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School of Nursing  
Virginia Commonwealth University


This is to certify that the thesis prepared by Terry M. Tuck and Sharon K. Williams entitled The Effect of a Cardiovascular Risk Factor Education Program on Health Behaviors of Selected School Age Children has been approved by their committee as satisfactory completion of the thesis requirement for the degree of Master of Science.


  
Director of Thesis

  
Committee Member

  
Committee Member

  
School Director of Graduate Study

  
Department Chairman

  
School Dean

6/1/87  
Date

THE EFFECT OF A CARDIOVASCULAR RISK FACTOR EDUCATION PROGRAM  
ON HEALTH BEHAVIORS OF SELECTED SCHOOL AGE CHILDREN

A thesis submitted in partial fulfillment of the  
requirements for the degree of Master of Science  
at Virginia Commonwealth University

by

Terry M. Tuck  
B.S.N., Medical College of Virginia, 1980

Sharon K. Williams  
B.S.N., Mercy College of Detroit, 1973

Director: Dr. Marya Olgas  
Associate Professor of Nursing  
Medical-Surgical Nursing

Virginia Commonwealth University  
Richmond, Virginia  
May, 1987

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Marya Olgas, R.N., Ph.D.  
Associate Professor, Medical-Surgical Nursing  
School of Nursing, Medical College of Virginia  
Virginia Commonwealth University

Doris W. Busby, Ed.D.  
Associate Professor  
School of Education  
Virginia Commonwealth University

Jeanette Jones, R.N., M.S.  
Assistant Professor, Community Health Nursing  
School of Nursing, Medical College of Virginia  
Virginia Commonwealth University

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## ABSTRACT

### THE EFFECT OF A CARDIOVASCULAR RISK FACTOR PROGRAM ON HEALTH BEHAVIORS OF SELECTED SCHOOL AGE CHILDREN

Terry M. Tuck, R.N., B.S.N.  
Sharon K. Williams, R.N., B.S.N.

Medical College of Virginia, Virginia Commonwealth University, 1987

Major Director: Marya Olgas, R.N., Ph.D.

This study, using a quasi-experimental design, was conducted to explore the effect of a cardiovascular risk factor education program on the health behaviors of a group of fifth grade children. The following hypothesis was tested:

There will be a statistically significant improvement in self-reported health behaviors of school age children who receive a cardiovascular risk factor education program as compared to the self-reported health behaviors of those school age children who do not receive a cardiovascular risk factor education program.

One hundred and nineteen subjects, 63 in the experimental group and 56 in the control group, were tested using the researcher's designed health behavior questionnaire, "My Health Behaviors", before and after participation in the health education program. The program provided for the experimental group consisted of eight 45 minute sessions. The introductory and summary sessions were primarily concerned with administration of the pretest and post-test



and sessions two through seven were informative sessions about high fat, high cholesterol diet, smoking and sedentary lifestyle. The program provided for the control group consisted of four 45 minute sessions; session one was concerned with introductory material and administration of the pre-test, sessions two and three were informative sessions related to general nutrition and foods high in salt and sugar, and session four was devoted to review of content as well as administration of the post-test.

Data were statistically analyzed using the paired-sample student's t-test. Results of the analysis revealed a significant difference between the two sample groups at  $p < 0.01$  level. The hypothesis was accepted.

## CHAPTER I

### THE PROBLEM

#### Introduction

Morbidity and mortality related to atherosclerotic heart disease have reached epidemic levels in the United States, causing an estimated 54.8 percent of the total deaths in 1987 (Heart Facts, 1987). The etiology of atherosclerotic heart disease is not completely understood, but is believed to be accelerated by the presence of certain risk factors such as cigarette smoking and high cholesterol dietary intake (Wolfgang, 1981). Duncan et al. (1983) support the premise that poor physical fitness also increases the risk of cardiovascular disease.

Heart disease has most often been considered a disease of the elderly. Several studies (Holman, 1961; Kannel and Dawber, 1972; Strong, 1976), however, have indicated that the precursor of atherosclerotic heart disease begins in childhood. Autopsies of Korean and Vietnamese war casualties studied by Enos et al. (1971) and McNamara (1971) revealed advanced atherosclerotic conditions in subjects with a mean age of twenty-two years. Wolfgang and Dennison (1982) stated that since the disease process begins much earlier than the disease manifests itself, investigation of risk factors in youth was important.

Two groups of factors have been identified as correlates of increased risk for developing atherosclerotic disease. The first group consists of those factors (such as age and heredity) that are beyond the individual's control. The second group are of behavioral origin. The behavioral precursors of cardiovascular disease include smoking and high fat and cholesterol dietary intake and are of utmost importance because of the possibility of modification (Wolfgang and Dennison, 1982). Lack of physical exercise is another risk factor that can be behaviorally modified. Way (1981) supports introducing regular physical fitness activities early in childhood to encourage children to assume responsibility for their own fitness throughout their lifetime.

During the last ten years in the United States, the incidence of heart attacks has decreased. As a result of a review of research literature, Holcomb et al. (1981) surmised that this decline is at least partially due to personal changes in behavior, such as reduction in smoking, dietary changes to reduce cholesterol and fat intake, and an increased interest in exercise.

A conclusion may be drawn based on results of the studies previously noted. Because of the early onset and latency of the atherosclerotic disease process, it is vital to institute positive health behaviors early in life, before lifetime habits have been established. Coates et al. (1981) stated that changing children's health habits may be a key element in promoting widespread adoption

of a healthier lifestyle that could lead to a reduction of cardiovascular risk behavior and disease in the overall population.

### Purpose of Study

The purpose of this study is to determine if a selected group of school age children will modify their health behaviors following an educational program.

### Problem

Do school age children who receive cardiovascular risk factor education modify their health behaviors and develop a healthier lifestyle?

### Definition of Terms

Throughout this study the following definitions will be used:

Health - that state of body and mind functioning which affords man the ability to strive towards his functional objectives and his culturally desired goals (Balog, 1981).

Health behaviors - those practices that have an effect on an individual's state of health.

a. Negative health behaviors - those practices that threaten the present state of health. For the purpose of this study, they will be operationally defined as: smoking, ingestion of a high fat, high cholesterol diet and lack of regular aerobic exercise.

b. Positive health behaviors - those practices that enhance the present state of health. For the purpose of this study, they will be operationally defined as: avoidance of smoking, ingestion of a low fat, low cholesterol diet, and regular aerobic exercise.

Health education - instruction provided to assist the individual to choose a pattern of living that enhances the well-being of his body and mind. For the purpose of this study, it will be operationally defined as: the content of the eight teaching sessions that will be taught.

Risk factors - "an attribute or exposure that increases the probability of occurrence of disease ..." (Valanis, 1986, p. 436). For the purpose of this study, they will be operationally defined as the negative health behaviors stated above.

School age child - a child who is enrolled in the fifth grade in elementary school.

#### Delimitations

1. The subjects selected for this study will be from a public school rather than a private school to obtain a sample more reflective of the general population.

2. The subjects will be of normal or higher intelligence in order to control for the level at which the health education programs will be presented.

### Assumptions

1. Behavior can be modified.
2. A pretest and post-test can measure modifications in a person's health behaviors.
3. School age children can make decisions that promote positive health behaviors.
4. Learning will take place.
5. The subjects will answer the test questions truthfully.

### Theoretical Rationale

Self-care implies that people can and should take responsibility for their own health (Blazek and McClellan, 1983, p. 554). Orem (1980, p. 35) stated that self-care is "the practice of activities that individuals initiate and perform on their own behalf in maintaining life, health, and well-being". Further, she stated that "self-care is developed in day-to-day living, and is aided by intellectual curiosity, by instruction, by supervision from others, and by experience in performing self-care measures" (Orem, 1980, p. 37). The way an individual meets his self-care needs is not instinctual, but is a learned behavior.

"Orem presents health based on the concept of preventive health care. ... It includes the promotion and maintenance of health (primary prevention), the treatment of disease (secondary prevention), and the prevention of complications (tertiary

prevention) (George, 1985, p. 130). Nursing promotes preventive health care in the individual by providing education regarding self-care needs in order to maintain health and sustain life.

Adults voluntarily care for themselves. Children, however, require assistance with self-care activities and must be taught appropriate health care practices. This is accomplished through education and practice of positive health behaviors (Orem, 1980).

