RELATIONSHIP BETWEEN COMPREHENSIVE SCHOOL HEALTH EDUCATION AND THE SMOKING KNOWLEDGE, ATTITUDES, AND BEHAVIOUR OF GRADE NINE ADOLESCENTS

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SHARON FITZGERALD

Relationship Between Comprehensive School Health Education and the Smoking Knowledge, Attitudes, and Behaviour of Grade Nine Adolescents

by

Sharon Fitzgerald, B.N.,R.N.

A thesis submitted to the School of Graduate Studies in partial fulfilment of the course requirements for the degree of Master of Education

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Abstract

The primary purpose of this study was to assess the effectiveness of smoking prevention and cessation efforts in this province which were delivered as part of a piloted comprehensive health program to grade 7 students during the 1992-1993 academic year. Specifically, the study examined the smoking knowledge, attitudes, and behaviours of a sample of grade 9 adolescents exposed to the comprehensive health program in grade 7, as compared to a sample of grade 9 adolescents who were not exposed to the program in grade 7. This study also examined whether the relationship between the comprehensive health program and student smoking knowledge, attitudes, and behaviour varied with gender and role modelling influence.

The experimental group consisted of a convenience sample of 122 grade 9 students in the school which received the comprehensive health program while the control group consisted of a convenience sample of 69 grade 9 students in another school who did not receive the program. Both schools were in the St. John's area. All students completed questionnaires which secured data on gender and the smoking behaviour of friends and family, previous and current student smoking behaviour, student smoking knowledge, and student smoking attitudes.

The results of the study demonstrated that the experimental and control groups were not statistically different overall in their smoking knowledge, attitudes or behaviour. Descriptive statistics indicated that students were very knowledgeable on smoking issues, yet substantially large numbers of students reported they currently smoked. Findings also suggested that the relationship between the comprehensive health program and student smoking attitudes and behaviour varied with role modelling influence. When controlling for other variables, mothers' smoking behaviour was most predictive of student smoking behaviour.

The findings in the study demonstrated that the effectiveness of comprehensive school health on smoking attitudes and behaviour can be impeded by the antecedents of health behaviour, namely environmental influences such as role models' behaviour, and in particular, mothers. Such influence must be taken into account in the design and implementation of school health programs. Further research is warranted to assess the impact of mothers' smoking behaviour on adolescents and to identify interventions that may be effective in counteracting this influence.

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CHAPTER 1

Introduction

The public health objective to reduce prevalence of cigarette smoking is no longer debatable. Tobacco-related diseases in Canada will cause eight times as many deaths as car accidents, suicide, murder, AIDS, and drug abuse combined according to the Heart and Stroke Foundation of Canada (HSFC) (1988), yet there are still about 600,000 young smokers in Canada. Haché (1994) reporting on "The Health Canada Survey on Smoking in Canada: May to August 1994" revealed that 30% or 6.5 million Canadians smoke, and 80% of these smoke daily. Further, smoking has increased among the 15 to 19 year age group from 20% in 1991 to 29% in 1994 for females and from 12% in 1991 to 26% in 1994 for males. Worldwide concern is being expressed regarding projected smoking-related death rates. The Evening Telegram (1994) reported that the results of a survey recently conducted by the World Health Organization which indicated that smoking worldwide is killing six people per minute. Also, it suggested that if current trends persist, by the time today's young smokers reach middle or old age, the death rate will be ten million per year or twenty per minute.

The nature and frequency of health risks affecting youth appear to be increasing in severity. With appropriate interventions, such problems can be prevented or controlled. Currently much national attention is being focused on reform in education and health care. There is a growing recognition that the two entities share a reciprocal relationship. In education there is maximum potential for success when children enter and remain in school as healthy individuals, ready to learn. Similarly, health care will succeed best through prevention, with a public educated to make informed decisions regarding lifestyle and personal health behaviour. Greater things can be achieved through a cooperative relationship than can be achieved independently.

Schools can be a focal point within their communities to promote the health of students as well as to prevent specific health/social problems. As open social systems, schools impact on and are impacted by health of the public. Schools must respond through well-developed health prevention programs. Obviously, the school cannot by itself determine the overall environment in which our children live. But as Seffrin (1990) noted, if schools simply mirror the larger community in the environment it provides each student, then schools unwittingly increase the probability of risk behaviour and their negative outcomes.

Context of the Problem

Traditional health education in schools has concentrated on facts about the body and specific health issues or risks. Schools were seen as the only place for health instruction, and textbooks were used as the main source of information. Parental and community involvement were to a large part ignored. This approach presumes providing such knowledge will translate into desired behaviour. Garcia, D'avernas, and Best (cited in Abernathy and Bertrand, 1992) noted some concerns now exist that a purely informationally-based approach, such as simply presenting school children with facts regarding the health consequences of smoking, is not a particularly effective prevention technique.

In contrast, smoking prevention, taught within the context of a comprehensive school health program concentrates on attitudes, skills, behaviours, and psychosocial influences. Classroom instruction is complemented by formal and informal family and community education. A variety of health issues are addressed. The program's goal is to build a repertoire of knowledge, skills, and attitudes which will hopefully result in healthy behaviourial choices by students. Also, role modelling and the school's social climate are viewed as important in influencing health behaviour. A supportive environment is provided which includes provision

of a smoking cessation program and enforcement of a smoke-free policy in the school.

Purpose of the Study

The primary purpose of this study was to assess the effectiveness of smoking prevention and cessation efforts in this province which were delivered as part of a piloted comprehensive health program to grade 7 students during the 1992-93 academic year, by trained classroom teachers. The grade 7 curriculum objectives for this content are presented in Appendix E. Specifically, the study examined the smoking knowledge, attitudes, and behaviours of a sample of grade 9 students exposed to the comprehensive health program in grade 7, as compared to a sample of grade 9 students who were not exposed to the comprehensive health program in grade 7.

This study also examined whether the relationship between the comprehensive school program and student smoking knowledge, attitudes and behaviours varied with gender and role modelling. Finally this investigation looked at the relationship between: 1) student smoking knowledge and their smoking behaviours and 2) between student smoking attitudes and their smoking behaviour. The literature indicates that each of these intervening variables can influence adolescent smoking behaviour.

Significance of the Study

This study reflects the writer's belief that smoking behaviour in adolescence is determined by a wide variety of variables including peer pressure, parental influence, knowledge, values, assertiveness skills, and decision-making skills. Students must be taught how to make effective decisions where risky behaviour is concerned. The "Adolescence: Healthy Lifestyles" program for grade 7 includes curriculum content which addresses the decision making process and making informed decisions. This comprehensive school health program assists students to make effective health decisions through the use of participating learning strategies. This includes active learning methods such as role play, small group discussions, case studies and community action projects which can go beyond the classroom and can help students to explore and practice positive health behaviours. The philosophy and goals of the program are presented in Appendix F.

As noted by Cameron, Mutter, and Hamilton (1991), the health-related problems of today's youth will not respond to simplistic or one-dimensional approaches. A comprehensive approach to school health advocates health instruction be coordinated with school health services, within a healthy school and community environment. However, as noted by the

Canadian Association for School Health (CASH)(1992), a common understanding of the comprehensive school health framework among educators, health professionals, social workers and community leaders is necessary for effective inter-agency cooperation.

There has been no research conducted to date in this province on the effects of a comprehensive approach to health education. In 1992, the Newfoundland and Labrador Department of Education distributed questionnaires to students participating in a pilot of the "Adolescence: Healthy Lifestyles" program. The purpose of the study was to examine students' attitudes about the usefulness of the program and obtain their opinions about program-related resource materials and classroom activities. While this provided feedback on the implementation of the instructional component, the present study assessed the program's impact in relation to specific health (smoking) knowledge, behaviour, and attitudes of students. Through this study the writer also attempted to determine if the relationship between comprehensive school health and adolescent smoking knowledge, attitudes, and behaviour varied with gender and role modelling, thereby laying the groundwork for future research.

King, Robertson, Warren (1985) reporting on "The Canada Health Attitudes and Behaviours Survey: 9, 12, & 15 Year Olds, 1984-85" revealed this province had the highest

proportion of young people smoking. King et al., (1988) revealed in "The Canada Youth AIDS Study: Newfoundland Report", that in comparison with the national average this province's youth reported having trouble making decisions. Any success in helping adolescents make effective decisions on the use of tobacco will likely help them make effective decisions with other types of risky behaviours. Our contribution to society may be enhanced if we yield graduates who by choice are less likely to develop tobacco-related diseases.

Societal pressures are increasing at an alarming rate. These are evidenced in the pressures imposed on family members by events such as marital breakups, family violence, job loss and substance abuse. Schools are in a position to assist students to deal with these pressures. The comprehensive school health education approach advocated is holistic. It allows students to observe the level of commitment from school administrators, teachers, parents, and community. We cannot advocate one thing and do another. This sends a powerful message to our youth. Assessment of the impact of the piloted comprehensive health program can help determine if goals need to be revised, or methods of implementation altered.

Research Questions

The following research questions guided the study:

1) Is there a relationship between the Comprehensive School Health Program and student smoking knowledge? Does this relationship vary with gender and role modelling?
2) What is the relationship between the Comprehensive School Health Program and student smoking attitudes? Does this relationship vary with gender and role modelling?
3) What is the relationship between the Comprehensive School Health Program and student smoking behaviour? Does this relationship vary with gender and role modelling?
4) Is there a relationship between student smoking knowledge and student smoking behaviour?
5) Is there a relationship between student smoking attitudes and student smoking behaviour?

Definitions

Comprehensive School Health Education:

School health education represents one component of the comprehensive school health program which includes the development, delivery, and evaluation

of a planned instructional program and other activities for students pre-school through grade 12, for parents, and for school staff; it is designed to positively influence the health knowledge, attitudes, and skill of individuals (American School Health Association, 1993).

Comprehensive School Health Instruction:

Comprehensive school health instruction refers to the development, delivery, and evaluation of a planned curriculum, pre-school through grade 12, with goals, objectives, content sequence, and specific classroom lessons which includes, but is not limited to, the following major content areas: community health, consumer health, environmental health, family life, mental and emotional health, injury prevention and safety, nutrition, personal health, prevention and control of disease, and substance use and abuse (American School Health Association, 1993).

Comprehensive School Health Program:

A comprehensive school health program includes an organized set of policies, procedures, and activities designed to protect and promote the

health and well-being of students and staff. It traditionally included health services, healthful school environment, and health education. It also should include, but not be limited to, guidance and counselling, physical education, food service, social work, psychological services, and employee health promotion (American School Health Association, 1993).

CHAPTER 2

Literature Review

Comprehensive School Health Program

The comprehensive health program for elementary students in this province piloted in 1991-92, and implemented in 1993, is titled "Adolescence: Healthy Lifestyles". The concepts in this program were developed based on a model of comprehensive school health proposed by the Canadian Association for School Health (CASH) (1992) and a similar model developed by the World Health Organization. The Department of Education's, "Adolescence: Healthy Lifestyles Curriculum Guide" (1993) has defined comprehensive school health as a "framework for school health education which is based on health promotion. It offers a broad spectrum of programs, activities and services involving a wide range of school and community personnel working collectively to enhance the well-being of young people by promoting positive health practices" (p. 25).

The basic idea here is to affect not only the health of youth, but the environment in which they live and learn. Our changing societal structure and our youth's view of conflicting information and messages produce an environment in which the ability to make health-promoting choices becomes

difficult for them. Shamai & Coombs (cited in CASH, 1992) noted that unless society really wants to change, schools will have limited impact. Schools are continuously faced with many health related issues to which they have often responded from an action-oriented, individual issue approach. Experience and research does suggest that a comprehensive integrated approach can influence the health-related knowledge, attitudes, and behaviours of students. However, commitment is needed from various societal sectors including students, families, education, health/social services, law enforcement and the community. As noted by WHO/UNESCO/UNICEF (1991):

> Education for health is a fundamental right of every child. Health is inextricably linked to educational achievement, quality of life, and economic productivity. By acquiring health-related knowledge, values, skills, and practices, children can be empowered to pursue a healthy life and to work as agents of change for the health of their communities. This goal can be achieved if we have the will. (p. 1).

Comprehensive school health has three components, namely, school health services, school environment, and health education/instruction. To be comprehensive, the

health education component must link with, and be conceptually related to, the other two components. The model of comprehensive school health is based on several theories significant in smoking prevention. In order to develop effective programs, we need to understand the factors and processes underlying health behaviour. Social learning theory and social influences theory developed by Bandura (1977) has provided the basis for numerous smoking prevention programs aimed at adolescents. Bandura (1977) viewed learning as a reciprocal interaction among the individual, environment, cognition and behaviour. As noted by McAlister (1981), social learning theory proposes that behaviour is the product of transactions between an individual and the social models, rewards, and punishments that are encountered in the environment. Bandura's (1982) theory of self-efficacy has also been applied in many areas of health education. Self-efficacy refer to one's belief in the ability to do a specific behaviour. Self-efficacy is a principal connection between knowledge and action since the belief that one can do a behaviour usually occurs before one actually attempts the behaviour. (Lawrence & McLeroy, 1986). A person must also know how to perform the behaviour (skills) and want to do the behaviour (incentives).

Perry and Murray (1982) in their theory, advocated that programs which have considered both environmental influences

on the adolescent and personal influences related to individual differences have shown greater success in changing behaviour than those designed solely to achieve specific behavioral outcomes. Perry and Murray's theory appears conceptually related to Bandura's social influences, social learning, and self-efficacy theories. The Newfoundland comprehensive school health curriculum reflects these various theories in that it is based on the delivery of a comprehensive body of knowledge related to health and personal development as well as enabling skills which will assist young people to make healthy lifestyle choices. Perry and Murray's approach considers the interaction between environmental influences (model structures, networks, the social system and community norms) and personal influences (individual skills, perception and personality). Discussion of the behavioral influences identified by Perry and Murray follows and relevant literature is presented.

Environmental Influences System

Within the adolescent's environment are four structures of influence (ranked from proximal to distal effect) which affect health behaviour. These include model structures, networks structures, social systems structures, and community messages structures. Those structures most proximal to the

behaviour and to the person are likely to affect behaviour the most and, as such, are the most appropriate targets for health promotion activities. Model structure includes the actual behaviour of significant others. Bandura (cited in Perry and Murray, 1982) noted that people acquire and are prompted to engage in behaviours as a function of observing others. Models that the adolescent may consider include parents, siblings, best friends, teachers, as well as television, movies, or music celebrities. The actual behaviour of those who are respected and admired by the adolescent directly influences how he/she behaves and so it is critical to consider the existing model structure in program development.

