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To the Graduate Council:

I am submitting herewith a dissertation written by Deborah Ann Fortune entitled "A Survey of Health Risk Factors Among Tennessee Adolescents: Ninth and Twelfth Graders." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Education.

Robert J. Pursley, Major Professor

We have read this dissertation and recommend its acceptance:

Ira E. Harrison, Bill C. Wallace, Robert H. Kirk, James J. Neutens

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

To the Graduate Council:

I am submitting herewith a dissertation written by Deborah Ann Fortune entitled "A Survey of Health Risk Factors Among Tennessee Adolescents: Ninth and Twelfth Graders." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Health Education.

Robert J. Pursley, Major Professor

We have read this dissertation
and recommend its acceptance:

Robert H. Kirk

James J. Mentzer

Bill C. Wallace

Jack E. Henson

Accepted for the Council:

Vice Provost
and Dean of the Graduate School

A SURVEY OF HEALTH RISK FACTORS AMONG TENNESSEE ADOLESCENTS: NINTH AND TWELFTH GRADERS

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Deborah Ann Fortune

August 1988

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DEDICATION

To the memory of my beloved maternal grandmother,

Mrs. Elizabeth Boler,

and my dear neighbor,

Ms. Linda Riley

ACKNOWLEDGEMENTS

The writer wishes to express a sincere appreciation to each member of her doctoral committee. A special thanks is expressed to Dr. Robert J. Pursley, committee chairperson, for his patience, gentle nudging, availability, encouragement, and professional assistance on all aspects of the study; Dr. Ira E. Harrison, for continous support, guidance, and friendship; Dr. Bill C. Wallace, who was instrumental in the writer's matriculation into the program and for his practical advice, interest, and guidance throughout the entire program; Dr. Robert H. Kirk, for his expert guidance and support; and Dr. James J. Neutens, for his expert ideas, support, and timely wit.

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Finally, I give thanks to God Almighty for providing me with strength for endurance and His spiritual guidance and love, for without Him, this research would not have been possible.

ABSTRACT

The purpose of the study was to identify health risk factors for teens attending selected Tennessee public schools as either ninth or twelfth graders during the school year 1986-87 and to provide baseline data for future school health education programs in Tennessee.

The data were collected using a computerized health risk appraisal questionnaire. The sample consisted of 1,348 ninth and twelfth grade students from seven selected Tennessee public schools across the state. Of the 1,348 students, 720 were ninth graders and 628 were twelfth graders. Descriptive statistics were used to obtain frequencies and percentages of the sample according to grade, gender, race, and geographical area. The *t*-test for independent samples and chi-square were utilized to determine whether significant differences existed between ninth and twelfth graders, male and female students, nonwhite and white students, and students from rural and urban areas.

The major findings of the study included: (1) The majority (46.5%) of Tennessee ninth and twelfth grade students were categorized into the fair health risk category. (2) The results of cross tabulations of grade (ninth and twelfth), race (nonwhite and white), and geographical area (rural and urban) with the health risk categories were significant when chi-square was applied but were not significant for gender. (3) Significant differences were found in practicing risky health behaviors according to grade, race, and geographical area, however no significant difference was determined between male

and female students for engaging in risky health behaviors. (4) The major health risk factors of Tennessee teens were substance use/abuse, driving or riding under the influence of alcohol, lack of seat belt use, lack of adequate amount of exercise, and poor nutritional habits.

The following major conclusions were drawn from the findings of the study: (1) The overall health of Tennessee teens is fair. Driving or riding under the influence of alcohol, substance use/abuse, lack of adequate amount of exercise, poor nutritional habits, and lack of seat belt use appear to be the risk factors most implicated in the subjects' practice of risky health behaviors. (2) As students progress in grade, they increase their practice of risky health behaviors. (3) The gender of the subjects seems not to be a factor concerning the practice of risky health behaviors. (4) White students are more likely to engage in risky health behaviors than nonwhite students. (5) Students from urban areas are more likely to practice risky health behaviors than students from rural areas.

The significance of the study is that this research is a major step toward primary prevention health education programs for dealing with adolescent health problems.

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IN-POCKET MATERIAL

BOOKLET

The Way to Wellness for Teens . . . . . In Pocket

CHAPTER I

INTRODUCTION

Adolescence generally has been regarded as a healthy time of life. Yet, the mortality and morbidity for adolescents are 11% higher today than they were 20 years ago (American Medical Association, 1986). Until recently, adolescents and young adults age 15 to 24 were the only age group which did not experience the steady health improvement characteristic for the rest of Americans. In 1960, the mortality rate for youths aged 15 to 24 was 106 deaths per 100,000 people, and by 1970 it had risen to 128 deaths per 100,000 people (NCHS, 1985). American adolescents and young adults had a higher death rate than their counterparts in other countries such as Japan, Wales, England, and Sweden (DHEW, 1979). Although this trend reversed in the 1980s with the death rate for this age group declining to 98 per 100,000 people by 1984, adolescents and young adults are the only age group which has not experienced the steady health improvement characteristic for the rest of Americans (NCHS, 1985).

It is during adolescence that many self-destructive behaviors are developed that can either shorten or reduce the quality of life. Such behaviors include substance abuse (use of alcohol, illicit drugs, and tobacco), sexuality activities (teen pregnancy and sexually transmitted diseases), suicide, lack of good nutrition, exercise habits, violent behavior, and alienation from school and family. These behaviors are commonly referred to as lifestyle habits. Many of the

health problems of adults have their roots in these lifestyle habits developed as youths (American Medical Association, 1986).

It has been almost 10 years since the Surgeon General delivered a report entitled Healthy People (DHEW, 1979). The main emphasis of that report was based on health promotion and maintenance which can be accomplished through individual lifestyle and behavior change. One of the most promising approaches to lifestyle and health behavior changes has been the development of health hazard/health risk appraisal instruments. These instruments range from simple self-test to elaborate multimedia productions, computer-scored and analyzed reports with extensive data presentation and complex actuarial predictions. The instruments are used to collect information about a person and provide estimates of one's risks of dying and to recommend risk reduction strategies (Weiss, 1984).

The initial health risk appraisals were aimed primarily at adult population, particularly middle-class audiences. The health risk appraisals focused on the 12 leading causes of death for sex, race, and age group and estimate an individual's probability of dying in the next 10 years. In 1978, the Florida Cooperative Extension Service developed the first health risk appraisal for use with adolescents (Moody and Rienzo, 1981). Other health risk appraisals, subsequently, have been developed for adolescents (Goulding and Peterson, 1983; Moody and Moriarty, 1983). Adolescent health risk appraisals have been used in schools, health departments, and youth organizations as part of health education programs. They are used

to help adolescents select at an early age behaviors and lifestyles conducive to health and safety in hopes of prolonging and improving the quality of life.

I. STATEMENT OF THE PROBLEM

The purpose of the study was to identify health risk factors of teens attending selected Tennessee public schools as either ninth or twelfth graders during the school year 1986-87 and to provide baseline data for future school health education programs in Tennessee.

II. RESEARCH QUESTIONS

The study specifically sought to address the following research questions:

1. What are the major health risk factors for teens in the state of Tennessee as measured by the "Teen Wellness Check" questionnaire?
2. Are there significant differences for the major health risk factors between ninth and twelfth grade students?
3. Are there significant differences for the major health risk factors between male and female students?
4. Are there significant differences for the major health risk factors between white and nonwhite students?
5. Are there significant differences for the major health risk factors between students from rural and urban areas?
6. What recommendations can be made statewide related to the Tennessee Health Curriculum Framework (1985).

III. NEED FOR THE STUDY

Indeed, adolescence is a precarious period of development--one is no longer a child nor is one yet an adult. Adolescence has too long been ignored. Until recently (about 20 years ago, there was inadequate recognition of adolescence as a distinct and highly stressful period (AMA, 1986; Brunswick and Merzel, 1986). This group has not been thoroughly studied probably because "(a) they fall between medical specialties and thus miss peak attention by any of the specialties or by a combination, (b) adolescents are a tough group to deal with, their troubles are elusive and often exasperating, and (c) because their very problems prevent them from presenting themselves for medical attention" (Sternlieb and Munan, p. 177, 1972).

Adolescents comprise a group that has health problems that are very specific to them: accidents (all types), stress, depression, suicide, homicide, unintended pregnancy, alcohol and drug abuse, smoking, sexually transmitted diseases, skin problems, immunizations, atherogenic diets, sedentary lifestyle, and obesity (Moody and Rienzo, 1981; McGinnis, 1981; and Irwin, 1986). Of these specific health problems, sexual activity (pregnancy and sexually transmitted diseases), substance abuse (drugs and alcohol), and accidents (all types) are the major causes of mortality and morbidity among adolescents (WHO Technical Reports, 1986; Irwin, 1986).

The major mortalities and morbidities of adolescents are associated with behaviors that reflect a high degree of risk taking. The lifestyles of adolescents usually involve more risk taking

behavior than any other age groups in the population. Many teenagers know which behaviors are risky, but it is likely that they are aware of the immediate or long-term consequences of their action (Irwin, 1986; WHO Technical Reports, 1986).

In 1983, the Tennessee Department of Public Health, Health Promotion Section, Bureau of Health Services, published a report entitled Healthy Tennesseans: A Handbook for Health Care Providers. The main focus of the report was primary prevention through health promotion (encourage behaviors which reduce risk and disease). In the report, special attention was given to groups with "special needs." These groups included mothers, infants, children, and "older Tennesseans," but not adolescents, although they are a group also with special health problems and needs. According to Healthy Tennesseans: A Handbook for Health Care Providers (1983), in 1980, injuries were the leading cause of death among those aged 1 to 44 years. Further, injuries accounted for over half of all deaths between the ages of 15 and 24 years. Homicide was the second leading cause of death in Tennessee among those aged 15 to 24 years. The third leading cause of death among those 15 to 24 years of age was suicide, with a rate (13.1 per 100,000 population) slightly higher than the national average (12.1 per 100,000 population) (Healthy Tennesseans: A Handbook for Health Care Providers, 1983). These major causes of mortality among Tennessee adolescents are associated with safety and health behaviors/lifestyles which are preventable.

The Tennessee Department of Health and Environment has a growing interest about health services and health education in the school

setting, therefore, in 1986, the Health Promotion Section sought to study adolescents at the ninth and twelfth grade levels regarding their health-related knowledge and behaviors. Since there are sparse systematic data concerning the current health behaviors of Tennessee adolescents prior to completion of this study, the results of the study are important in providing a research data base related to adolescent health behaviors. A better understanding of health behaviors of adolescents at the ninth and twelfth grade levels in a selected number of schools could possibly provide direction and/or suggestions to school health education programs.

IV. ASSUMPTIONS

The following assumptions were made regarding the study:

1. The subjects would respond honestly to the survey instrument.
2. The seven selected Tennessee public schools in the three major geographical areas of Tennessee (East Tennessee, Middle Tennessee, and West Tennessee) will be representative of the adolescent population in Tennessee at-large.
3. The "Teen Wellness Check" questionnaire has face validity.

