk as a consequence of their behaviour. The frequency of those feeling at risk was 52.7% (n = 79/150). In cross-tabulating exposure to health-education and feeling at risk of infection, pregnancy, injury, disability or death as a result of possibly partaking in any of the health-compromising behaviours, the findings, illustrated in Table 5.1 to Table 5.5, were as follows. The valid percentage for this question was 91% (N = 141).

Smoking

In relation to those who have received health-education on smoking, as shown in Table 5.1 below, 56% (n = 65/116) said they do feel at risk. In the non-educated group 52% (n = 13/25) said they feel at risk. Thus, slightly more in the educated group felt at risk. However, according to further exploration using Chi Square tests, the exact significance was $p = 0.825$, which indicates that in both groups the level of feeling at risk was greater than not feeling at risk. Thus, education cannot be said to be the defining variable.

Alcohol

In analysing health-education on alcohol and feeling at risk, as seen in Table 5.2, 55.8% (n = 67/120) of the educated group as against 54.5% (n = 12/22) of the non-educated group said they feel at risk. The difference again is minimal and the level of significance ($p = 1.000$) does not inspire confidence in the two groups being scientifically different. Thus, once again, education cannot be seen to be the variable influencing these students' perceptions of risk.

Drug Abuse

On the subject of drug abuse and feeling at risk, 56.5% (n = 74/131) said they do feel at risk in the educated group compared with 45.5% (n = 5/11) in the non-educated group. This is also a very small difference and one that is not statistically significant (p = 0.538) as illustrated in Table 5.3 below.

Sexual Behaviour

In cross-tabulating those who have received health-education on sex and feeling at risk of infection, shown in Table 5.4, 56.4% (n = 79/140) said they feel at risk, which is only marginally higher than those who did not feel at risk in the educated group. No one in the non-educated group felt at risk (n = 2/2). The level of significance between the two groups is p = 0.195 and, therefore, not noteworthy.

Seatbelts

Looking at the relationship between education on the wearing of seatbelts and feeling at risk, 58.8% (57/97) of the educated group said they feel at risk. Again this is slightly higher than those who did not feel at risk (41.2%, n = 40/97). There is, however, an insignificant difference between the educated and non-educated groups (p = 0.282), as indicated in Table 5.5. Slightly more people in the non-educated group did not feel at risk through not wearing seatbelts (51.1%, n = 23/45). Thus, it does seem that education has made a slight difference, but one that is not large enough to be statistically significant.

Table 5.1: The Relationship between Health Education on Smoking and Feeling at Risk

			Feeling at risk of infection,etc		Total	p value
			Yes	No		
Have you received health education on smoking?	Yes	Frequency	65	51	116	0.825
		%	56.0%	44.0%	100.0%	
	No	Frequency	13	12	25	
		%	52.0%	48.0%	100.0%	
Total		Frequency	78	63	141	
		%	55.3%	44.7%	100.0%	

Table 5.2: The Relationship between Health Education on Alcohol and Feeling at Risk

			Feeling at risk of infection,etc		Total	P value
			Yes	No		
Have you received health education on alcohol?	Yes	Frequency	67	53	120	1.000
		%	55.8%	44.2%	100.0%	
	No	Frequency	12	10	22	
		%	54.5%	45.5%	100.0%	
Total		Frequency	79	63	142	
		%	55.6%	44.4%	100.0%	

Table 5.3: The Relationship between Health Education on Drug Abuse and Feeling at Risk

			Feeling at risk of infection,etc		Total	p value
			Yes	No		
Health education on drugs	Yes	Frequency	74	57	131	0.538
		%	56.5%	43.5%	100.0%	
	No	Frequency	5	6	11	
		%	45.5%	54.5%	100.0%	
Total		Frequency	79	63	142	
		%	55.6%	44.4%	100.0%	

Table 5.4: The Relationship between Health Education on Sex and Feeling at Risk

			Feeling at risk of infection,etc		Total	p value
			Yes	No		
Have you received health education on sex	Yes	Frequency	79	61	140	0,195
		%	56.4%	43.6%	100.0%	
	No	Frequency	0	2	2	
		%	.0%	100.0%	100.0%	
Total		Frequency	79	63	142	
		%	55.6%	44.4%	100.0%	

Table 5.5: The Relationship between Health Education on Seatbelts and Feeling at Risk

			Feeling at risk of infection,etc		Total	p value
			Yes	No		
Have you received health education on belts?	Yes	Frequency	57	40	97	0,282
		%	58.8%	41.2%	100.0%	
	No	Frequency	22	23	45	
		%	48.9%	51.1%	100.0%	
Total		Frequency	79	63	142	
		%	55.6%	44.4%	100.0%	

In response to whether the students would like to be living a healthy lifestyle, 32.3% (n = 50/155) said they would. More than half (66.5%, n = 103) said it was not applicable, as they already perceived themselves to be living a healthy lifestyle.

4.4.6 OBJECTIVE 6: BENEFITS OF HEALTH EDUCATION PROGRAMMES

The last objective was to establish whether existing health-education programmes are meeting the needs of adolescents, in terms of their risk-taking tendencies. In response to

whether the students have been exposed to well-developed health-education programmes, 69.7% (n = 108/155) said they had.

The programmes met the needs of 38.6% (n = 59, N = 153), while 30.7% (n = 47) said they had not met their needs, and 30.7% (n = 47) said the question was not applicable, presumably because they had not had exposure to such programmes. Since, 30.7% (n = 47) of the total sample that answered these questions had not been exposed to health-education programmes, the number of participants is N = 106. Two people did not answer the question at all, hence the two missing values.

The programmes contained relevant material that encouraged 44.4% (n = 68) not to take risks, while 24.8% (n = 38) said they did not find the content relevant. As shown in Tables 6.1 and 6.2, statistically significant results were only found in relation to smoking (p = 0.019) and binge-drinking (p=0.036).

The information was practical and easy to understand according to 59.5% (n = 91), but not according to 9.8% (n = 15) of the students. The information was appropriate to the culture of 37.3% (n = 57), but not to 32% (n = 49) of the participants.

The programmes were sensitive to people's different sexual orientations, according to 28.1% (n = 43), whereas 41.2% (n = 63) thought they were not. It was felt by 51.6% (n = 79) that the information was appropriate for their age at the time, while 17.6% (n = 27) said that it was inappropriate.

The programmes motivated 32.7% (n = 50) emotionally, socially and personally not to take health risks; while almost an equal number said they did not (36.6%, n = 56). A statistically significant result was found in relation to binge-drinking and educational programmes (p = 0.016), showing a positive relationship (Table 6.3).

The programmes invited personal involvement according to 27.5% (n = 42) of the participants, whereas 41.8% (n = 64) said they had not experienced programmes that encouraged their input.

The programmes were thought to be well delivered by 41.2% (n = 63) of the students but 28.1% (n = 43) did not find this to be the case. Sixty-nine of the participants (45.1%) found the programmes to be adolescent friendly and fun, while 24.2% (n = 37) said they were not.

Thus, it can be seen that there is a mixed reaction to the programmes to which the students have been exposed. Equal numbers felt they had and had not met their needs; slightly more people felt the programmes contained relevant material and a large majority agreed that they were practical and easy to understand. Equal numbers felt that they had and had not been culturally appropriate. More felt that they were not sensitive to people's sexual orientations and a fair majority felt that they were age appropriate. Equal numbers felt that they were and were not motivating to not take health risks. Slightly fewer said they did not encourage personal input while slightly more found the programmes to be well delivered, adolescent friendly and fun.

Looking at the influence of relevant material in these health programmes in decreasing risk-taking, cross tabulated with the various health-compromising behaviours, the following results were found. Fisher's Exact Test shows a significant result relating to smoking ($p = 0.019$), as shown in Table 6.1. Considerably more students, who felt the programmes contained relevant material that encouraged them not to take risks, did not smoke (80.3%, $n = 53/66$).

Table 6.1: Relevant Material that Discouraged Risk-Taking Behaviour versus Smoking

			Smoking cigarettes		Total	p value
			Yes	No		
Relevant material that encouraged me not take health risks	Yes	Count	13	53	66	*0.019
		Row %	19.7%	80.3%	100.0%	
	No	Count	15	20	35	
		Row %	42.9%	57.1%	100.0%	
Total		Count	28	73	101	
		Row %	27.7%	72.3%	100.0%	

* Statistically significant ($p < 0.05$)

Binge-drinking also showed a statistically significant result ($p = 0.036$) in the relationship with relevant programme materials, illustrated in Table 6.2. Sixty point six percent ($n = 40/66$) of the students did not drink four or more tots of alcohol in succession (binge-drinking), possibly as a result of being exposed to educational material which they found relevant.