Since one group of adolescents who are difficult to influence are those whose parents smoke, parental involvement in smoking prevention may be a powerful enhancer. Perry, Pirie, Holder, Halper, and Dudovitz (1990) found high awareness and participation rates in the "Unpuffables Program", an activity package for adolescents and their parents. Parents reported their children can provide a strong incentive to consider cessation. Thus parental involvement in health education also might beneficially affect parental smoking habits. Parents demonstrate adult behaviour by their lifestyle and the way they communicate their values, norms, and beliefs. Miller and Hunter (1991)

found that within households, the probability that a young person smokes, how much they smoke, and the type of cigarette they smoke is closely associated with the smoking behaviour in the household. King and Coles (1992) reporting on "The Health of Canada's Youth: Views and Behaviours of 11, 13 & 15 Year Olds from Eleven Countries", supported this. They noted that for the 13 and 15 year olds surveyed in 1989-90, more students who smoked indicated that their parents smoked daily than did non-smoking students. This was especially apparent for the girls of both ages.

Fullen (cited in CASH, 1991) suggested that parental involvement in the instructional process is the key to helping at-risk students. Parent involvement in comprehensive school health can be enhanced through convenient scheduling for parent interviews, frequent teacher-pupil communication on student progress, training for parents, and home-based instructional activities. The power of parental influence must not be ignored. The adolescent's social environment influences behaviour by engendering beliefs. As indicated by McAlister (1981):

> A young person whose environment includes parents who routinely respond to stress by saying "I need a cigarette", is more likely to adopt the belief that cigarettes assist in management of arousal than one whose parents do not smoke. As well, the

> role of other siblings who smoke and their effect on health behaviour of the adolescent must not be de-emphasized. (p. 27)

Peer involvement in the delivery of school-based smoking prevention programs can enhance program effectiveness. Whereas parents, as noted by Grimes and Swisher (1989), were more influential where norms were concerned, peers tended to be more influential from the behaviour perspective. The finding that adolescents are more likely to smoke if their friends smoke has been used to justify smoking prevention programs that emphasize peer pressure resistance. Such programs are based on the social learning theory which assumes peer leaders are more effective because they serve as credible role models for other youth.

A study by Abernathy and Bertrand (1992) regarding Peer Assisted Learning (PAL), suggested these programs have some utility in preventing the uptake of tobacco use among young males but its efficacy with females has been negligible. These results suggest that with respect to gender, different instruction methods may be needed for females. It is important for those designing prevention programs for schools to be aware that more teenage girls than boys are smoking. King and Coles (1992) found a pronounced difference in the rate of increase between Canadian boys and girls; just over

three times as many boys smoke at age 15 as at age 11, but almost six times as many girls do.

Peer helpers should not act as replacements for trained professionals. Instead they should act as a "friend" and as a bridge to available support sources. Car (cited in CASH, 1992) suggested the necessary components for peer involvement in comprehensive school health education as:

> well-qualified adult leaders, clearly stated goals, effective recruitment and selection of helpers, training for peer helpers, peer helper involvement in goal setting, program development, supervision of peer helpers, evaluation of programs and on-going organizational structure. (p. 26)

Network structures that exert environmental influence are groups of people that interact with each other regularly such as peer groups, neighbourhood and families. Students trying to quit often describe the situations where smoking was initially learned or where it is likely to recur such as weekend parties, and peer or group gatherings after school. With this in mind networks that support health behaviour and reinforce individual choices must be established in adolescent health programs.

Social systems which influence adolescent behaviour include the rules, constraints, and health messages of formal groups such as school or church. Comprehensive school health requires schools to prepare for the creation and maintenance of a healthy school environment because it influences student health behaviour. Restrictive smoking policies according to Brink, Simons-Morton, Harvey, Parcel, and Tiernan (1988), may have a continuing influence on student's smoking behaviour even after graduation. To more effectively promote non-smoking, the school must support a non-smoking norm. However, non-smoking policies in schools are one of the most difficult to enforce and present a big discipline problem in today's schools. Obviously teacher adherence to smoking restrictions presents teachers as desirable role models. Such policies need to be clearly defined, communicated via specific interventions, and prominently displayed to students, faculty, and staff. Community agencies can also support the aims of comprehensive school health education by promoting a non-smoking norm. As part of their comprehensive health instruction, students in our province were asked to research tobacco policies in government offices, municipal offices, and school based offices. Neighbourhood people were interviewed to find out their attitudes to smoking bans.

The last of the environmental influences identified by Perry and Murray are community messages structures.

Community messages structures most distally influence adolescent behaviour. They offer messages about health through government regulations, media messages, and private health organizations. Various community health programs exist that promote health behaviour. Their inclusion in a comprehensive school health program is necessary. Because of their appeal to youth at highest risk for smoking, mass media provides a particularly effective way to deliver smoking prevention messages. To promote non-smoking, the federal government has recently sponsored several graphic television messages which target young people. Flay (1986) suggested media awareness programs are most effective when they are linked with educational or instructional programs. School based programs should be coordinated with community awareness campaigns.

In testing the ability of mass media interventions on the efficacy of school smoking prevention Flynn, Wordon, Selker-Walker, Bader, Gellor, and Gostanza (1992) reported significant reductions in reported smoking. ASHA (cited in CASH, 1992) recommended the student use media in school health programs by:

> contacting local TV or radio stations to suggest talk shows, organizing a school health "mini-series", writing a series of articles for local newspapers, preparing a public service

> announcement for local community television each month, asking the stations to include a health message with weather reports, student essays, contests, writing a regular column or hosting a talk show and meeting with editors about policy issues. (p. 27).

Shop owners willingness to sell cigarettes to minors must also be addressed. Health educators should consider personal and national campaigns to encourage owners to assume a degree of responsibility and to comply with existing legislation.

Personal Influences Systems

Despite mixed messages not all adolescents practice unhealthy patterns of behaviour. Some refuse to smoke even when pressured by their friends. Factors which account for such differences, Perry and Murray (1982) call personal influences. It includes three structures, ranging from most proximal to most distal. These include the behaviour repertoire, the perceived environment, and the personality structure. The behaviour repertoire is determined by how well the adolescent performs a particular behaviour, as well as the number of different skills he or she can draw on in a particular situation.

Bandura (1982) postulated a mechanism of behavioral change, that is, different modes of influence that alter coping behaviour partly by creating and strengthening self-percepts of efficacy. The challenge for the comprehensive approach is to increase the behaviour skills available to adolescents. Perry and Murray (1982) noted that one can predict future behaviour of an individual by the existing behaviour patterns and skills available because these shape the adolescent's responses to the environment. Such skills help resist peer pressures and advertising pressures. The degree of acquisition of these skills may vary with the gender of the adolescent.

Programs which incorporate the development of behavioral skills to resist pressures through active involvement according to Heimann-Ratain, Hanson, and Pereguy (1985), have demonstrated greater long-term success rates than those programs that only conveyed information. This is one of the biggest mandates in smoking prevention. It determines which adolescents are going to bow to school influences and which are not. With all the reasons kids have to smoke, it seems crucial to give them reasons not to.

We must provide anxious and insecure adolescents with support and instruction to reduce their susceptibility to the situational demands of their peers. In Newfoundland and Labrador, under the umbrella of comprehensive health, smoking

prevention curriculum instruction provides adolescents with opportunities to practice goal-setting, decision-making and refusal skills, and assertiveness skills via effective communication. Such an approach according to Elder and Stern (1986), provides a safe environment to build up a repertoire of skills through selective alternate activities, rehearsal of new skills, and direct feedback on changing behaviour patterns.

The perceived environment that exerts personal influence is how the adolescent perceives the environment. Jessor and Jessor, cited by CASH (1992), noted this may be more important than the actual behaviours exhibited. According to Schinke and Gilchrist (1983) smoking for many teenagers appears to constitute a "rite of passage" into adulthood. They found 56.6% of teenagers erroneously believed that over half the boys at school smoked and 49.5% erroneously believed half of the girls smoked. Smoking prevention must include strategies to adjust adolescent perceptions of the environment. The "Adolescence: Healthy Lifestyles" curriculum guide (1993) indicated that the actions of adolescents are often based on myths and misinformation and that this must be considered by those who direct their learning.

Personality structure exerts the most distal personality influence on health behaviour. This refers to factors such

as personal values, self-esteem, self-confidence, and personal self-management. It is important to note however that measurements of self-esteem are useful to help understand how young people feel about themselves in social situations. It is now widely accepted that adolescents' beliefs alone do not translate into healthy behaviour. Fishbein and Ajzen (cited in CASH, 1992) suggested that normative beliefs about what others think we should do, when combined with motivation, causes us to change our behaviour. To increase such motivation, smoking prevention programs must help adolescents clarify their own values and teach social skills that reinforce those values. Adolescents are often more influenced by the negative consequences of refusing cigarettes, that is, the environment, than they are by personal beliefs. The goal must be to provide them with the necessary skills to resist direct social pressure to smoke by helping them build self-confidence, self-esteem and means to cope with anxiety in social situations.

Students through part of their comprehensive school health curriculum instruction, were involved in role play to practice cigarettes refusal skills in peer pressure situations. They also took part in group discussions which identified pressure situations, alternative choices, and negative consequences of smoking.

Bringing the environmental and personal influences systems together is essential. Health promotion among adolescents is a particularly challenging one because it is a time of physical, cognitive, and moral transition in the midst of major societal pressures. However, the importance of fostering non-smoking at an early age cannot be over-estimated. The earlier one starts smoking the greater the likelihood of health problems, the harder it is to quit, and the greater the chance of relapse if one does quit. To counteract peer influences and role models that encourage smoking during school years, the school can provide a comprehensive program that includes education and a non-smoking environment. As noted by Perry and Murray (1982), we can work to construct a healthier environment through models promoted in school, the networks utilized and the opportunities created for healthy choices.

Health behaviour can be taught within schools to increase adolescents' health behaviour repertoires, to correct their perceptions of the environment and to provide them with values and skills to recognize and affect their environment. A review of the "Adolescence: Healthy Lifestyles Curriculum Guide" indicates that some of the learning strategies recommended reflect an attempt to bridge the environmental and personal influences systems. These include the use of role play to practice cigarette refusal

skills in peer pressure situations, as well as participation in group discussions which identify pressure situations, alternative choices, and negative consequences of smoking.

Summary

The literature review supports the more recent view that new and multifaceted approaches to school health education is essential. The sources of health behaviour are very complex. Health education programs which seek to impart knowledge to students presuming that knowledge will translate into the desired behaviour are based on narrow conceptualizations and are unlikely to have a significant impact.

Given that the onset of smoking is believed to be a complex process mediated by several interacting forces including both environmental and personal factors, the development of prevention programs must attempt to address these issues.

During the school years, students are exposed to role models who encourage smoking initiation. To counteract these influences, schools can provide a comprehensive program which includes education and a nonsmomokingenvironment. A educationcomprehensive school health program can influence the health related knowledge, attititudeand behaviours of students. However it must be recognized that smoking

behaviour is determined by both environmental aXand psychosocial factors and this can372Xlimithe impact of such programs.

The involvement of family and the community at large is paramount to the success of comprehensive school health education. A non-smoking norm must be desired and fostered by parents, teachers and society at large. Only through these means can schools be successful in assisting adolescents, especially those considered high risk, to make healthy lifestyle choices.

Conceptual Framework

The conceptual framework for this study involves six key concepts. These concepts are: (1) comprehensive health education, (2) gender, (3) role modelling, (4) smoking knowledge, (5) smoking attitudes, and (6) smoking behaviour. The impact of comprehensive health education on adolescent smoking knowledge, attitudes and behaviour is central to this conceptual framework because this is the primary purpose of the present study. This framework is founded on several theories which have been described in the literature review. These include the social learning theory, social influence theory proposed by Bandura (1977), and self-efficacy theory proposed by Bandura (1982). Also incorporated is the

environmental and personal influences theory proposed by Perry and Murray (1982).

Bandura, in describing his social learning and social influences theories, and Perry and Murray in their discussion of environmental influences, identified role modelling influences as critical in predicting adolescent health behaviour. Adolescents engage in behaviours as a function of observing the actual behaviour of those they admire and respect. Such role models include peers, parents and siblings. Bandura defines self-efficacy as the adolescent's belief in his/her ability to perform a specific behaviour. This is reflected in smoking attitudes and is identified by Bandura (1982) as the main connection between smoking knowledge and smoking behaviour.

Perry and Murray, in discussing personal influences, suggested that smoking behaviour can be predicted by the present behaviour patterns and skills available, because they shape the adolescents response to the environment. It is possible the development of a repertoire of refusal skills may vary with gender.

The comprehensive school health program is grounded in the theories previously described. It's main challenge is the development of a thorough health knowledge base and personal development, as well as enabling skills which help adolescents choose not to smoke. Because the effectiveness

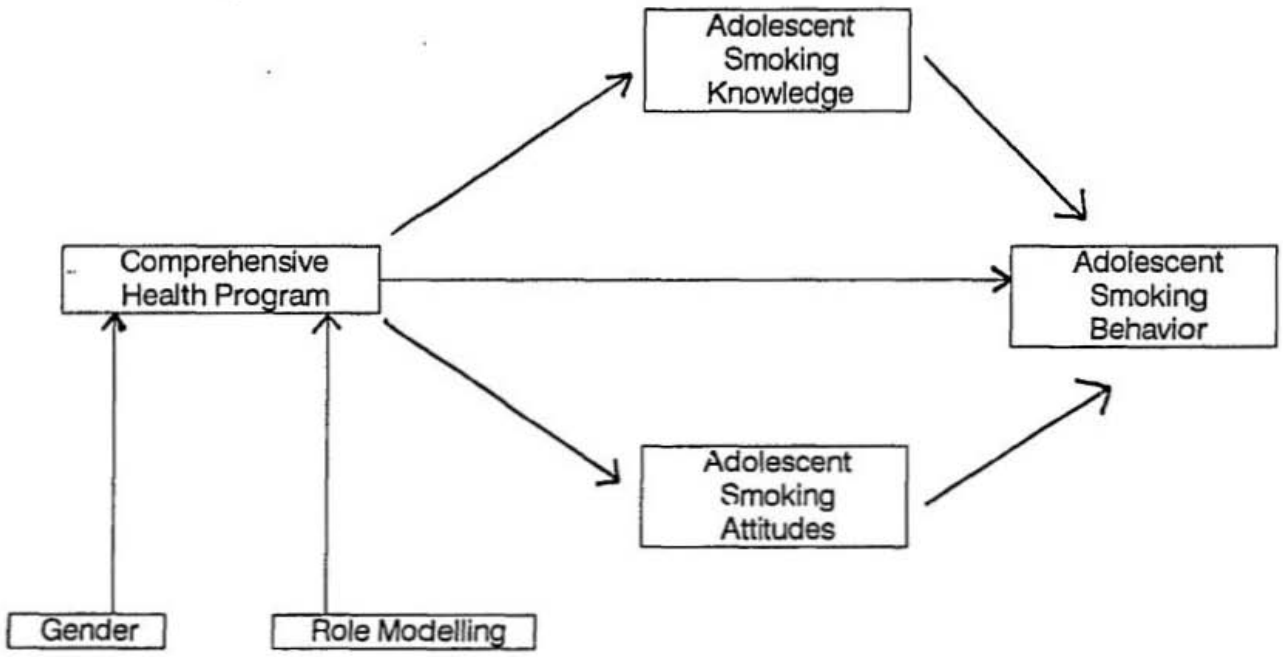
of school health education can vary with gender and role modelling influence, this was incorporated into the conceptual framework.