V. DELIMITATION

The study was delimited to ninth and twelfth grade students from seven selected Tennessee public schools across the state.

VI. LIMITATIONS OF THE STUDY

The study was bound by the following limitations:

1. Only those students present the days the survey was administered were included in the study.

2. The information collected on specific health risk factors was limited by the type of instrument used.

VII. DEFINITIONS

For the purpose of this study, the following terms were defined.

Adolescents. Persons aged 13 to 19 years.

Health Risk Appraisal. A method and tool that determines the probability of an individual becoming ill or dying from selected diseases (Goetz, Duff, and Bernstein, 1980).

Nonwhite Students. All the students excluding white students; including Blacks, Native American Indians, Alaskan natives, Hispanics, Asians, Pacific Islanders, and those classified as others.

Risk Factors. The environmental and behavioral influences capable of provoking ill health with or without previous disposition (DHEW, 1979). Examples of risk factors include family health history, nutrition, dental health, alcohol and drug use, tobacco use, stress, safety belt use, and sexual activity.

School Health Education Program. Program which provides a health knowledge base, information on value-clarification and decision-

making skills that enables students to make voluntary adaptation of those behaviors which prolong and/or enhance the quality of life.

VIII. SUMMARY

The study consists of six chapters. Chapter I introduces the study by providing background information, purpose of the study, research questions, need for the study, assumptions, delimitation and limitation of the study, definition of terms, and summary.

Chapter II contains a review of literature pertaining to health problems and risk factors of adolescents, interventions, overview of health risk appraisals, teen health risk appraisals, and summary.

Chapter III describes the methodology, procedures of the study, and includes statistical procedures.

Chapter IV contains the analysis and discussion of data.

Chapter V presents the summary, findings, conclusions, and recommendations of the study.

Chapter VI is the epilogue of the researcher.

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter consists of review of literature related to the study. It is divided into three categories. Part I is a review of literature related to adolescents health problems and health risk behaviors. Part II is a review of literature related to an overview of health risk appraisals. Part III is a review of literature that is related to teen health risk appraisals.

I. ADOLESCENTS HEALTH PROBLEMS AND HEALTH RISK BEHAVIORS IN THE UNITED STATES

Adolescents are generally believed to be a healthy population, requiring little service from our health care system. Yet, the mortality rate for adolescents and young adults 15 to 24 has increased over the last 20 years (DHEW, 1979). This is the one age group which in recent years has not experienced the steady health improvement characteristics for the rest of Americans. Adolescents have health problems that are very specific to them: accidents (all types), stress, depression, suicide, homicide, unintended pregnancy, alcohol and drug abuse, smoking, sexually transmitted diseases, skin problems, immunizations, atherogenic diets, sedentary lifestyle, and obesity (Moody and Rienzo, 1981; McGinnis, 1981; and Irwin, 1986). Of these specific health problems, sexual activity (pregnancy and sexually transmitted diseases), substance abuse (drugs and alcohol),

and accidents (all types) are the major causes of mortality and morbidity among adolescents (WHO Technical Reports, 1986; Irwin, 1986).

The major mortalities and morbidities of adolescents are associated with behaviors that reflect a high degree of risk taking. The lifestyles of adolescents usually involve greater risk taking behavior than any other age group in the population. Many teenagers know which behaviors are risky, but, probably, they are not aware of the immediate or long-term consequences of their action (Irwin, 1986; WHO Technical Reports, 1986).

Accidents (especially automobile accidents), by far, are the leading cause of death for adolescents, accounting for 60% of teenage deaths, except for black teenage males, in which case the greatest immediate threat to life is murder (Irwin, 1986; WHO Technical Reports, 1986; McGinnis, 1981). According to McGinnis (1981), during the childhood ages of 1 to 14 years, traumatic death (i.e., death from automobile accidents, other accidents, homicide and suicide) is nearly three times as likely to occur as death from chronic diseases and infectious diseases together. "The five leading causes of death for the adolescent and young adult population are, in descending order of incidence, accidents, homicides, suicides, cancers, and heart diseases" (McGinnis, p. 19, 1987).

Generally, males are more likely to be involved in accidents than females. White males have the highest rate of death from motor vehicle accidents. Also, motor vehicle occupant fatality rates are much higher in low income areas than in areas of higher per capita

income. Factors such as poor roads, old vehicles, and poor emergency and medical care all contribute to the higher death rates in the low income areas. Additionally, teenager drivers in high income areas use seat belt at a much higher rate than teenage drivers in low income areas (Miller, Adams-Taylor, Schorr, 1986; AMA, 1986).

It is important to note that motor vehicle accidents are higher at ages 15 to 24 than at any other age. "Homicide rates for these ages are second only to the rates for ages 25 to 35" (Brunswick and Merzel, p. 101, 1986). Distinct differences appear by race. Motor vehicle accidents account for 40% or more of the white deaths at these ages. But homicides are the leading cause of deaths among Black men, ages 15 to 24, and women, ages 15 to 24, accounting for about 40% of Black male deaths nationwide at these ages (Brunswick and Merzel, 1986; CDC, 1985; and Task Force on Black and Minority Health, 1986).

Because homicide victims are mostly adolescents and young adults, the actual impact of homicide is assessed better by years of potential life lost annually, rather than just by number of victims. For Americans under age 65, homicide ranks fourth among all causes of death and accounts for more than 726,000 potential years of life lost annually. For Black Americans, ages 1 to 65 years, in 1980 homicide was the fifth leading cause of death and the second leading cause of years of potential life lost (CDC, 1985; Task Force on Black and Minority Health, 1986). Although Blacks continue to have higher homicide rates than whites, the differences are

acknowledged to reflect socioeconomic disparities between racial groups. When blacks are compared with whites of similar socioeconomic status (SES), racial differences disappear or become much smaller. The majority of homicides are concentrated in urban areas characterized by low SES, poor housing, and high population density. Other factors associated with excess deaths from homicide include broken homes, working mothers, high proportion of single males, low levels of education and vocational skills, high unemployment, availability of weapons, and antisocial and violent behavior (CDC, 1983; CDC, 1985; and Task Force on Black and Minority Health, 1986).

Another major cause of death for adolescents and young adults aged 15 to 24 years is suicide. It is the third leading cause of mortality for this age group (NCHS, 1987; WHO Technical Reports, 1986; AMA, 1986; and Eisenberg, 1980). Evidence indicates that suicide among young people in American has increased markedly in the past decades. The group that is at greatest risk is the white male. About 90% of young male suicide victims are white which has caused most of the upward trend in suicide rates for young males. The suicide death rate for young Black males, about half that for white males, has been increasing more slowly. The suicide rate for females has increased, but more slowly than for males, but the suicide rate for Black females 15 to 24 years of age has generally been lower than that for white females (NCHS, 1987; McGinnis et al., 1987; Eisenberg, 1980; and Lloyd, Armour, and Smith, 1987). Although young males, particularly whites, have a much higher suicide rate than females,

Deykin, Perlow, and McNamara (1985) reported that females attempt suicide more often than males.

The reasons for suicidal behavior are complex and not always clear; however, it is usually associated with the following risk factors: history of major psychiatric disorders, drug or alcohol abuse, recent behavioral changes such as depression or truancy, previous suicide attempts, or suicide by another member of the family, and confused values. Other factors associated with increased risk of suicide among children and youths are divorce or separation of parents, unwanted pregnancy among adolescents, and occurrence of other stressful situations such as romance problems, loss of parent or other significant relative, sense of failure and recent humiliation or punishment (Miller, Fine, Adams-Taylor, Schorf, 1986; and Neinstein and Stewart, 1984). "Attempted suicide rates are highest in poor urban areas, where other indices of social disorganization are high. Individuals who have suffered from depression, who have experienced suicide in the family, or who have previously attempted suicide are at particularly high risk" (WHO Technical Reports, 1986, p. 56).

Lester (1987) examined five suicidal teenagers to assess the subcultural of teenage suicide. The examination suggested several elements of a teenage suicidal subculture: heavy drug involvement, difficult relations with parents characterized by intense resentment or apparent indifference, poor self-image, and shyness and dependency on one person or on a small number of peers. Also, loss of a lover and "deep involvement with the fantasies engendered by heavy metal

music and with daydreams of being a similar type of musician" (Lester, p. 320, 1987).

Native Americans also have high rates of suicide, although the overall rate does not exceed that of the white population, but individual tribes have rates of suicide that are several times greater. Factors characterizing tribes with high suicide rates are different from those cited for the general American population aged 15 to 24. Characteristics of tribes with high suicide rates include abandonment of traditional ways of living, traditional religion, and to clans and societies which result in a family chaos, and adult alcoholism. High unemployment, adoption of Indian children by non-Indian families, and attending boarding schools are other factors contributing to the high suicide rates among native Americans (Berlin, 1987).

Suicide is a significant problem for youths aged 15 to 24, not only because it is one of the leading causes of mortality in this age group, but also because it is very difficult to assess. It is likely that a proportion of accidents and homicides may actually be disguised suicides. It has been suggested that many Black inner-city males subconsciously set up violent confrontations when they engage in gang fights, high-risk burglaries, and other explosive situations that involve the use of lethal weapons in order to provoke lethal retaliatory action. "How many of these youths are consciously or unconsciously flirting with death, even inviting destruction, so that they can remove themselves from an intolerable existence without

actually taking responsibility for the ultimate act of self-annihilation?" (Gibbs, p. 77, 1988). Gibbs (1988) referred to these apparent homicides as forms of "revolutionary" or "fatalistic" suicide.

Among adolescents, health risk behaviors include tobacco, alcohol, and illicit drug use; sexuality (pregnancy and sexually transmitted diseases); and careless risk-taking resulting in accidents and injuries.

Trends in cigarette use by adolescents have been reported by the American Medical Association (1986):

> Daily cigarette use by high school seniors dropped from 29% in 1977 to 20% in 1985. More females (13%) than males (11%) smoke a half-pack or more a day. Further, the reduction in male smokers has been greater than that in female smokers, so that by 1982 the number of adolescent female smokers for the first time exceeded the number of male smokers (AMA, p. 3, 1986).

As part of a health risk survey (conducted July 1983 through December 1984), information was obtained from 11,657 Rhode Island public high school students about their cigarette smoking practices. Approximately, 22.3% of the students reported that they smoked cigarettes. Cigarette smoking was more common among the female students (26.5%) than among male students (17.5%) and increased by grade (Scott, Marciano, and Cabral, 1986). Similar findings were revealed in the 1983 Colorado Survey of Drug Use. A higher percent of twelfth grade females (22%) reported smoking on a daily basis than the twelfth grade males (15%) (Adolescent Health in Colorado, 1986).

Evidence indicates that most experimentation with cigarettes occurs between the ages of 12 and 17, with many youths beginning to

smoke in junior high. Also it has been suggested that many children first tried smoking as young as 5 or 6 years old (Adolescent Health in Colorado, 1986; and Tucker, 1987).