Table 6.2: Relevant Material that Discouraged Risk-Taking Behaviour versus Binge-Drinking

			Drinking alcohol in succession		Total	p value
			Yes	No		
Relevant material that encouraged me not take health risks	Yes	Count	26	40	66	*0.036
		Row %	39.4%	60.6%	100.0%	
	No	Count	22	13	35	
		Row %	62.9%	37.1%	100.0%	
Total		Count	48	53	101	
		Row %	47.5%	52.5%	100.0%	

* Statistically significant ($p < 0.05$)

Thus, smoking and binge-drinking were the only risky behaviours found to be possibly influenced by the presentation of relevant health-education material.

In terms of those who felt that the programme had motivated them emotionally, socially and personally not to take health risks, as shown in Table 6.3 below; there was only a significant result in relation to binge-drinking ($p = 0.016$). This result shows that 66.0% of those who felt motivated by the programme not to take health risks do not binge-drink.

Table 6.3: Programme Motivated Students Emotionally, Socially and Personally not to take Health Risks versus Binge-Drinking

			Drinking alcohol in succession		Total	p value
			Yes	No		
Programme motivated me emotionally, socially & personally not to take health risks	Yes	Count	16	31	47	*0.016
		Row %	34.0%	66.0%	100.0%	
	No	Count	32	22	54	
		Row %	59.3%	40.7%	100.0%	
Total		Count	48	53	101	
		Row %	47.5%	52.5%	100.0%	

* Statistically Significant ($p < 0.05$)

4.4 Conclusion

Overall the above findings are complex and not always as one would expect. However, they have adequately answered the six objectives of the study. In order to have a clearer understanding of the relationship between health-education and health-compromising behaviour, these results need to be put into the wider context of the existing literature, and subjected to further discussion and interpretation.

Chapter 5

DISCUSSION OF THE RESULTS

RECOMMENDATIONS AND CONCLUSIONS

5.1 Introduction

The results presented in Chapter Four are discussed and interpreted against the background of the literature reviewed, and in the context of the conceptual framework. These findings are examined in relation to the six objectives of the research in an attempt to answer the problem statement. In addition, attention is given to the strengths and limitations of the study. Recommendations for possible further research, as well as ideas for improvement in service and policy, are also given. An overview of the main findings, relating to the research hypothesis concludes the chapter.

5.2 Discussion of the Sample

The characteristics of the sample show that the majority of participants were at an age where they should have had ample opportunity for exposure to health-education. The fact that they were all of a similar age means that differing levels of maturity should not have biased the sample. While there were slightly more females than men in the sample, and more Asians than Whites, these factors are representative of the demographics of the selected campus. These sample characteristics, therefore, met the desired outcome of the quota sampling strategy.

Almost all the participants, except for three, identified themselves as being affiliated to a religion of some sort. Religion was included as a possible confounding variable. However, since only three people said they were not religious, the naturally occurring control group would have been too small to make a meaningful observation.

In terms of home language, the majority spoke English, followed closely by Zulu/Xhosa. Afrikaans and Sesotho were the least spoken home-languages, amongst this sample. This was to be expected according to the sample's ethnic distribution, and was included in the demographic questions as a way of establishing reliability of the tool. While Blacks made up the majority of participants ($n = 68$), the number of Whites and Asians together ($n = 82$), was greater than the Black group and, therefore, would account for English being the dominant home-language in this sample. The total number of responses to this question was more than 155 (total number of sample participants) because, as can be seen from the results, some people speak more than one language at home.

The vast majority of sample members had been exposed to government schooling as opposed to private or home schooling. Almost three quarters of the students were in the process of obtaining their first degrees, with one quarter having completed the undergraduate phase. Only six students had completed a postgraduate qualification. This was in keeping with the age distribution of the sample, since most students were between seventeen and twenty one years old and, therefore, likely to be in the undergraduate phase. These results further confirmed the reliability of the tool.

More than three quarters of the sample members were raised and educated in KwaZulu Natal, with only a very small representation from the other provinces. Although it would have been desirable to have a sample that could be generalised to the rest of the country, this would have been a very difficult objective to achieve. The researcher was dependent on the availability of willing students and, therefore, did not build geographical distribution into the quota sampling strategy.

The above demographic findings of age, gender, ethnic group, religion and context/setting of the participants, is underpinned by Rosenstock's Health Belief Model (1974). An adapted version of this model is illustrated in Figure 2.1.

5.3 Discussion of the Findings

5.3.1 Objective One:

To determine whether adolescents in South Africa are receiving health-education that deals with the issues of risk-taking behaviour.

It is reassuring to discover that health-education on the subjects of sex, drugs, alcohol and smoking has reached more than 80% of the students on this campus. Rosenstock in his Health Belief Model (1974) (Figure 2.1) describes what he calls '*cues to action*' in influencing the '*likelihood of action*'. In this instance health knowledge is one of the '*cues to action*' that influences healthy behaviour practices. However, it is of concern that only 68% of the participants have been exposed to health-education on the risks of failing to use seatbelts and helmets when travelling on the country's roads. This could be a contributing factor to the unacceptably high number of road injuries and deaths which South Africa

experiences daily. According to Veven Bisetty reporting in the Daily News (20 September, 2004), more than 1,420 people lost their lives in almost 100,000 accidents on provincial roads in 2003. The same report showed that in 2002, 16,316 people were injured as a result of motor vehicle accidents in KwaZulu Natal. The Arrive Alive Campaign (2004) showed the high levels of mortality and morbidity amongst teenagers on the roads to be as a consequence of reckless driving and failure to wear seatbelts.

The discrepancy in the results of this thesis indicates that the emphasis of health-education in KwaZulu Natal has been selective, concentrating on the more obvious issues of unprotected sex and the abuse of substances. Perhaps it is because these issues are seen to act on the lives of others as well and, therefore, are considered more important. In addition there is still controversy in the minds of some people, including the educators, as to the advantages of wearing seatbelts/helmets. It is the opinion of the researcher that conflicting messages abound in this regard, mainly through ignorance and the natural tendency of many people to look at anecdotal evidence rather than at the statistics.

Another reason for not giving sufficient education on the wearing of protective devices could be because historically, South Africa has had a casual attitude towards travelling on the roads. It is not uncommon to see small children standing up on car seats, both in the back and front of vehicles. Parents themselves are seen not wearing seatbelts, and seem happy for their children not to either. People, including small children, travel in the back of open vehicles completely unprotected even on national roads. These common sights show that there is a general disregard for and/or ignorance of the consequences of this form of risk-taking behaviour.

Thus, many children in South Africa are socialized from a very young age into not understanding the need to be self protective. It is, therefore, not surprising that the number of participants in this study who have been exposed to such education is lower than that of exposure to education on other health-compromising behaviours. In addition, it is the opinion of the researcher, that because school children and even many university students are not drivers, the education regarding the wearing of seatbelts is overlooked. This happens, possibly because it is deemed unnecessary. For some reason, the fact that all passengers in vehicles need to wear seatbelts, even when travelling in the back, seems to have been lost.

5.3.2 Objective Two:

To identify sources of health-education

Schools have provided the greatest number of adolescents in this sample with health-education (92.3%) followed surprisingly by the media (81.3%). While it is expected of schools in South Africa to give health-education, the media is commonly thought to have a negative influence on young minds. Many films and television productions show actors smoking or having sexual liaisons in irresponsible situations; and rarely demonstrate safe sex. Actors drinking alcohol and then getting into vehicles without buckling up, as well as scenes of excessively fast driving and the survival of passengers from mangled vehicles is all too well known. It is, therefore, very positive to find that despite these negative influences, the media is also giving positive messages in the form of good health behaviour.