An adolescent's decision to smoke is not a matter of simple choice but rather likely the result of a complex set of influencing factors. Determining the best predictors of adolescent smoking behaviour has great implications, not only for the health of the nation, but also for its' economic welfare in light of rising health care costs.

The conceptual model (Figure 1) arising from the conceptual framework previously described by the investigator, depicts the various background factors believed to impact adolescents' smoking knowledge, behaviour, and attitudes. The focus of the model is the direct impact of the comprehensive health program on the smoking behaviour of adolescents. The direct impact of comprehensive health education on adolescent smoking knowledge and attitudes is also considered. As the model further depicts, factors such as gender and role modelling may affect the relationship between the comprehensive school health program and the outcome variables. Because the variables smoking knowledge and smoking attitudes may themselves be related to smoking behaviour, their potential impact is included in the conceptual model. The interrelationships of these various concepts formed the conceptual framework for this study.

Figure 1

Conceptual Model



CHAPTER 3

Methodology

Research Design

The need to evaluate the effectiveness of school health programs in relation to health knowledge, attitudes and behaviours is a belief supported by this investigator and one which is well-documented in the literature. Thus the main thrust of this study was to assess the effectiveness of smoking prevention and cessation efforts which were delivered as part of a provincially-piloted comprehensive school health program to grade seven students during the 1992-1993 school year.

A quasi-experimental, static-group comparison design (Borg & Gall, 1989, p. 689) was used with nonrandom assignment of control and experimental groups. A total of 191 students who entered grade nine during the 1994-1995 school year, participated in the study. The experimental group included 122 adolescents who were exposed to the new program in grade seven. The control group was composed of 69 adolescents who were not exposed to the new program in grade seven.

The study examined the effect of the independent variable, comprehensive health education on each of the dependent variables: (1) student smoking knowledge (2) student smoking attitudes and (3) student smoking behaviour. The study also examined whether the relationship between comprehensive health education and the outcome variables varied with gender and role modelling influence. The output variables student smoking knowledge and student smoking attitudes were also used as independent variables to examine their effect on student smoking behaviour. A forty-two item questionnaire (Appendix D) developed by the investigator, was used to gather the data. Because the experimental grade nine group received the treatment curriculum in grade seven it was not possible to pre-test this group and therefore not feasible to pre-test the control group.

The Setting

The setting was urban in nature. It included one school in the St. John's area which had 76 students enrolled in grade 9, and another school in the St. John's area which had 135 students enrolled in grade 9. The research was conducted in the 1994-1995 school year.

The Sample

The experimental group consisted of a convenience sample of four classes of grade nine students who were exposed to the comprehensive health program titled "Adolescence: Healthy Lifestyles" in the 1992-1993 school year as part of a provincial pilot. There were 122 adolescents in this group. The control group consisted of a convenience sample of three classes of grade nine students who attended a school not involved in the pilot project and thus were not exposed to the piloted program. There were 69 adolescents in this group.

The total sample consisted of 93 male students and 98 female students. Subjects in the experimental group were not randomly assigned. An effort was therefore made by the investigator to select a control school with characteristics which matched those of the experimental school. To select a comparison school most similar to the experimental school, the investigator consulted the Assistant Superintendent at the R.C. School Board, the Health, Home Economics and Family Studies Consultant at the Department of Education, and the Principal at the experimental school. The school chosen was noted to be closely matched to the experimental school with respect to socioeconomic status and religious denomination.

Procedure

Approval to conduct the study was obtained from the St. John's Roman Catholic School Board Assistant Superintendent on behalf of the Superintendent. Following this, the identified schools were contacted to seek permission from the principals. Letters forwarded to the board superintendent and school principals outlining the purpose and procedure of the study are included in Appendix A and B respectively. Initial contact was then made with the seven homeroom teachers of the classes involved in the study, to explain the purpose of the study and to enlist assistance in obtaining parental/guardian consent for students to participate.

Three weeks prior to administration of the questionnaire, the classroom teachers distributed the consent forms to the students and explained the purpose of the study. These consent forms explained to parents/guardians the purpose and procedure of the research and asked for their consent for inclusion of their child in the study (Appendix C). The students were instructed to bring the form home and discuss it with their parents/guardians. They were then instructed to return the form to the teacher within two days. However, because of the large sample size, several school visits were needed and additional consent forms were distributed to get the largest return possible. Sixty-nine

of the seventy-six students in the control group (91 percent) returned the consents and all were granted permission to participate in the study. One hundred and twenty-three of the one hundred and thirty-five students in the experimental group (91 percent) returned the consents. One declined permission while 122 granted permission. This constituted a return rate of 91% for each school.

The questionnaires were administered in the first week of May to both the experimental and control groups. Preferred time of administration was determined in consultation with the respective school principals and teachers involved. All efforts were made to ensure a time was chosen which was the least disruptive to the school day and one which minimized loss of instructional time.

Teachers in the respective classrooms were asked for their assistance in the administration and collection of questionnaires and answer sheets. Adherence to a specific set of typed instructions provided to each teacher was stressed. After collection, the questionnaires were computer scanned and the data were coded and prepared for analysis.

Ethical Considerations

Once the study was approved by the Faculty of Education's Ethics Review Committee, permission to conduct

the study was obtained from the school board responsible for the schools involved. Following this, permission to carry out the research was obtained from the principals of the respective schools. Parental/Guardian consent was then secured for each student involved.

As outlined in the "procedure", all reasonable steps were taken to ensure the students and parents gave an informed consent. Students and parents were assured of the confidentiality of the child's responses in relation to data collection.

Instrumentation

Data for this study were gathered using identical, self-report questionnaires and answer sheets which were machine scannable. The questionnaire was developed by this investigator. It consisted of 42 items and was divided into 4 sections. See Appendix D for a sample questionnaire.

Section A was composed of 6 items which secured demographic information on background variables such as gender and role modelling. Role modelling included the smoking behaviour of friends, mothers, fathers, and siblings. Items on friends smoking behaviour was broken down into having no friends who smoke, having "1 to 3" friends who smoke, and having "4 or more" friends who smoke. Questions

asking whether the mother, father, or brothers and/or sisters smoke were scored dichotomously as yes or no.

Section B included 6 items which obtained information on students past and current smoking behaviour as well as the frequency of smoking. Questions included whether the student ever smoked regularly and whether they smoked now. Students were asked to choose the option yes or no for their answer. The grade the student started smoking and the grade they quit (if applicable) was also questioned. The options for the amount smoked ranged from once a month to every day.

Section C identified the students' level of knowledge with respect to smoking issues. It consisted of 8 questions on smoking issues identified as core curriculum content on smoking issues in the text used for the "Adolescence: Healthy Lifestyles" program (Robertson & Mang, 1990). The answers to this section were scored dichotomously as true or false. Section D consisted of 23 items which identified student attitudes related to smoking. These items were answered using a 4-point Likert scale ranging from A (strongly agree) to D (strongly disagree).

A pre-test of the questionnaire was conducted with 15 grade nine students in a school not involved in the study, but one whose characteristics were noted to be similar to the schools involved in the study. Based on the results, modifications were made to the instrument which did not alter

its psychometric properties. These included formatting changes which reduced the number of pages to be administered to each student and changes in the sequencing of the sections which enhanced the accuracy of subjects' responses. The pre-test was conducted within the estimated time frame and the feedback from students indicated they understood the questions.

Validity and Reliability

The content validity of the questionnaire was assessed by several independent reviewers who were deemed experts in this area. This included: 1) the Health, Home Economics and Family Studies Consultant at the Department of Education, 2) a teacher employed by the R.C. School Board who was instrumental in the development of the new health program, and 3) two Nurse Educators with theoretical and clinical expertise in smoking-related health issues. These reviewers were asked to examine the questions for their appropriateness and relevance to smoking knowledge, attitudes and behaviours. Based on their feedback, six attitudinal items were added to obtain data on student perceptions of their decision-making ability and their perception of whether peer pressure affects student smoking behaviour. A grade 9 English teacher

reviewed the questionnaire to ensure the language and reading level was appropriate for grade 9 students.

The reliability coefficient Cronbach alpha was used to measure internal consistency of the attitudinal items. This reliability check was carried out to determine if all instrumental items in this section measured attitude. Based on the results no changes were made and all items were left intact with an alpha rating of .84.

Data Analysis

Upon completion of the questionnaires, the data analysis was conducted. Both descriptive and inferential statistics were generated. Statistical analysis of the data was facilitated through use of the Statistical Package for Social Sciences (SPSS for Windows, Version 6.1). This program was originally developed by Nie, Hull, Jenkins, Steinbrenner & Bent in 1975. Throughout the data analysis, significant findings were reported at the .05 level.

The 3 independent variables were: (1) comprehensive school health program, (2) gender, and (3) role modelling. Results of initial analysis related to role modelling influence on student smoking behaviour, necessitated the breakdown of the role modelling (role) variable into: (1) friends' smoking behaviours (friends

smoke), (2) mothers' smoking behaviour (mothers smoke), (3) fathers' smoking behaviour (fathers smoke) and (4) siblings' smoking behaviour (siblings smoke). The dependent variables described were: (1) student smoking knowledge, (2) student smoking attitudes and (3) student smoking behaviour. Student smoking knowledge and attitudes also served as independent variables to examine their effect on student smoking behaviour.

Descriptive statistics were used to describe sample characteristics for both the experimental and control groups. Frequencies and percentages were generated for the various variable items. Inferential statistics were used to analyze the data obtained from both groups.

A correlation matrix was created to identify relationship between the independent and dependent variables. Next, a simple linear regression analysis was carried out to discover the unique effects of each independent variable on each of the outcome variables, as identified earlier in this section. Following this, multiple regression analysis was conducted to permit prediction of outcomes and provide explanations of the interrelationships among variables. This technique tests the b-weights for significance, indicating whether each independent variable is contributing significantly to the variance accounted for in the dependent variable (Munro & Page, 1993).

Multiple regression enters independent variables into a model so that hypotheses concerning their relative contribution to the variance of the dependent variable can be tested. The appropriate and versatility of multiple regression as a technique in evaluating the impact of intervention programs has been described by Cohen and Cohen (cited in Allendorf, Sunseri, Cullinan, & Oman, 1985) who outline the application of multiple regression in the formal analysis of causal models.

Check for Violations

A data check for violations was conducted. Based on this information, the following assumptions were noted to be satisfied: 1) normality, of distribution 2) homoscedasticity, 3) linearity and 4) independence of the sample.

Limitations of the Study

1) Because the curriculum was piloted in the 1992-93 school year, pre-testing of students at the beginning of the study to determine the homogeneity of the two groups with respect to the dependent variables was not possible.

2) Collection of saliva samples for thiocyanate and expired air samples for carbon monoxide prior to questionnaire completion would have increased the likelihood of valid reporting of student smoking behaviour.

3) Because the curriculum has been piloted in specific schools, it was not possible to obtain a random sample for the experimental group. However, effort was made to match the schools so the student cohorts are relatively similar.

4) There is no assurance that the "Adolescence: Healthy Lifestyles" program was implemented by teachers involved in the pilot exactly as outlined in the Department of Education's curriculum guide.

5) Because this study is limited to two schools in the St. John's area, results will not be generalizable beyond these schools.

CHAPTER 4

Presentation and Discussion of Results

This chapter presents the findings and relevant discussion of the study. First, descriptive statistics which highlight sample characteristics are presented and discussed. Both the experimental and control samples are discussed and characteristics according to gender are also presented.

The descriptive statistics are followed by presentation and discussion of findings for hypotheses generated from each of the research questions. Correlational statistics and multiple regression techniques were used to investigate the relationships among these variables: (1) comprehensive health education, (2) gender, (3) role modelling, (4) student smoking behaviour, (5) student smoking attitudes and (6) student smoking behaviour.

The conceptual framework for the investigation was founded on several theories. These include social learning theory, social influences theory (Bandura, 1977), and self efficacy theory (Bandura, 1982), plus the environmental and personal influences system theory (Perry and Murray, 1982). The conceptual model (see Figure 1, p. 35) depicted the relationships between the variables (comprehensive health education, gender, and role modelling) and (student smoking

knowledge, student smoking attitudes, and student smoking behaviour). The relationships of student smoking knowledge and student smoking attitudes to student smoking behaviour were also incorporated into the model.

Characteristics of the Sample

The descriptive statistics which describe sample characteristics are presented and discussed first. Although these statistics do not answer any of the research questions for the study, they do provide some insight into the nature of the samples. Frequencies and percentages which highlight characteristics for both the experimental and control samples are presented in Table 1. Table 2 presents the same information according to gender.

As indicated by the frequencies in Table 1, there were more males (65) than females (57) in the experimental group while there were more females (41) than males (28) in the control group. However, as depicted in Table 2, there was little difference in the total sample in the number of males (93) as compared to females (98). It is important to note that results of the multiple regression analyses which followed indicated that gender significantly predicted the outcome variable smoking attitudes only.

Table 1

Characteristics of the Control and Experimental Samples

Characteristics	Control (n=69)		Experimental (n=122)	
	Frequency	%	Frequency	%
Gender				
Males	28	40.0	65	39.7
Females	41	60.0	57	46.7
Role modelling				
Friends Smoke				
None	26	37.7	23	18.9
1 to 3	22	31.9	25	20.5
4 or more	21	30.4	74	60.7
Mothers Smoke	24	34.8	46	37.7
Fathers Smoke	22	31.9	46	37.7
Siblings Smoke	13	19.1	31	25.4
Student Smoking Behaviour				
Smokes/Smoked Regularly	23	33.3	58	47.5
* Smokes/Smoked Daily	17	73.9	44	75.9
Started Grade 6	3	13.0	19	32.8
Started Grade 7	10	43.5	22	37.9
Started Grade 8	8	34.8	14	24.1
Started Grade 9	2	8.7	3	5.2
**Smokes Now	14	21	42	34.4

* Percentages of students who smoke/smoked daily (control = 73.9 and experimental = 75.9) is derived from the % of students who claimed they smoke/smoked regularly (control = 33.3 and experimental = 47.5).