Certain social and psychological variables have been associated with young people smoking. These variables include: peer pressure (teenagers with friends who smoke are more likely to begin smoking), following the example of siblings and parents, and employment outside the home (Adolescent Health in Colorado, 1986; Irwin, 1986; Tucker, 1987; WHO Technical Reports, 1986).

There has been a recent trend toward the use of smokeless tobacco products among adolescents because of its strong appeal to this group. Also, many teens perceive smokeless tobacco to be a safe alternative to cigarettes. However, there is evidence that smokeless tobacco contributes to oral cancer and dental disease (AMA, 1986; The Health Consequences of Using Smokeless Tobacco, 1986; and Dignan, Block, Steckler, Howard, and Cosby, 1986). The use of smokeless tobacco is more common among males and "seem to be learned and reinforced through exposure to the media ads, peer contacts, and emulation of suitable role 'models' during the early adolescent and adolescent years" (Glover, Christen, and Henderson, p. 1, 1982).

A study was conducted to determine the prevalence of smokeless tobacco use among high school students in selected rural communities in Arkansas. Factors associated with initiation and maintenance of use of smokeless tobacco were identified. A close-ended inventory was administered to 1,237 students in grades 10 to 12

attending 13 rural high schools in different educational service regions of Arkansas during the spring of 1985. The study revealed that 34.5% of males and 2.5% of females reported regular use of smokeless tobacco. Factors contributing most to initiation of smokeless tobacco use was the influence of a parent (57.1%) who used smokeless tobacco products followed by the influence of a coach. The most frequent occasions cited for using smokeless tobacco were: when bored or alone (63.6%) and when participating in athletics (33.6%) (Williams, Guyton, Marty, McDermott, and Young, 1986).

The consumption of alcohol among adolescents has increased over the past 40 years. In 1941, approximately 20% of adolescents had tried alcohol, 35% by 1948, 60% by 1956, 65% by the mid-1969s, and close to 90% by the mid-1970s (Neinstein, 1984). The consumption of alcoholic beverages is more prevalent among males than females, and more are heavy drinkers. Also, as youths progress through school, they usually drink more often, and when they do drink will drink more (Gibbons, Wylie, Echterling, and French, 1986; and AMA, 1986). The use of drugs among adolescents increased dramatically in the 1960s and the 1970s, since then drug use by teenage had leveled off and even declined for some drugs. However, drug use and abuse are still prevalent for this age group (Neinstein, 1984). According to Neinstein (1984), two-thirds of American youngsters (64%) try an illicit drug before they finish high school, and over one-third of teens by twelfth grade have illicitly used drugs other than marijuana.

Adolescence is the chief period of risk for initiating substance use. Most users of substances, licit and illicit, begin use in adolescence. Generally, illicit drug use is higher among males than females, higher in the Northern and Western states than the South, and higher in urban areas than rural (Brunswick and Merzel, 1986).

Death and injuries from alcohol-related automobile accidents among young Americans have become recognized as serious public health problems. A survey was conducted to gather information regarding students' behaviors and beliefs about drinking, drug use, and driving (Wechsler, Rohman, Kotch, and Idelson, 1984). The investigators wished to examine the characteristics of those students who might be most at risk of operating a motor vehicle under the influence of alcohol or marijuana, therefore this analysis was limited to 623 students in the 1982 school survey who were at least 16 years of age.

The study revealed that about half of the students in this age group used alcohol (63%) or marijuana (44%). Also, during the 1982 school year as many as 18% of the students had used other illicit drugs. Most of the current drinkers (72%) did not drink more than three times a month, while nearly half (46%) of the current marijuana users smoked at least once a week. Many of the students combined drug and/or alcohol use with driving. About half (between 43% and 50%) of the surveyed students reported being a passenger

with a driver who was under the influence of alcohol or marijuana at least once during the 1981-82 school year. Moreover, many students appeared to be unaware of the dangers involved in driving under the influence of alcohol or marijuana.

It was further reported that students' behaviors and beliefs regarding drinking, drug use and driving were significantly related to their level of involvement with alcohol and drugs. The heavier drinker, frequent marijuana users, and students who used drugs other than alcohol or marijuana were more likely than other students to combine drug use and driving. They also believed that these activities could be combined safely. According to the data, it was suggested that risk-taking and drug-using behaviors should be addressed in educational programs (with emphasis on the effects of drugs both alone and in combination with alcohol on driving ability (Wechsler et al., 1984).

Teen pregnancy is also a major health problem for young people. It has been estimated that about one million female adolescents between the ages of 15 and 19 become pregnant each year, and approximately 30,000 girls younger than 15 become pregnant each year (Neinstein, 1984; AMA, 1986; and Miller et al., 1986). Teenage childbearing is associated with a variety of negative health consequences for the school-age mothers and for their babies. For the babies, the consequences include: low birth weight; increased risk of dying before they reach their first birthday; less likely to adapt well to school; more likely to score lower on I.Q. tests; and

increased risk of neglect, mental retardation, and congenital defects. The consequences of the teenage mother is largely social rather than biological. They are less likely to finish either high school or college and more likely to be unemployed or underemployed. Many of the consequences of teenage childbearing are intertwined with its causes and risks. Low self-esteem, early school failure, and the perception of poor prospects for the future are risk factors that contribute to teenage pregnancy (Miller et al., 1986; AMA, 1986; and Wattleton, 1987).

In addition, sexually transmitted diseases are also major threats to adolescents' health. Young people ages 15 to 24 account for approximately 75% of all new cases of sexually transmitted diseases (Compendium of Resource Materials on Adolescent Health, 1981).

Whether it is suicide, teen pregnancy, drinking alcohol, or sexually transmitted diseases, most health educators feel that these health problems can be ameliorated through school health education programs (Seffrin, 1981; Mason and McGinnis, 1985; and Connell, Turner, and Mason, 1986). The School Health Education Evaluation (SHEE) demonstrated that exposure to school health education curricula can result in substantial changes in students' knowledge, attitudes, and self-reported practices. This study, conducted from 1982 through 1984, involved more than 30,000 children in grades four through seven, representing 1,071 classrooms from 20 states in order to determine the effectiveness of four curricula. It was revealed that children exposed to school health education exhibited increased knowledge, healthier attitudes, and better health skills and practices than those who

did not receive shcool health education (Connell, Turner, and Mason, 1985; Connell, Turner, and Mason, 1986; and Seffrin, 1981). The SHEE showed "that school health education can decrease the likelihood that children will adopt behaviors that are hazardous to health, such as cigarette smoking" (Mason and McGinnis, 1985, p. 299).

II. OVERVIEW OF HEALTH RISK APPRAISALS

One of the most promising approaches to lifestyle and health behavior change has been the development of health risk appraisal instruments. The health risk appraisal is a "method and tool that dedescribes a person's chances of becoming ill or dying from selected diseases" (Goetz, Duff, and Bernstein, 1980, p. 56). The procedure generates a statistical estimation, not a diagnosis. The risk estimates are based on data from epidemiological studies. Health risk appraisal was developed out of efforts to make the public aware of preventable cancers and subsequently has expanded to provide predictions for many other health problems (Fielding, 1982).

The first health risk appraisal was used in private medical practice in 1958; however it was not until Robbins and Hall published their book How to Practice Prospective Medicine, in 1970, that an attempt was made to estimate mortality risk quantitatively (Robbins and Hall, 1970). This book also demonstrated how the health risk appraisal could be used in clinical settings.

The health risk appraisal is based on the Geller/Gesner tables, developed by biostatistician Harvey Geller and actuary Norman Gesner

(Geller, 1974). Robbins and Hall utilized these tables as the data base for risk factor calculations (Robbins and Blankenbaker, 1982). The tables use national mortality statistics rather than morbidity data because mortality data are more reliable population based statistics available (Geller, 1974).

The tables are organized according to race, sex, and age group. The major causes of death are ranked in order of magnitude by rates per 100,000 persons in the next 10 years for each category (Hall and Zwemer, 1979).

All health risk appraisals (HRA) have similar components. In addition to sex, race, and age, the health risk appraisal gathers information regarding the following health related behaviors and characteristics: (1) lifestyle factors such as drinking, smoking, exercise, and driving practices; (2) outcomes from present health screenings such as breast exams, pap smear, and chest x-rays; and (3) personal and family history of certain diseases such as cancer, diabetes, and heart disease. Sophisticated HRAs include certain physical measurements, such as weight, blood pressure, and laboratory test results such as blood analysis (Sievert, 1986; Tennessee Department of Health and Environment, Health Promotion, 1984). The health risk appraisal is only the first part of a health promotion program and is only one approach of attracting attention to one's present health risks. To be an effective tool for improving health and reducing risks to premature death, the HRA must be followed by other programs. These programs include risk-reduction, health

education, social-support systems, and follow-up evaluations (Sievert, 1986). The strength of the HRA lies in its ability to serve as a catalyst for implementing a comprehensive wellness program.

Since the development of the first HRA in the late 1950s, many HRAs have been developed. As of March 1985, there were 10 self-scored questionnaires, 22 computer-scored HRAs, and 18 microcomputer-based HRAs available for use (Sievert, 1986). Some research studies have indicated that attention given to health risk appraisals have been overly excessive (Wagner, Berry, Schoenbach, and Graham, 1982). Another study has found that insufficient research has been done on the reliability of the HRA questionnaire (Sacks, Krushat, and Newman, 1980). It was reported that only 15% of subjects had no contradictions when comparing the responses of the follow-up with baseline questionnaire. It was further stated that failure to control for reliability may account for apparent reduction of risk reported in previous studies of HRAs.

Further studies have attempted to assess the extent and appropriateness of HRA use, as well as to review its scientific basis, efficacy, and effectiveness in varied settings (Wagner et al., 1982). Wagner et al. (1982) analyzed the uses, databases, methodologies, and effectiveness of HRAs. The study utilized multiple approaches to information-gathering about HRAs. These approaches included: literature review; inventory of HRA instruments and programs; consultation with experts in epidemiology, biostatistics, and behavioral science as well as developers and users of HRAs; epidemiologic and biostatistical review of risk estimation in HRA; and site

visits to HRA programs. Findings revealed that HRAs are used primarily as program promotional devices, as tools for structuring education about health-related behaviors, and as motivational devices for stimulating behavior change.

The investigation also revealed that reviews of the databases concluded that risk predictions are difficult to validate. Many of the risk factor values are based on extrapolations of various kinds from data derived from two major epidemiologic investigations: the Framingham Heart Disease Study (Dawber, Meadors, and Moore, 1951) and the American Cancer Society Study (Sterling, 1975). These studies largely involve middle-aged, middle-class, White subjects, yet their findings are being used to predict the risk of Blacks, Hispanics, Native Americans, and teenagers (Wagner et al., 1982; and Moriarty, 1985).