Social learning theory, as developed by Rotter and Bandura, provides a theoretical framework which "attempts to incorporate cognitive, affective, behavioral and social dimensions into a cohesive theory of learning" (Parcel, 1983, p. 40). This theory has been used as the theoretical basis for school health education programs by McAlister (1980), Evans (1979), Hurd (1980), Nadar et al. (1983) and other researchers. The social learning theory utilizes three basic components in the measurement and prediction of behavior. According to social learning theory, behavior is always directional. In other words, an individual responds with those behaviors that he has learned will lead to the greatest satisfaction in a given situation (Rotter, 1964). The translation of theory into practice through education makes social learning theory a particularly attractive theoretical model for school health education (Parcel, 1983).

### Hypothesis

There will be a statistically significant improvement in self-reported health behaviors of school age children who receive a cardiovascular risk factor education program as compared to the self-reported health behaviors of those school age children who do not receive a cardiovascular risk factor education program.

### Significance of Study to Nursing

A large percentage of today's population is affected by cardiovascular disease. There has been limited documentation that children can be educated to make positive health choices regarding dietary intake, physical fitness, and avoidance or control of cigarette smoking in order to decrease the incidence of cardiovascular disease.

One of nursing's responsibilities is to assist children to learn positive health practices in order to be better able to assume self care as adults. This can be accomplished through a variety of educational programs and practice of positive health behaviors that promote the health of the individual. Data from this study will provide community health and school nurses with additional information regarding their approach to provide health education to children.



## CHAPTER II

### Literature Review

#### Coronary Artery Disease

"Coronary artery disease is near epidemic in the Western World" (Cardiovascular Disorder, 1984:89). Even with the recent strides in treating the severe forms of coronary artery disease, it still remains a challenge to both health personnel and laymen. Coronary artery disease is an umbrella term used for various diseases that reduce or halt blood flow through the coronary arteries (Cardiovascular Disorders, 1984). It takes more lives than any other disease.

Atherosclerosis of the coronary arteries is the leading cause of coronary artery disease in the United States (Bullock and Rosendahl, 1984). There are many theories of the pathogenesis of atherosclerosis, however, most agree that the process begins early in life and progresses over a period of years. According to Bullock and Rosendahl (1984:246)

The initial change in the arteries is seen early in life and consists of a fatty streak that may develop into a fibrous plaque. This atheromatous plaque becomes elevated inside the artery and partially occludes the lumen of the artery. The cores of the atheromatous plaques become necrotic and hemorrhage, and calcification may result. Thrombosis on or around the plaque may occur, partially or completely occluding the lumen of the vessel.

These atherosclerotic lesions don't usually cause symptoms until the atherosclerotic process is well advanced. There can be a latent period of 20 to 40 years before symptoms occur. As the plaque formation enlarges, the coronary artery lumen narrows, causing resistance to blood flow through the artery. The result is compromised myocardial blood supply. This leads to decreased myocardial oxygenation and ischemia of the cardiac muscle. Angina pectoris results and with prolonged ischemia, necrosis of the myocardium can occur (Bullock and Rosendahl, 1986).

#### Cardiovascular Risk Factors

Although the cause of atherosclerosis remains unknown, multiple risk factors are associated with the development of atherosclerosis and cardiovascular disease. The American Heart Association has identified high fat, high cholesterol diets (resulting in elevated blood lipid levels), obesity, smoking, hypertension and a sedentary lifestyle as important risk factors that lead to the development of cardiovascular disease (Sunseri et al., 1984). Thompson et al. (1986) add an age of 35 to 60 years and having a type A personality to the list of risk factors. All of these factors can make a person more prone to developing atherosclerosis by producing either a lipoprotein abnormality, arterial wall injury, or platelet dysfunction (Cardiovascular Disorders, 1984).

### High Fat, High Cholesterol Diet

Hyperlipidemia is directly related to the development of atherosclerosis and coronary artery disease. Diet plays an important role in governing the blood levels of cholesterol, lipoproteins and triglycerides. There is a direct correlation between a person's intake of fat and his blood levels. With increased fat and cholesterol intake, serum levels of cholesterol, triglycerides and low density lipoproteins increase. Likewise, when a person limits his/her intake of fats and cholesterol, serum levels fall.

Elevated serum levels of fats and cholesterol cause atherosclerotic buildup along the intima of the arteries. As these lesions further develop, they occlude the arteries, especially the coronary arteries, and lead to the development of coronary heart disease as well as other cardiovascular diseases. The fact that a high fat, high cholesterol diet is easy to change makes this an important risk factor to focus on.

### Obesity

Obesity is a less clearly defined cardiovascular risk factor, but is associated with hypertension and hyperlipidemia. There is a direct correlation between increased fat intake and obesity which tends to increase the heart's workload leading to hypertension, which in turn can also result in coronary heart disease.

### Cigarette Smoking

The relationship between cigarette smoking and the development of coronary heart disease has long been established. Andreoli (1979) cited statistical evidence that supports a mean increase of about 70 percent in the death rate from coronary artery disease in middle-aged men who smoke one pack of cigarettes a day as compared to their non-smoking counterparts. "Cigarette smoking is the single most important preventable cause of death ..."  
(Healthy People, 1979:7). In the same report it is noted that smoking, even in the absence of other important risk factors, nearly doubles the risk of heart attack. Because of these conclusions, emphasis has been placed on educating the public regarding the potential risks associated with smoking.

### Sedentary Lifestyle

American life has become increasingly sedentary. Most people drive or ride to work and work itself, for much of the work force, involves relatively little activity. Even in recreation, people are more often spectators rather than participants. This relative lack of physical activity has led to a decline in physical fitness in children and adults (Healthy People, 1979).

"Poor physical fitness increases the risk of developing cardiovascular disease and is also associated with elevated serum lipids, hypertension and obesity" (Duncan et al., 1983:469). High

cholesterol levels are directly related to coronary artery disease. Research (Lauer et al., 1975; Duncan et al., 1983) has shown that physical exercise has resulted in a moderate decrease in blood cholesterol levels. More importantly, physical exercise has resulted in increased levels of high density lipoproteins and decreased levels of low density lipoproteins, which have been associated with a decreased risk of coronary heart disease. Physical exercise is a deterrent to obesity, which also is a risk factor for developing coronary heart disease.

#### Atherosclerosis As a Pediatric Problem

Atherosclerosis begins early in life (Holman, 1961; Kannel and Dawber, 1972; Strong, 1976) and progresses at a variable rate which is probably dependent on various intrinsic and environmental factors such as lifestyle associated with coronary risk factors. Strong (1976:66) stated:

Fatty streaks of atherosclerosis are present in the aorta of virtually all children, regardless of geographic location or diet. ... During the second decade of life, the fatty streaks increase in number and size and first become evident in the coronary arteries.

Kannel and Dawber (1972) report evidence of fatty streaks in children by age three to five years. Although there are no longitudinal study data documenting the progression of the fatty streaks to fibrous atherosclerotic plaques, there are studies

(Lauer et al., 1975; Blumenthal et al., 1975; Enos et al., 1973; McNamara et al., 1971) that show evidence of atherosclerosis in early adulthood supporting the conclusion that fatty streaks do progress to atherosclerosis later in life. Kannel and Dawber (1972) believe that if this progression of fatty streaks to atherosclerotic plaques could be slowed, then atherosclerotic heart disease would not be a major cause of death in later life. This consideration supports the seriousness of atherosclerosis as a pediatric problem.

Other researchers (Moller, 1982; Immarino et al., 1980; Wolfgang and Dennison, 1982; Walter and Donnelly, 1985; and Boyer, 1984) agree that the problem of cardiovascular disease is not solely a problem of the adult population. They concur with Strong's and Kannel and Dawber's conclusions that the atherosclerotic process actually begins in childhood and progresses during adolescence and young adulthood even though serious clinical manifestations do not appear until middle age or later. They also support the need for early intervention in order to prevent blatant coronary artery disease later in life.

Blumenthal et al. (1975) provide evidence that children possess several cardiovascular disease risk factors (elevated cholesterol levels, obesity) and that not only may they lead sedentary lifestyles but also smoke, especially if their parents have manifestations of coronary artery disease. These risk

factors although commonly associated with adults, are often based on habits established during childhood. They too emphasize the importance of altering negative health behaviors related to risk factors before signs of coronary artery disease become apparent. Strong (1976), Boyer (1974), Lauer et al. (1975), Kannel and Dawber (1972) also believe that it is imperative that lifestyle modifications begin early in life, i.e. childhood, to successfully prevent the development of heart disease. It is absurd to allow children to develop habits which lead to such a deadly disease and then be urged to alter these habits later in life. If a child learns positive health behaviors during childhood, it is very likely that he/she will continue to practice such behaviors later in life. The American Heart Association believes that modification of "adult risk factors" in children may influence the establishment of favorable habits that will extend into adulthood and have a positive effect on reducing the risk of developing atherosclerosis. Physicians also agree that a more effective way to prevent coronary heart disease later in life is to concentrate on known preventive measures early in life before coronary heart disease becomes established (Way, 1981). Research has shown that beginning risk factor modification measures late in life, after the precursors of atherosclerosis have been present for years and the atherosclerotic lesions are far advanced simply are not as effective (Kannel et al., 1976). Programs which encourage lifestyle habits conducive to

maintaining good cardiovascular health are more beneficial when introduced at younger ages because they condition behavior for later in life.