These findings bode well for organizations in South Africa, such as 'loveLife' (2005), which combines a sustained high-powered multi-media campaign with nationwide youth-friendly sexual health services, school-based, and community-level outreach and support programmes

for youth. Other organizations, such as the 'Arrive Alive' (2004) campaign, also depend heavily on the media for conveying their messages regarding safe travelling behaviour. Both these organizations make use of billboards, radio, television, newspapers and small magazines. The South African Broadcasting Company (SABC) also relay a good selection of radio talk shows and television productions, relating to health-education, that could be contributing to the positive influence of the media found in these results. Productions such as '3 Talk', 'Your Choice', 'Take 5' and 'Soul Buddies' are a few examples of such health-orientated programmes.

The comparatively low level of parental involvement (68.4%) in their children's health-education is also surprising, since, it is commonly recognized that the best place for a child to learn about health-compromising issues is in their own home and preferably from their parents. Research has shown that teenagers do respect their parents' opinions (Fogelman 1996). The importance of parental involvement and recognition of parents' opinions is endorsed in multiple studies (Hill 1993; Noller & Callam 1991; Steinberg 1990). The literature goes on to say that parental guidance, support and mutual respect are essential during adolescence and that both parents and adolescents need to work together to redefine their relationship (Youniss & Smollar 1985).

The difference that exists between the pro-activity of the schools and the parents could be attributed to the fact that parents do not get as involved as they should, because they believe that the schools are giving the health-education. Schools in South Africa have life-skills programmes in place, usually beginning in the fifth grade, when the children are approximately eleven years old. In addition, organizations such as Feed the Babies Fund,

Teenagers Against Drug Abuse, South African National Council on Alcohol and Drug Abuse, among others, target the schools giving health-education on risk-taking behaviours. The parents, therefore, may feel they do not need to be giving health-education as well. Discussing sensitive subjects such as sex also poses personal difficulties for many parents. In certain African cultures talking about sex is taboo (Harrison 2001; UNAIDS 1997). This culture of silence and taboos surrounding talking about sex makes it difficult, not only for parents to give sex education to their children, but also for young couples to negotiate safer sex.

Parents, who are poor role models, in that they are compromising their own health in some way, have additional problems in educating their children. According to Durr-Fritschen cited in the Daily News (2004, p.24), “parents in the eyes of children, are their leaders and leaders should lead by example.” Parents need to believe that their own risky health behaviour is wrong in order to have any positive influence on their children. Even if they do acknowledge this, their health-compromising behaviour could still be influencing their inability to convince their children of the need for good health behaviour.

Findings from a survey into the behaviour of South Africa’s youth point to a lack of supervision and example-setting by parents (Daily News 2004). Thus, lack of skills on the part of the parents and/or giving double messages to children could also be contributing towards these comparatively low results.

The fact that more nurses (47.1%) than doctors (27.1%) have given health-education to this sample could be attributed to a higher patient contact with clinic nurses by adolescents, rather

than the lack of involvement in health-education by the doctors. Adolescents in South Africa are also more likely to go to state run clinics for contraceptive advice than to their family doctors, since it is free and more anonymous. Clinics also provide health-education programmes from time to time, which most family practitioners do not.

However, surveys in the global literature do point to the fact that few physicians were found to provide smoking prevention counselling, particularly prior to and during early adolescence (Makni et al. 2002). These results concur with previous studies in other parts of the world, which indicate that physicians are missing opportunities during their interactions with young people to prevent tobacco use. In addition, few doctors were found to be giving health-education on the use of seatbelts to their young patients. The United States Preventive Services Task Force recommended that physicians routinely counsel all patients to wear seatbelts. However, concurring with this research, 54% of the sample under survey reported not wearing seat belts.

It is also interesting to note that religious organizations (41.3%) and friends (49%) are providing almost as much health-education as the clinic nurses (47%). This could be because the greatest majority of this sample (98%) affiliated themselves to some form of religious belief; and the role of friends is very important in the adolescent years. All the major religions in South Africa, namely, Christianity, Hinduism, Islam and Judaism promote health-seeking behaviour; while friends provide a significant platform for discussion and mutual support. This interpretation is supported by Kjellstrand & Dosseter (1992), who say that the abovementioned religions encourage and support most measures to promote health and longevity. Certain religious groups, such as the Catholic Institute of Education (CIE), the

Durban Christian Centre, Doctors for Life and Focus on the Family run health-education outreach programmes in schools and elsewhere. Thus, health-education is not just imparted as part of the religion's ethos but also in the form of organized programmes. The efforts of religious groups such as these organizations are obviously paying off, in that nearly half the sample attributed their source of health-education knowledge to religion.

All of the above sources of health-education can be classified by Rosenstock's Health Belief Model (1974) (Figure 2.1) as '*cues to action*' in that they comprise of the motivating influences that impact on the '*likelihood of action*', in this case healthy behaviour practices.

5.3.3 Objective Three:

To establish if those adolescents who have been exposed to health-education take fewer risks

As an introduction to discussing this objective, it is interesting to note which risk-taking behaviours are the most frequent in this sample. Rosenstock (1974) in his Health Belief Model (Figure 2.1) describes the importance of the influence of knowledge and motivation on behaviour. The non-use of seatbelts/helmets ranks the highest amongst the risk-taking behaviours (56%). This correlates with the fact that health-education pertaining to the use of seat-belts is also the lowest (67.7%). In this instance it seems that lack of education is influencing the fact that fewer seatbelts/helmets are worn amongst these participants. However, having cross tabulated, the insignificant result ($p = 0.489$) shows that there is no real difference between the educated and non-educated groups. In both groups the wearing of seatbelts is very low. Therefore, education does not seem to play a role in this relationship, in

that there is no real difference between the two groups, and more people travel without seatbelts in the educated group.

Driving above the speed limit (50.3%) closely follows the lack of being self protective when travelling in vehicles. These results show that disregard for the rules of the road are highly prevalent in this sample of young people. This combination of fast driving and failure to buckle up is most likely contributing to South Africa's high levels of morbidity and mortality on the country's roads. According to the editor's report given in the Daily News (20 Sept. 2004), "the main reasons for road accidents is speeding, followed by drunken driving and a disregard for road rules and regulations." Another report in the same newspaper given by the director for the provincial Road Traffic Inspectorate (Maistry 2004), says that "excessive speed is blamed for 70% of the 91,641 accidents that occurred in KwaZulu Natal last year." These reports support the findings of this study.

The nature of adolescence could be influencing the non compliance of so many young people to the rules of the road. As has been illustrated in the literature, failure of the frontal lobe to have developed fully by the age of 20 years (the mean age of this sample), means that forward thinking, as to the possible consequences of one's actions, is not always there (Giedd 2004). Thus, as stated by Giedd (2004), the delay in the maturation of this part of the brain means that the ability to suppress impulses, for example, the thrill of driving fast is limited. Weighing up the consequences of one's actions and exercising sound judgement is also impeded. These results also support Dahl (2004) when he describes the influence of adrenal sex hormones on mood and excitability. The consequent desire to experience intense feelings of excitement can also lead to fast driving. Feelings of immortality, invulnerability and

fatalistic attitudes that are commonly attributed to adolescents, are probably also playing a role in the failure to buckle up and to consistently drive above the speed limit in this sample. This is underpinned by Rosenstock's Health Belief Model (1974) (Figure 2.1), which states that the perceived seriousness of the consequences of risk-taking influences behaviour either negatively or positively.

To add to this disastrous combination, binge-drinking of four or more totts of alcohol drunk in succession is the next most prevalent form of risk-taking behaviour (44.1%) among these participants. According to Pickard et al. (2000), it was found in their Leeds University study that youth are at the forefront of alcohol abuse. In this study 86% of the students were found to be abusing alcohol. In Africa, according to Baumann (1998), high rates of binge-drinking were found among the youth. In a study done in Cape Town by Strachan (1999), an even greater number of young people were found to be abusing alcohol (72%). These studies support the findings of this research in that binge-drinking is highly prevalent among adolescents in this tertiary institution. The South African Community Epidemiological Network on Drug Use (1998) demonstrated similar findings in their nationwide study. Researchers have also raised the possibility that rapid changes in dopamine rich areas in the brain may be making teens vulnerable to the stimulating effects of drugs and alcohol (Giedd 2004).