** Percentages displayed for students smoking now (smokes now) is based on the total sample for each group (control n = 69 and experimental n = 122).

Table 2

Characteristics of the Male and Female Samples

Characteristic	Males (n=93)		Females (n=98)	
	Frequency	%	Frequency	%
Role modelling				
Friends Smoke				
None	15	16.3	33	33.7
1 to 3	25	27.2	22	22.4
4 or more	52	56.5	43	43.9
Mothers Smoke	31	33.7	38	38.8
Fathers Smoke	32	34.8	36	36.7
Siblings Smoke	25	27.5	19	19.4
Student Smoking Behaviour				
Smokes/Smoked Regularly	42	45.7	39	39.8
* Smokes/Smoked Daily	34	80.9	27	69.2
Started Grade 6	13	30.9	8	20.5
Started Grade 7	22	52.4	9	23.1
Started Grade 8	6	14.3	18	46.1
Started Grade 9	1	2.4	4	10.3
**Smokes Now	29	31.5	27	27.6

* Percentages of students who smoke/smoked daily (males = 80.9 and females = 69.2) is derived from the % of students who claimed they smoke/smoked regularly (males = 45.7 and females = 39.8).

** Percentages displayed for students smoking now (smokes now) is based on the total sample for each group (male n = 93 and female n = 98).

Descriptive statistics for peer smoking behaviour (Table 1) demonstrated that 37.7% of the control group and 18.9% of the experimental group reported that none of their close friends smoke. Table 2 shows that 16.3% of males and 33.7% of females reported that "none" of their close friends smoke. In contrast, the percentages increased when students reported on smoking behaviour of "1 to 3" and "4 or more" close friends. 30.4% of the control group and 60.7% of the experimental group believe that "4 or more" of their close friends smoke (Table 1). Table 2 shows that more males (56.5%) than females (43.9%) reported that "4 or more" of their close friends smoke. These statistics differ from those reported in a study conducted by Price, Telljohann, Roberts, and Smit (1992). They found that 58%, 69%, and 74% of students at 3 respective schools believed that "none" of their close friends smoke while 17%, 9%, and 8% respectively reported that "4 or more" of their close friends smoke.

This gives some indication as to the large numbers of teens that appear to be smoking in the schools involved in this Newfoundland (NF) study and lends support to the well-documented view that peers should be involved in any smoking prevention efforts in school health education programs. However, as noted in the literature review, students often have a misperception regarding the number of peers smoking, tending towards over estimation of the numbers.

Both groups reported large numbers of parents smoking. The experimental group (Table 1) reported 37.7% of mothers smoked as compared to 34.8% in the control group. In the experimental group more fathers (37.7%) were reported to be smoking than in the control group (31.9%). Overall more mothers (36.3%) than fathers (35.8%) were reported to be smoking. The prevalence of parents smoking, as perceived by students, was higher than that reported for adult smoking in a Health Canada Survey on Smoking (1994) at 29% for both Canada and NF. There was little difference in the Canadian survey in the prevalence between men (30%) and women (29%) who smoke. The fact that more mothers than fathers were noted to be smoking in the present study is interesting in view of later findings. Results reported in the multiple regression analysis which follow indicate mothers' smoking behaviour significantly predicted students' smoking behaviour, while fathers' smoking behaviour did not.

Greater sibling smoking behaviour was reported (Table 1) by the experimental group (25.4%) than the control group (19.1%). Later regression analysis showed sibling smoking behaviour did significantly relate to student smoking behaviour. The view that household smoking behaviour affects childrens smoking behaviour is supported in the literature. Miller & Hunter (1991) noted that within family and household settings, social pressures operate to create homogeneity in

smoking behaviour. Perhaps as a result, smoking-related disease may cluster within household or family systems. The numbers of role models (peers, parents and siblings) reported to be smoking is important in light of the potential effect on adolescent smoking behaviour. Social learning theory, as described by Bandura (1977), emphasizes the importance of modelling in the initiation, maintenance, and extinction of behaviour.

There were more students smoking now in the experimental group (34.4%) compared to the control group (21%) as reported in Table 1. The percentage of students who were at some time regular smokers was higher for the experimental group (47.5%) than for the control group (33.3%). The fact that there may have been more smokers in the experimental group than the control occurred by chance, since smoking behaviour was not determined when the samples were chosen. The percentage of students smoking for the total sample was 29.5%. This is comparable to the incidence of smoking reported by Health Canada (1994) for those aged 15-19 at 29%, with 27% being young men and 30% being young women. In the present study Table 2 shows that 31.5% of males were reported smoking as compared to 27.6% of females.

Review of the frequencies and percentages for the grade in which students started smoking indicated that the majority of students started smoking in grade 7 for both the

experimental (37.9%) and the control (43.5%) groups. However a large percentage started smoking in grade 6 with 13% reported for the control group and 32.8% for the experimental group. Few students started smoking in grade 9 with 8.7% reported for the control group and 5.2% for the experimental group (Table 1). This supports the view that school smoking prevention efforts need to start in the primary grades. This is particularly important for males who were reported to have started smoking earlier than females (Table 2). This need may be addressed in the new school health program for grades 4, 5 and 6 entitled "Towards a Comprehensive School Health Program", which was implemented in this province in September, 1993. Students involved in this present study were not exposed to this program.

Sarason, Mankowski, Peterson & Dinh (1992) noted that understanding which reasons for tobacco use that are most prevalent at various stages of the smoking onset process might be useful in designing prevention program components to address specific motivations for using tobacco at different stages of onset. Results of psychosocial stage of adolescent research conducted by Eckhardt, Woodruff & Elder (1994) supported this view. They indicated that variables which predict early smoking may be different than ones that predict smoking later in adolescence.

Relationships Among Variables Depicted in the Conceptual Model

The analysis which follows was carried out in several stages. First, a correlational matrix was constructed to examine relationships between the variables. Next individual regression analyses were conducted to investigate the amount of unique variance in the dependent variables explained by each of the independent variables identified in the research questions. Additional regression analysis were carried out in which the dependent variables (smoking knowledge, attitudes, and behaviours) were regressed on each of the independent variables to determine the best predictors of the outcome variables.

Results Related to Student Smoking Knowledge

The first research question, as stated in Chapter 1, p. 13 asked if there was a relationship between the comprehensive school health program and student smoking knowledge. Does this relationship vary with gender and role modelling? From this research question the following three hypotheses were generated:

1. There will be a significant relationship between exposure to the comprehensive health program and

student smoking knowledge. (Reject) - $F(1,186) = .145$, $p > .05$.

2. There will be no significant relationship between gender and student smoking knowledge. (Accept) - $F(1,185) = .184$, $p > .05$.
3. There will be no significant relationship between role modelling and student smoking knowledge. (Accept) - $F(1,186) = .170$, $p > .05$.

Initially, the dependent variable (student smoking knowledge) was regressed on each of the independent variables (comprehensive health program, gender and role modelling). These analyses were conducted to examine whether either of these variables uniquely contributed to variance in student smoking knowledge. Next, the dependent variable, student smoking knowledge, was regressed on all three independent variables. This analysis was conducted to determine which variables, when others were controlled statistically, were the best predictors of student smoking knowledge. The knowledge items are found in Section C of the questionnaire (Appendix D). Responses to these items were scored dichotomously as true or false. The correct answer was coded as 1 and the wrong answer was coded as 2.

As indicated by the correlation coefficients shown in Table 3, and the multiple regression results for the unique

relationship of each of the independent variables to student smoking knowledge in Table 4, none of the relationships were found to be statistically significant. The unique relationship of the comprehensive health program to student smoking knowledge was not significant and yielded: $F(1,186) = .145$, $p = .70$. The amount of unique variance in smoking knowledge explained by the comprehensive health program was small at .001 (Table 4). This result holds when all independent variables are regressed together on student smoking knowledge. When controlling for other variables, the comprehensive health program was not significantly related to student smoking knowledge with a beta value of .022, $t = .282$, $p = .778$ (Table 5).

Thus hypothesis 1 was rejected and it was concluded that with respect to student smoking knowledge, there was no difference between the experimental group who were exposed to comprehensive health education and the control group who did not receive the program.

It is important to note that students in both groups were very knowledgeable with respect to the smoking issues tested. Students in the experimental group answered the knowledge questions correctly between 85.9% and 97.5% of the time, while the control group answered correctly between 87% and 97.1% of the time. Unfortunately, knowledge may not be translated into healthy behaviour. As noted by Dignan,

Table 3

Correlations Between the Variables in the Study: Comprehensive Health Program, Gender, Role modelling, Smoking Knowledge, Smoking Attitudes, and Smoking Behaviour.

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Comprehensive Health Program (1)	1.000					
Gender (2)	-.123 (.052)	1.000				
Role modelling (3)	.223 (.001)	-.117 (.062)	1.000			
Knowledge (4)	.043 (.287)	.029 (.351)	.064 (.201)	1.000		
Attitudes (5)	.045 (.276)	-.203 (.003)	.456 (.000)	-.151 (.022)	1.000	
Behaviour (6)	.127 (.046)	-.062 (.208)	.482 (.000)	-.107 (.079)	.604 (.000)	1.000

The significance level is given in brackets directly below the coefficient.

Table 4

Unique Regression Results for Student Smoking Knowledge on each of the Independent Variables (Comprehensive Health Program, Gender and Role modelling).

	SMOKING KNOWLEDGE				
Independent Variables	B	SE B	Beta	t	p.
Comprehensive Health Program	.042	.109	.028	.381	.70
Multiple R = .028 R^2 = .001					
Gender	.045	.106	.032	.429	.67
Multiple R = .032 R^2 = .001					
Role modelling	.016	.039	.030	.412	.68
Multiple R = .030 R^2 = .001					

p. = probability

Table 5

Regression Analysis Results for Student Smoking Knowledge on all of the Independent Variables (Comprehensive School Health, Gender and Role modelling).

	SMOKING KNOWLEDGE				
Independent Variables	B	SE B	Beta	t	p.
Comprehensive Health Program	.032	.115	.022	.282	.778
Gender	.054	.108	.037	.501	.617
Role	.014	.041	.026	.343	.732
Multiple R = .049 R^2 = .002					

p. = probability

Block, Steckler, & Cosby (1985), although research has shown that smoking education can be effective if it includes the psychosocial aspects of the adolescent and society, programs which teach resistance to peer pressure and other social aspects with knowledge are not always successful in preventing the onset of smoking.

The fact that in general the students in this study were very knowledgeable on smoking issues and yet many of them smoke, may indicate that only a small percentage of instructional time should be spent on smoking knowledge issues. The vast majority of time should possibly be spent on skills such as decision-making, assertiveness, resistance to peer pressure, and communication. Green (1981) noted that necessary cognitive skills for the adolescent include the ability to acquire health knowledge, to comprehend it and apply it to one's own life situation, to analyze and synthesize health-related knowledge and to evaluate alternatives.

The unique relationship of gender to student smoking knowledge yielded: $F\ (1,185) = .184$, $p = .668$ and was thus not significant. In Section A of the questionnaire (Appendix D), gender was coded as 1 for male and 2 for female. The amount of unique variance in smoking knowledge explained by gender was small at .001 (Table 4). This initial result was supported when all independent variables were regressed

together on student smoking knowledge. Table 5 shows that when controlling for other variables, gender was not significantly related to student smoking knowledge with a beta value of .037, t = .501, p = .617. Therefore hypothesis 2 was accepted and it was concluded that the relationship between the comprehensive health program and student smoking knowledge did not vary with gender.

As noted in the presentation on sample characteristics, both males and females were very knowledgeable with respect to smoking issues. These results suggest that instruction methods with respect to smoking knowledge presentation and acquisition were equally effective for males and females in the comprehensive health program.

The unique regression results of role modelling on student smoking knowledge yielded: F (1,186) = .170, p = .681. This result was not significant and as shown in Table 4, the amount of unique variance in smoking knowledge explained by role modelling was small at .001. This result was supported when student smoking knowledge was regressed on all independent variables. Table 5 shows that when controlling for other variables, role modelling was not significantly related to student smoking knowledge with a beta value of .026, t = 343, p = .732. Therefore, hypothesis 3 was accepted and it was concluded that the relationship between the comprehensive health program and

student smoking knowledge did not vary with role modelling. However as stated previously, most students were very knowledgeable on smoking issues.

Results Related to Student Smoking Attitudes

The second research question which guided the study, as stated in Chapter 1, p. 13, was: What is the relationship between the comprehensive school health program, and student smoking attitudes? Does this relationship vary with gender and role modelling? From this research question the following three hypothesis were generated:

1. There will be a significant relationship between exposure to the comprehensive health program and student smoking attitudes. (Reject) - $F(1,178) = .536$, $p > .05$.
2. There will be no significant relationship between gender and student smoking attitudes. (Reject) - $F(1,177) = 7.984$, $p < .01$.
3. There will be a significant relationship between role modelling and student smoking attitudes. (Accept) - $F(1,177) = 48.092$, $p < .001$.

First the dependent variable, student smoking attitudes, was regressed on each of the independent variables:

comprehensive health program, gender, and role modelling which were identified in the second research question. These analyses were conducted to determine whether these variables uniquely contributed to variance in student smoking attitudes. Next, student smoking attitudes was regressed on all three independent variables. Thus it could be determined which independent variables, when others were controlled statistically, were the best predictors of student smoking attitudes. Attitudinal items used in the present study are identified in Section D of the questionnaire (Appendix D). These items were answered using a 4-point Likert scale ranging from A (strongly agree) to D (strongly disagree). These options were computed using a code ranging from 1 (strongly agree) to 4 (strongly disagree). Higher values on this measure indicated stronger anti-smoking attitudes.

Examination of the correlation coefficients in Table 3, p. 59 and the multiple regression results for the unique relationship of each of the independent variables to student smoking attitudes in Table 6, p. 67, reveal that the independent variables gender and role modelling were significantly related to student smoking attitudes. The unique variance in student smoking attitudes explained by the comprehensive health program was not significant: $F(1,178) = .536$, $p = .47$, $R^2 = .003$ (Table 6). This result holds when smoking attitudes is regressed on all three independent

variables. Table 7, p. 69 shows that when controlling for other variables, the comprehensive health program was not significantly related to students smoking attitudes with a beta value of -.071, t = -1.047, p = .297. Thus hypothesis 1 was rejected and it was concluded that with respect to student smoking attitudes, there was no difference between the experimental group who were exposed to the comprehensive health program and the control group who did not receive the program.