The American Academy of Pediatrics strongly support the concept of school health education, from kindergarten through grade twelve, for all children in the United States. It believes that a basic concept of pediatric practice is prevention, and that health education is a basic element of disease prevention (Cook, 1978). As has been stated, cardiovascular disease can be prevented easily by modification of risk factors. All children deserve to know how they can live a healthier life.

Most people's dietary habits are formed early in life. If children are accustomed to eating high fat foods, they will continue this practice later in life. However, if children are accustomed to eating low fat foods, chances are they will continue this practice later in life. The end result would be less atherosclerotic buildup inside the adult's coronary arteries and less chance of developing coronary heart disease later in life. It is crucial to reach children at an early age in hopes of preventing such a deadly disease later in life.

A variety of studies (O'Rourke et al., 1985; Shute et al., 1981; Andrews and Hearne, 1984; Schinke and Gilchrist, 1983; Sunseri et al., 1983; Botvin and Eng, 1980; Nolte et al., 1983;



Allendorff et al., 1985) have studied children from pre-school through grade 12.

Shute et al. (1981) concluded that for children three to eight years of age, who made up their study group, knowing "someone" who smokes cigarettes is significantly related to a desire to smoke. They noted that the effect was especially strong for pre-school children. A second conclusion was that over 80 percent of the children studied, who had tried smoking, 25.5 percent reported a strong desire to smoke in the future. A third conclusion drawn from their study indicated that of children who were not exposed to tobacco at home, almost 90 percent stated that they would not smoke in the future. Shute et al. stated that just as children model smoking parents they also model non-smoking parents.

What of children of smoking parents? Andrews and Hearne (1984) in a longitudinal study investigated health attitudes of children beginning in kindergarten through third grade. Six hundred kindergarten children were assigned to either an experimental or control group. Two hundred and eighty-four children were in the experimental group and received the Primary Grades health curriculum. Three hundred and sixteen children were in the control group and received textbook health curriculum. Data collected at the end of the third grade demonstrated that the experimental group possessed more positive attitudes about health and less engagement in cigarette smoking. It also was noted that

a significant number of parents of experimental group children (16.5%) and 11 percent of the control group parents reported that they had stopped smoking since their children started the program. Andrews and Hearne stated that this difference was greater than could be expected by chance ( $p < .02$ ). These data seem to indicate that parents also benefit from health education programs designed for their children. This same benefit was noted in another study (Sunseri et al., 1983).

Other studies were designed to increase health knowledge regarding the negative affects of smoking and to promote positive health behaviors. Schinkle and Gilchrist (1983) studied 56 sixth grade students. The experimental group was exposed to eight sessions related to health, problem solving and decision making skills to help them abstain from tobacco use. They were compared to untrained controls. The researchers concluded that students in the experimental group had a stronger commitment to tobacco abstinence and more frequent refusals of tobacco. Allendorff et al. (1985) studied the relationship between knowledge related to heart health, smoking attitudes and self-esteem. Thirty-seven sixth grade teachers, with their students were randomly assigned to experimental and control groups. The experimental group was comprised of 18 teachers and 430 students; the remaining 19 teachers and 460 students comprised the control group. A pre-test was administered to all subjects. Five curricular modules were

taught, in three 45 minute sessions each week for five weeks, to the experimental group. Following completion of the curricular modules both groups were post-tested. Allendorff et al. concluded that the program had an impact on student's health knowledge and that independence from peer pressure significantly influenced student attitudes and self-esteem.

O'Rourke et al. (1985) conducted a study of school age children in grades seven through 12. The study was designed to provide a profile of the ex-smoker as compared to his smoking and never smoking counterpart. Data were collected from 5,393 subjects. They were asked to identify smoking behaviors of close friends who smoke, parents who smoke, best friends upset about smoking and parents upset about smoking. Responses of subjects in each of the three groups were then divided according to grade level. The total number of subjects, per grade, were then compared according to positive responses on the smoking behavior tool. Results indicated that the ex-smoker had a significantly different profile than smokers and never-smokers. Data analysis revealed that the ex-smokers more closely resembled never-smokers. Data also indicated that ex-smokers consistently had a higher percentage of positive responses on the smoking behavior tool than never-smokers and a lower percentage of positive responses than smokers. O'Rourke et al. contended that these data provide insight "into the ex-smoker's group which may be useful to those involved in anti-smoking efforts

be they focused on prevention or cessation" (O'Rourke et al., 1985:21).

Children are generally considered to be physically active. Surprisingly, however, relatively few high school and even fewer elementary school age children participate in regular physical exercise programs (Duncan et al., 1983). Most schools and adults tend to assume that physical fitness conditioning in children results from their daily routine. Hovell et al. (1978) concluded that children's voluntary activity levels during recess were insufficient to increase cardio-respiratory fitness and reduce the risk of developing cardiovascular disease. According to Duncan et al. (1983) children who participated in regular physical fitness programs during recess initially complained because they preferred more sedentary activities. As they became adjusted to the program, however, their general demeanor changed. They became more alert, more enthusiastic in the classroom and more active during recess periods.

Regular physical exercise has been identified as an important preventive factor of cardiovascular disease. It is important to build a routine of physical exercise into a person's lifestyle at a young age. Children need guidance in understanding which exercises are important and the benefits of maintaining physical fitness throughout their lives. School age children can take the responsibility for their own physical fitness and learn heart

healthy activities that they can continue throughout their lives. If benefits of exercise are taught early, the children may be more likely to continue these activities into adult life.

Several programs (Project Superheart, The Chicago Heart Health Curriculum Program, Know Your Body) have shown that children are able to modify their lifestyle habits and are able to understand ways to keep their hearts healthy. There are, however, no longitudinal study data about children's cardiovascular risk modification available at this time. Because of the daily routine and contact with children, schools are considered to be excellent settings in which to provide information and guidance for making lifestyle changes conducive to good cardiovascular health for the general youth population.

The researchers for this study chose high fat, high cholesterol diet, smoking and sedentary lifestyle as the most important risk factors affecting the development of atherosclerosis in children. A large percentage of school children have already adopted related detrimental lifestyle habits. Rather than wait until the disease is obvious, it is better to prevent these unhealthy practices from occurring by educating the younger generation about atherosclerosis, coronary heart disease, and the risk factors associated with these conditions.

### Cardiovascular Health Education Programs for Children

There are numerous cardiovascular risk factor education programs that have been successfully implemented in schools. For example, Illinois, Michigan, New York, Kansas, Rhode Island and Minnesota have successful "heart health" programs that have been implemented for school age children from elementary through high school levels. The primary objectives of these programs are: 1) to provide education about cardiovascular disease and risk factors and 2) to encourage the participants to make "heart healthy" lifestyle choices, modify their personal behaviors and prevent the development of cardiovascular disease.

These federally funded programs have all been conducted in the public school system. The Minnesota program is particularly interesting because it provides risk factor education in both school and community settings. It attempts to reach children and adults, with particular focus on the family. All of the programs involve cognitive learning, consideration of personal feelings and values, and opportunities for the participants to make responsible decisions regarding their own health. Primary focus is on the elementary to middle school age populations, in an attempt to prevent the development of risk behaviors. Two programs, however, offer risk factor education to high school students as well as younger aged children.

The literature review revealed favorable results from all of the programs. Program evaluations demonstrated that cardiovascular risk factor education positively impacted the student participants primarily because increased knowledge of cardiovascular risks changed student preferences and decisions positively. In many instances the children took the knowledge home to share with their families. Various programs allowed for parent participation. For example, Project Superheart included evening gym activities for the families of participant children (Bellardini et al., 1980). As a result, the majority of the programs had an extended effect on those who were involved.

A brief description of some of the cardiovascular health education programs available in the United States follows:

1. Chicago Heart Health Curriculum Program: Chicago, Illinois

This program was designed to increase students' heart health knowledge related to primary risk factors of cardiovascular disease in order to develop positive attitudes about healthful living, and to encourage the adoption of heart health lifestyle behaviors. "The program consists of five heart health education modules: 1) "Special You", 2) "Foodwise", 3) "Movin", 4) "Keeping It Together", and 5) "Do You Mind If I Smoke", and is taught to upper elementary classes" (Creswell, 1982:26). This program is perhaps one of the more successful and is still functioning. The program emphasizes the freedom of choice and responsibility for

one's own actions. Teachers implement the program after receiving extensive training about cardiovascular concepts and facts.