However, in this research only 14.6% admitted to driving when over the legal limit of alcohol. While it is reassuring to find that driving when intoxicated is the second to lowest form of risk-taking, it is still too high, especially since health-education on alcohol abuse has reached 83% of the participants. This result is not supported by the literature or the

province's accident statistics, which consistently show drunken driving to be an enormous problem on the country's roads. A study in 2005 by the Human Sciences Research Council in Cape Town, South Africa says "drinking and driving, particularly among young people and the number of deaths and injuries resulting from it are at an unacceptable level in most countries" (Phaswana-Mafuya & Peltzer 2005, p.316). This contradicts the findings of this study.

It is, therefore, questionable as to whether the students are actually aware of the correct legal limits of alcohol and how truthful they are being when answering this question. Perhaps even more pertinent is the fact that if they are admitting to binge-drinking, then it is debatable as to how much they remember about getting home after such drinking sessions. Binge-drinking and driving over the legal alcohol limit usually concur and co-vary. While it is possible that these students either do not have their own transport or are responsible enough to appoint a designated driver; they also might not be giving truthful answers. This question may well carry an element of bias in that the results may be underestimated. Therefore, this could be a limitation of the study.

Similar percentages of students smoke (25.7%) and have unprotected sex (21.2%). Drug abuse was by far the least common risk-taking behaviour in this group (7.9%). According to Thompson (2000), drug abuse statistics are related to the level of education attained and were found to be the lowest amongst university graduates, thus, supporting these results. However, studies done in South Africa and in other parts of the world refute these findings, demonstrating that drug abuse is very high amongst university students (Peltzer & Phaswana, 1999). There is a great deal of conflicting information in the literature regarding this point.

Exploring this objective further, by looking at the relationship between those who have received health-education on the various topics and the incidence of risk-taking, the following results were found. Significantly more students who have received education on smoking, smoke, than those who have not been educated on this topic ($p = 0.025$). Thus, health-education appears to be encouraging smoking. These surprising results indicate that there could be confounding variables influencing these findings. It is possible that health-education is more likely to be available to those individuals who come from more affluent backgrounds; where exposure to a higher level of health-education is also more common. Since smoking is an expensive past time, it stands to reason that those who have money are also more likely to be able to afford to smoke.

However, one must not lose sight of the fact that amongst the educated group ($n = 123$), which is the group under surveillance, more people (69.9%, $n = 86$) do not smoke than do (30.1%, $n = 37$). This does give the impression that the education which this group has been exposed to has made a difference. The question rests, however, as to why those who have not been exposed to smoking education show an even greater percentage of people who do not smoke. It is difficult to be categorical as to whether education or some other variable is playing the defining role here, and is, therefore, open to further discussion. It is possible that health-education has influenced the educated-group not to smoke; while those who say they have not been exposed to smoking education, may not smoke because of their religious views, ethnicity, gender or other confounding variables. It is, therefore, possible to say that health-education has made a difference in the educated group; but at the same time leaves questions as to what has influenced the non-educated group not to smoke. This could be an area for further research.

As with smoking, binge-drinking was higher in the educated group, thereby, giving the impression that education encourages drinking. However, the percentage differences were small between the two groups, giving results that were not significant ($p = 0.831$). Therefore, no inferences can be made as to the role of education in this relationship. On the other hand, as with smoking, alcohol is expensive and, thus, more likely to be available to those who come from affluent homes where exposure to good health-education is also more probable. This too could be an area for further research.

Looking further at the relationship between exposure of the students to health-education and driving over the legal limit of alcohol; it is possible that other variables are influencing these findings. It is unlikely that lack of health-education is discouraging the participants from driving under the influence of alcohol. Rather, modifying factors such as positive peer pressure, gender, ethnicity and so forth may be playing a part. In addition, knowledge of policing, and punishment meted out as a consequence of one's actions, probably also influences this behaviour in a positive way.

Health-education on sex is almost universal in this sample (99%) and, therefore, one would expect unprotected sex to be very low. Although, 21.2% of the participants still do not protect themselves, the results are better than expected, given the high rate of HIV/AIDS and other sexually transmitted infections (STIs) in KwaZulu Natal. These relatively high levels of self-protective behaviour regarding sexual behaviour (except among the Black group) could be attributed to the fact that a higher level of general education, in itself, has been found to be

protective against STIs (Michael & Kelly 2004). While the risk of sexually transmitted infections can cross all barriers, the high incidence in KwaZulu Natal may, therefore, not be coming from this population.

Since the size of the natural control group is too small to be statistically significant ($n = 2/2$, $p = 1.000$), no scientific comment can be given on the uneducated group. Among those who have received health-education on healthy sexual practices, the majority (78.2%) practise safe sex which suggests that the education they have received has played a positive role. Careful investigations in Africa have found that sex education contributes to a “delay in the onset of sexual activity, increased recourse to abstinence, reduction in the number of sexual partners, and a lessening of the incidence of sexually transmitted diseases and unwanted pregnancies” (Gachuhi 1999; UNAIDS 1997). Thus, the findings of this study are supported by the literature.

The relatively low number of people who say they have unprotected sex could, however, be underestimated; in that it is possible that couples who are in ‘faithful’ long term relationships may not admit to unprotected sex. Participants involved in a monogamous relationship may not think of themselves as having unsafe sex, owing to the feeling of being faithful, and thus protected. Crosby et al (2000) show that increased familiarity, and trust in relationships, can lead to an illusion of partner safety, negating motivations to use condoms for disease prevention. The term ‘*unprotected sex*’ was not defined in the questionnaire. Perhaps this omission may have contributed to the positive results, thereby, limiting the study.

Since 91% of the participants had received health-education on drug abuse, it was not surprising to find that drug taking was the lowest form of risk-taking. Health-education, thus, appears to be playing a significant role here. However, the cross tabulation results were insignificant ($p = 0.601$), which suggests that, no relationship exists between health-education and drug taking. Possibly, the small size of the non-educated group did not allow for a true reflection of the relationship between health-education and drug-taking among these students. The natural control group was too small to make scientific comment, even though, no one in this non-educated group took drugs (100%, $n = 0/13$).

The results suggest that lack of health-education encourages people not to take drugs. However, it is likely that the uneducated group would still not take drugs, even if they had been exposed to health-education on the subject. The reasons they do not take drugs, are probably related to other variables such as religious beliefs, good self-esteem, lack of peer pressure and so forth. It is unlikely that lack of health-education is preventing them from drug abuse. According to Millstein (1998) and Barnes (1996), lack of knowledge about the possible consequences of behaviour on one's health leads to bad decisions regarding risk-taking and not to good ones, as is shown in these results.

5.3.4 Objective Four:

To explore which variables are influencing the relationship between health-education and health-compromising behaviour.

DEMOGRAPHIC VARIABLES

a) Gender

According to the finding of this study, gender plays a defining role in the above relationship. It is more common for males to drive above the speed limit ($p = 0.021$); to drive when over the legal alcohol limit ($p < 0.001$); to binge-drink ($p < 0.001$) and to abuse drugs ($p = 0.035$). Females, on the other hand are more likely to take part in unprotected sex ($p = 0.045$). The results are insignificant between males and females regarding the risk-taking behaviours of smoking ($p = 0.095$) and failure to use seatbelts/helmets ($p = 0.095$).

These results correspond with the findings from the Leeds University study where a higher percentage of males than females abuse alcohol and illicit substances (Pickard et al. 2000). The higher rate of drug abuse amongst males in this study was also supported by the National Survey on Drug Use and Health (2004), which found that more males between the ages of eighteen and twenty-five years abuse drugs than females.

The higher rate of alcohol abuse amongst males could also be influenced by the fact that in some families and cultures it is considered masculine to drink and is, therefore, condoned. According to Alsop et al. (2002), gender role expectations for both males and females from the Zulu ethnic group, are taught together with cultural norms, from a very young age. Zulu men are portrayed by their society to be both physically and emotionally strong. They should drink alcohol, smoke, have more than one sexual partner and be the decision makers.

The fact that more females than males have unprotected sex could also be related to gender issues such as the subservience of women in certain cultures, as described above. In South Africa male dominance over women prevails among the Zulu ethnic group as well as among some Asian groups. Men, for instance, are expected to be strong, assertive and leaders in any relationship, while women are considered weak, emotional, submissive and subservient to their male partners. Power dynamics with sexual partners are, thus, deeply unequal. The Zulus are also the largest group in KwaZulu Natal and, therefore, gender power relations could be contributing to these results. This could be further aggravated by women's socio-economic dependency on their male partners (UNAIDS 1999a). According to Aggleton (2001), gender role stereotypes cause power relations between sexual partners. All these factors make it more difficult for many South African women to negotiate safer sex.