It is possible that immediately following the program, the experimental group may have had greater anti-smoking attitudes in grade 7 than the control group but these may have decayed somewhat since then. A study by Pfau & VanBockern (1994) found that adolescent attitudes opposing smoking quickly deteriorate, making it hard to resist smoking. These researchers' results clearly showed the vulnerability of nonsmokers' attitudes toward smoking during the seventh and eight grades.

Positive attitudinal change with respect to health has been shown to be difficult to achieve. A large scale evaluation study across 20 of the United States found that although school health education had large effects on student

Table 6

Unique Regression Results for Student Smoking Attitudes on each of the Independent Variables (Comprehensive Health Program, Gender and Role modelling).

	SMOKING ATTITUDES				
Independent Variables	B	SE B	Beta	t	p.
Comprehensive Health Program	.868	1.186	.055	.732	.465
Multiple R = .055 R^2 = .003					
Gender	-3.168	1.121	-.208	-2.826	.005
Multiple R = .208 R^2 = .043					
Role modelling	2.601	.375	.462	6.935	.000
Multiple R = .462 R^2 = .214					

p. = probability

knowledge, the effects on student attitudes was small (Connell, Turner, & Mason, 1985).

The unique contribution of the independent variable role modelling to student smoking attitudes yielded: $F\ (1,177) = 48.092$, $p < .001$. This relationship was significant and as shown in Table 6, the amount of unique variance in student smoking attitudes explained by role modelling was 21 percent, $t = 6.935$, $p = .000$. When smoking attitudes was regressed on all independent variables, role modelling was identified as the best predictor of student smoking attitudes with a beta value of .46. Thus hypothesis 3 was accepted. These results are displayed in Table 7, p. 69. It was thus concluded that the relationship between the comprehensive health program and student smoking attitudes did vary with role modelling influence.

The finding that role modelling is significantly related to student smoking attitudes is important and supports the view that attitudes are influenced by one's social environment. McAlister (1981) noted that the social environment influences behaviour by engendering specific beliefs about substances and behaviours. Simons, Conger, & Whitbeck (cited in Melby, Conger, Conger & Lorenz, 1993) noted that it is exposure to role models who model and reinforce inappropriate attitudes and behaviour that promotes disapproved activities. In the present study the results

Table 7

Regression Analysis Results for the Dependent Variable (Smoking Attitudes) on all of the Independent Variables (Group, Gender and Role modelling).

	SMOKING ATTITUDES				
Independent Variables	B	SE B	Beta	t	p.
Comprehensive Health Program	-1.134	1.084	-.071	-1.047	.297
Gender	-2.531	1.023	-.166	-2.476	.014
Role modelling	2.562	.381	.456	6.721	.000
Multiple R = .490 R^2 = .240					

p. = probability

indicated that the smoking behaviour of role models was significantly related to student smoking attitudes. When the role models smoked, students displayed weak antismoking attitudes (prosmoking). This finding is congruent with social learning theory. Children assimilate what they see into attitudes which mediate behaviour (Oei & Baldwin, 1992).

Thus, considering the significant relationship of role modelling to student smoking attitudes it appears logical that role models such as peers, parents, and siblings should be involved in smoking prevention and cessation strategies offered in a comprehensive health curriculum. In the "Adolescence: Healthy Lifestyles" program, peers were involved in small group discussions, role-play and case study analysis aimed at building decision-making skills related to smoking. The parental involvement occurred mainly through meetings during which they were made aware of the programs goals and were provided an opportunity for input. Parents were provided, when possible, with pamphlets related to program topics, with an aim toward reinforcement of positive health values and attitudes in students.

The independent variable gender uniquely explained a significant proportion of student smoking attitudes in yielding: $F(1,177) = 7.984$, $p = .005$. As shown in Table 6, the amount of unique variance in student smoking attitudes explained by gender was 4 percent, $t = -2.826$, $p = .005$.

When the dependent variable, smoking attitudes, was regressed on the three independent variables, gender was identified as the second best predictor of smoking attitudes with a beta value of -.166. These results are depicted in Table 7, p. 69.

Thus hypothesis 2 was rejected. It was thus concluded that the relationship between the comprehensive health program and student smoking attitudes did vary with gender influence. The direction of the relationship was negative. Since males were coded as 1 and females as 2 these results indicated that females in the study had stronger anti-smoking attitudes than males. If attitudes are predictive of a certain behaviour, which is the generally accepted view, this result is supported by descriptive statistics presented in Table 2. As depicted, 31.5% of males were reported smoking as compared to 27.6% of females.

Results Related to Student Smoking Behaviour

The third research question as stated in Chapter 1, p. 13 was: What is the relationship between the comprehensive health program and student smoking behaviour. Does this relationship vary with gender and role modelling? From this research question the following three hypotheses were generated:

1. There will be a significant relationship between exposure to the comprehensive health program and student smoking behaviours. (Accept) - $F(1,189) = 4.301$, $p < .05$.
2. There will be no significant relationship between gender and student smoking behaviour. (Accept) - $F(1,188) = .357$, $p > .05$.
3. There will be a significant relationship between role modelling and student smoking behaviour. (Accept) - $F(1,188) = 56.338$, $p < .001$.

First the dependent variable, student smoking behaviour, was regressed on each of the independent variables, comprehensive health program, gender and role modelling, which were identified in the third research question. These analyses were conducted to determine whether each of these independent variables contributed significantly to variance in student smoking behaviour. Next, all three independence variables were entered together in a regression equation to determine which variables, when other variables are controlled statistically, are the best predictors of student smoking behaviour.

Examination of the correlation coefficients in Table 3, p. 59 and the multiple regression results for unique relationships of independent variables to student smoking behaviour in Table 8, p. 74 reveal that the independent

variables comprehensive health program and role modelling were significantly related to student smoking behaviour. The unique contribution of the variable comprehensive school health to smoking behaviour yielded: $F(1,189) = 4.30$, $p = .039$.

This finding led to the acceptance of hypothesis 1 since a significant relationship was found. However, unexpectedly, there were more reported smokers in the group exposed to the comprehensive health program. The descriptive statistics reported previously in Table 1, p. 50 did indicate that a larger percentage of the experimental group (34.4%) as compared to the control group (21%) reported they smoked regularly at present. Fifteen percent of students in each group reported they have quit smoking since grade 7.

This initial finding was not supported when controlling for other independent variables. The comprehensive health program was not a significant predictor of student smoking behaviour with a beta value of .059, $t = .987$, $p = .325$. This result is presented in Table 9, p. 75.

There are several plausible explanations for the higher incidence of smoking in the group exposed to the comprehensive health program. First of all, these findings are dependent on the accuracy of student self-reporting with

Table 8

Unique Regression Results for Student Smoking Behaviour on each of the Independent Variables (Comprehensive Health Program, Gender, Role modelling, Student Smoking Knowledge and Student Smoking Attitudes). (#1)

	SMOKING BEHAVIOUR				
INDEPENDENT VARIABLES	B	SE B	Beta	t	p.
Comprehensive Health Program	.141	.068	.149	2.074	.039
Multiple R = .149 R^2 = .022					
Gender	-.040	.066	-.044	-.597	.551
Multiple R = .043 R^2 = .002					
Role modelling	.161	.022	.480	7.506	.000
Multiple R = .480 R^2 = .231					
Smoking Knowledge	-.077	.046	-.121	-1.667	.0971
Multiple R = .121 R^2 = .015					
Smoking Attitudes	.035	.003	.591	9.781	.000
Multiple R = .591 R^2 = .350					

p. = probability

Table 9

Regression Analysis Results for the Dependent Variable Student Smoking Behaviour on all of the Independent Variables (Comprehensive Health Program, Gender and Role modelling). (#2)

	SMOKING BEHAVIOUR				
INDEPENDENT VARIABLES	B	SE B	Beta	t	p.
Comprehensive Health Program	.056	.057	.059	.987	.325
Gender	.070	.055	.077	1.286	.200
Role modelling	.087	.023	.258	3.813	.000
Knowledge	-.035	.038	-.054	-.907	.366
Attitudes	.029	.004	.491	7.260	.000
Multiple R = .655 R^2 = .429					

p. = probability

regard to their smoking behaviour. Secondly, as noted previously, student responses indicated that there were more students smoking in the experimental group to begin with, thus possibly hampering the effectiveness of the new program. Thirty-three percent of the experimental group (Table 1) as compared to 13% of the control group had started to smoke in grade 6 before the new program was started. The fact that the earlier that youth begin using tobacco, the less likely they can quit later is well documented in the literature (Peck, Acott, Richard, Hill & Schuster, 1993; Glynn, 1989). A smoking cessation program was offered within the comprehensive health program but it is generally accepted that in schools, smoking prevention strategies are generally more successful than smoking cessation strategies.

Also worthy of note is the fact that the relationship between the comprehensive health program and smoking behaviour varied with role modelling, in that role modelling was significantly related to student smoking behaviour. This is important in light of the fact that as noted previously in the description of sample characteristics (Table 1, p. 50) a greater percentage of each of the role models (friends, mothers, fathers, and siblings) were reported to be smoking by the experimental sample in comparison to the control sample.

The unique relationship of the independent variable gender to student smoking behaviour yielded: F (1,188) = .357, p = .55. This relationship was not significant and as shown in Table 8, p. 74, the amount of unique variance in student smoking behaviour explained by gender was small at .002. Regression of student smoking behaviour on all independent variables also revealed that gender was not a significant predictor of student smoking behaviour with a beta value of .077, t = 1.286, p = .200. (Table 9, p. 75). These results supported hypotheses 2 and indicated that the relationship between the comprehensive health program and smoking behaviour did not vary with gender. There was little difference in the number of male and female smoking behaviour in this study, as noted previously in Table 2, p. 51.

The unique relationship between the independent variable role modelling to student smoking behaviour yielded: F (1,188) = 56.338, p = .000. This relationship was significant and as shown in Table 8, p. 74, the amount of unique variance in student smoking behaviour explained by role modelling was 23 percent. This result supports hypothesis 3. Thus the relationship between the comprehensive health program and student smoking behaviour did vary with role modelling influence.

This finding was also supported by results revealed through regression of student smoking behaviour on the

independent variables. Role modelling was found to be a significant predictor of student smoking behaviour with a beta value of .258, t = 3.813, p = .000 (Table 9, p. 75). Support for this finding has been well documented in the literature. Several researchers suggest that the use of tobacco is affected through modelling by and imitation of significant others (Glover, Christen, & Henderson, 1982; Oei, Fae, & Silva, 1990). This finding is also congruent with Bandura's social learning theory as described previously in the literature review.

These results made it essential to determine which role models were significantly related to student smoking behaviour. The questionnaire used in the study (Appendix D) asked students to report role model smoking behaviour under 4 constructs. These included friends' smoking, mothers' smoking, fathers' smoking and siblings' smoking. Friends' smoking behaviour was coded as 1 for having no friends who smoke, 2 for having 1 to 3 friends who smoke and 3 for having 4 or more friends who smoke. Questions asking whether the mother, father, or siblings smoke were scored dichotomously as yes or no. The yes option was coded as 1 and the no option was coded as 0.

Student smoking behaviour was regressed on each of the role modelling variables to determine if uniquely these variables contributed significantly to variance in student

smoking behaviour. Student smoking behaviour regressed on friends' smoking behaviour yielded: $F(1,189) = 22.424$, $p = .000$, while mothers' smoking behaviour yielded: $F(1,189) = 4.627$, $p = .033$. These relationships were significant and as shown in Table 10, p. 80, the amount of unique variance in student smoking behaviour explained by friends' smoking behaviour was .106 while that explained by mothers' smoking behaviour was .024. The unique contribution of fathers' smoking behaviour yielded = $F(1,189) = 1.817$, $p = .179$, while siblings' smoking behaviour yielded: $F(1,188) = 18.851$, $p = .000$. As shown in Table 10, the amount of unique variance in student smoking behaviour explained by fathers' smoking behaviour was small at .010 and was not significant while that explained by siblings' smoking behaviour was significant and larger at .091. This suggested the unique contribution of friends' smoking behaviour, mothers' smoking behaviour, and siblings' smoking behaviour to students' smoking behaviour was significant.

However when the dependent variable, student smoking behaviour, was regressed on all four independent role modelling variables, only one of the role modelling variables reached significance. This was mothers' smoking behaviour, with a beta value of .13 at $p = .036$. It could be said therefore, that when controlling for other variables, only mothers' smoking behaviour contributed significantly to the

Table 10

Unique Regression Results for the Dependent Variable Student Smoking Behaviour on each of the Independent Variables (Friends' Smoking Behaviour, Mothers' Smoking Behaviour, Fathers' Smoking Behaviour and Siblings' Smoking Behaviour). (#3)

	SMOKING BEHAVIOUR				
INDEPENDENT VARIABLES	B	SE B	Beta	t	p.
Friends' Smoking Behaviour	.339	.072	.326	4.735	.000
Multiple R = .326 R^2 = .106					
Mothers' Smoking Behaviour	.146	.068	.155	2.151	.033
Multiple R = .154 R^2 = .024					
Fathers' Smoking Behaviour	.093	.069	.098	1.348	.179
Multiple R = .098 R^2 = .010					
Siblings' Smoking Behaviour	.326	.075	.302	4.342	.000
Multiple R = .302 R^2 = .091					

p. = probability

Table 11

Regression Analysis Results for the Dependent Variable Student Smoking Behaviour on all the Independent Variables (Comprehensive Health Program, Gender, Friends' Smoking Behaviour, Mothers' Smoking Behaviour, Fathers' Smoking Behaviour, Siblings' Smoking Behaviour, Student Smoking Knowledge and Student Smoking Attitudes). (#4)

	SMOKING BEHAVIOUR				
INDEPENDENT VARIABLES	B	SE B	Beta	t	p.
Comprehensive Health Program	.084	.058	.088	1.446	.150
Gender	.069	.056	.075	1.222	.223
Friends' Smoking	.054	.071	.052	.764	.446
Mothers' Smoking	.123	.058	.130	2.118	.036
Fathers' Smoking	.008	.059	.008	.136	.891
Siblings' Smoking	.110	.070	.102	1.578	.116
Smoking Knowledge	-.034	.040	-.053	-.857	.393
Smoking Attitudes	.033	.004	.546	7.613	.000
Multiple R = .641 R^2 = .411					

p. = probability

prediction of student smoking behaviour and it was thus the best predictor. These results are shown in Table 11, p. 81. Nonetheless, a significant proportion of student smoking behaviour was explained in unique variance by friends' and siblings' smoking behaviour, therefore these variables warrant appropriate focus in any school smoking prevention and cessation efforts. But if these findings as depicted in Table 11 hold, inclusion of mothers in planning and implementation of school health programs becomes imperative.