Further support was offered by Schoenbach, Wagner, and Karon (1983). They cited that one of the major limitations of HRA is the absence of empirical data. Risk factor data are often extrapolated from age-race-sex groups other than that of the client. Clients who are not "reasonably typical" of their age-race-sex group may receive inappropriate health education messages and behavioral recommendations.

Schoenbach (1987) cited that the basic problem in testing the predictive validity of HRAs is that "there is no entirely satisfactory validation standard to use--available cohorts are too small, include too few of the prognostic characteristics used in HRAs, and

give us information only about past, not present, mortality rates" (Schoenbach, p. 410, 1987). Smith, McKinlay, and Thorington (1987) conducted a study to evaluate the validity of the scoring systems employed by 41 health risk appraisal instruments for assessing coronary heart disease. Validity was evaluated by comparing predictions of mortality risk produced by each HRA to estimates from the Risk Factor Update Project and Framingham Heart Study. Several characteristics were identified as having important implications for the validity of HRA risk scores: (1) the sophistication of the estimation method, instruments using logistic regression or the Geller/Gesner methodology had the highest validity coefficients, while self-administered general health status and lifestyle questionnaires had the lowest; (2) the range of risk estimate, the instrument is more likely to be valid the greater the number of different risk categories; (3) the extent to which a person's age was taken into consideration.

The reliability of HRAs was addressed in a study by Alexy (1984). Twenty-five males were administered a health risk assessment questionnaire, which was readministered three to five days later to the same individuals without any intervention during the interval between tests. Therefore, most of the data would be expected to remain the same. The Pearson product correlations were computerized on all quantifiable data from the profile response print-out.

Reliability coefficients ranged from 0.996 to 0.239. Variables that are likely to be greatly influenced by an individual's

chronological age represented some of the highest reliability coefficients (reliability coefficients between .90 to .99). High correlation on age-associated variables is to be expected, assuming that individuals reported correct age. Cholesterol and high density lipoprotein levels (HDL) had reliability coefficients of 0.814 and 0.500, respectively. These variables are apt to be age-related. It was assumed that the relatively high coefficient for cholesterol was possibly a result of 23 computer assumed scores based on age. The coefficient for HDL may be due to the fact that some individuals reported different values on the two tests or had assumed values on the first questionnaire and actual values on the second questionnaire. Few individuals knew their cholesterol and HDL levels in this particular sample. The group of variables regarding personal and family history had reliability coefficients ranging from 0.974 to 0.800. The lowest reliability coefficient for this group was exercise levels which required that the individual report daily activity and weekly planned exercise. Estimated life expectancy and the potential for life expectancy increase had reliability coefficients of 0.774 and 0.757 which were probably influenced to a large degree by the individual's personal, family, and social history (Alexy, 1984).

The variable with the low reliability coefficient (0.239) was systolic blood pressure. Individuals were asked what their blood pressure had been over the past three months. The responses were different from test to test. Some reported current readings, other

individuals had computer assumed values on the first test and an actual value on the second test (Alexy, 1984). Much study is needed regarding the validity and reliability of HRAs.

Further assessments of the HRA databases revealed that the scientific evidence for certain behavioral recommendations may have been sufficient. The standard HRA includes: (a) behaviors for which the scientific evidence of their predictive importance remains controversial; (b) characteristics for which the scientific evidence that intervention is effective remain controversial; and (c) characteristics about which the client can do nothing (Wagner et al., 1982). Wagner et al. (1982) finally concluded that the widely-held beliefs in HRA's efficacy for motivating behavioral change could not be substantiated from available evidence, nor could the assumed absence of potentially adverse effects attributable to HRA use.

Weiss (1984) cited that an assessment of the efficacy and potential of HRA is best carried out in terms of the purposes for which the appraisal might be employed. Several factors have been suggested as contributing to the apparent attention-getting ability of HRA. Aspects of HRAs that make them attractive at the individual level include the following:

1. The use of studies, statistical measures, and computer-generated reports make HRAs appear "scientific" and thus attractive to many individuals.
2. They help the individuals better understand the concept of personal health risk and the role of individual health practices in the etiology of disease.

3. They demonstrate the quantitative nature of risk-taking behavior and the synergistic potential of individual risks added together.
4. They quantify the relative importance of health practices, so that the individual can select which ones to work on and where to start.
5. They provide measures of improved risk if some of the health practices are improved.

At the organizational level, the following factors make HRAs attractive:

1. They provide a structure with which to focus discussions of health and behavior.
2. The self-administrated questionnaires, physiological measurements, and computer-assisted calculations make HRAs' application to large groups feasible, efficient, and relatively inexpensive.
3. They strengthen development of a data base for epidemiologic research and health planning.
4. The data-gathering devices, computer software, and other features of HRA programs can be marketed as a package, which stimulates the involvement of commercial firms.

Although HRAs originally were proposed for use by physicians in private medical practices, their use has expanded to diverse settings. These settings include medical care, community, occupational, and educational (Hyner and Melby, 1985; Bartlett et al.,

1983; Moody and Moriarty, 1983). Time and space limit the review of all HRA-related programs (for an annotated bibliography; see Berry, Schoenbach, Wagner, Graham, Karon, and Pezzullo, 1986). However, some of the most notable uses of HRA will be cited.

A study conducted by Bartlett et al. (1983) explored the use of HRA in a family practice center. During the five-month period, 118 HRA forms were distributed to patients at the center. Of the 118 patients, only 69 respondents (58.5%) actually completed and returned the HRA forms. The 69 respondents were later telephoned to assess their opinions of the HRA questionnaire and the extent of their behavior change due to the HRA findings.

Varying percentages of patients reported that the HRA caused them to begin an exercise program, stop cigarette smoking, limit their alcohol intake, reduce their driving mileage to under 10,000 miles, and women to examine their breast. Ninety-four percent were not bothered by the personal nature of the questions, 81% believed the amount of time required to complete the HRA form was about right.

From the physicians' evaluation of HRA, six of the eleven physicians expressed that HRA was beneficial to the doctor-patient relationship. Four of the eleven physicians reported that they did not feel very comfortable in discussing the HRA results with the patients. It was concluded from the study that HRA could be used effectively in a family practice center primarily as a stimulus for health decision-making.

Several studies have implemented HRAs in educational settings (Petosa, Hyner, and Melby, 1986; Bensley, 1981; and Ellis and Raines, 1983). Petosa et al. (1986) examined the appropriate use of health risk appraisals with school-age children. They cited that HRAs may reinforce positive health practices, particularly if the teacher assists the child in interpreting the HRA and reinforces identified health enhancing factors. Students should receive correct information on risk reduction. Additionally, they should learn appropriate skills and receive adequate support to make recommended lifestyle changes required to reduce risk. It was concluded that the use of HRAs is most appropriate in settings where students receive long-term, comprehensive health education.

Neutens and Pursley (1985) conducted a study to compare two HRAs for use in the university classroom. The two HRAs selected for the study were the Tennessee Department of Health and Environment (TDHE), 1984 and the Micro-HRA developed by Planetree Medical Systems, 1984. The study compared the TDHE and Micro-HRA in terms of appraised age, attainable age, the list of positive lifestyle factors for reinforcement, the list lifestyle of factors to be changed, and the variables of desirable weight and blood pressure, and differences in display and unique characteristics. Findings from the study revealed that there were no significant differences in appraised age or attainable age, however significant differences were found in the number of positive lifestyle changes listed, number of suggested lifestyle changes to be made by students, and

several observable differences in display including graphics and tables. It was concluded that the selection of a HRA program for classroom use involves several decisions: (1) which program provides the most accurate data on appraised and attainable risk ages, blood pressure, positive lifestyle reinforcement, suggested lifestyle changes, and weight; (2) which program offers tables and graphs that assist understanding student data.

III. TEEN HEALTH RISK APPRAISALS

Initially, health risk appraisals were aimed primarily at the adult population, but in 1978 work was begun in developing a health risk appraisal for adolescents. The Florida Cooperative Extension Service developed a computerized health hazard appraisal program (Computerized Health Risk Profile) for adolescents, ages 12-18, during 1978-81. The Computerized Health Risk Profile consisted of 104 items and required optical scanning and batch processing by a mainframe computer. Pilot testing of this model in four Florida counties (Columbia, Manatee, Putnam, and Suwanee) with 307 teens, ages 12-18, during 1978-81, to assess its usability with an adolescent audience, represented one of the first involvements in computerized health risk appraisal for adolescents. From the pilot study, it was concluded that the Computerized Health Risk Profile model is a useful tool for capturing adolescents concern for making positive decisions about their lifestyles and their health (Moody and Rienzo, 1981).

"I'm a Health Nut" is a computerized health risk appraisal for adolescents that is intended to effect a significant change in unhealthy behavior and to reinforce positive health practices. It was developed by St. Paul Public School District #625 and St. Paul Division of Public Health, Minnesota, during 1979-1982. Though the instrument was initially targeted for seventh grade students, the appraisal is currently being used for students at the junior high, senior high, and college levels. The appraisal has also been used at health fairs, adolescent health clinics, and with high-risk adolescent populations such as those in treatment centers, halfway houses, shelters, and alternative education centers (Goulding and Peterson, 1983).

The computer appraisal consists of 50 questions on physical, mental, and social health behaviors and attitudes. It evokes information concerning family history, immunizations, exercise, nutrition, drug and alcohol use, smoking, safety, dental health, rest, personal feelings, locus of control, height, weight, and blood pressure. After completing the questionnaire, each individual immediately receives a printout that describes health age as compared to actual age and provides specific suggestions on how health age can be improved. Also, the printout includes feedback on the participant's attitudes toward health (Goulding and Peterson, 1983).

Phillip (1985) conducted a study to investigate the extent to which the Centers for Disease Control's Teen Health Risk Appraisal can be used by students to identify behaviors that influence their

health. The findings revealed that the experimental students were significantly more able than control students to identify behaviors that positively or negatively influence their health. Although further developmental work on the Teen Health Risk Appraisal and its printout is pending, it was reported that "the procedure has the potential to help individuals and groups in the school setting to understand health risk factors" (Phillipp, p. 65, 1985).

An additional health risk assessment for teens is the Teenage Health Risk Inventory (HRI). This microcomputer program contains 10 demographic questions, 40 core health risk questions, plus the ability for the user to add 10 additional questions. The risk questions elicit information from the following risk areas: family history, body form, diet/nutrition, dental health, substance use/abuse, stress, exercise, safety, and sexuality. The program uses a card reader which insures the participant's confidentiality. The program also consists of individualized printout, detailing advisory health messages according to the participant's answer to the risk question. Each participant is provided with a health score ranging from 0 to 100. A special feature of this program is that it permits the name of an appropriate referral personnel, such as school nurse, to be included on the printout for "high risk" teens to seek assistance (Pursley and Lambach, 1986).