It is interesting to note that there was no difference between males and females who smoke. This supports the literature which says that as many women as men are now taking up smoking (Bateman 2002). In previous generations, and even now in some cultures, smoking was considered to be a predominately male activity.

b) Ethnicity

As stated in the presentation of the results describing the relationship between exposure to health-education and ethnicity, the differences are not great. Despite the fact that the Asians, Blacks and 'Others' have historically been educationally disadvantaged groups in South Africa; this is only slightly evident in these findings with regard to the Black group. While the Blacks' exposure to health-education on the topics of smoking, alcohol, drugs and

seatbelts is consistently lower than the other groups; their exposure to sex education is comparable (100%).

However, apart from a low exposure to seatbelt/helmet education (59%), the Black group still never fell below 72% on exposure to health-education concerning all the other risk-taking topics. It would be interesting to discover where this group received most of their health-education, since historically, education in some Black schools was not as good as it should have been. This could be a subject for further investigation and research.

Although the Asian group was also previously disadvantaged by the Apartheid policies, this does not show in these results. This group exhibits similar exposure to health-education as the White group, who were not disadvantaged. Although 'schools' demonstrated the highest percentage of influence over health-education in the overall sample, it is possible that the often strict religious morals and values and sense of "family" associated with many Asians, may have played a role in this relationship.

The variable of ethnicity, however, becomes more meaningful when it is not just descriptive in terms of risk-taking trends, but when it is cross tabulated with exposure to health-education as well.

Smoking

The significant smoking result between the Black educated and non-educated groups ($p = 0.013$) is very similar to that found in the overall sample when it was not stratified by ethnicity. Both sets of results show that health-education seems to encourage smoking in that

more people smoke in the educated group than in the non-educated group. Since the Blacks were the majority group in the sample, it is not surprising that the results were statistically significant for this group. However, the same trends were evident in the Asian and White groups, as well, but were not shown to be significant because the statistical power was insufficient, owing to their small sample size. The 'Other' group was too small for any comment.

It is interesting to note that in comparing the Asian group where 91.1% have received smoking health-education and the Black group where only 72% have received smoking health-education, it is seen that in both cases a similar percentage smoke, namely 29.5% and 28.1% respectively. It is possible that ethnic cultural differences rather than education could be influencing smoking behaviour in this instance. In some Black cultures, for example, it is unacceptable for a woman to smoke whereas, for a man it is almost expected. Amongst the Asian group, it is visually evident on this campus that both men and women smoke.

Alcohol Abuse, Drug Abuse, Unprotected Sex, Seatbelts

In terms of all the other risk-taking behaviours, namely, alcohol abuse, drug abuse, unprotected sex and failure to wear seatbelts/helmets none of the results were significant. Therefore, health-education cannot be found to be influencing health-compromising behaviour in the separate ethnic groups.

However, driving above the legal alcohol limit was shown to be much less common in all four ethnic categories, if they have been exposed to health-education than if they had not. It is possible that if the naturally occurring control groups had been bigger, then statistically

significant results might have shown a relationship between health-education and the health-compromising behaviour. However, knowledge of the law and its punishment could have been the modifying factors here; rather than the knowledge of the health consequences of the risky behaviour.

In terms of drug abuse and ethnicity very little more can be added to what has already been stated when these results were presented in the previous chapter; apart from interpreting them against the literature. The fact that health-education was a constant, in all but the Black group indicates that further discussion is limited. Although the results cannot be linked to health-education; the low and similar incidence of drug taking amongst all the ethnic groups in this sample, may be indicative of other moral controls such as religion, family values and positive peer pressure.

The percentage of Blacks not having received health-education was high (20.3%), yet none in this group admitted to taking drugs. The drug taking, therefore, came from the educated group. However, since the cross tabulation results were insignificant ($p = 0.574$), no relationship between health-education and drug-taking among Black students can be assumed. What is interesting is why a relatively large percentage of students who had not been exposed to education on drugs, do not take drugs. These results do not support Millstein (1998) and Barnes (1996) who say that the decisions made by young people are characterised by lack of knowledge about the consequences of those behaviours which may compromise their health. In this sample the incidence of drug taking is highest amongst those who have been exposed to education on drug abuse. The reasons for this could also be explained in

terms of financial affordability, as was previously discussed with regard to smoking and alcohol abuse.

Unprotected sex in the Black group is high (36.5%), especially since 100% of this group claim to have been given health-education on the dangers of indiscriminate sexual practices. This is concerning and shows that health-education is not making the impact it should. There are obviously other factors playing a role here. Since more women than men in this group admit to unprotected sex, it is possible that the subservience of women to the expectations of their men, is contributing to this high result. The literature supports the fact that education alone is not always enough to prevent risk-taking behaviour. A study by Rocha-Silva (1997) demonstrated that the knowledge of HIV/AIDS did not increase condom use.

Since health-education was a constant in the Black, White and "Other" groups, (that is 100% had been exposed to sex education), no natural control group occurred. This limits the discussion. However, it is interesting to note that the incidence of unprotected sex is low in the Asian and White groups and does not happen at all in the 'Other' group. This might suggest that education is playing a role in these groups. Possibly, if the sub-categories had been bigger this relationship would be evident. The question of what is preventing the non-educated Asian group from partaking in unprotected sex could be attributed to cultural or religious variables.

The failure to be self protective when travelling in vehicles occurs across the ethnic spectrum. Blacks, Asians and 'Other' have similar percentages who, do not buckle up, while

the Whites were slightly more protective. The results show that education has failed to make an impact on this form of health-compromising behaviour.

SOCIO- PSYCHOLOGICAL VARIABLES

a) Support

Amongst the participants in this sample, lack of support was not shown to be influencing risk-taking behaviour, because 90.3% said they were encouraged to lead a healthy lifestyle; and 98% said they had received ongoing support. The sources of support were very similar to the sources of health-education in that most of them came from schools and parents. The media was not given as a source of support in the questionnaire. A supportive environment is shown in the literature to be critical. In America the National Research Council Study (1993) demonstrated the importance of settings which serve the needs of the youth. In addition, the Adolescent Workshop on New Research (1999) emphasized the profound influence of settings on adolescents' risk-taking behaviour.

b) Cultural Norms

Cultural norms were not found to be a confounding variable in the relationship between health-education and health-compromising behaviour in this sample. The vast majority of the sample did not link their risk-taking behaviour to their culture. This does not support Newcomb and Harlow (1986) who found that traditional beliefs play a big role in the decisions people make and the way they behave. They also go on to say that in the African context substance abuse, for example, is known to be attached to such beliefs. Likewise a study on substance abuse among university students in South Africa by Peltzer and Phaswana (1999) showed that in Africa the "influences of Western culture and its pervasive ethos of

modernity, combined with traditional cultural practices,” may be responsible for the increase in substance abuse amongst the continent’s youth.

Historically, consumption of alcohol in South Africa pre-dates Colonial times, when traditionally, it was reserved for the senior members of society, in particular the elders and traditional leaders. It was not considered an activity for the youth. This study, however, shows binge-drinking to be a significant problem cross-culturally for young people, in that 44.1% of the sample abuse alcohol from time to time. These findings support the fact that culture is not influencing their drinking behaviour.

c) Personality

Since more than a quarter of the sample said they enjoy taking risks and 14.2% said they are the rebellious type, personality may be playing a role in the risk-taking behaviour of certain participants. However, it is unlikely that the numbers are large enough to be modifying the overall results.

d) Self Esteem

Likewise, lack of self-esteem, including financial insecurity, has encouraged some of these students to take risks, but probably not significantly. These results are surprising in that the literature places a great deal of emphasis on the relationship between self-esteem and behaviour, but these findings do not support this relationship. Possibly the students sampled consistently had high levels of self-esteem. This may also explain the low influence of peer pressure in this study because peer approval is directly linked to the adolescent’s feeling of self-worth (Zimmerman et al. 1997).