## 2. Feelin' Good: Spring Arbor, Michigan

This is a fitness and health education program for children, grades kindergarten through nine. It emphasizes the study of cardiovascular anatomy and physiology, and the effects of exercise, diet, stress, obesity, and smoking on the body (Creswell, 1982). It uses the following educational strategies: discovery activities, behavior modification, lectures and physical exercise activities. This program has been adopted by and is currently being implemented in several schools and Y.M.C.A.s throughout the United States.

## 3. Know Your Body: New York, New York

This program was implemented in six New York City school districts in an attempt to prevent development of major chronic disease risk factors and to reduce elevated cardiovascular risk status. Due to its success, it is currently being replicated for 1400 Washington, D.C., black, urban children (Stone, 1985). Its focus is on cardiovascular risk factor prevention and is designed to assist elementary school age students in making healthy choices concerning nutrition, exercise, and substance abuse. The program consists of ten learning modules based on social learning, modeling, and self-responsibility (Immarino et al., 1980).



#### 4. Project Superheart: Cortland, New York

This heart disease prevention program is for children age six through twelve years. The program's primary goal is "to provide cardiovascular health and fitness that begins when the child enters school" (Bellardini et al., 1980:11). It consists of a variety of physical education activities and a cardiovascular health education curriculum. The program emphasizes positive health attitudes to influence children to make healthy lifestyle choices that will continue throughout their life. The available literature cites that "Project Superheart" has significantly increased cardiovascular knowledge and impacted on physical fitness. The interesting fact about this program is that the teaching was done not only in the classroom, but also through role modeling and environmental engineering. The school and schedules were arranged in ways that were conducive to good health, such as including physical exercise sessions three times a week and providing nutritionally balanced lunches (Bellardini et al., 1980).

#### 5. Project Panther: Youngstown, Ohio

Project Panther (Prevent and Neutralize Through Health Education Risk Reduction) was designed to reduce specific health risks, i.e., smoking, alcohol abuse, poor nutritional habits, lack of physical fitness and hypertension in school age children (Kittleson and Ragon, 1985). Directed toward fifth and sixth grade students, it fostered developing a positive self-esteem through activities

pertaining to self-awareness and decision-making skills. This program utilized several self-assessment tools, classroom teaching, decision-making, exercise and health related field trips. The project has been successful in reducing the students' risk factors, especially relative to smoking. Pre-test scores revealed that 12 percent of the fifth grade experimental group smoked and post-test scores revealed that the number of students who smoked decreased to less than five percent (Kittleson and Ragon, 1985). The Center for Disease Control formally recommended that Project Panther be classified as a model project worth duplicating.

#### 6. Minnesota Heart Health Program: Minneapolis, Minnesota

The Minnesota Heart Health Program is a disease prevention community project whose primary goal is to significantly reduce morbidity and mortality due to cardiovascular disease by focusing on changing general lifestyle patterns (Creswell, 1982). The project is community based rather than school based and operates from a community setting. It provides personal risk factor screening as well as risk factor education to both adults and children. The schools host the program for school aged children. The program is being implemented as a longitudinal study (1980-1990) in three Minnesota communities. Presently, limited evaluations have revealed positive effects of the program on cardiovascular disease awareness and risk modification.

The Role Of the School In  
Cardiovascular Risk Factor Education

Researchers (Kilbe and Newman, 1983; Moller, 1982; Creswell, 1982; Immarino et al., 1980; Schaller, 1977; Boyer, 1974) agree that cardiovascular disease education must begin early in life in order to effectively prevent the occurrence of and deaths from cardiovascular disease. Creswell (1982:25) stated:

Because it is generally assumed that heart and blood vessel disease begins early in childhood, the school is uniquely suited to initiate positive action through its health education program. It not only has access to young people when they are most receptive to learning, but also before the irreversible effects of the disease have occurred.

Fitch and Blue (1982) and Immarino et al. (1980) agree that cardiovascular disease education can occur almost any place in society. They, however, feel that schools are the most important environment for this education because they provide a captive audience of children and can assure that an organized program will be delivered. Biles (1982), Bellardini et al. (1982), McAlister (1981), Janis (1980), Rash and Pigg (1979) and Schaller (1977) all support health education programs in the schools.

Janis (1980:360) stated, "Schools are where the children are -- a fact that makes them logically ideal for the introduction of preventative health care concepts and preventive health services". Of further importance is the fact that the school is the most logical place to bring together health professionals, parents,

and administrators concerned with improving child health. Schaller (1977) feels that the school provides the optimal environment for cardiovascular education. He further believes that "the basis for having a good health program is that if the child is not in a state of good health, he or she will not be able to learn effectively (Schaller, 1977:394). McAlister (1981) feels that health education has been neglected in the public schools, adding that health courses are often taught by athletic instructors who actually know little about health or how to teach it. He strongly recommends that health education be incorporated into the curriculum and that teachers receive special training to teach health education.

McAlister (1981) and Rash and Pigg (1979) also believe that the child's school environment can positively impact his health behavior(s). For example, "a carefully planned school lunch program combined with the elimination of candy machines may do more to provide prudent eating habits than a semester of nutrition education" (McAlister, 1981:29). He further added that improved facilities and more opportunities for athletics could lead some students to choosing physical fitness to augment their social involvement and enjoyment. "The role of the school in health education is more than mere teaching of facts. It involves making environmental changes in the schools to influence health behavior through the basic skills of self management and decision making" (McAlister, 1982:29).

Bellardini et al. (1982) agree with McAlister regarding using the school environment to encourage positive health habits in children. They believe that teaching can be accomplished through role modeling and environmental engineering. Examples of role modeling include: adults and teachers avoiding smoking, practicing sound nutritional habits and exercising regularly. The school can offer an environment conducive to health by offering physical exercise opportunities at least three times a week, nutritionally balanced, low fat lunches, a curriculum stressing individual growth and positive outlets for stress.

Biles (1982), Bellardini et al. (1982) and Rash and Pigg (1979) all stress the importance for elementary schools to address the cardiovascular disease problem in the United States. They strongly support restructuring the elementary school health education curriculum so that it centers around the basics of cardiovascular health. According to Bellardini et al. (1982:12) "It is best to begin with children who are basically healthy and impress on them that they must take the responsibility for their own health and that healthy habits established early will serve them for a lifetime". Biles (1982) added that the unique role of the public school is to provide cardiovascular health education to all children, but that it is crucial to begin this education at the elementary level before individual habits and values have been established. She feels, however, that cardiovascular health

education is important to everyone, and encourages children to share their knowledge with parents and other family members. In this way, health education programs have an effect on the total community.

Kreuter and Christenson (1981) specify that school health educators, unlike patient health educators, are faced with the problem of linking health education activities to future behaviors. They state that the goal of school education is "to guide children towards optimal and lasting acquisition of healthful practices and to enable them to make sensible decisions when they face new situations for which they have not been prepared" (Kreuter and Christenson, 1981:49). In addition they feel that "school health education programs should be aimed at enhancing children's perceived value of health as well as reinforcing their internal locus of control" (Kreuter and Christenson, 1981:52).

#### Health Education

Current definitions of health are usually vague and non-specific. They very often depend on the individual, group, or condition under which the definition is applied. Therefore the concept of health education likewise tends to be vague and non-specific (Balog, 1981). "... the laws concerning health instruction are few, often ambiguous, and even mandates are largely left to local option for enforcement (National Professional School Health Education Organization, 1984:4).

Balog (1981) stated that it would be convenient to offer a more discriminating concept of health. He believed that such a definition would more specifically identify the role of health education and the health educator. "The rationale for health education rests on the premise that the educated individual will make appropriate lifestyle decisions which will be beneficial to health" (Schoenberger, 1982:15).

Kreuter et al. (1983) indicated that they are satisfied that growing evidence demonstrates an association between education and the practice of health-enhancing behavior. They are sufficient to justify a commitment for health education in the schools.

Health education in the school setting is planned and carried out to maintain, reinforce or enhance health. It should, therefore, do what education has been designed to do. The objectives of health education should be to impart knowledge for the purpose of developing the powers of reason and judgment to help people make their own healthful decisions. Specifically, health education should disseminate information concerning what life habits promote the well functioning of the body and mind and encourage the advancement of self-rule and self-care (Balog, 1981; Kolbe, 1982; National Professional School Health Education Organization, 1984).