In the spring of 1980, the Rhode Island Department of Health introduced the nation's first microcomputer-based health risk appraisal program, Wellness Check. Since 1983, when the Wellness

Check was made available to organizations outside Rhode Island, many agencies and professionals throughout the world have utilized the computer software program. In the United States, hospitals have been the largest single client group followed by colleges and universities. Other clients include: physicians and group practices, state, city, and county health departments, private industry, health maintenance organizations, and voluntary non-profit organizations (Marciano, 1985).

The program consists of a microcomputer program, reusable questionnaires, and scan-type answer cards. The program takes responses to health-habits and family-history questionnaire, scores them, and returns an immediate printout with assessed major health risks and advisory health messages (Rhode Island Department of Health, 1984).

There are two versions of the program, one for adults and one for teenagers. The adult version questionnaire consists of 47 items eliciting information about health risk factors: demographics, body frame size, height, weight, nutrition, exercise, alcohol consumption, cigarette smoking, seat belt use, drive/ride with drivers under the influence of alcohol and drugs, sleeping habits, depressions and anxieties, special occupational health problems (e.g., high noise levels), immunization, frequency of checking blood pressure, and family medical history (Rhode Island Department of Health, 1984).

The version for teenagers, "Teen Wellness Check," is slightly different. It includes areas such as sex education, illegal drug

use and hitchhiking. The questionnaire consists of 46 items for females and 40 for males. After the questionnaire has been completed, the data are entered into the computer, which produces an immediate printout. The printout details individualized advisory health messages and calculates a health score (ranging from 0 to 100) which places the participant in one of four risk categories of excellent, fair, risky, or hazardous (Marciano, 1985; Rhode Island Department of Health, 1984).

The TWC program has been used in several statewide projects to assess adolescent health needs in order to make health education more effective by targeting programs to better meet student needs. The program has been implemented in Rhode Island, Tennessee, New Mexico, Connecticut, and Delaware (Marciano, 1985; Bolton, Pursley, and Marciano, 1987; DeMusis and Dewey, 1987; and Siegel, 1987). "The use of immediate response health risk questionnaires in the classroom can do much to enhance the quality and content of school health programs" (Pursley and Dewey, p. 529, 1988).

IV. SUMMARY

This chapter consists of a review of the literature related to the study. It was divided into three categories. Part I contained a review of the literature as it relates to adolescents' health problems. The emphases were upon the major causes of mortality, health practices, and risk-taking behaviors. Part II consisted of review of literature related to an overview of HRAs

focusing upon the development and use of HRAs in various settings. Literature related to teen HRAs was reviewed in Part III. This section contained information regarding the development of teen HRAs and findings of teen HRA studies.

CHAPTER III

METHODOLOGY

I. OVERVIEW

The purpose of the study was to identify health risk factors of teens attending Tennessee public schools as either ninth or twelfth graders during the school year 1986-87, and to provide baseline data for future school health education programs in Tennessee. The methodology used in the study is discussed in this chapter in the following sections: Instrumentation, Study Methodology, Pilot Study, Data Tabulation, Development of Recommendations Related to Health Curriculum, Data Analysis, and Summary.

II. INSTRUMENTATION

A computerized health risk appraisal, "The Teen Wellness Check," (TWC), 1.2 version, was used to collect data. The questionnaire was developed by the Rhode Island Health Department. The program consists of a microcomputer program, reusable questionnaires, a scan-type answer card (which assures confidentiality and anonymity), and a follow-up booklet entitled The Way to Wellness for Teens (see In Pocket) (Rhode Island Department of Health, 1984). The "Teen Wellness Check" program is designed for use with students in grades seven through twelve.

The questionnaire consists of 46 items for females and 40 for males eliciting information about health risk factors. These risk

factors include the following risk areas: demographics, family history, body form, diet/nutrition, dental health, immunizations, exercise, smoking, tobacco use, drugs and alcohol, auto/bicycle safety, hazardous activities, moods and stress, human sexuality, females only (breast self-examination, hysterectomy, menstrual period, and oral contraceptive). After the questionnaire has been completed, the data are entered into the computer, which produce an immediate printout. The printout provides the participant individualized advisory health messages and calculates a health score (ranging from 0 to 100) placing the person in one of four risk categories of excellent, fair, risky, or hazardous (Marciano, 1985; Rhode Island Department of Health, 1984).

Information regarding the validity and reliability of the "Teen Wellness Check" questionnaire is sparse. However, the questionnaire appears to have face validity. The "Teen Wellness Check" has been used in more than 55 different locations in the United States and Canada, suggesting that the questionnaire has been accepted by others as having face validity. By 1985, more than 14,764 students from grades ninth through twelfth in Rhode Island schools had participated in the "Teen Wellness Check" program (Marciano, 1985). Efforts were made to contribute to the reliability of the instrument. During the developmental stage of the "Teen Wellness Check" questionnaire, the Rhode Island Department of Health had a panel of experts (specialties in the various health areas included in the questionnaire) review the instrument for accuracy and comprehensiveness.

After several revisions of the questionnaire, the completed instrument was field tested at three Rhode Island high schools and evaluated by the students. Afterwards, the instrument was revised again to incorporate the students' evaluation comments and suggestions by a nurse educator who had experience using the questionnaire at schools (Development of the Rhode Island Department of Health Wellness Check Teen Health Risk Appraisal, handout, 1984).

The instrument was slightly altered by the Tennessee Department of Health and Environment study whereby question 24 (Is the abuse of alcohol--a depressant--or any other drug dangerous?) was substituted by a question which elicits information regarding the use of smokeless tobacco, for which permission was granted by the Rhode Island Department of Health. The substitution was due to the concern about the use of smokeless tobacco among adolescents in Tennessee and there was not a question on the questionnaire regarding the use of smokeless tobacco. Moreover, there were other questions included in the questionnaire that elicited response to the use/abuse of alcohol.

III. SUBJECTS AND DATA COLLECTION

The Tennessee Department of Health and Environment, Health Promotion Section designed the sampling procedure and collected the data during the 1986-87 school year (October 21, 1986 to February 26, 1987). The sample consisted of ninth and twelfth grade students from seven selected Tennessee public schools across the state. A total of 124,112 ninth and twelfth grade students comprised the population

size. The population consisted of the 1985-86 school enrollment of ninth and twelfth grade students across the state of Tennessee. It was recommended by a consultant (University of Tennessee professor) that a minimum sample size of 1250 students be utilized in the study, which represents a 1% sample. However, 1507 students were utilized, 754 females and 752 were males. One hundred fifty-eight (10.5%) students were eliminated from the study because they were either in the tenth or eleventh grade. Accordingly, the study population consisted of 1,348 students; 683 females and 665 males, 1,183 white and 165 nonwhite students, 656 students from rural areas and 692 students from urban areas, and 720 ninth graders and 628 twelfth graders.

The seven public schools were selected as a representative sample of ninth and twelfth graders across the state of Tennessee. The selection of the schools was based upon three requirements: (1) race representation (84% white, 16% nonwhite), (2) geographical area (60% urban, 40% rural), and (3) major grand division (geographical regions) of the state of Tennessee (East, Middle, West). Four urban schools and three rural schools were utilized in the study.

The "Teen Wellness Check" questionnaire was administered by two health educators from the Tennessee Department of Health and Environment, Health Promotion Section. Permission to administer the questionnaire was obtained from the principal of each school. All students (ninth and twelfth graders) were given a choice to participate in the study through a letter of parental consent.

Initially, the data collection procedure was explained to the students by an eight minute videocassette. The following information was given:

1. An explanation of the Tennessee Teen Wellness study.
2. Explanation of how to complete the "Teen Wellness Check" questionnaire.
3. Explanation of how to interpret the "Teen Wellness Check" feedback printout.
4. The subjects' anonymity and confidentiality were assured.

IV. PILOT STUDY

During the fall of 1986 (September 23-25 and October 1), the TWC questionnaire was pilot tested with students from a large suburban high school in East Tennessee and large innercity high school in West Tennessee. The pilot study was conducted in order "to document the value of computerized health risk assessment in two dissimilar schools" (Pursley, Neutens, Bolton, and Dewey, p. 11, 1987). Two health educators from the Tennessee Department of Health and Environment, Health Promotion Section administered the questionnaire to 446 ninth through twelfth grade students.

The study population of the West Tennessee school consisted of 261 (58%) respondents, 143 (55%) females and 118 (45%) males. The student population at the West Tennessee school had a 97% black student population. The East Tennessee school study population consisted of 185 (42%) students, 87 (47%) females and 98 (53%) males,

while the student population had a 96% white student population (Pursley et al., 1987).

Both schools were given identical questionnaires (TWC), and all the students (both schools) were assured confidentiality and anonymity, but the method of administration of the instrument was different. A computer was set up in the classroom at the East Tennessee school to process the answer cards after the students filled out the questionnaire. The student immediately received a computerized health advisory message/profile pertaining to his/her health risks. However, at the West Tennessee school, permission was not granted for the research team to take computers into the classroom. Therefore, the students completed the questionnaire, turned in their answer cards with their names on the back of the cards because of interest of the school authorities. The students did not receive a health advisory printout/profile.

The results of the pilot study revealed the following information: (1) the mean health scores were quite similar between the students from East Tennessee (80.63) and West Tennessee (79.94) with scores ranging from 34 to 96 and 41 to 97, respectively; (2) the variance was greater for East Tennessee students (standard deviation--12.17) than the variance for West Tennessee students (standard deviation--8.65); (3) a higher percent (51%) of students from East Tennessee were categorized into the excellent category than the percent (32%) of students from West Tennessee, while a much higher percent (60%) of students from West Tennessee were in the fair category than

the percent (33%) of students from East Tennessee. Also, a higher percent of the students from East Tennessee were in the risky (11%) and hazardous (5%) categories than the percent of students from West Tennessee (risky category--7%, hazardous category--2%). These findings were significant at the .001 level of significance when chi-square was applied; (4) based on the findings, it seems that the East suburban students need additional health education related to substance abuse (drinking alcoholic beverages, cigarette smoking, using alcohol with other drugs, and drinking and driving or riding), while students from the West innercity appear to need health education efforts directed toward seat belt use, value of eating breakfast, water safety (knowing how to swim), importance of brushing one's teeth; (5) additionally, a much higher percent (79%) of female students from East Tennessee were not performing breast self-examination monthly than the percent (39%) of females from West Tennessee (Pursley et al., 1987).

Based upon the findings, the following conclusions were inferred: (1) the lack of reliability for self-reported data concerning one's own health practices and measurement (blood pressure, weight, etc.) is probably the greatest weakness of microcomputer health programs; (2) ". . . microcomputer programs can be used to identify differences between populations with known differences of health status" (Pursley et al., p. 14, 1987); (3) "Microcomputer programs are useful for research, assessment, and intervention applications in connection with school health programs" (Pursley et al., p. 15, 1987).