e) Nature of Adolescence

The nature of adolescence is more influential than the preceding variables. Feelings of immortality and competing priorities, such as having fun now; as well as the idea that risk-taking is normal behaviour for young people, is evident in the results of this study. More than a quarter of the sample attaches itself to these beliefs. These results are supported in the literature by Gilligan and others (Gilligan et al. 1990). They show that when adolescents are faced with personal dilemmas, such as whether to have fun now and not worry about the consequences of risk, they are able to regress to less mature moral stages. This prevents them from applying their moral reasoning ability and allows them to behave in a way that does not fit with their own set of values. This is underpinned by Rosenstock's Health Belief Model (1974) (Figure 2.1), which describes what he refers to as '*perceived barriers to preventive action.*' In this instance such barriers include the above mentioned competing priorities, such as fun, excitement and the feelings of immortality, which are preventing these respondents from health-seeking behaviour.

f) Peer Pressure

Interestingly, acknowledgement of the negative influences of peer pressure by the participants was not as high as expected. This could be underestimated in that some only see peer pressure as being overt and coming from their peers, rather than covert and being instigated personally in an endeavour to be accepted. Many young people will compromise their own set of moral values by behaving in a risky way, in order to be accepted by the peer group. This is usually not seen as peer pressure by the adolescent because the peer group is not being coercive by using direct pressure. These dynamics could account for the unexpectedly low results here. The literature consistently shows a relationship between risk-

taking and peer pressure (Brook et al. 2002). Dunu (2003) states that decisions to take drugs is usually influenced by peer pressure.

g) Time of Exposure to Health Education

Timing of exposure to health-education has been shown in the literature to be critical (Siegel 2001). The literature supports the fact that health-education needs to be given as early as possible, preferably from the first year of school, and to be reinforced, thereafter, on a continuous basis so that it is age appropriate (UNESCO 2001). Early onset of sexual behaviour underlies the crucial importance of timing of effective sex and other risk-taking education. The literature supports the idea of education being given earlier rather than later (ADEA 2001).

The findings of this research endorse this. The greatest majority (91%) of the sample said they had received their health-education during their high school years. Interestingly, this has probably been far too late. Health-education has not been shown by this research to be making as big an impact on health-compromising behaviour as one would have expected and was stated in the hypothesis. Only a little more than half of these participants received health-education in their senior primary years. Almost twice as many had received health-education in their university years, compared to their primary school years and earlier. This late onset of health-education could be contributing to the seemingly poor relationship that exists between health-education and health-compromising behaviour in this sample of adolescents.

STRUCTURAL VARIABLES

a) Content and Delivery of Health Knowledge

Of those participants who said they had received health-education/information, the majority felt the contents and methods of delivery were good. The methods of delivery and the contents varied from dry facts, the giving of information only and then to more interactive approaches.

The vast majority said they preferred the interactive approach where they were not given information only but were personally involved in the education process, through interaction with the educator. These findings support the literature, which states that interactive approaches are far more successful and that health-education should fully engage the educators, as well as the learners, by going far beyond the realms of academic, intellectual knowledge (Michael & Kelly 2004; Kiragu 2001). Michael and Kelly (2004) state that there is no room for passive learning and that the programmes should be interactive and participative.

b) Knowledge of the Consequence of Risk-Taking

The results of the knowledge of the consequences of risk-taking amongst these participants, is interesting. The participants view unprotected sex as the behaviour which carries the greatest health risk, followed by drug abuse, nicotine smoking, reckless driving, drinking alcohol and then lastly failure to wear seatbelts/helmets. This relates almost exactly to the exposure of these participants to health-education on the above mentioned health topics. The topic which had the highest exposure was sex, followed by drug abuse, then alcohol and smoking with almost identical results and lastly seatbelts/helmets. This suggests that

exposure to health-education has impacted positively on the knowledge of the consequences of risk-taking behaviour.

However, this does not necessarily mean that health-education is preventing risk-taking behaviour. Rather it is showing that exposure to health-education has made the students more aware of the consequences of their behaviour. This is supported by an evaluation of a peer-led drinking and driving primary prevention programme (Phaswana-Mafuya & Peltzer 2005), which found that on almost all knowledge measures, the programme was generally effective in bringing about statistically significant positive changes. However, there was found to be a lack of significant behavioural change. According to Rosenstock's Health Belief Model (1974), knowledge of consequences is important in behaviour change but does not act alone. The individual will usually weigh up the consequences or perceived benefits of not behaving in a certain way, minus the perceived barriers in order to effect behaviour change (Rosenstock 1974). This model (Figure 2.1) is, thus, underpinning the above findings.

The literature supports the importance of understanding the consequences of risk. Studies reveal that this knowledge is not always adequate (Brook et al. 2000). However, knowledge alone was not found to be sufficient and should include other behaviour changing strategies (Bridges et al. 2003 & Sigelman et al. 2002). According to Elkind (1967), '*personal fables*' created by adolescents during their cognitive development stage often include those of immortality. These confirm to the adolescent that risk-taking cannot have bad consequences. It, therefore, gives them permission to take risks without fear of any repercussions. It is possible that apart from health-education, such '*personal fables*' are also contributing to these results, in that the participants are selective in which behaviours they see as carrying a

health risk. None of the selected risk-taking behaviours was identified by every participant in this study as being risky. This supports Elkind's theory of Social Cognition.

According to the Rosenstock's Health Belief Model (1974) (Figure 2.1), modifying factors such as the demographic, socio-psychological and structural variables discussed above have the potential to be very influential on what he describes as the '*likelihood of action*'. In this study the latter refers to health-seeking or health-compromising behaviour. The above mentioned results, therefore, are underpinned by Rosenstock's model in that they show the varying relationships that exist between the different modifying factors and the individuals' behaviour. These variables also impact on the individual's perceived threat of the consequences of risk-taking behaviour; as well as the perceived seriousness and susceptibility of their behaviour, as shown above.

5.3.5 Objective Five:

To determine whether South African Adolescents, who have been exposed to health-education/information perceive themselves to be at risk, as a consequence of their behaviour

A little over half this sample felt vulnerable as a result of their risk-taking. However, when looking at the health-compromising behaviours individually, between those who had received health-education and those who had not, the slightly higher feelings of risk that were found in the educated groups, were not statistically significant. Education is, therefore, not making a significant difference to this relationship. According to Rosenstock's Health Belief Model (1974) (Figure 2.1), a person's beliefs about his own susceptibility to the consequences of his behaviour, plus the seriousness with which he views the negative health

consequences equals the perceived threat of the consequences for each person. Thus, individual perceptions of threat are important dynamics in changing or maintaining behaviour and education alone cannot reliably affect behaviour. It is interesting to note that more than half the participants perceive themselves to be living a healthy life style despite the high level of risk-taking in this group. The findings here further support Barnes et al. (1996) who says that youth often do not perceive the issue of health as an immediate priority.

5.3.6 Objective 6:

To establish whether health-education programmes are meeting the needs of adolescents, in terms of reducing their risk-taking behaviour tendencies

More than half of this sample (69.7%) has been exposed to well-developed health-education programmes. This is supported by the literature which states that two thirds (65%) of all South African youth report being exposed to more than four 'loveLife' programmes and services. These findings were based on a nationwide representative household survey conducted in 2003 by the Reproductive Health Research Unit (loveLife 2004).

Answers to the above objective, show that the various programmes to which the participants have been exposed have had mixed responses. Nearly equal numbers of participants say that their needs have and have not been met. The same applied to the programmes being culturally appropriate and motivating enough not to take health risks. Concerning the influence of motivating educational material, significant results were found in relation to smoking and binge-drinking. In terms of the programmes being emotionally, socially and personally motivating, significant results were only found with binge-drinking. Zimmer-Gembeck and Colleagues (1997) point out that one programme design cannot be expected to

fit all groups of adolescents, thus, supporting these findings. Nduat and Kiai (1997) show that some education programmes are knowledge directed and only superficially address cultural factors. While other studies (Kiragu 2001) show positive results from peer-educated programmes, which stress experiential learning, and are developmentally and culturally appropriate. Failure of health-education programmes in KwaZulu Natal, therefore, could be attributed to the lack of a more comprehensive approach to education.

However, more participants felt that the programmes did contain relevant material, but were not sensitive to the sexual orientation of the population. This is supported in the literature by Waterman and Goldman (1976) who show that the challenges of identity are not necessarily resolved at one point in time. This, therefore, poses further challenges for health-education in that educators need to be aware of the ongoing phenomenon of identity formulation including sexual identity.