Results indicated that peer smoking behaviour did explain a significant amount of unique variance in student smoking behaviour. This is not surprising since peer influence in adolescence has been studied extensively and has been shown to be an important factor in the development of health behaviours (Ransom, 1992). During the time when adolescents are beginning to make their own decisions and form their own values, peer influence has been shown to increase significantly as compared to the influence of parents and other adults (Sebald, 1986; Clasen & Brown, 1985). The results suggest that in school health programs, peer-led interventions may be more successful at times than an adult-led approach in preventing and reducing smoking behaviour. However these results are not consistent with those of Wilkinson (1992) who surprisingly, found that peer status provided no significant increment in predicting

childrens health habits over and above the effects explained by demographic variables.

Siblings' smoking behaviour did explain a significant amount of unique variance in student smoking behaviour in this study. Melby, Conger, Conger, & Lorenz (1993) concurred when they noted sibling tobacco use has been associated with the adolescents' beliefs about smoking and actual smoking behaviour. The more smokers there are in the family (parents and siblings), the more likely the adolescent will use tobacco (Peterson & Peterson, 1986; Sunseri et al, 1983). Thus it appears the inclusion of siblings in smoking prevention and cessation efforts in the school comprehensive health program is warranted. It is unclear if siblings were incorporated into the "Adolescence: Healthy Lifestyles" Program. As noted earlier, mothers' smoking behaviour explained a unique amount of variance in student smoking behaviour. As well, when controlling for other variables such as peer and sibling smoking behaviour, mothers' smoking behaviour was the only role modelling variable which contributed significantly to the prediction of student smoking behaviour. Numerous other studies have found positive relationships between tobacco use by parents and their children (Coombs & Parkson, 1988, Peterson & Peterson, 1986; Skinner, Massey, Krohn, & Laver, 1985; Oei, Fae, & Silva (1990). However there has been little research on the

separate influence of mothers' and fathers' smoking behaviour on adolescent smoking behaviour. Chen & Winder (1986) in their findings suggested an educational need to link parents, especially mothers of sixth graders, to prevent students from initiating smoking behaviour.

The finding that maternal, peer and sibling smoking behaviour were predictive of student smoking behaviour is congruent with social learning theory as discussed by Bandura (1977). Children tend to imitate the behaviour of those they respect and admire. Therefore, it could be said that the role models in an adolescent's social environment are major determinants of his/her smoking behaviour.

The fourth research question as stated in Chapter 1, p. 13 was: Is there a relationship between student smoking knowledge and student smoking behaviour? From this research question the following hypothesis was generated:

> There will be no significant relationship between student smoking knowledge and student smoking behaviour. (Accept) - $F(1,186) = 2.780$, $p > .05$.

Student smoking knowledge did not relate uniquely to student smoking behaviour, yielding: $F(1,186) = 2.780$, $p = .10$. As shown in Table 8, p. 74, the amount of unique variance in student smoking behaviour explained by student

smoking knowledge was small at .015. The knowledge variable was also not predictive of student smoking behaviour with a beta weight of - .054, t = -.907, p = .366 when student smoking behaviour was regressed on all of the independent variables. These results are presented in Table 9, p. 75 and it was concluded there was no significant relationship between student smoking knowledge and student smoking behaviour. Thus the hypothesis was accepted.

The finding that student smoking knowledge did not significantly relate to student smoking behaviour is not surprising. As discussed in Chapter 1, individuals may be very knowledgeable about certain health practices yet they often still display the unhealthy behaviour. Eckhardt, Woodruff, & Elder (1994) in a longitudinal analysis of adolescent smoking, found that knowledge about health effects of smoking did not predict changes in smoking behaviour.

As noted in the discussion of results on student smoking knowledge, if these findings are a valid indicator and generalizable, it appears that approaches to school health education should focus mainly on creating health attitudinal change and providing opportunities for behavioral skills practice related to health issues. Perhaps less time should be spent on fostering acquisition of health knowledge, since such knowledge does not seem to translate into healthy behaviour.

The fifth research question as stated in Chapter 1, p. 13 was: Is there a relationship between student smoking attitudes and student smoking behaviour? From this research question the following hypothesis was generated:

> There will be a significant relationship between student smoking attitudes and student smoking behaviour. (Accept) - $F(1,178) = 95.669$, $p < .001$.

The unique relationship between the independent variable student smoking attitudes and student smoking behaviour yielded: $F(1,178) = 95.669$, $p = .000$. As shown in Table 8, p. 74, the amount of unique variance in student smoking behaviour explained by student smoking attitudes was 35 percent. Thus the hypothesis was accepted and it was concluded there was a significant relationship between student smoking attitudes and student smoking behaviour. This result was also supported when controlling for other variables (Table 9, p. 75). When the independent variables were entered together in a regression equation to examine their relationship to student smoking behaviour, student smoking attitudes contributed significantly to the prediction of student smoking behaviour ($p < .001$) with a beta value of .49, $t = 7.260$, $p = .000$. Thus student smoking attitudes was the best predictor of student smoking behaviour.

The finding that weak antismoking attitudes (pro-smoking) in students is a significant predictor of smoking behaviour is not surprising. Allendorff, Sunseri, Cullinan & Oman (1985) noted that attitudes are crucial because there seems to be a strong relationship between attitudes and behaviour. Anti-smoking attitudes tend to decrease from grade 6 to 12, while initiation of smoking behaviour increases (O'Rourke, Smith & Nolte, 1984). Therefore, early intervention with smoking prevention programs is imperative before grade 6, that is, before smoking initiation and experimentation begins and before anti-smoking attitudes decay. A study by Pfau & Buckern (1994) showed a clear deterioration in nonsmoker's attitudes toward smoking during the seventh and eighth grades.

CHAPTER 5

Implications and Recommendations

Summary and Conclusions

The need for the development of effective smoking-prevention and cessation programs for adolescents represents one of the largest current health challenges provincially and nationally. A recent report on the second of four cycles of a longitudinal survey being conducted to track smoking prevalence between May and August, 1994 showed that for those aged 15 to 19 smoking increased from 27% to 29% during that period (Health Canada, 1994). Over 700 Newfoundlanders die every year from tobacco - related diseases, costing over 59 million dollars, according to the Newfoundland and Labrador Medical Association (1993).

The dangers imposed on Canadians who are exposed to cigarette tobacco cannot be over-emphasized. Because their lungs are still growing, children are extremely vulnerable to tobacco smoke. It is generally accepted that children whose parents smoke have a greater risk of disease including asthma, pneumonia and bronchitis. In a recent magazine item Health Canada (1993) noted the following:

> Virtually all new smokers are adolescents. They represent over 200 million in sales. 85% start before age 13 with almost 30% starting before age 13. Of all the 15-year-olds currently smoking, about one-half will die from tobacco products. New smokers are evenly split between boys and girls. Lung cancer now kills more women then breast cancer. And the number of female lung cancer deaths is rising. Tobacco is the leading cause of preventable death. (p. 57).

A comprehensive approach to health education is designed to influence not only the health knowledge, attitudes and behaviours of youth but to change the environment in which they live and learn. The impact of such an approach can be impeded by the antecedents of health behaviours, namely, psychosocial and environmental influences. Comprehensive health requires schools, government agencies, community groups and the media to work together to counteract negative social influences (Shamai & Coombo cited by CASH 1992). However in a recent examination of Canadian provincial and territorial health curriculum guidelines, Cameron, Mutter, & Hamilton (1991) suggested there is little evidence that school environments are taken into account, or that communities are playing a role in the design.

The primary purpose of this study was to assess the impact of smoking prevention and cessation efforts in the province which were delivered as part of a piloted comprehensive health program to grade 7 students during the 1992-93 academic year, by trained classroom teachers. Specifically, the study examined the smoking knowledge, attitudes, and behaviours of a sample of grade 9 students exposed to the comprehensive health program in grade 7, as compared to a sample of grade 9 students who were not exposed to the comprehensive health program in grade 7. This study also examined if the relationship between the comprehensive school health program and student smoking knowledge, attitudes and behaviours varied with the variables gender and role modelling. The relationship between the variables (student smoking knowledge and student smoking attitudes) and student smoking behaviour was also investigated.

The conceptual framework for this study involved six key concepts (comprehensive health education, gender influence, role modelling influence, adolescent smoking knowledge, adolescent smoking attitudes and adolescent smoking behaviour). The framework draws on several theories including social learning theory and social influences theory developed by Bandura (1977) and self-efficacy theory developed by Bandura (1982). The other major theoretical

influence was the environmental and personal influence system theory developed by Perry & Murray (1982).

The research design was a quasi-experimental, static-group comparison design with nonrandom assignment of control and experimental groups. The experimental group consisted of a convenience sample of 122 grade 9 students attending a high school in the St. John's area, who were exposed to the piloted comprehensive health program in the 1992-1993 school year. The control group consisted of a convenience sample of 69 grade 9 students attending a junior high school in the St. John's area, who were not exposed to the piloted program.

Data for the study were collected using identical, self-report questionnaires developed by the investigator. This was a 42 item questionnaire designed for the grade 9 adolescent population which was divided into 4 sections. Section A secured demographic information on gender and the smoking behaviour of friends of family. Section B collected data on student previous and current smoking behaviour as well as the frequency of smoking. Section C tested student smoking knowledge and was based on the comprehensive health curriculum content. Section D assessed student attitudes related to smoking issues.

Descriptive statistics were used to highlight sample characteristics. Inferential statistics were used to answer the five research questions of the study. The findings

indicated that the experimental and control groups were not statistically different overall in their smoking knowledge, attitudes, or behaviour. However the results showed both groups were very knowledgeable overall on smoking issues. Males and females did not differ significantly on the outcome variables smoking knowledge and behaviour. Both groups reported substantially large numbers of peers, parents and siblings smoking.

Role modelling significantly predicted student smoking attitudes indicating a relationship between the smoking behaviour of role models and student smoking attitudes. Gender reached significance in predicting student smoking attitudes. Females had stronger anti-smoking attitudes then males.

Student smoking attitudes were significantly related to student smoking behaviour in that students with weak anti-smoking attitudes were those who were smokers. Smoking knowledge was not found to be predictive of student smoking behaviour. Role modelling was significantly related to student smoking behaviour. Friends' smoking behaviour, mothers' smoking behaviour and siblings' smoking behaviour explained a significant amount of unique variance in student smoking behaviour. However when other variables were controlled for, mothers' smoking behaviour was the only role

modelling variable which reached significance in predicting student smoking behaviour.

The fact that role models' smoking behaviour was a significant predictor of both student smoking attitudes and student smoking behaviour can be explained by social learning theory. Adolescents tend to model the behaviour of those they admire, whether they be peers, parents or siblings. Adolescents acquire and engage in such behaviour, for example smoking, by observing the behaviour of these role models. Thus it is critical to consider existing model structures in school health education program development.

The finding that mothers' smoking predicts adolescent smoking has implications for future smoking-prevention and cessation efforts. Schools, governments, the media and the community at large must be mindful of such a relationship in any collaborative or singular strategies aimed at prevention or cessation of smoking among our youth.

Implications for School Health Education

In 1986, Achieving Health for All: A Framework for Health Promotion provided the model for future health promotion efforts in Canada (Epp, 1986). It emphasized creating environments conducive to health, in which people are better able to take care of themselves, and to offer each

other support in solving and managing collective health problems.

The factors and sources which influence health behaviour generate a number of implications for efforts to promote health through the schools. In order to stimulate positive actions and deter negative practices we need to conduct a very careful and comprehensive analysis of all the factors and processes that are involved in the development and maintenance of healthy behaviour. The introduction of a comprehensive school health program in Newfoundland schools is a positive step in health promotion for the children of this province.

In a cooperatively-developed proposal for the comprehensive school health project, representatives of the Department of Education, Department of Health, Newfoundland agencies for School Health, and the Newfoundland and Labrador (NF and L) School Trustees Association (1992), the following rationale was outlined:

> The health and well-being of NF and L youth is a fundamental value. The capacity of the Province's young people to assume effective control over their own lives and to contribute to society is determined largely by their own and their community health. The overall project aim is to

> promote and facilitate the development of school health teams consisting of educators, parents, and other community personnel who will begin strategic plans to address individual regional needs throughout the province. (p. 1).

Inherent in this statement is the need for cooperative efforts among schools, homes, and community in the planning and delivery of the program. This should continue to be the major thrust of the program in that future societal reinforcement needs to be congruent with smoking prevention efforts.

The suggested role tasks for the various personnel involved in the comprehensive health program are described in Appendix G. The roles of the classroom health teacher and the community health nurse require collaboration. Teachers of health must be given adequate training in comprehensive school health teaching strategies and methodologies. Also, teachers themselves must be accountable in seeking opportunities for professional growth in health-related issues. All faculty should endeavour to be positive role models for students with respect to smoking, particularly in adhering to non-smoking policies on school premises.

Nurses must display a willingness to be active participants in the program. The nurse is in an ideal

position to promote smoking prevention strategies in schools and to collaborate in their delivery. Nurses have both the educational and practical background to bring a unique perspective to school health education. They also serve as a link to the community which can facilitate one of the central aims of comprehensive school health education.

Educational administrators must endeavour to ensure that the educational environment and that value that drives it, promote the health of all children, and if not, examine how it can be changed to do so. It is essential that adequate hours of classroom instruction be devoted to school health. As shown in Appendix H, the "Adolescence: Healthy Lifestyle" Program suggested smoking content be presented in 3 weeks in grade 7. With respect to smoking, smoking-focused sessions should be provided from grades 4 through 9, followed by booster sessions in grades 10 through 12.

Murray, D., Pirie, P., Luepker, R., & Pallonen, U. (1989) found that high school students who had been exposed to smoking prevention efforts based on the social influences model in grade 7 had similar smoking patterns to students who were not exposed. They advocated booster sessions for each school year following grade 7 until graduation. One concern is that with the current focus on the "back to the basics" movement in Newfoundland and throughout the country, there will be pressure to decrease instructional hours on issues

such as those related to health. The effectiveness of school health programs in changing attitudes is crucial in that there appears to be a stronger relationship between attitude and behaviour than between knowledge and behaviour (Allendorff, Sunseri, Cullinan, & Oman, 1985). However the hours of instruction devoted to the health curriculum can affect the program's success in changing attitudes. Attitudes cannot be altered drastically during a period of several months, let alone by a curriculum brought to the student within 4 or 5 weeks. Reinforcement through continual intervention over a prolonged period may produce a more permanent change over time.