V. DATA TABULATION

After the questionnaire was completed, the data were entered into the computer, which produced an immediate printout containing lifestyle score and recommended behavioral changes. A base score of 76 points was used. Points were added or subtracted from the base score according to each individual's lifestyle to determine a final score. Females could achieve a maximum of 100 points while males could only achieve 99 points, because they did not answer the questions for females, but they were assigned one bonus point to bring the male's maximum score to 100 points. The calculated scores placed the students in one of the following health risk categories: excellent (85-100), fair (70-84), risky (55-69), and hazardous (0-54).

VI. DEVELOPMENT OF RECOMMENDATIONS RELATED TO HEALTH CURRICULUM

Based upon the results of the study, recommendations were made in regard to the statewide curriculum framework in school health education at the high school level for students in Tennessee.

VII. DATA ANALYSIS

The primary statistical method used to describe the students' health risk behaviors was to compute the survey responses in terms of percentages and frequencies. The mean, standard error of the mean,

mode, z-scores, and standard deviation of the health risk scores were calculated. Cross tabulations were constructed of the following variables: grade, sex, race, geographical area (urban and rural), and health risk categories (excellent, fair, risky, and hazardous).

Chi-square was employed to determine whether or not observations of health risk behaviors between and within groups were statistically significant. The chi-square coefficient was calculated using health risk categories versus grade (ninth, twelfth), health risk categories versus gender (female, male) health risk categories versus race (nonwhite, white), and health risk categories versus geographical area (rural, urban). The Kolmogorov-Smirnov one sample test was used to determine whether the distribution of health risk score was a normal distribution.

The _t_ test was used in determining significance of difference between the mean scores of health risk scores of the following groups: ninth and twelfth grade students, male and female students, nonwhite and white students, and students from rural areas and urban areas. The .05 level of significance was used as the decision rules governing all statistical tests.

VIII. SUMMARY

In 1986, the Tennessee Department of Health and Environment, Health Promotion Section, along with the Department of Health, Leisure, and Safety at The University of Tennessee, Knoxville, initiated a project to collect data on the health beliefs and practices

of ninth and twelfth graders in Tennessee. The role of the researcher was to analyze the data and present it in a documentary form, which provided support for the need of health education programs in the schools.

The study sought to identify major health risk factors among Tennessee adolescents. The sample was chosen from seven selected Tennessee public schools. The type of sampling plan followed was cluster sampling. The Rhode Island "Teen Wellness Check" questionnaire was utilized in the study. Tests of significance of difference included chi-square, Kolmogorov-Smirnov one sample test, and *t*-test. The .05 level of significance was used as one of the decision rules governing statistical tests conducted.

CHAPTER IV

ANALYSIS OF THE DATA

I. INTRODUCTION

The chapter was designed to present and analyze data that were collected via the administration of a computerized health risk questionnaire, "Teen Wellness Check." As previously discussed in Chapter I, the purpose of the study was to identify health risk factors for teens attending selected Tennessee public schools as either ninth or twelfth graders.

The data were collected from 1,507 students during the school year 1986-87. One hundred fifty-eight (10.5%) students were eliminated from the study because they were either in the tenth or eleventh grade. Consequently, a total of 1,348 students were analyzed in the study. The data were coded and entered into the Virtual Address Extension (VAX) program at The University of Tennessee Computer Center and analyzed using Statistical Analysis System (SAS).

The chapter is organized into the following sections: (1) the Introduction, (2) Demographic Description of the Sample, (3) Data Description of Health Risk Scores, (4) Data Description of Health Risk Categories, (5) Data Description of Selected Health Risk Factors, (6) Analysis of Hypotheses, and (7) Summary of the Data.

II. SAMPLE DESCRIPTION

Race

The sample consisted of 1,183 white students or 87.8%, 144 black students or 10.7%, and 21 students or 1.5% were classified as others. The students classified as others included four Hispanics, seven Asians or Pacific Islanders, six Native American Indians or Alaskan natives, and four students indicated other for their race identification. The description of the sample by race is presented in Table 1. The number of Hispanic, Asian, Native American, and other respondents was small and nonrepresentative of those specific sub-populations, therefore their responses were combined with those of the black students. The data were categorized as nonwhite students. The terms nonwhite and white were used throughout the text when referring to race.

Gender

The sample was composed of 683 female students or 50.7% of the total number of participants while 665 or 49.3% of the total population were male students. This information is presented in Table 1.

Age

Table 2 represents a distribution of the study participants by age. The majority (87.8%) of the students were 14 to 17 years of age. A few students (9 or 0.7%) were 13 years of age or younger. Approximately 11.6% were 18 years of age or older.

TABLE 1

NUMBER AND PERCENT OF SAMPLE BY RACE AND SEX
(N = 1348)

Category	Combined		Female		Male	
	Number	Percent	Number	Percent	Number	Percent
Race						
White	1183	87.8	598	44.4	585	43.4
Black	144	10.7	76	5.6	68	5.0
Other	21	1.5	9	0.7	12	0.9
Total	1348	100.0	683	50.7	665	49.3

TABLE 2

NUMBER AND PERCENT OF SAMPLE ACCORDING TO AGE (N = 1348)

Age	Number	Percent
13 or under	9	0.7
14	396	29.4
15	233	17.3
16	84	6.2
17	470	34.9
18 or over	156	11.6
Total	1348	100.1

Geographical Area

Approximatley one-half (51.3%) of the students attended schools in urban areas. Slightly less than half (48.7% of the students attended schools in rural areas. The distribution is demonstrated in Table 3. In comparing the study population with the state population, Tennessee is 60.4% urban and 39.6% rural.

TABLE 3

NUMBER AND PERCENT OF SAMPLE ACCORDING TO GEOGRAPHICAL AREA
(N = 1348)

Geographical Area	Number	Percent
Rural	656	48.7
Urban	692	51.3
Total	1348	100.0

Grade

A total of 720 (53.4%) ninth grade students were surveyed at the seven selected Tennessee public schools. A total of 628 (46.6%) students were twelfth graders. This distribution is shown in Table 4. Of the 720 ninth graders, 364 (50.6%) were females and 356 (49.4%) were males. Of the 628 twelfth graders, 319 (50.8%) were females and 309 (49.2%) were males.

TABLE 4

NUMBER AND PERCENT OF SAMPLE BY GRADE AND SEX
(N = 1348)

Category	Category		Female		Male	
	Number	Percent	Number	Percent	Number	Percent
Ninth Grade	720	53.4	364	27.0	356	26.4
Twelfth Grade	628	46.6	319	23.7	309	22.9
Total	1348	100.0	683	50.7	665	49.3

III. SUMMARY OF HEALTH RISK SCORES

Data analysis of health risk scores was based on a health risk questionnaire which consisted of 46 items for females and 40 for males (questionnaire shown in Appendix A). The questionnaire included the following areas: (1) demographics consisting of five questions, (2) family history consisting of one question, (3) body form consisting of three questions, (4) diet/nutrition consisting of three questions, (5) dental health comprising three questions, (6) immunizations comprising three questions, (7) exercise comprising three questions, (8) smoking and tobacco use comprising three questions, (9) other drugs and alcohol use comprising three questions, (10) auto/bicycle safety comprising seven questions, (11) moods and stress consisting of four questions, (12) sexuality consisting of two questions, and (13) females only (breast self-exam, hysterectomy, menstrual cycle, and birth control pills) consisting of six questions.

In order to calculate the health risk score, a base score of 76 points was used. Points were added or subtracted from the base score according to each individual's lifestyle to determine a final score. The total possible score for females was 100 points. Males could only achieve 99 points on the scored items because they did not answer the questions for females, but they were assigned one bonus point to bring the male maximum score to 100 points (see Appendix C for scoring of each item).

The health risk scores of the respondents were arranged according to frequency and percentage distribution. The mean score, z-scores, standard deviation, standard error, mode and range were computed and are shown in Table 5. Health risk scores ranged from 12 to 98 points with a range of 86. The z-scores ranged from -4.88 to 1.69. The mean health risk score was 75.89 with a standard deviation of 13.10 and a mode of 83. The results of the research study indicated that on the average the teens (ninth and twelfth graders) in the state of Tennessee fall in the fair health risk category.

In order to determine whether the distribution of the health risk scores is a normal distribution, the Kolmogorov-Smirnov (K-S) one-sample test was applied. The following null hypothesis was tested:

H_0: There is a normal distribution of health risk scores among the students.

The table K-S value is .037 and the calculated K-S value is 4.311, which is greater than the table value (see Table 6). Thus,

TABLE 5

SUMMARY OF RESPONDENTS' HEALTH RISK SCORES (ALL TEENS)

Scores	z-Scores	Frequency	Percentage	Cumulative Frequency	Cumulative Percentage
12	-4.88	1	0.1	1	0.1
22	-4.11	1	0.1	2	0.1
24	-3.96	1	0.1	3	0.2
28	-3.65	2	0.1	5	0.4
29	-3.58	1	0.1	6	0.4
30	-3.50	2	0.1	8	0.6
31	-3.43	1	0.1	9	0.7
32	-3.35	1	0.1	10	0.7
33	-3.27	1	0.1	11	0.8
34	-3.20	3	0.2	14	1.0
36	-3.04	2	0.1	16	1.2
37	-2.97	1	0.1	17	1.3
38	-2.89	3	0.2	20	1.5
39	-2.82	2	0.1	22	1.6
40	-2.74	2	0.1	24	1.8
41	-2.66	3	0.2	27	2.0
42	-2.59	3	0.2	30	2.2
43	-2.51	3	0.2	33	2.4
44	-2.43	7	0.5	40	3.0
45	-2.36	4	0.3	44	3.3
46	-2.28	2	0.1	46	3.4
47	-2.20	5	0.4	51	3.8
48	-2.13	4	0.3	55	4.1
49	-2.05	9	0.7	64	4.7
50	-1.98	8	0.6	72	5.3
51	-1.90	2	0.1	74	5.5
52	-1.82	6	0.4	80	5.9
53	-1.75	12	0.9	92	6.8
54	-1.67	10	0.7	102	7.6
55	-1.59	11	0.8	113	8.4
56	-1.52	5	0.4	118	8.8
57	-1.44	16	1.2	134	9.9
58	-1.37	18	1.3	152	11.3
59	-1.29	13	1.0	165	12.2
60	-1.21	11	0.8	176	13.1

TABLE 5 (Continued)

Scores	z-Scores	Frequency	Percentage	Cumulative Frequency	Cumulative Percentage
61	-1.14	17	1.3	193	14.3
62	-1.06	15	1.1	208	15.4
63	-0.98	13	1.0	221	16.4
64	-0.91	17	1.3	238	17.7
65	-0.83	16	1.2	254	18.8
66	-0.75	18	1.3	272	20.2
67	-0.68	28	2.1	300	22.3
68	-0.60	30	2.2	330	24.5
69	-0.53	18	1.3	348	25.8
70	-0.45	37	2.7	385	28.6
71	-0.37	26	1.9	411	30.5
72	-0.30	20	1.5	431	32.0
73	-0.22	37	2.7	468	34.7
74	-0.14	36	2.7	504	37.4
75	-0.07	24	1.8	528	39.2
76	0.01	41	3.0	569	42.2
77	0.08	37	2.7	606	45.0
78	0.16	36	2.7	642	47.6
79	0.24	60	4.5	702	52.1
80	0.31	46	3.4	748	55.5
81	0.39	52	3.9	800	59.3
82	0.47	52	3.9	852	63.2
83	0.54	66	4.9	918	68.1
84	0.62	57	4.2	975	72.3
85	0.69	47	3.5	1022	75.8
86	0.77	61	4.5	1083	80.3
87	0.85	42	3.1	1125	83.5
88	0.92	41	3.0	1166	86.5
89	1.00	38	2.8	1204	89.3
90	1.08	27	2.0	1231	91.3
91	1.15	33	2.4	1264	93.8
92	1.23	22	1.6	1296	95.4
93	1.31	20	1.5	1306	96.9
94	1.38	16	1.2	1322	98.1
95	1.46	12	0.9	1334	99.0

TABLE 5 (Continued)

Scores	z-Scores	Frequency	Percentage	Cumulative Frequency	Cumulative Percentage
96	1.53	5	0.4	1339	99.3
97	1.61	5	0.4	1344	99.7
98	1.69	4	0.3	1348	100.0

Total N = 1348; maximum score = 98; minimum score = 12; mean score = 75.89; mode = 83; range = (12 - 98) = 86; standard deviation = 13.10.

the null hypothesis was rejected at the .05 level of significance. It was concluded that the health risk scores were not normally distributed among the students.