Schoenberger (1982) identified several reasons for health education for children as well as adults. He stated that the

risk factors in adults are, in all likelihood, risk factors for the young as well. Potentially dangerous conditions may be present for many years before they manifest. Schoenberger's second reason is that adults are usually resistant to changes in longstanding life habits. Surely it is easier never to have begun those habits deleterious to one's health. The final reason is that the atherosclerotic process is probably reversible up to the point of scarring of the blood vessel wall. Intervention after a heart attack is less likely to be of value than early in the disease process or prior to disease onset.

The importance of health education is gaining support as Americans are becoming increasingly concerned about the rising cost of health care and resulting decreased accessibility to health care for the poor and medically naive (Dignan and Sheard, 1981).

In the future, Americans will assume increased responsibility for their own health. "This responsibility will be focused on changes in personal behaviors which are associated with promotion of one's health and prevention of diseases most prevalent in our society" (Alderman, 1980:22).

Health education is not a passive experience. The individual plays an active role in which he makes choices and takes actions which are instrumental in affecting the status of his/her well-being (Alderman, 1980).



### Nurse's Role in Health Promotion

In Healthy People (1979:119) the surgeon general reported that health promotion begins with people who are basically "healthy". The practice of health promotion seeks to develop community and individual measures to help them adopt lifestyles that will "maintain and enhance" that state of well-being. The report goes on to say that beginning in early childhood and throughout our lives we make choices that affect our current and future health status. These decisions are most often made without the person having contact with health professionals and without thought to personal future health implications.

Health promotion has long been identified as a major role of the community health nurse. Health promotion programs and activities include various forms of health education, demonstrations of health practices, and efforts to provide a greater number of health-promoting options for the client, family or community (Spradley, 1981:15).

Johnson and Parsons (1984:193) stated that regardless of the health care setting, the nurse has increasing responsibilities to restore or promote health. They too identify the community health nurse's special responsibilities to actively be involved in promoting wellness for community residents.

The concept of nurses promoting health in the community is not a new one.

"America's first public health nurses knew that the community settlement houses, clinics, and homes were the natural settings for the practice of nursing. Sickness and hospitalization were, for most individuals, temporary infrequent experiences that required the skilled services of nursing specialist. Yet, even nurses practicing in hospitals vicariously entered the homes and lifestyles of patients to teach wellness and disease prevention" (Johnson and Parsons, 1984:193).

Moore and Williamson (1984) stated that nursing responds to societal trends in an effort to meet the perceived health needs of the culture in which it exists. They identify the relationship between health status/behavior and lifestyle choices - those choices individuals make that impact on future health status. Moore and Williamson believed that nurses must begin to formulate their own ideas about health promotion and identify aspects of application in their own practice. They go on to say that health promotion practices are applicable whether the nurse is working with individuals, families, or communities as client. Moore and Williamson believed that behavior and lifestyle choices of individuals directly affect health status.

Grasser and Craft (1984) stated that health care is a participatory process that includes both the provider and the recipient. Nurses must more actively involve themselves in health promotion activities. The health promotion activities must be designed and implemented for individuals of all age groups. Grasser and

Craft identify sites most often utilized for health promotion such as schools, work sites, community centers, or communication channels such as radio or television. Professional nurses must be ready and willing to meet the individuals wherever they are, not wait passively for them to seek assistance once they are already ill.

### Summary

Atherosclerotic heart disease has been identified as a disease with devastating implications. It is most often considered a disease of the elderly, but recent research has indicated that precursors of the disease exist long before symptoms manifest. Research has also indicated that the incidence and severity of heart disease can be reduced through variations in an individuals lifestyle.

Society is currently burdened with increasing health care costs. It is projected that, in the future, it will be necessary for individuals to assume greater responsibility for promotion and maintenance of their own health status.

The school is an ideal site for providing heart health education due to its regular contact with children. The school is also the most logical place to bring together health professionals, parents, teachers, and administrators who are concerned with improving children's health status, now and in the future.

## CHAPTER III

### METHODOLOGY

#### Selection of Sample

The setting for this study was a public elementary school located in Southeastern Virginia. It serves children from five to eleven years of age and grades kindergarten through five. A public school was chosen to obtain a sample more reflective of the general population.

The study population consisted of 119 students divided into two study groups - experimental and control. All subjects were fifth grade students in the participating school. The subjects were of normal or higher intelligence as judged by available school records. Subjects comprising the experimental group were exposed to the testing and educational program during the last weeks of the school year. Those comprising the control group were exposed to the testing and educational program during the first half of the following school year. By that time, the subjects comprising the experimental group had advanced to the middle school - decreasing the probability of subject contamination.

The 63 subjects in the experimental group consisted of 27 males and 36 females and the control group totaled 56 subjects,

30 males and 26 females. Fifty-four percent of the experimental group were black and 46 percent were white. Sixty-two and one half percent of the control group were black and 37.5 percent were white. The age range for both groups was ten to 13 years. The mean age for the experimental group was 10.86 years; the mean age for the control group was 10.38 years. Tables 1 and 2 depict this demographic data.

Table 1

## Sex and Race Distribution of Subjects by Study Group

Study Groups	Sex			Race		
	Female	Male	Total	Black	White	Total
Experimental Group	36	27	63	34	29	63
Control Group	26	30	56	35	21	56
Total	62	57	119	69	50	119

Table 2

## Age Distribution of Subjects by Study Group

Age in Years	Experimental Group	Control Group	Total Subjects
10	23	38	61
11	27	16	53
12	12	1	13
13	1	1	2

Selection of Instrument

A thorough review of the literature revealed that although a variety of tools were available to measure knowledge of cardiovascular disease risk factors, there were none that measured health behaviors of children who had been taught the cardiovascular disease risk factors. It was therefore necessary to develop an instrument, "My Health Behaviors", to measure health behaviors of the subjects (Appendix A). The instrument developed was in the form of a questionnaire that was used as a "pretest" and a "post-test". The questions related to behaviors directly associated with content taught during the eight week educational program.

### Reliability and Validity

Reliability was determined by the test-retest method. The questionnaire was administered to twelve girl scouts (Troop 537) and was repeated two weeks later. A Pearson r correlation was calculated and the result was 0.6. Face validity was determined by having two experts in the field of nursing and one expert in the field of elementary education review the questionnaire. The nursing experts examined the questions for appropriateness of health practices and the elementary education expert examined the questions for appropriateness for fifth grade level students.

### Scoring

The tool was scored by giving a minus one for every behavior that was linked to a negative heart health behavior (such as: high fat, high cholesterol foods, smoking or lack of exercise). A positive one was given for every behavior that could be linked to a heart healthy behavior (such as: eating foods low in fat or cholesterol, getting physical exercise, or not smoking). All negative and positive scores were added together to obtain the total score. The highest possible score was sixty-nine, indicating the most positive health behaviors and the lowest possible score was negative forty-six, indicating the most negative health behaviors. For the purpose of analysis, the differences between the pretest and post-test scores were used.

### Data Collection

The principal at the designated school was contacted by mail and an appointment scheduled with him to discuss the study (Appendix B). Permission to collect data at the designated school was obtained from the principal (Appendix C). He in turn obtained permission from the county school board for the study to be conducted in his school. Permission to participate in the study was obtained from each subject's parents. The purpose of the study was explained and confidentiality was assured. The parents and subjects were told that the information gained would be used in this research study only, and would in no way affect the subjects' status in school. The parents were informed that the subjects could withdraw from the study at any time. Opportunity was provided for the parents to call the researchers and ask any questions they might have before the study was begun. Those parents agreeing to allow their child to participate in the study signed an informed consent (Appendix D [Experimental Group] and Appendix E [Control Group]). One copy of the informed consent was returned to the school and the parents kept one copy. One hundred percent of the parents of both groups consented to allow their child to participate in the study.

The experimental group received a total of eight 45 minute sessions (Appendix F). The introductory and summary sessions were



primarily concerned with administering the pretest and post-test. Sessions two through seven were informative sessions devoted to the three major cardiovascular risk factors (high fat, high cholesterol diet, smoking and sedentary lifestyle). A combination of didactic presentation along with a variety of student activities and audio-visual aids were used to convey the material.

The control group received a total of four 45 minute sessions (Appendix G). After giving permission for the study, the county school board offered a mandatory drug abuse program for all fifth grade students. The principal and fifth grade teachers agreed that they could not afford an additional eight sessions that deviated from the routine reading, English, math and science activities. They did allow four sessions for the program and requested specific content related to general principles of nutrition and foods high in salt and sugar. The introductory session was primarily concerned with administration of the pretest, sessions two and three were devoted to the nutrition content requested by the teachers, and session four was comprised of a review session, administration of the post-test, and presentation of program certificates.