In the "Adolescence: Healthy Lifestyles" Program, smoking prevention and cessation efforts appear to be concentrated in grade 7. The time frame for program implementation is displayed in Appendix E. However, the literature suggests that such efforts continue until graduation from high school. Those involved with school health education should ensure they are part of any decision-making processes that affect the health of children in Newfoundland and Labrador.

The results of this study suggested there was no difference in males and females with regard to the impact of the comprehensive school health program on smoking behaviour. However, identification and implementation of effective

smoking prevention and cessation strategies specific to each gender should be incorporated into any comprehensive health program. It is unclear whether such efforts have been implemented in this province, although the importance of identifying gender differences in directing learning is noted in the "Adolescence: Healthy Lifestyles" curriculum guide (1993).

Identifying gender differences in reasons for smoking may impact the success of smoking prevention and cessation efforts in schools. Sarason, Mankowski, Peterson, & Dinh found a number of gender differences in reasons for tobacco use. As a reason for current smoking more females (29%) than males (19%) reported pleasure/affect. Females reported social norms and pressure more often than males as reasons for beginning smoking. Different strategies may have to be tailored to address such gender issues. Although evidence is accumulating which suggests that males and females initiate smoking and quit in different social contexts and for different reasons, this understanding has yet to be fully incorporated into prevention programs.

Changes in gender smoking behaviours must be monitored and taken into account in health education programs. Although in the present study fewer females reported smoking behaviour than males, this is somewhat different than recent national statistics. Historically, females have smoked less

than males, although during the past 25 years, there has been a convergence of female and male smoking rates. Canada's Health Promotion Survey (1990) reported that though rates of current smoking for persons 15 and over had declined, the decline in rates was much slower for women than for men. The latest report from Health Canada (1994) indicated that for those 15 to 19 the smoking prevalence nationally is 27% for men and 30% for women. Smoking is the leading killer of Canadian women with upwards of 15,000 woman dying yearly from tobacco related diseases.

The finding in the present study that household smoking (mothers and siblings) can encourage adolescent smoking, has implications for smoking-prevention and cessation efforts at all levels. Government and the business community must be encouraged to fund the development and delivery of anti-smoking interventions with families and in the work place. This would supplement efforts being made in school health education. The home and community environment as well as that of the school, must demonstrate a non-smoking norm. This may foster positive smoking attitudes and practices in children throughout their school years and beyond. Today's children are the parents of tomorrow. Therefore, broad and long-term anti-smoking efforts may be the most effective health promotional and cost-saving measures to consider.

The results of the present study suggest the effectiveness of the comprehensive school health program with respect to smoking attitudes and behaviour of students may be impeded or enhanced, depending on the smoking behaviour of significant role models, especially mothers. It is important that high-risk students be identified early. Such students, as indicated in the literature and in the results of the study, are those adolescents whose friends, parents, and siblings smoke. Only in this way can smoking-prevention and cessation strategies be tailored to the individual student.

The finding that mothers' smoking behaviour is most predictive of student smoking behaviour is important because mothers are traditionally known for their nurturing qualities with respect to their children. Therefore their involvement in school health programs could be a potentially powerful enhancer. Thus a concerted effort should be made to include them in smoking-prevention and cessation strategies in our schools. However, securing parental involvement in the 1990's can be difficult considering that both parents often work, thus limiting their free time. Perry, Pirie, Holder, Halper & Dudsvitz (1990) in a study on parent involvement on smoking prevention, found that efforts to involve parents have been only partially encouraging, primarily due to difficulties in recruiting and maintaining substantial parental participation.

If the finding holds, a new approach in federal and provincial anti-smoking campaigns may be needed. Substantial economic resources could be invested into media messages aimed at convincing mothers that if they do not smoke their children will likely not smoke. This may be one of the most effective methods of influencing the health of Canadian youth. School health programs may be more effective if supported by families where non-smoking is the norm.

In turn, schools must be mindful of effectively including role modelling influences, especially mothers in smoking prevention and cessation efforts. Given that the onset of smoking is believed to be a complex process mediated by several interacting forces as described in the literature review and conceptual framework, schools may have limited impact if these factors are not incorporated successfully.

Perhaps Seffrin (1990) said it best. In examining existing research to determine if comprehensive school health makes a positive difference in health behaviour he noted:

> Yes, school health education makes a positive difference, but its ultimate impact on behaviour is heavily dependent upon a number of factors, such as teacher training, extent and degree of program implementation, time allotted for instruction, involvement of parents and family, community support, and the overall comprehensiveness of the curriculum. (p. 153).

Research Implications

Any major research projects related to smoking prevention and cessation in this province should involve collaboration from the Department of Health, the Department of Education and Community representatives. In this way, accomplishments may be fostered that would otherwise not have occurred.

Recommendations for future research include:

1. Replication of the present study with adolescents exposed to both the elementary and adolescent comprehensive school health programs across the province.
2. Identification of variables which predict smoking behaviour at various ages, so that program components can be designed to address specific motivations for using tobacco at different stages of onset.
3. Longitudinal study of the effects of smoking prevention and cessation effects focused specifically on mothers who smoke and their children as compared to mothers not exposed to such efforts.
4. Evaluative research to determine which components of comprehensive school health education influence

adolescent smoking, possibly yielding more cost-effective interventions.

5. Longitudinal study of students following graduation to see how comprehensive health translates into adult smoking behaviour.

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Appendix A

LETTER TO SUPERINTENDENT

Dear _____:

My name is Sharon Fitzgerald and I am a graduate student in the Faculty of Education at Memorial University. As part of my thesis research I plan to investigate the effects of the "Adolescence: Healthy Lifestyles" program on smoking knowledge, attitudes, and behaviour of students. I would like to survey grade nine students at _____ High School who received the pilot program in grade seven. As well I want to survey a comparison group of grade nine students at _____ School who were not involved in the pilot program in grade seven.

I am requesting your permission for these grade nine students in your district to participate in this study. Students will be asked to complete a questionnaire (which I have enclosed), composed of 35 items that will take about 15 minutes to complete. The time of administration will be determined in consultation with the school principal.

This study has received the approval of the Department of Education and the Faculty of Education's Ethics Review Committee. All information gathered is strictly confidential and at no time will individuals be identified. Participation is voluntary and you may withdraw your schools as any time. The results of my research will be made available to you upon request. If you are in agreement with having these students participate in the study, please sign below and return to the address provided by _____. If you have any questions or concerns, please do not hesitate to contact me at 778-6653. If at any time you wish to speak with a resource person not associated with the study, please contact Dr. S. Norris (Associate Dean of Research and Development, Memorial University) or contact my thesis advisor Dr. B. Sheppard (Faculty of Education, Memorial University).

Thank you for your consideration of this request.

Yours sincerely,

Sharon Fitzgerald

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CONSENT FORM

I, _____, hereby give permission for grade nine students at _____ High School and _____ School to participate in the study on the impact of the "Adolescence: Healthy Lifestyle" program presented in grade seven on the smoking knowledge, attitudes, and behaviour of grade nine students. I understand that participation is entirely voluntary. All information is strictly confidential and no individual will be identified.

_____

Date Superintendent

Appendix B

LETTER TO PRINCIPAL

Dear _____:

My name is Sharon Fitzgerald and I am a graduate student in the Faculty of Education at Memorial University. As part of my thesis research I plan to investigate the effects of the "Adolescence: Healthy Lifestyles" program on smoking knowledge, attitudes, and behaviour of students. I would like to survey grade nine students at _____ High School who received the pilot program in grade seven.

I am requesting your permission for selected classes of grade nine students in your school to participate in this study. Students will be asked to complete a questionnaire composed of 35 items that will take about 15 minutes to complete. The time of administration will be determined in consultation with you.

This study has received the approval of the Department of Education, the Roman Catholic School Board in St. John's, and the Faculty of Education's Ethics Review Committee. All information gathered is strictly confidential and at no time will individuals be identified. Participation is voluntary and you may withdraw your students at any time. The results of my research will be made available to you upon request. If you are in agreement with having these students participate in the study, please sign below and return to the address provided by _____. If you have any questions or concerns, please do not hesitate to contact me at 778-6653. If at any time you wish to speak with a resource person not associated with the study, please contact Dr. S. Norris (Associate Dean of Research and Development, Memorial University) or contact my thesis advisor Dr. B. Sheppard (Faculty of Education, Memorial University).

Thank you for your consideration of this request.

Yours sincerely,

Sharon Fitzgerald

****

CONSENT FORM

I, _____, hereby give permission for grade nine students at _____ High School to participate in the study on the impact of the "Adolescence: Healthy Lifestyle" program presented in grade seven on the smoking knowledge, attitudes, and behaviour of grade nine students. I understand that participation is entirely voluntary. All information is strictly confidential and no individual will be identified.

_____

Date Principal

Appendix C

PARENT/GUARDIAN CONSENT FORM

Dear Parent/Guardian:

My name is Sharon Fitzgerald and I am a graduate student in the Faculty of Education at Memorial University. I will be surveying grade nine students at _____ _____ to investigate the effects of school health education on smoking behaviour. I am requesting your permission for your child to take part in this study.

Your child's participation will consist of him/her completing a questionnaire composed of several sections. Students will be asked questions related to their smoking knowledge, attitudes and behaviour. Students will be asked if their parents, siblings, or friends smoke. This will take about 15 minutes of your child's time. The time of administration will be decided by the school principal.

All information gathered in this study is strictly confidential and at no time will individuals be identified. Participation is voluntary and you may withdraw your child at any time. This study has received the approval of the Faculty of Education's Ethics Review Committee, the Roman Catholic School Board in St. John's, and the School Principal. The results of my research will be made available to you upon request. If you are in agreement with having your child participate in this study, please sign below and return one copy to the classroom teacher. The other is for you. If you have any questions or concerns, please do not hesitate to contact me at 778-6653. If at any time you wish to speak with a resource person not associated with the study, please contact Dr. S. Norris (Associate Dean of Research and Development, Memorial University) or contact my thesis advisor Dr. B. Sheppard (Faculty of Education, Memorial University). I would appreciate it if you would please return this sheet to me by _____.

Thank you for your consideration of this request.

Yours Sincerely,

Sharon Fitzgerald

****

CONSENT FORM

I, _____, (parent/guardian) hereby give permission for my child to take part in a study on the smoking behaviour of grade nine students. I understand that participation is entirely voluntary. All information is strictly confidential and no individual will be identified.

_____

Date Parent/Guardian

Appendix D

Sample Questionnaire

STUDENT QUESTIONNAIRE ON CIGARETTE SMOKING ISSUES

General Instructions

This questionnaire is not a test. It is designed to find out what you know about cigarette smoking. There are also questions pertaining to your background, and your beliefs about smoking. Your opinions are important. This questionnaire is confidential with the exception of an identification number, so you are requested to not sign your name.

Note: *(i)* *You must use a dark lead pencil;*

(ii) *You will read items in the four sections (A, B, C, and D) and record your responses on the answer sheet provided;*

(iii) *To record your response, shade the letter on the answer sheet which corresponds to the answer you have chosen*

Please answer questions 1 through 35 in this manner.

SECTION A

Please answer questions 1 through 6 by indicating *one* of the choices on the separate answer sheet provided.

1. Are you male or female?

   A) male
   B) female

2. Did you take the ***"ADOLESCENCE: HEALTHY LIFESTYLES (Health Wise)"*** course in grade seven?

   A) yes
   B) no

3. How many of your close friends smoke?

   A) none
   B) one to three
   C) four or more

4. Does your mother smoke?

   A) yes
   B) no

5. Does your father smoke?

   A) yes
   B) no

6. Do your brothers and/or sisters smoke?

   A) yes
   B) no

SECTION B:

Please read questions 7 through 12 carefully and answer by indicating *one* of the choices listed below on the answer sheet provided.

7. Have you ever been a cigarette smoker?

   A) yes *(If yes, go to question 8)*
   B) no *(If no, go to question 12)*

8. In what grade were you when you started smoking regularly?

   A) grade 6 or before
   B) grade 7
   C) grade 8
   D) grade 9

9. At the present time do you smoke?

   A) yes *(If yes, go to question 11)*
   B) no *(If no, continue on to question 10)*

10. In which year did you stop smoking?

    A) grade 6 or before
    B) grade 7
    C) grade 8
    D) grade 9

11. How often do/did you smoke?

    A) once a month
    B) once a week
    C) 2 - 3 times a week
    D) every day

12. How often do you use alcohol (beer, wine, liquor)?

    A) never
    B) once a month
    C) 2 - 3 times a week
    D) every day

SECTION C

Please answer questions 13 through 19 by indicating *one* of the following on the separate answer sheet provided.

13.	The younger a person starts smoking, the greater are the health risks.	A) true	B) false
14.	Smokeless tobacco (example: chewing tobacco) is a safe alternative to cigarettes.	A) true	B) false
15.	Second-hand smoke has no physical effects on non-smokers.	A) true	B) false
16.	Carbon monoxide is a harmful ingredient in cigarette smoke.	A) true	B) false
17.	People who smoke become physically dependent on nicotine.	A) true	B) false
18.	Smoking has been directly linked to heart disease and lung cancer.	A) true	B) false

19.	Smoking is not harmful as long as the smoke is not inhaled.	A) true	B) false

SECTION D

Please answer questions 20 through 42 by indicating *one* of the choices below on the separate answer sheet provided.