TABLE 6

KOLMOGOROV-SMIRNOV GOODNESS OF FIT TEST

Table K-S Value	Calculated K-S Value
.037	4.311

The mean health risk score, standard deviation, mode, and range were computed for the following groups: females, males, ninth grader (females and males), twelfth graders (females and males), nonwhite teens (females and males), white teens (females and males), rural teens (females and males), and urban teens (females and males). The computations are shown in Table 7.

The mean score for female students was 76.45 with a standard deviation of 11.83 and a mode of 83. Health risk scores ranged from 34 to 97 points (see Table 7). The male students' mean score was 75.32 with a standard deviation of 14.28 and a mode of 86. Health risk scores ranged from 12 to 98 points.

Students in the ninth grade had a mean score of 77.68 with a standard deviation of 12.43, while ninth grade female students had a mean score of 78.18 with a standard deviation of 10.56 and ninth grade male students had a mean score of 77.17 with a standard deviation of 14.08. The ninth graders, female ninth graders, and male

TABLE 7

SUMMARY OF MEAN HEALTH RISK SCORES, MODE, RANGE AND STANDARD DEVIATION

Groups	Range	Mean	Mode	Standard Deviation
All Teens	(12-98)=86	75.89	83	13.10
Females	(34-98)=63	76.45	83	11.83
Males	(12-98)=86	75.32	86	14.28
Ninth Graders	(12-98)=86	77.68	86	12.43
Females	(34-97)=63	78.18	83	10.56
Males	(12-98)=86	77.17	86	14.08
Twelfth Graders	(22-97)=75	73.84	83	13.56
Females	(37-97)=60	74.47	70	12.86
Males	(22-97)=75	73.19	83	14.24
Nonwhite Teens	(31-98)=67	78.25	91	11.68
Females	(48-96)=48	78.21	83	9.86
Males	(31-98)=67	78.29	84	13.41
White Teens	(12-98)=86	75.57	83	13.26
Females	(34-97)=63	76.20	83	12.07
Males	(12-98)=86	74.92	86	14.36
Rural Teens	(22-97)=75	75.82	79	12.74
Females	(37-97)=60	77.28	83	10.75
Males	(22-95)=73	74.29	86	14.40
Urban Teens	(12-98)=86	75.96	83	13.45
Females	(34-97)=63	75.65	80	12.75
Males	(12-98)=86	76.28	83	14.13

ninth graders had modes of 86, 83, and 86, respectively. The range of health risk scores for ninth graders was 12 to 98 points, while the health risk scores for the female ninth graders ranged from 34 to 97 points and 12 to 98 points for male ninth graders (see Table 7).

The mean score for twelfth graders was 73.84 with a standard deviation of 13.56, while the mean scores for female twelfth graders and male twelfth graders were 74.47 and 73.19, respectively, with standard deviation of 12. 86 and 14.24, respectively. The twelfth graders, female twelfth graders, and male twelfth graders had modes of 83, 70, and 83, respectively. The range of health risk scores for the twelfth graders was 22 to 97 points, while the health risk scores for the female twelfth graders and male twelfth graders ranged from 37 to 97 and 22 to 97, respectively (see Table 7).

The mean score for nonwhite students was 78.25 with a standard deviation of 11.68, while the mean score for white students was 75.57 with a standard deviation of 13.26. Nonwhite students had a mode of 91 with scores ranging from 31 to 98 points. White students had a mode of 83 with scores ranging from 12 to 98 points (see Table 7).

The mean score for nonwhite female students was 78.21 with a standard deviation of 9.86, while the mean score for white female students was 76.20 with a standard deviation of 12.07. Nonwhite female students had a mode of 83 with scores ranging from 48 to 96 points. White female students had a mode of 83 with scores ranging from 34 to 97 (see Table 7).

The mean score of nonwhite male students was 78.29 with a standard deviation of 13.41, while the mean score of white male

students was 74.92 with a standard deviation of 14.36. Nonwhite male students had a mode of 84 with scores ranging from 31 to 98 points. White male students had a mode of 86 with scores ranging from 12 to 98 points (see Table 7).

Students from rural areas and urban areas had mean scores of 75.82 and 75.96 respectively, with standard deviations of 12.74 and 13.45 respectively. Students from rural areas had a mode of 79 with scores ranging from 22 to 97 points. Students from urban areas had a mode of 83 with scores ranging from 12 to 98 points (see Table 7).

Female students from rural and urban areas had mean scores of 77.27 and 75.65 respectively, with standard deviations of 10.75 and 12.75 respectively. Female students from rural areas had a mode of 83 with scores ranging from 37 to 97 points. Female students from urban areas had a mode of 80 with scores ranging from 34 to 97 points (see Table 7).

Male students from rural and urban areas had mean scores of 74.29 and 76.28, respectively, with standard deviations of 14.40 and 14.13, respectively. Male students from rural areas had a mode of 86 with scores ranging from 22 to 95 points. Male students from urban areas had a mode of 83 with scores ranging from 12 to 98 points (see Table 7).

Analysis of the health risk scores according to sex, grade, race, and geographical area revealed that on the average all the groups are categorized into the fair health risk category.

IV. DATA DESCRIPTION OF HEALTH RISK CATEGORIES

In this section, the health risk categories were presented and selected variables were analyzed by cross tabulation. Chi-square was applied to determine whether the findings were significant at the .05 level of significance. The variables analyzed were grade, sex, race, and geographical area. These variables were cross tabulated with the health risk categories (excellent, fair, risky, and hazardous).

The health risk categories of all the teens combined are presented in Table 8. The students were categorized by percent into the following categories: 27.7% were in the excellent category, followed by 46.5% in the fair category, 18.2% in risky category, and 7.6% in the hazardous category.

Cross tabulations of grade (ninth and twelfth) with health risk categories are presented in Table 9. According to their health risk

TABLE 8

HEALTH RISK CATEGORIES OF ALL TEENS

Categories	Frequency	Percent
Excellent (85-100)	373	27.7
Fair (70-84)	627	46.5
Risky (55-69)	246	18.2
Hazardous (0-54)	102	7.6
Total	1348	100.0

TABLE 9

HEALTH RISK CATEGORIES BY GRADE

Categories	Ninth	Twelfth
Excellent (85-100)	231 (32.1%)	142 (22.6%)
Fair (70-84)	335 (46.5%)	292 (46.5%)
Risky (55-69)	116 (16.1%)	130 (20.7%)
Hazardous (0-54)	38 (5.3%)	64 (10.2%)
Total	720 (100%)	628 (100%)

$X^2 = 25.449$, df = 3, $p < .05$, N = 1348.

scores, the following percent of ninth grade students were categorized into the four health risk categories: 32.1% in the excellent category, 46.5% in the fair category, 16.1% in the risky category, and 5.3% in the hazardous category. Based upon their health risk scores, the twelfth grade students were also categorized into the following health risk categories: 22.6% in the excellent category, 46.5% in the fair category, 20.7% in the risky category, and 10.2% in the hazardous category. It should be noted that a higher percent of the ninth grade students were categorized into the excellent category than the twelfth grade students. However, there were not any major differences between the groups in the fair category. Yet, there was almost twice the percent of twelfth graders (10.2%) in the hazardous category as opposed to the ninth graders (5.3%). There was a significant difference between ninth and twelfth graders regarding

the health risk categories at the .05 level of significance when chi-square was applied.

The results of cross tabulations of gender (female and male) with health risk categories are presented in Table 10. There were not many differences according to sex for the excellent category, 28.6% of the males and 26.8% of the females were in the excellent category. For the fair category, 44.4% consisted of male students compared to 48.6% of female students. A small percent difference was found for the male and female students whose health risk scores placed them in the risky category (males--17.9%, females--18.6%). Six percent of the female students were in the hazardous category compared to 9.2% of the male students. No significant difference

TABLE 10

NINTH AND TWELFTH GRADERS' HEALTH RISK CATEGORIES ACCORDING TO GENDER

Health Risk Categories	Males	Females
Excellent (85-100)	190 (28.6%)	183 (26.8%)
Fair (70-84)	295 (44.4%)	332 (48.6%)
Risky (55-69)	119 (17.9%)	127 (18.6%)
Hazardous (0-54)	61 (9.2%)	41 (6.0%)
Total	665 (100%)	683 (100%)

$X^2 = 6.257$, df = 3, not significant at $p < .05$, N = 1348.

was found at the .05 level of significance when chi-square was applied to the cross tabulations of gender and health risk categories.

The results of cross tabulations of race with health risk categories are presented in Table 11. For the white students, 26.6% were in the excellent category, followed by 47.0% in the fair category, 18.3% in the risky category, and 8.1% in the hazardous category. The nonwhite students were categorized by percent into the following categories: 35.2% in the excellent category, 43.0% in the fair category, 18.2% in the risky category, and 3.6% in the hazardous category. There was a significant differnce between white and nonwhite students regarding the health risk categories at the .05 level of significance when chi-square was applied. A higher percent of the nonwhite students (35.2%) were in the excellent category than the percent (26.6%) of white students.

TABLE 11

HEALTH RISK CATEGORIES BY RACE

Health Risk Categories	White	Nonwhite
Excellent (85-100)	315 (26.6%)	58 (35.2%)
Fair (70-84)	556 (47.0%)	71 (43.0%)
Risky (55-69)	216 (18.3%)	30 (18.2%)
Hazardous (0-54)	96 (8.1%)	6 (3.6%)
Total	1183 (100%)	165 (100%)

$X^2 = 8.132$, df = 3, $p < .05$, N = 1348.