The children were eager to be involved in the study. The majority of the subjects in both groups were active participants during the sessions as evidenced by the questions asked and by bringing information from magazines, home experiences and other

readings to class for discussion. Greater than fifty percent of the participants in the experimental group brought in at least one food label or cigarette advertisement for discussion. Both the experimental and control subjects were encouraged to share their knowledge with their families in hopes that the sessions would benefit a given segment of the community. All material obtained from the American Heart Association and other sources was age relevant. Table 3 presents the topical outline for the sessions by group.

Table 3  
Comparison of Session Content for  
Experimental and Control Groups

Experimental	Control
Session 1 - Introduction Pretest	Introduction Pretest
Session 2 - Cardiovascular Anatomy and Physiology	Basic 4 Food Groups
Session 3 - High Fat, High Cholesterol Diet	Foods High in Salt & Sugar
Session 4 - High Fat, High Cholesterol Diet	Summary/Post-test
Session 5 - Smoking	
Session 6 - Exercise	
Session 7 - Exercise	
Session 8 - Summary/Post-test	

## CHAPTER IV

### Analysis of Data

#### Introduction

The purpose of this study was to determine if a selected group of school age children would modify their health behaviors after having participated in a four and one-half hour cardiovascular education program. The stated hypothesis was tested using the student's paired-sample  $t$ -test. The  $t$ -test is "the basic parametric procedure used for testing differences in group means" (Polit and Hungler, 1983:511). A probability of  $p < 0.05$  was accepted.

#### Hypothesis:

There will be a statistically significant improvement in self-reported health behaviors of school age children who receive a cardiovascular risk factor education program as compared to the self-reported health behaviors of those school age children who do not receive a cardiovascular risk factor education program.

There was a significant difference found between the self-reported health behavior of school age children who received the cardiovascular education program as compared to those who did not ( $t=2.55$ ,  $p < 0.01$ ). (Table 4). The hypothesis was supported.

The range in scores (difference between pretest and post-test scores) for the experimental group was -13 to 21, with a mean score of 2.857. The range of test scores for the control group was -19 to 14, with a mean score of -0.714.

Table 4  
Comparison of Test Scores Between  
Experimental and Control Groups

Study Groups	N	$\bar{X}$	S.D.	$t$	df	p
Experimental Group	63	2.857	7.43	2.55	118	.01
Control Group	56	-0.714	7.83			

In addition, a sample variance was completed to compare the similarities of the experimental and control groups. The sample variance for the experimental group was 55.22 and for the control group was 61.30. Thus, the two groups were comparable.

#### Discussion

The findings of this investigation support the findings of several other studies related to educating children about cardiovascular disease and risk factors. Many of these studies have demonstrated increases in the subjects' knowledge of cardiovascular diseases and risks. "Project Superheart" (Way, 1981) demonstrated that children who received heart health education scored higher on

knowledge tests than children who did not. The "Cardiovascular School Health Curriculum" (Holcomb et al., 1984) also demonstrated significant gains in knowledge of cardiovascular disease and risk factors in children who participated in the cardiovascular health curriculum as compared to those who did not. The "Chicago Heart Health Curriculum" Program (Stone, 1985) and "Project Panther" (Kittleson and Ragon, 1985) evaluations measured knowledge and attitudes of the participants, and indicated positive changes in the study subjects' knowledge and health attitudes. Even though the Tuck-Williams research study did not measure knowledge, the researchers believe that the self-reported changes in health behavior occurred as a result of learning that had been internalized as a result of the cardiovascular education program.

The researchers did not have the opportunity to observe children in the school setting, but asked the teachers to share any observation. The teachers reported they noticed more children were selecting lower fat foods during and after the data collection period than before the children became involved in the cardiovascular education program. The teachers did not comment on any noticeable changes in physical activity in the experimental group children. The teachers also commented that the children in the experimental group were more aware of and concerned about their health and their heart(s) and continued to bring food labels and articles to school for discussion.

An interesting observation made by the researchers during the process of data collection was the experimental group subjects' overall concern for their parents' heart health behaviors. Many shared their concerns about their parents' smoking, diet, and exercise habits and asked for advice and literature that they could share with their parents. The researchers also noted that both boys and girls asked questions and participated in class activities and discussions.

The researchers did notice a difference between the experimental and control groups regarding the subjects' willingness to listen and the topics brought up for class discussion during the teaching sessions. The experimental group appeared to be more concerned about their health habits and wanted to learn more about how to take care of themselves. The researchers feel that one possible reason for this difference is that the experimental group were aware that the teaching sessions related to their heart and circulatory system, which they perceived as keeping them alive and healthy. The control group did not have the benefit of seeing how their teaching sessions related to any specific organ or system of the body.

Even though the hypothesis for this study was supported and the findings of this investigation confirm the findings of the cited research studies, questions remain. Among these are:

Would the results be the same if a different grade level had been used?

Did the experimental group improve their health behaviors because of actual knowledge that was gained or simply as a result of the contact with the researchers?

Could it be that the control group did not improve their health behaviors because of its more limited contact with the researchers?

A limitation of this study rests with the unequal allotment of contact time between the experimental and control groups. The answers to these questions could be sought by replicating the study, with different grade levels and with equal contact time for both the experimental and control groups.

## CHAPTER V

### Summary, Conclusions, Implications and Recommendations

#### Summary and Conclusions

This study, using a quasi-experimental design, was conducted to explore the effect of a cardiovascular risk factor education program on the health behaviors of a group of fifth grade children. The following hypothesis was tested:

There will be a statistically significant improvement in self-reported health behaviors of school age children who receive a cardiovascular risk factor education program as compared to the self-reported health behaviors of those school age children who do not receive a cardiovascular risk factor education program.

One hundred and nineteen subjects, 63 in the experimental group and 56 in the control group, were tested using the researcher's designed health behavior questionnaire. "My Health Behaviors", before and after participation in the health education program. The program provided for the experimental group consisted of eight 45 minute sessions. The introductory and summary sessions were primarily concerned with administration of the pretest and post-test and sessions two through seven were informative sessions about high fat, high cholesterol diet, smoking and sedentary lifestyle. The program



provided for the control group consisted of four 45 minute sessions; session one was concerned with introductory material and administration of the pretest, sessions two and three were informative sessions related to general nutrition and foods high in salt and sugar, and session four was devoted to review of content as well as administration of the post-test.

Data were statistically analyzed using the paired-sample student's t-test. Results of the analysis revealed a significant difference between the two sample groups at  $p < 0.01$  level. The hypothesis was accepted.

#### Conclusions

There was a significant difference between the self-reported health behaviors of the school age children who received the cardiovascular risk factor education as compared to those who did not.

#### Implications

Findings from this study indicate that children do benefit from nursing interventions aimed at educating them about their heart and their heart health behaviors. In addition to changing their own health behaviors, several of the children shared the information with their parents, thus allowing for an extended effect on the family's heart health behaviors. Children are able to take care of their heart, and assume positive heart health

practices. The school and school health nurse are excellent resources to provide children with heart health knowledge.

#### Recommendations for Further Study

It is recommended that:

1. This study be replicated:

- a. using equal contact time between experimental and control groups.
- b. using a larger sample.
- c. using a different age group to determine if age is a variable to be considered.
- d. comparing health behaviors between different ethnic groups to determine if ethnocentricity is an intervening variable.
- e. using a sample of children and their parents to note the effect that parental involvement would have on the health behaviors of the sample subjects.

2. A longitudinal study be done with post-testing conducted over a three year period, at 12 month intervals, to investigate the long term effects of the cardiovascular risk factor education program.

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**APPENDIX A**  
**"MY HEALTH BEHAVIORS"**

### "My Health Behaviors"

1. List the 3 foods that you usually eat for snacks.

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

2. Circle all the foods that you ate yesterday.

Bacon

Sausage

Hot Dogs

Bologna

Hamburger

Fried Eggs

Pancakes

Waffles

Toast/Bread

Hot Cereal

Cold Cereal

Apple

Orange

Banana

Strawberries

Peaches

Pears

Grapes

Tuna Fish

Fried Fish

Baked Fish

Fish Sticks

Ham

Poached Eggs

Spaghetti

Macaroni & Cheese

Whipped Potatoes

French Fries

Baked Potatoes

Fried Potatoes

Rice

Fruit Juice

Fruit Cocktail

Peanut Butter

Jelly

Peanuts

Candy Bar

Pretzels

Corn Chips

Fried Chicken

Baked Chicken

Barbeque Ribs

Roast Beef

Scrambled Eggs

Boiled Eggs

Green Beans

Corn

Peas

Greens

Lettuce

Sweet Potatoes

Milk

Soda

Tea

Snack Cakes

Ice Cream

Pie

Potato Chips

Popcorn

3. For each pair of foods below, check the food you eat most.

- |   |   |
|---|---|
| a. <input type="checkbox"/> chicken<br>or<br><input type="checkbox"/> hamburgers        | f. <input type="checkbox"/> fried chicken<br>or<br><input type="checkbox"/> baked chicken |
| b. <input type="checkbox"/> fresh fruit<br>or<br><input type="checkbox"/> candy         | g. <input type="checkbox"/> butter<br>or<br><input type="checkbox"/> margarine            |
| c. <input type="checkbox"/> hot dog<br>or<br><input type="checkbox"/> tuna fish         | h. <input type="checkbox"/> vegetables<br>or<br><input type="checkbox"/> desserts         |
| d. <input type="checkbox"/> baked potato<br>or<br><input type="checkbox"/> french fries | i. <input type="checkbox"/> ham<br>or<br><input type="checkbox"/> chicken                 |
| e. <input type="checkbox"/> eggs<br>or<br><input type="checkbox"/> cereal               |   |

4. What do you usually do after you get home from school?

5. Circle the best answer that describes you.

- a. I never exercise except in gym class.
- b. I exercise once in a while, but not regularly.
- c. I exercise 1 or 2 times a week for at least 15 minutes (non-stop).
- d. I exercise at least 3 times a week for at least 20 minutes each time (non-stop).