On the whole the ability to understand the content was considered easy and practical; but only half of the participants felt the information was age appropriate, adolescent friendly and fun.

According to Durr-Fitschen (Daily News 2004, p.24), “parental involvement in the educational programmes is a must if there is to be any chance of them succeeding.” This is further supported by Rosenstock (1974) when he describes the importance of ‘*cues to action*’, in this instance health-education programmes. The quality of such programmes impacts directly on the perceived threat of the consequences of risk.

5.4 Summary of the Main Findings

The overall results of this study in relation to the problem statement show the relationship between health-education and health-compromising behaviour to be fairly tenuous. While health-education does seem to be playing a role in certain areas as discussed; it is not as strong a relationship as one would have expected and as was stated in the hypothesis. In relation to certain risky behaviour topics, the relationship although found to be significant, indicates an inverse relationship to the hypothesis, whereby more students in the educated groups take risks. Health-education was, therefore, not consistently found to be reducing health-compromising behaviour in adolescents. The hypothesis, therefore, cannot be supported.

While it is reassuring to discover that the majority of this sample has received health-education that deals with risk-taking behaviour, it is concerning that these findings vary quite considerably. There is an emphasis on certain topics of risk and a relative neglect of others.

However, overall the exposure to health-education is high cross culturally. The schools and media are making a concerted effort while parents have much room for improvement.

Whether this health-education/information exposure is having the desired action is not quite as clear. Its influence has been shown to vary depending on the health risk topic and the setting.

Supportive environments are in place and little influence on risky behaviour has been acknowledged from cultures, self-esteem and peer pressure. However, other variables, such

as gender, ethnicity, personality, the nature of adolescence and timing of exposure to health-education, have all been shown to play significant roles in this relationship. These results show that health-education/information alone is not sufficient to effect behaviour change. This endorses the importance of comprehensive education and the attention to other variables which could impact on the success of the intervention.

While health-education is not influencing the perception of risk amongst this sample; knowledge of the potential consequences of risky behaviour is related to health-education exposure. Existing health-education programmes are generally not meeting the needs of this population, in terms of reducing their risk-taking tendencies.

5.5 Strengths of the Study

The study demonstrated a number of strengths which enhanced the research process, namely:

- ❖ The tool was found to be user friendly in that the participants found it easy to understand and quick to complete.
- ❖ Few errors were found in the questionnaires resulting in a low attrition rate.
- ❖ The response rate was high.
- ❖ The quota sampling strategy was successful and, thus, representative of the population.
- ❖ The reliability of the tool was confirmed by control questions which showed consistent results.

5.6 Limitations of the Study

The limitations of the study were few and minor as shown below. Consequently, they did not impact negatively on the research.

- ❖ The naturally emerging control groups were sometimes too small to give statistically significant results and, therefore, scientific comment was not always possible.
- ❖ The results of this study cannot be generalized to any other provinces because there was insufficient representation from the rest of South Africa.
- ❖ Certain questions may have been underestimated as indicated in the discussion.

5.6 Recommendations for Service and Policy

The research generated many recommendations for service and policy as listed below:

- ❖ Earlier exposure to health-education through the existing life-skills programmes is needed in the schools and elsewhere. Further modules addressing risk-taking behaviour could be introduced into schools especially regarding safe-travelling behaviour.
- ❖ Capitalizing on the influence of the media is important.
- ❖ Health educators need to know which topics of risky behaviour are gender-specific and adjust their education focus and emphasis accordingly.
- ❖ Health-education programmes need to ensure that they are comprehensive and holistic in their approaches and should be mindful of identity formulation and sexual orientation.
- ❖ Health educators and parents need to be made aware of recent discoveries on the development of the adolescent brain, in order to give the correct support and

necessary understanding. This could be achieved through various avenues, for example, religious and social organisations, radio, television, articles in the media, talks at schools, mass media campaigns and other forms of risk management.

- ❖ The profound influence of settings/context needs to be emphasized by all those who are involved in promoting adolescent health. This could be achieved by utilising the abovementioned risk management strategies.
- ❖ All health-education should be age appropriate, interactive, continuous, culturally appropriate and gender specific.
- ❖ Health-education needs to be interesting, flexible, adolescent friendly and fun.
- ❖ Health-education needs to be made available to a wider population.
- ❖ All existing health-education programmes need to be reviewed in accordance with that suggested above.
- ❖ Equal attention needs to be given to all health-compromising topics.
- ❖ Education regarding health-compromising behaviour also needs to be given to parents.
- ❖ Parental involvement in the health-education of their children needs to be encouraged.
- ❖ Parental supervision of their adolescents needs to be improved.
- ❖ Tighter controls on under-age drinking, access to night clubs and bars is essential.
- ❖ More adult supervision of adolescents and the need to set sensible, realistic boundaries is important.
- ❖ Stricter law enforcement in relation to driving without seatbelts, speeding and drinking is critical.
- ❖ Research findings on adolescent health need to be consolidated from all the different disciplines and made universally accessible.

5.7 Recommendations for Further Research

The following recommendations and topics for further study emerged as a consequence of this research:

- ❖ What is the relationship between binge-drinking and driving when intoxicated?
- ❖ What is the relationship between binge-drinking and failure to wear seatbelts?
- ❖ Further investigation into the impact of select variables on the relationship between health-education and health-compromising behaviour.
- ❖ What influences people who have not been exposed to health-education, not to take risks?
- ❖ Are smoking, drug abuse and drinking related to economic status?
- ❖ To repeat this study in other provinces in South Africa.
- ❖ Explore sources of health-education among previously disadvantaged communities.

5.9 Conclusion

In conclusion, the inspiration for this research grew out of concern for the seemingly excessive risk-taking behaviours, visually evident amongst the young people of KwaZulu Natal. In response to the problem statement, health-education dealing with risky behaviour, although readily available, is not meeting the needs of all young people. Parental proactivity in particular is lacking; health-education programmes need to be reviewed; and certain neglected areas of health-compromising behaviour require urgent attention. Issues of identity, sexual orientation, and recent findings regarding the development of the adolescent brain demand new respect and understanding. Areas where health-education has previously been concentrated, but show low levels of success need to be reviewed, giving attention to race

and gender issues. All educators need to be mindful of those variables that are playing modifying and supportive roles. The relationship between health-education and health-compromising behaviour in this context has not supported the research hypothesis. While this is disappointing in terms of the health of our youth, it is also not surprising, since the motivation for this study grew out of a suspicion that this relationship was probably only a tenuous link.

Thus, this research looks to the future in the hope that these new findings will contribute towards the nourishment, so badly needed for the healthy development of future generations.

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RESEARCH ETHICS COMMITTEE

Student: INGRID LINNEA USSHER

Student No: 202513955 Qualification: MASTERS in NURSING (COMMUNITY HEALTH)

Research Title: THE RELATIONSHIP

BETWEEN HEALTH-EDUCATION AND HEALTH-COMPROMISING BEHAVIOUR AMONGST SOUTH AFRICAN ADOLESCENTS ATTENDING AN INSTITUTION OF TERTIARY EDUCATION

A. The proposal meets the professional code of ethics of the Researcher: EDUCATION

YES

NO

B. The proposal also meets the following ethical requirements:

	YES	NO
1. Provision has been made to obtain informed consent of the participants.	✓	
2. Potential psychological and physical risks have been considered and minimised.	✓	
3. Provision has been made to avoid undue intrusion with regard to participants and community.	✓	
4. Rights of participants will be safe-guarded in relation to:		
4.1 Measures for the protection of anonymity and the maintenance of confidentiality.	✓	
4.2 Access to research information and findings.	✓	
4.3 Termination of involvement without compromise.	✓	
4.4 Misleading promises regarding benefits of the research.	✓	

Signature of Student: I. L. Ussher Date: 24th OCTOBER 2004

Signature of Supervisor: A. M. Shabalala Date: 28th October 2004

Signature of Head of School: S. M. M. M. M. Date: 28/10/2004

Signature of Chairperson of the Committee: P. P. P. Date: 1/11/2004

Faculty of Community & Development Disciplines

Postal address: Durban 4041, South Africa

ANNEXURE B

5 Grays Inn Crescent
Westville
3629
Kwa-Zulu Natal
4 November 2004

The Dean of Students
Howard College Campus
University of Kwa-Zulu Natal
Durban

Dear Sir/Madam,

I am a Master's student from the School of Nursing at the University of Kwa-Zulu Natal. In partial fulfillment of the degree Masters in Nursing (Community Health), I have to conduct a research dissertation. My topic on the relationship between health-education and health-compromising behaviour amongst South African adolescents attending an institution of tertiary education, identifies the Howard College Campus as being an appropriate research setting, from where my sample population could be drawn.