A) strongly agree
B) mostly agree
C) mostly disagree
D) strongly disagree

20.	Smoking helps people get along with others.	A	B	C	D
21.	It is hard not to smoke when your friends smoke.	A	B	C	D
22.	Smoking is socially okay.	A	B	C	D
23.	Anti-smoking messages (television/magazines) make people less likely to smoke.	A	B	C	D
24.	Most young people smoke because their friends expect it.	A	B	C	D
25.	Smoking is enjoyable.	A	B	C	D
26.	I often have trouble making decisions.	A	B	C	D
27.	Smoking helps people to relax.	A	B	C	D
28.	Smoking helps control weight.	A	B	C	D
29.	I feel pressure from my friends to smoke.	A	B	C	D
30.	Cigarette advertising should be restricted.	A	B	C	D
31.	Smoking makes people look sophisticated.	A	B	C	D
32.	I would refuse to smoke even if my friends expect it.	A	B	C	D

33.	Smoking makes people look grown up.	A	B	C	D
34.	People who smoke tend to smoke more when they drink alcohol.	A	B	C	D
35.	Smokers should ask if anyone objects before smoking around others.	A	B	C	D
36.	Smoking helps you think.	A	B	C	D
37.	Smoking is a bad habit.	A	B	C	D
38.	Selling cigarettes to people under age must be prevented.	A	B	C	D
39.	People who smoke are more likely to have bad breath.	A	B	C	D
40.	Cigarette sales should be made illegal	A	B	C	D
41.	Smoking helps people forget their problems.	A	B	C	D
42.	Smoking should be banned in all public places.	A	B	C	D

Appendix E

Comprehensive School Health Program

Grade 7 Curriculum Objectives

Related to Smoking Issues

1. To understand that tobacco contains an addictive drug and other chemicals that effect health.

2. To identify reason why people choose to smoke or not to smoke.

3. To be aware of the immediate and long-term effects of cigarette smoking, both physical, social and psychological.

4. To understand the effects of second hand and side-stream smoke.

5. To understand the influence of advertising on smoking behaviour.

6. To recognize the rights of smokers and non-smokers.

7. To use the decision-making model with regard to tobacco use.

8. To identify and practise refusal skills with regard to smoking.

9. To promote and encourage appropriate health-related practices.

10. To be aware of the laws pertaining to tobacco use.

11. To be aware of the immediate and long-term benefits of cessation.

12. To identify programs and methods used by smokers in an effort to quit smoking.

Appendix F

ADOLESCENCE: HEALTHY LIFESTYLES

A Philosophy of Health and Personal Development Education - A Comprehensive Approach

A comprehensive school health and personal development program is recognized as an effective way to improve students' health and involves a wide range of school and community personnel working collectively to enhance the well-being of young people and to promote positive health practices. Such a program is comprised of a broad spectrum of activities and services delivered in a setting that fosters and supports health and wellness.

Comprehensive programs achieve their goals through:

formal and informal instruction and learning

support services

a healthy physical environment

social support from peers, families, school and community

Curriculum: The curriculum with its instructional strategies and learning activities involves many topics including physical, mental, emotional, and social development, nutrition, safety, substance use and abuse, human sexuality, relationships, and environmental health. A variety of teaching methodologies and learning strategies are important in addressing the needs and interests of students.

Services: Health education is more than curriculum, and should include services such as health screening, immunization, health counselling, emergency services, and curriculum support. Public health and school health professionals working with administrators, teachers and students provide valuable services and support for program goals. Other community agencies are also involved in a similar fashion.

Environment: Commitment to comprehensive school health aims to achieve a school environment that is clean, pleasant,

> accessible and conducive to and supportive of healthful living. In addition to attending to instruction, schools must work towards creating and maintaining a healthy school environment, as well as coordinating their efforts with those of parents and community agencies and systems that are responsible for providing health and social services to young people. Such an approach requires the development of policies and regulations related to AIDS, nutrition, smoking, quality physical education and recreation, as well as space and building design. Such policies and regulations would promote and reinforce health curricula and services.

In the words of Privitt:

> *You don't get healthy students by setting aside 30 minutes every other day while the teacher tells a class what it's like to be healthy. You change behaviour by establishing an environment in which certain types of behaviour flourish and other types are discouraged.*

Healthful living should be an integral part of all school activities and areas of the curriculum.

Comprehensive school health and personal development initiatives should enhance the daily life and future well-being of every student.

The ultimate goal of a health and personal development program should be to influence in a positive way knowledge, attitudes, and especially behaviours leading to an enhanced quality of life for young people. It should relate directly and indirectly to every aspect of a young person's life by involving the school, home, and community. Every effort should be made to ensure that each and every young person will benefit from the health and personal development program.

Comprehensive school health and personal development education for today's young person differs considerably from knowledge-based programs of the past. Scientific and technological advances have produced a new environment encompassing different family structures, changing values, a variety of consumer products, and never-ending promises for "the good life" through the use of alcohol, tobacco, fast foods and fast cars. Conversely, there has never been more factual information available on such issues as heart disease, obesity, cancer, personal safety, automobile safety,

and environmental hazards. Today's world of conflicting information and conflicting messages produces an environment in which the ability to make health-promoting choices becomes a critical educational issue.

Society in general, believes that education in the areas of health and personal development should be provided in school. Parents look to the school to deal with the "sensitive" issues with which they themselves may feel uncomfortable. A more knowledgeable public is becoming increasingly aware that provision of factual information does not necessarily lead to positive change in behaviour.

At a time in which our health care system is being taxed to the limit, health promotion has become a national priority and recommendations for comprehensive school health are included in every major health study. Similarly, health and wellness are regularly addressed in popular magazines and talk shows.

A specific, comprehensive body of knowledge is inherent in any health and personal development program. Such a program is accompanied by enabling skills which prepare students to make positive lifestyle choices. Similarly, programs may be strongly supported by a healthy school environment, and adequate health services at the school and community level.

Within the context of society's health needs, a program for schools in this Province should take into consideration:

The development stages of the learner, recognizing that all are different.

The needs and interests of young people.

Positive and negative media influences.

Current research findings.

Environment and culture of the Province.

The program should be interactive and student-centered. It should foster critical and creative thinking, provide motivational support, develop decision-making abilities, promote appropriate behaviour, and develop assertiveness skills in order to promote physical, social, emotional and spiritual wellness.

Goals

To foster awareness of self and others.

To promote the integration of health concepts into personal living practices.

To foster awareness of the role of school, home, and community as they relate to all aspects of health.

To develop skills and promote behaviours that enhance good health and safety.

To foster the idea of self-responsibility and capability for wellness.

To encourage sound decision making with respect to the selection and use of various sources of health information and services.

To help young people to understand the process of decision making and accept responsibility for the consequences of their decisions.

To encourage young people to examine various value systems, such as personal, familial, religious, and societal.

To provide support to the family and to enhance family relationships.

To provide a positive environment in which respect, understanding, acceptance, and caring are encouraged.

To investigate innovative means of creating culturally-relevant experiences than enhance wellness.

To encourage the development of lifelong coping skills and supports to enhance and ensure mental and physical health.

To provide educational experiences that will enable teenagers to develop a responsible attitude toward human sexuality and reproduction.

To help young people to explore various adolescent relationships.

To enhance young people's self esteem by providing educational experiences which increase their awareness of self-worth.

Appendix G

ROLES RELATED TO PROGRAM IMPLEMENTATION

Role of School District Personnel

School district personnel are the key link between the Department of Education and the school. They are the primary facilitators in the implementation of the program. It is through their efforts that the school receives assistance and support in the delivery of programs. Because comprehensive school health involves health services, the local community and the school environment, school district personnel can assist by facilitating the collaboration, consultation and networking that needs to occur for effective implementation. For remote and/or small rural schools not having access to a full-range of services, facilities and resources, school district personnel can assist with the coordination, acquisition, and distribution of these.

Program coordinators, for example, play an important role when assisting teachers with the implementation of the health and personal development program. They may provide assistance with professional development, coordination of resources, and make provision for the continuous monitoring and assessment of the program at the school/district level.

In the initial stages of the implementation process, school district personnel must strive to ensure that schools develop and adopt policies which support comprehensive health and personal development programs. Schools cannot advocate a comprehensive program while condoning practices which do not support and promote healthy lifestyles for students and educators.

Role of School Administrators and Staff

If the health and personal development program is to be comprehensive, and if it is to enable young people to engage in behaviours that enhance personal and community well-being, it must have the support of administrative personnel. The school's key administrator, the principal, should be familiar with the philosophy, goals and objectives of the program, and the approaches and methodologies used in the delivery of the program. The principal's support is one of the most important elements in the success of the program and without his or her involvement in developing an appropriate plan for implementation, success may not be possible.

It is important that the program be given adequate time in the overall curriculum (see chart - Suggested Unit Sequence and Time Frame) and that teachers for the program be selected based on qualifications, suitability and interest in the area. In addition, policies and conditions in the school should support the program. For example, the unit on nutrition would be relevant and meaningful if delivered in an environment that has a sound nutrition policy accompanied by appropriate practices related to the serving of food and provision of eating facilities for students and staff.

Positive support and attitudes of other staff members towards health and personal development initiatives for adolescents will also contribute to the success of the program. Teachers could be given an overview of the program at a staff meeting or be kept informed less formally through conversations int he staff room. At times throughout the year, students will be involving other teachers in the program through such activities as completing questionnaires and surveys. Some of these activities may involve sensitive issues arising from discussions in units such as human sexuality or drugs. Teachers who are aware of the program and its methodologies are better able to respond to such activities and to also cope with sensitive questions posed by students who feel open enough to involve other teachers in issues arising from class discussions.

Because this program promotes collaboration among those who provide services to students, it is important that the guidance counsellor be aware of the philosophy and goals of the program. This would allow promotion of services and assistance to students at the classroom level as well as facilitate the involvement of the guidance counsellor when the need for services to students has been identified.

Role of the Teacher

The teachers of this program must act as ambassadors for the program and promoters of its benefits to student well-being. The teacher must continuously aim to keep communication lines open involving the school and its professionals, the home, and the health and community sector. Comprehensive school health is not the responsibility of the teacher alone, but does require his/her constant support and willingness to extend involvement beyond the classroom into the school and the community.

The intent of this comprehensive program is to place students and the centre and to actively involve and engage them in the learning process and the attainment of the program's goals. The skill and ability of the teacher to direct this process is critical to the success of a comprehensive school health program. Research reports that teachers who are effective in creating and setting the climate for such learning demonstrate the following characteristics:

a positive view of others

view others as potentially friendly and worthy in their own right

hold a favourable view of democratic classroom procedures

have the ability to see things from another's viewpoint

see students as persons who are capable of doing things for themselves

Teachers who choose to become involved in the implementation of a health and personal development program that is process-oriented and that addresses sensitive issues in a number of areas must be prepared to deal with potentially difficult situations in and outside the classroom. Examples of such situations include parents/guardians who react strongly to the content of sexuality units, students who reveal too much about themselves in class or students who use inappropriate language or gestures that are offensive or degrading to themselves or others.

The teacher must be prepared to discuss in a frank and open manner many sensitive issues raised by adolescents and to assist young people in evaluating alternate courses of action

and making responsible decisions regarding behavioral choices.

Role of Community Resource Personnel in the School

Community resource personnel play a vital role in the delivery of a variety of services which enhance health in the school environment.

In addition to the traditional health professionals, there are many individuals and groups who are willing and able to provide students and schools with expertise and resources in a variety of areas. Some of these resource personnel include the police, Cancer Society, Red Cross, St. John Ambulance, Coast Guard and many other organizations and community service groups.

A comprehensive approach to health education and service delivery in the school system requires the coordination and utilization of resources to avoid unnecessary duplication and to make the best use of instructional time and human resources.

Some of the health professionals who interact with the school system include: the public health nurse, nursing assistant, health educator, nutritionist, dental hygienist, physician, social worker, occupational therapist, physiotherapist, and speech language pathologist.

The public health nurse is a key team member in the delivery of health promotion and health services in the school. She/He is often the entry point into the health care system for the family/student/teacher. The primary roles of the public health nurse in the school system include:

Coordinator - involves student, family, school personnel and community in accessing required health services.

Consultant - provides information regarding health issues and appropriate community resources.

Care/Service Provider - uses clinical skills to assess student's health in order to provide appropriate interventions. Assists the student/family to accept responsibility for health.

Advocate - helps student/family become aware of issues which affect their health and actively promotes the development of needed resources.

Educator - provides information, in-service education, expertise and resource materials to assist the classroom teacher who is the primary educator in the implementation of the health program. Provides educational sessions in the classroom when professional or technical expertise is required. Provides formal presentations to parent groups and school board personnel on a variety of health issues.

Parental Involvement

Because the education of adolescents in the areas of relationships and sexuality and other health issues is seen as a partnership between the family and the school, it is important that parents and guardians be involved in the program. The school has a shared responsibility with the home in assisting young people attain their full potential. When the home and the school are working towards the same goals communication at home is often facilitated.

Parents and guardians may have concerns about the implementation of a program that deals with sensitive issues. These concerns are usually alleviated when parents know the teacher, are aware of the course content, and feel assured that the teacher is inviting students to consider and discuss family viewpoints and values. It is useful to invite parent or guardian input into the program so that the teacher can be aware of different perspectives held in the home and school community. Keeping parents involved can also provide feedback with respect to the program and whether or not objectives are met.

One of the most effective ways to involve parents is through meetings. This arrangement not only allows them to become aware of the program's goals and objectives and to provide valuable input, but also allays their fears with respect to dealing with sensitive issues and sexuality education in particular.

A successful parent or guardian meeting is achieved by thoughtful planning and a positive attitude. Give notice of the meeting well in advance. The teacher should plan to include in the meeting such key persons as the school principal, a community health resource person, the clergy, and the school board coordinator.

The meeting should inform parents about the basic rationale and objectives of the program, include a brief outline of the contents of the program, and a sample of some of the student learning activities in the program. Provide ample opportunity for parents to ask questions and provide extra insight into the program. Take advantage of open discussion during the meeting to learn about parental concerns and feelings about the program. Parents and guardians of students who require individualized program planning must be involved at all stages in the program planning process as

participating members in the team approach (see Special Education Policy Manual).

It is important to emphasize that the purpose of the program is to support and not to replace family roles and responsibilities. Meeting with parents and guardians is one of the most important ways of showing that their involvement, support, and concern is desired and welcomed. If parents or guardians can't or don't come to the school, consider going to where they are - at work, social gatherings or community functions.

If possible, provide parents and guardians with appropriate pamphlets or a list of readily available resources that addresses program topics. As students reveal their interests or discuss class activities at home, parents can then choose to highlight or share available material. This also provides an opportune time to reinforce their own values and opinions surrounding the topic at hand. Students should be encouraged to take materials home and discuss topics and issues with parents.

Continuous efforts should be made to keep parents informed and involved in the program through a variety of venues. This allows parents not only opportunity to become aware of the value of the program, but also to provide worthwhile contributions to its sustainabilty and improvement.

Appendix H

ADOLESCENCE: HEALTHY LIFESTYLES

Suggested Unit Sequence and Time Frame			
Unit	**Grade 7**	**Grade 8**	**Grade 9**
Content, Process and Skills - An Overview	1-2 weeks	1 week (review)	
Emotional and Social Well-Being	4 weeks	4 weeks	
Climate Building - Communications			4 weeks
Self-Concept			4 weeks
Relationships	3 weeks	3 weeks	7 weeks
Human Sexuality	5 weeks	5 weeks	11 weeks
Drugs: Smoking and Alcohol	3 weeks		
Drugs: Alcohol and Other Drugs		8 weeks	
Active Living	4 weeks	5 weeks	
Nutrition			
Safety and Environmental Health	5 weeks		
*1 week = three 40-minute periods in a 6-day cycle.			