6. For each set of activities below, check which you do most.

a. \_\_\_\_\_ watch TV  
or  
\_\_\_\_\_ ride bike

d. \_\_\_\_\_ play video games  
or  
\_\_\_\_\_ play tag

b. \_\_\_\_\_ read  
or  
\_\_\_\_\_ walk

e. \_\_\_\_\_ play in your room  
or  
\_\_\_\_\_ play outside

c. \_\_\_\_\_ play ball  
or  
\_\_\_\_\_ play board games

7. Circle the best answer that describes smoking and you.

- a. I've never smoked a cigarette.
- b. I've only smoked part of one cigarette.
- c. I've only smoked a few times.
- d. I used to smoke at least once a week, but I quit.
- e. I now smoke.

8. If you don't smoke now, do you plan to smoke as an adult?

\_\_\_\_\_ Yes                      \_\_\_\_\_ No

9. What do you think is the best way to keep from smoking?

- a. Avoid smokers all the time.
- b. Yell at people who try to make you smoke.
- c. Say NO! when someone offers you a cigarette.
- d. Walk away whenever someone lights up a cigarette.

10. List three things that you do to help keep your heart healthy.

- 1.
- 2.
- 3.

Thank you for answering these questions.

**APPENDIX B**

**LETTERS REQUESTING PERMISSION FOR  
PARTICIPATION IN 'HEALTH BEHAVIORS' PROJECT**



April 22, 1986

Mr. Jeff Beatman, Principal

Dear Mr. Beatman:

We are Mrs. Sharon Williams and Mrs. Terry Tuck, graduate students in nursing at Virginia Commonwealth University. To meet the thesis requirement for a Masters of Science in Community Health Nursing, we are proposing to conduct a study entitled, "The Effects of a Cardiovascular Risk Factor Education Program on Health Behaviors of Selected School Age Children".

We would like to meet with you to discuss our plans for the project in detail and to request your permission to conduct the study at your school with volunteer subjects drawn from your fifth grade classes. Briefly, we propose to provide a series of eight classes on cardiovascular risk factors (high fat, high cholesterol diet, smoking and lack of exercise) and positive heart health and to assess the children's health behaviors utilizing a pre and post test. Parental consent will be sought only if you approve our project and allow us to conduct the study in your school.

A copy of the teaching program is enclosed for perusal prior to our meeting. Any suggestions for implementation of the study will be welcome and results of the study will be shared with you and your teaching staff.

Thank you for considering our request. We will contact you next week to schedule an appointment to further discuss our project.

Sincerely,

(Mrs.) Sharon Williams

(Mrs.) Terry Tuck



April 30, 1986

Mr. Jeff Beatman, Principal

Dear Mr. Beatman:

We are Mrs. Sharon Williams and Mrs. Terry Tuck, graduate students in nursing at Virginia Commonwealth University. To meet the thesis requirement for a Masters of Science in Community Health Nursing, we are proposing to conduct a study entitled, "The Effects of a Cardiovascular Risk Factor Education Program on Health Behaviors of Selected School Age Children".

We would like to meet with you to discuss our plans for the project in detail and to request your permission to conduct the study at your school with volunteer subjects drawn from your fifth grade classes to serve as our control group. Briefly, we propose to provide a series of eight classes on general health information, (Basic Four Food Groups, Foods High in Salt and Sugar, Simple First Aid, Stress and Relaxation, and Home Safety) and to assess the children's health behaviors utilizing a pre and post test. Parental consent will be sought only if you approve our project and allow us to conduct the study in your school.

A copy of the teaching program is enclosed for perusal prior to our meeting. Any suggestions for implementation of the study will be welcome and results of the study will be shared with you and your teaching staff.

Thank you for considering our request. We will contact you next week to schedule an appointment to further discuss our project.

Sincerely,

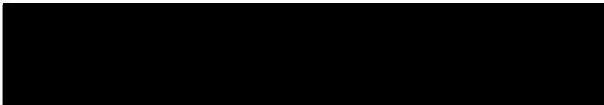
(Mrs.) Sharon Williams

(Mrs.) Terry Tuck

**APPENDIX C**  
**AGENCY CONSENT**

JEFFREY S. BEATMAN  
PRINCIPAL  
ETTRICK ELEMENTARY  
20901 CHESTERFIELD AVE  
ETTRICK, VA 23803

APRIL 21, 1986

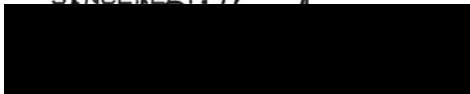


DEAR MS. TUCK AND WILLIAMS:

THIS LETTER IS TO LET YOU KNOW THAT THE HEART PROGRAM HAS BEEN APPROVED BY DR. ORGAN. OUR PLANS ARE FOR THE PROGRAM TO BE HELD ON MONDAYS AND THURSDAYS FROM 2:00-2:45. THE FIRST MEETING WILL BE ON MONDAY, APRIL 28 IN THE CAFETERIA. EACH MONDAY'S MEETING WILL BE IN THE CAFETERIA WITH ALL 3 GROUPS. EACH THURSDAY'S MEETING WILL BE IN MRS. HUNTER'S AND MRS. EGGLESTON'S ROOM AND WE WILL SPLIT THE 3 CLASSES INTO 2 GROUPS.

ENCLOSED YOU WILL FIND THE LIST OF FIFTH GRADE STUDENTS. WE ARE LOOKING FORWARD TO WORKING WITH YOU!!

STINCERELY, *[Handwritten signature]*



JEFFREY S. BEATMAN  
PRINCIPAL

*cc. Dr. Organ*

**APPENDIX D**

**INFORMED CONSENT FOR EXPERIMENTAL GROUP**

### Informed Consent

We are Mrs. Terry Tuck and Mrs. Sharon Williams, graduate students in nursing at Virginia Commonwealth University. As part of our program, we are conducting a study to investigate whether teaching children about factors which reduce the risk of developing heart disease will improve health behaviors. Children who participate in this study will be taught helpful heart health information that could help them live longer, healthier lives. This health study program has been approved by the principal and fifth grade teachers at your child's school.

If you agree to let your child participate in the study program, he/she will:

1. complete a fact sheet asking his/her age, sex, and race.
2. complete a written questionnaire about his/her current health behaviors like: what foods he/she likes to eat and what games/sports he/she likes to play.
3. attend eight (8), 45 minute classes and receive instruction about: a) heart healthy foods, b) the dangers of smoking and c) the benefits of regular exercise. These classes will be taught at your child's school during regular school hours.
4. complete a written questionnaire about his/her health behaviors when the eight classes are over.

Participation in this health program is voluntary and whether or not you allow your child to participate in the study program will in no way affect his/her academic grade or standing in school. Neither will attendance in the health classes harm your child in any way. You may withdraw your child from the study program at any time if you like by contacting us through our faculty advisor whose name and telephone number are noted at the bottom of this form. No child will be identified by name in any report about the study program. Only group information will be reported.

If you have any questions about this study program, please contact us at the school tomorrow, \_\_\_\_\_ by telephoning us at 526-6800 between 8:30 a.m. and 4:00 p.m.

If you agree to allow your child to participate in the study program, keep one copy of this consent form for your records and have your child return the second copy, WITH YOUR SIGNATURE to his teacher (school).

Thank you for considering this request.



I have read the above information about the heart health study program being presented at my child's school and I agree to have my child participate in the program.