My research proposal has been passed by the School of Nursing and the Faculty of Community and Development Disciplines. I have also had ethical clearance from the university's ethics' committee. I hereby, request permission from you to collect my data from suitable participants on this campus. The participants will be selected by way of non-random, quota sampling from students aged between 17 and 24 years who were raised and educated in South Africa, and are presently registered as students of this institution.

Thank you.

Yours faithfully,

I. h. Ussher

INGRID USSHER

(Tel. (031) 2664378)
(Cell. 083-703-5556)

*Approval to conduct research at Howard
College granted.*

*Wills
3/11/04*

DEAN OF STUDENTS
UNIVERSITY OF KWAZULU-NATAL
DURBAN
4041
wills@ukzn.ac.za

ANNEXURE C

CONSENT FORM

I hereby give my consent to respond to the questions in the attached questionnaire. I have read and understood the attached explanatory letter. I know that I have the right not to answer sensitive questions; and may withdraw from the study at any time.

QUESTIONNAIRE

ON THE RELATIONSHIP BETWEEN HEALTH EDUCATION AND HEALTH COMPROMISING BEHAVIOUR AMONGST SOUTH AFRICAN ADOLESCENTS

Dear Participant,

Thank you for agreeing to take part in this study, which I see as being a crucial investigation into the relationship between health education and health-compromising behaviour, among South African adolescents.

This study is being undertaken in partial fulfillment of a Master's degree in Nursing (Community Health). Taking part in this study should provide vital information, which will be used as data for my Master's thesis. Ultimately, I hope that the findings of this research will serve to improve the health of adolescents.

Please answer the questions with sincerity and honesty. Your anonymity and confidentiality will be guaranteed. Therefore, do not put your name on the questionnaire.

Please answer all the demographic questions in Section 1. If you feel uncomfortable answering some of the more sensitive questions in Section 2, you may leave them out. It is, however, in the interests of the study to have all the questions answered. Thank you for your participation; it is very much appreciated. Should you be interested in the findings, they will be made available once the thesis has been completed.

Yours sincerely,

I.L.Ussher.

ANNEXURE E

QUESTIONNAIRE

SECTION 1

DEMOGRAPHIC INFORMATION

Please indicate your responses with a tick against the appropriate answer or write in the spaces provided.

A. AGE

B. GENDER

1. Male
2. Female

C. ETHNIC GROUP

D. RELIGION

E. SCHOOLING

1. Government School
2. Private School
3. Home Schooling

F. LEVEL OF EDUCATION COMPLETED

1. Secondary
2. Tertiary
3. Post Graduate

G. HOME LANGUAGE

H. PROVINCE where raised and educated.....

SECTION 2

QUESTIONS RELATED TO THE RESEARCH TOPIC

Please indicate your responses with a tick against the appropriate answer, or write in the spaces provided.

1. Have you ever received any form of health education/ information that deals with any of the following topics? Tick as many as are applicable.

- a) Cigarette Smoking
- b) Alcohol use.....
- c) Drug Abuse.....
- d) Unprotected Sex
- e) Safe Travelling (eg. Wearing of seatbelts, driving within the speed limit, not driving under the influence of alcohol, etc.)

2. Indicate at what stage in your life you received this education? You may tick as many as are applicable.

- a) Pre-School
- b) Junior Primary
- c) Senior Primary
- d) High School
- e) Tertiary level

3. Where did you receive this education/information from? You may tick as many as are applicable.

- a) Parents
- b) Friends
- c) School
- d) Religious organizations
- e) The Media (eg. magazines, newspapers, television, radio, posters,).....
- f) Health Clinics/ Nurses
- g) General Medical Practitioner
- h) Other (Please specify)

4. Do you feel that this health-education/information has met your needs?

- a) Yes.....
- b) No.....

5. Do you do any of the following? Tick as many as are applicable

- a) Smoke cigarettes
- b) Use illegal drugs or other substances
- c) Drink alcohol (more than 4 tots/glasses in succession)
- d) Drink 3 tots/glasses every day
- e) Have unprotected sex (ie. vaginal, anal or oral)
- f) Drive above the speed limit
- g) Drive when over the legal limit of alcohol
- h) Travel in vehicles without buckling up when seatbelts are available.....

6. Do you feel at risk of infection, pregnancy, injury, disability or death as a result of answering yes to any of the questions in number five?

- a) Yes
- b) No

7. During your growing years, would you say that you were encouraged to live a healthy lifestyle?

- a) Yes
- b) No

8. Do you think that you do lead a healthy lifestyle?

- a) Yes
- b) No

9. If you answered **no** to question **eight**; would you like to be living a healthy lifestyle?

- a) Yes
- b) No

10. If you answered **no** to question **eight**; do you think that any of the following play a role in your “unhealthy” lifestyle? You may tick as many as are applicable.

- a) Peer pressure
- b) A feeling that what you are doing will not harm you
- c) You would rather have fun now and not worry about what might happen.....
- d) You want to be accepted by your friends
- e) Your behaviour is acceptable to your culture.
- f) You do not have a good self-image.
- g) You think that it is normal for young people to take risks

11. Do you believe that the health-education/information, which you received, was good in terms of content and method of delivery?

- a) Yes
- b) No

12. If you answered **yes** to any of the behaviours listed in question **five**; do you feel that any of the following are playing a role in encouraging such behaviour? You may tick as many as are applicable.

- a) Your desire to be accepted by your family.
- b) Your desire to be accepted by your friends.
- c) You do not have a good self-esteem.
- d) You feel inadequate financially.
- e) You would rather have fun now and not have to worry about what might happen.
- f) It is natural for young people to take health risks.
- g) You do not get emotional support from those who gave you the health education/information.
- h) You do not believe that anything bad will happen to you.
- i) You grew up in an unhappy home.
- j) Your culture supports these behaviours.
- k) You are the rebellious type.
- l) You did not grow up in a supportive environment
- m) Your destiny has already been decided; nothing you do can change that
- n) You enjoy taking risks

13. Have you been exposed to well-developed health-education programmes, for example, “loveLife”; “Arrive Alive” or similar?

- a) Yes
- b) No

14. If you answered **yes** to question **thirteen** then tick the appropriate answers below. You may tick as many as are applicable.

- a) These programmes met my needs
- b) They included relevant material that encouraged me to not to take health risks...
- c) The information was practical and easy to understand
- d) The information was appropriate to my culture
- e) The programme was sensitive to people’s different sexual orientations
- f) The information was appropriate for my age at the time
- g) The programme motivated me emotionally, socially and personally not to take health risks.....
- h) The programme invited input from the participants
- i) The programme was well delivered
- j) The programme was adolescent friendly and fun

15. If you feel that the health-education you received during your growing years was supported by significant others; indicate who these people were. You may tick as many as are applicable.

- a) Your parents
- b) Your school teachers
- c) Your older siblings
- d) Other members of your family
- e) Religious leaders
- f) Nurses
- g) Doctors
- h) Health-educators
- i) Peers

j) Other (please indicate)

16. Would you describe your personal health-education experience as any of the following? Indicate by ticking as many as are applicable.

- a) Received information only
- b) Interactive approach
- c) Given dry facts only
- d) Was personally involved in the education process

17. In your opinion what approach would suit you best? Indicate by ticking as many as are applicable.

- a) Information only
- b) Being involved in the education process through interaction with the educator.....

18. Which of the following behaviours do you think may have negative health consequences in the short or long term? Indicate by ticking as many as are applicable.

- a) Smoking nicotine
- b) Drinking alcohol
- c) Taking illicit drugs/ other substances
- d) Driving recklessly
- e) Not wearing a seat belt/ helmet
- f) Unprotected sex

THANK YOU FOR YOUR PARTICIPATION, IT IS VERY MUCH APPRECIATED. YOU HAVE MADE A DIFFERENCE TO MY CAREER AND TO THE HEALTH OF ADOLESCENTS.