\_\_\_\_\_  
Parent's Signature

\_\_\_\_\_  
Child's Name

\_\_\_\_\_  
Date

If you decide to withdraw your child from the program, please contact us through:

Dr. M. Olgas  
Associate Professor of Nursing  
Telephone Number 

**APPENDIX E**

**INFORMED CONSENT FOR CONTROL GROUP**

### Informed Consent

We are Mrs. Terry Tuck and Mrs. Sharon Williams, graduate students in nursing at Virginia Commonwealth University. As part of our program, we are conducting a study to investigate whether teaching children factors about healthy lifestyles will improve their health habits. This health study program has been approved by the principal and fifth grade teachers at your child's school.

If you agree to let your child participate in the study program, he/she will:

1. complete a fact sheet asking his/her age, sex, and race.
2. complete a written questionnaire about his/her current health behaviors like: what foods he/she likes to eat and what games/sports he/she likes to play.
3. attend four (4), one hour classes and receive instruction about: a) the four basic food groups, b) foods high in salt and sugar. These classes will be taught at your child's school during regular school hours.
4. complete a written questionnaire about his/her health behaviors when the four classes are over.

Participation in this health program is voluntary and whether or not you allow your child to participate in the study program will in no way affect his/her academic grade or standing in school. Neither will attendance in the health classes harm your child in any way. You may withdraw your child from the study program at any time if you like by contacting us through our faculty advisor whose name and telephone number are noted at the bottom of this form. No child will be identified by name in any report about the study program. Only group information will be reported.

If you have any questions about this study program, please contact us at the school tomorrow, \_\_\_\_\_ by telephoning us at 526-6800 between 8:30 a.m. and 4:00 p.m.

If you agree to allow your child to participate in the study program, keep one copy of this consent form for your records and have your child return the second copy, WITH YOUR SIGNATURE to his teacher (school).

Thank you for considering this request.


I have read the above information about the heart health study program being presented at my child's school and I agree to have my child participate in the program.

\_\_\_\_\_  
Parent's Signature

\_\_\_\_\_  
Child's Name

\_\_\_\_\_  
Date

If you decide to withdraw your child from the program, please contact us through:

Dr. M. Olgas  
Associate Professor of Nursing  
Telephone Number: 

**APPENDIX F**

**TOPICAL OUTLINE FOR EXPERIMENTAL GROUP**

## Cardiovascular Risk Factor Education Program

### Experimental Group Sessions

#### Session 1 - Introduction

- Pretest.
- Explanation of the total program.
- Introduction of the program instructors.
- Question and answers.

#### Session 2 - Review of Anatomy and Physiology

- Review of heart, blood vessel, and lung anatomy.
- Explanation of cholesterol and how it affects the blood vessels.
- Introduce the three major risk factors to be discussed - high fat, high cholesterol diet, smoking, and lack of regular exercise.

#### Session 3 - Diet

- Focus on high fat and high cholesterol foods.
- Have children identify which foods from display are high fat and low fat foods.
- Have children assist instructors in preparation of a low fat food snack.

#### Session 4 - Diet

- Introduce reading food labels and discuss how to identify high fat foods.
- Have children practice reading and interpreting sample food labels.
- Give children exercise to do at home (label high fat foods and read five food labels of foods at home).
- Identify several healthy, low fat snacks for children.
- Discuss the importance of making healthy food choices.
- Enjoy another healthy, low fat snack.

#### Session 5 - Smoking

- Review how smoking affects the heart and blood vessels.
- Discuss reasons why people should avoid smoking.
- Discuss ways to stop and/or avoid smoking.  
(Audio-visual aid from American Heart Association)

**Session 6 - Exercise**

- Explain how regular exercise strengthens heart and prevents cardiovascular disease.
- Discuss various aerobic exercises that will help the heart. (Audio-visual aid from American Heart Association)
- Remind children to come dressed for exercise for the next session.

**Session 7 - Exercise**

- Have children participate in an aerobic exercise workout.
- Enjoy a healthy, low fat snack.

**Session 8 - Summary**

- Post-test.
- Review of sessions.
- Presentation of program certificates.
- Healthy, low fat refreshments.

**APPENDIX G**

**TOPICAL OUTLINE FOR CONTROL GROUP**



## Topical Outline (Control Group)

### Session I - Introduction

- Introduction of program instructors
- Explanation of the total program
- Questions and answers
- Pretest

### Session II - Basic 4 Food Groups

- Explain the basic 4 food groups
- Discuss the number of servings per group per day
- Identify foods in each group
- Discuss importance of eating a balanced diet
- Have children plan a menu for one day

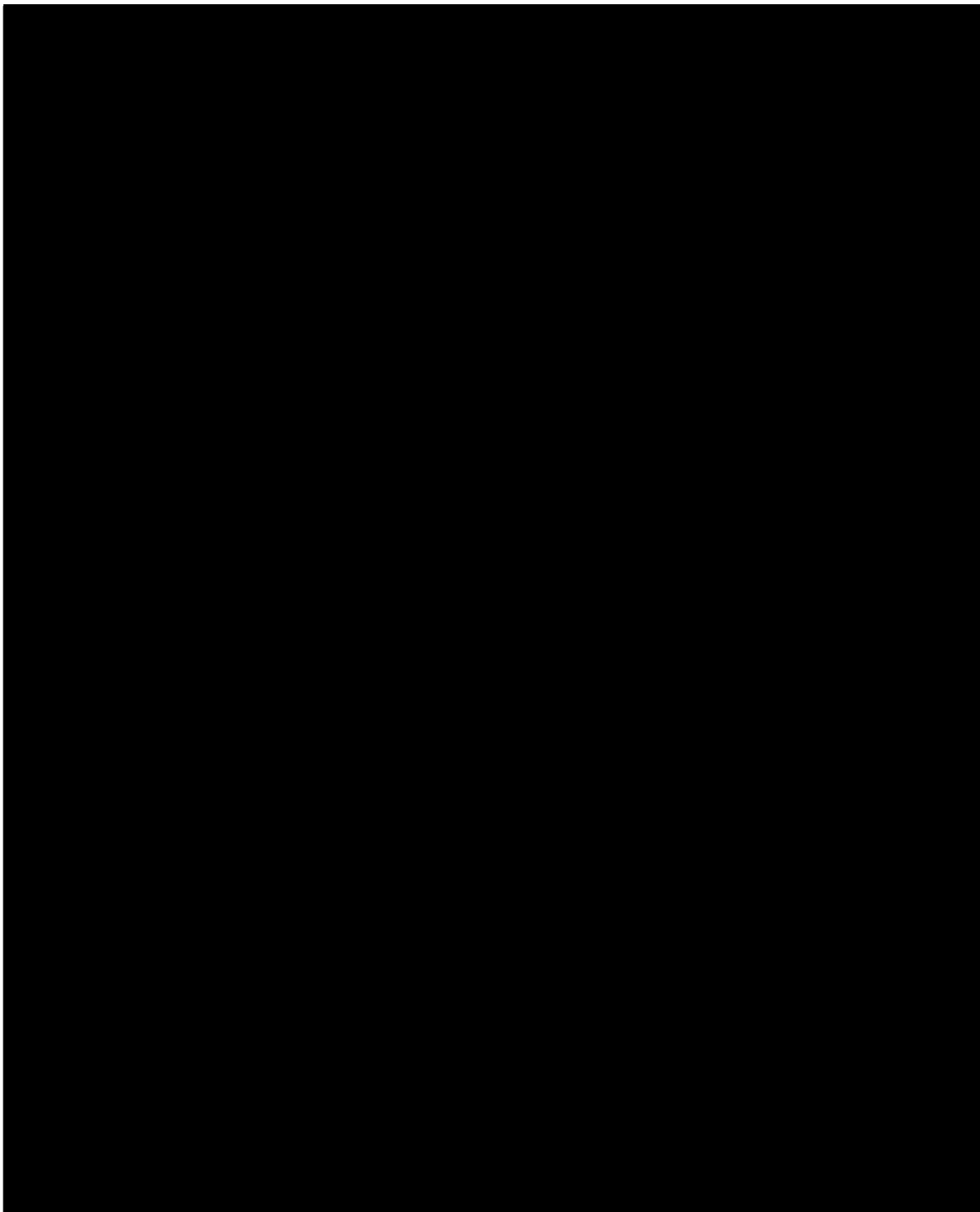
### Session III - Foods High in Salt and Sugar

- Explain importance of discussing foods high in salt and sugar
- Discuss how salt and sugar affect the body
- Have children identify foods that are high in salt and high in sugar
- Enjoy low sugar and low salt snacks

### Session IV - Summary

- Post-test
- Review of sessions
- Presentation of program certificates
- Refreshments

VITA



VITA