Table 12 shows the cross tabulations of geographical area (urban and rural) with health risk categories. For the students from urban areas, 29.9% were in the excellent category, followed by 42.6% in the fair category, 19.5% in the risky category, and 7.9% in the hazardous category. The students from the rural areas were placed in the following health risk categories according to percent: 25.3% in the excellent category, 50.6% in the fair category, 16.9% in the risky category, and 7.2% in the hazardous category. A higher percent of the students from the urban areas (29.9%) were classified in the excellent category when compared to the students from the rural areas (25.3%). When chi-square was applied, there was a significant difference between students from urban and rural areas regarding the health categories at the .05 level of significance.

Table 13 shows the cross tabulations of gender and grade (ninth grade males and ninth grade females) with the health risk categories. There was a significant difference at the .05 level of significance between ninth grade male students and ninth grade female students regarding health risk categories when chi-square was applied. A higher percent (34.5%) of the ninth grade male students were in the excellent category when compared to the ninth grade female students (29.7%). However, a higher percent (50.0%) of the ninth grade females were in the fair category than the ninth grade males (43.0%). There was not much difference between the two groups for the risky category (ninth grade males--15.2%, ninth grade females--17.0%). More than twice the percent of ninth grade males (7.3%) were in the hazardous category than the percent of ninth grade females (3.3%).

TABLE 12

HEALTH RISK CATEGORIES BY URBAN/RURAL SUBJECTS

Health Risk Categories	Urban	Rural
Excellent (85-100)	207 (29.9%)	166 (25.3%)
Fair (70-84)	295 (42.6%)	332 (50.6%)
Risky (55-69)	135 (19.5%)	111 (16.9%)
Hazardous (0-54)	55 (7.9%)	47 (7.2%)
Total	692 (99.9%)*	656 (100%)

*Rounding error.

$X^2 = 8.704$, df = 3, $p < .05$, N = 1348.

TABLE 13

NINTH GRADE HEALTH RISK CATEGORIES BY GENDER

Health Risk Categories	9th Grade Males	9th Grade Females
Excellent (85-100)	123 (34.5%)	108 (29.7%)
Fair (70-84)	153 (43.0%)	182 (50.0%)
Risky (55-69)	54 (15.2%)	62 (17.0%)
Hazardous (0-54)	26 (7.3%)	12 (3.3%)
Total	356 (100%)	364 (100%)

$X^2 = 9.106$, df = 3, $p < .05$, N = 720.

Table 14 presents cross tabulations of twelfth grade male students' scores and twelfth grade female students' scores with the health risk categories. No significant difference between the two groups was found regarding the health risk categories at the .05 level of significance when chi-square was applied.

Table 15 presents the cross tabulations of ninth grade female students' scores and twelfth grade female students' scores with the health risk categories. There was a significant difference between ninth grade female students and twelfth grade female students regarding the health risk categories at the .05 level of significance when chi-square was applied. A higher percent of the ninth grade female students (29.7%) were in the excellent category than the percent of twelfth grade female students (23.5%). A lower percent of the ninth grade female students (3.3%) were in the hazardous category than the percent of twelfth grade female students (9.1%).

Cross tabulations of the ninth grade male students' scores and twelfth grade male students' scores with the health risk categories are presented in Table 16. There was a significant difference between the two groups regarding the health risk categories at the .05 level of significance when chi-square was applied. A higher percent of ninth grade male students (34.5%) were in the excellent category than the twelfth grade male students (21.7%). There was not much difference between the two groups for the fair category (ninth grade males--43.0%, twelfth grade males--46.0%). A higher percent of the twelfth grade male students were in the risky and hazardous categories,

TABLE 14

TWELFTH GRADE HEALTH RISK CATEGORIES BY GENDER

Health Risk Categories	12th Grade Males	12th Grade Females
Excellent (85-100)	67 (21.7%)	75 (23.5%)
Fair (70-84)	142 (46.0%)	150 (47.0%)
Risky (55-69)	65 (21.0%)	65 (20.4%)
Hazardous (0-54)	35 (11.3%)	29 (9.1%)
Total	309 (100%)	319 (100%)

X^2 = 1.073, df = 3, not significant at $p < .05$, N = 628.

TABLE 15

FEMALE HEALTH RISK CATEGORIES BY GRADE

Health Risk Categories	12th Grade Males	12th Grade Females
Excellent (85-100)	108 (29.7%)	75 (23.5%)
Fair (70-84)	182 (50.0%)	150 (47.0%)
Risky (55-69)	62 (17.0%)	65 (20.4%)
Hazardous (0-54)	12 (3.3%)	29 (9.1%)
Total	364 (100%)	319 (100%)

X^2 = 13.247, df = 3, $p < .05$, N = 683.

TABLE 16

MALE HEALTH RISK CATEGORIES BY GRADE

Health Risk Categories	9th Grade Males	12th Grade Males
Excellent (85-100)	123 (34.5%)	67 (21.7%)
Fair (70-84)	153 (43.0%)	142 (46.0%)
Risky (55-69)	54 (15.2%)	65 (21.0%)
Hazardous (0-54)	26 (7.3%)	35 (11.3%)
Total	356 (100%)	309 (100%)

$X^2 = 16.018$, df = 3, $p < .05$, N = 665.

respectively, 21.0% and 11.3% than the ninth grade males (risky categories--15.2%, hazardous--7.3%).

Table 17 presents cross tabulations of female students' scores from urban areas and female students' scores from rural areas with health risk categories. There was no significant difference between female students from urban areas and female students from rural areas regarding the health risk categories at the .05 level of significance when chi-square was applied.

Cross tabulations of male students' scores from urban areas and male students' scores from rural areas with health risk categories are presented in Table 18. When chi-square was applied, no significant difference was found between male students from urban areas and male students from rural areas regarding the health risk categories at the .05 level of significance.

TABLE 17

FEMALE HEALTH RISK CATEGORIES BY GEOGRAPHICAL AREA

Health Risk Categories	Urban Females	Rural Females
Excellent (85-100)	95 (27.4%)	88 (26.2%)
Fair (70-84)	155 (44.7%)	177 (52.7%)
Risky (55-69)	71 (20.5%)	56 (16.7%)
Hazardous (0-54)	26 (7.5%)	15 (4.5%)
Total	347 (100%)	336 (100%)

$X^2 = 6.273$, df = 3, not significant at $p < .05$, N = 683.

TABLE 18

MALE HEALTH RISK CATEGORIES BY GEOGRAPHICAL AREA

Health Risk Categories	Urban Males	Rural Males
Excellent (85-100)	112 (32.5%)	78 (24.4%)
Fair (70-84)	140 (40.6%)	155 (48.4%)
Risky (55-69)	64 (18.6%)	55 (17.2%)
Hazardous (0-54)	29 (8.4%)	32 (10.0%)
Total	345 (100%)	320 (100%)

$X^2 = 6.745$, df = 3, not significant at $p < .05$, N = 665.

Table 19 shows the cross tabulations of male students' scores from rural areas and female students' scores from rural areas with health risk categories. There was significant difference between the two groups at the .05 level of significance when chi-square was applied. There was not much difference between the two groups for the excellent category (rural males--24.4%, rural females--26.2%) and the risky category (rural males--17.2%, rural females--16.7%). Yet, for the fair category, there was a higher percent of female students from rural areas (52.7%) in this category than the percent of male students from rural areas (48.4%). A higher percent of the male students from rural areas (10.0%) were in the hazardous category than the percent of female students from rural areas (4.5%).

TABLE 19

RURAL STUDENTS HEALTH RISK CATEGORIES BY GENDER

Health Risk Categories	Rural Males	Rural Females
Excellent (85-100)	78 (24.4%)	88 (26.2%)
Fair (70-84)	155 (48.4%)	177 (52.7%)
Risky (55-69)	55 (17.2%)	56 (16.7%)
Hazardous (0-54)	32 (10.0%)	15 (4.5%)
Total	320 (100%)	336 (100%)

$X^2 = 7.833$, df = 3, $p < .05$, N = 656.

Table 20 shows the findings of the cross tabulation of male students from urban areas and female students from urban areas with the health risk categories. The findings for the two groups were not significant at the .05 level of significance when chi-square was applied.

TABLE 20

URBAN STUDENTS HEALTH RISK CATEGORIES BY GENDER

Health Risk Categories	Urban Males	Urban Females
Excellent (85-100)	112 (32.5%)	95 (27.4%)
Fair (70-84)	140 (40.6%)	155 (44.7%)
Risky (55-69)	64 (18.6%)	71 (20.5%)
Hazardous (0-54)	29 (8.4%)	26 (7.5%)
Total	345 (100%)	347 (100%)

$X^2 = 2.680$, df = 3, not significant at $p < .05$, N = 692.

In Table 21, cross tabulations of white male students' scores and nonwhite male students' scores with the health risk categories were presented. A much higher percent of the nonwhite male students (42.5%) were in the excellent category than the white male students (26.7%). However, a higher percent of the white males (46.3%) were in the fair category than the nonwhite males (30.0%). A lower percent of the white male students (17.3%) were in the risky category than the nonwhite male students (22.5%), but a higher percent of the white male students (9.7%) were in the hazardous category than the nonwhite male students (5.0%). When chi-square was applied, there was a

TABLE 21

MALE STUDENTS HEALTH RISK CATEGORIES BY RACE

Health Risk Categories	White Males	Nonwhite Males
Excellent (85-100)	156 (26.7%)	34 (42.5%)
Fair (70-84)	271 (46.3%)	24 (30.0%)
Risky (55-69)	101 (17.3%)	18 (22.5%)
Hazardous (0-54)	57 (9.7%)	4 (5.0%)
Total	585 (100%)	80 (100%)

$X^2 = 13.207$, df = 3, $p < .05$, N = 665.

significant difference between the two groups regarding the health risk categories at the .05 level of significance.

Table 22 presents cross tabulations of white female students' scores and nonwhite female students' scores with the health risk categories. The difference between the two groups regarding the health risk categories was not significant at the .05 level of significance when chi-square was applied.

In Table 23, cross tabulations of white male students' scores and white female students' scores with the health risk categories are presented. For each health risk category, the findings for the two groups were similar. The differences between the groups regarding the health risk categories were not significant at the .05 level of significance when chi-square was applied.

TABLE 22

FEMALE STUDENTS HEALTH RISK CATEGORIES BY RACE

Health Risk Categories	White Females	Nonwhite Females
Excellent (85-100)	159 (26.6%)	24 (28.2%)
Fair (70-84)	285 (47.7%)	47 (55.3%)
Risky (55-69)	115 (19.2%)	12 (14.1%)
Hazardous (0-54)	39 (6.5%)	2 (2.4%)
Total	598 (100%)	85 (100%)

$X^2 = 4.169$, df = 3, not significant at $p < .05$, N = 683.

TABLE 23

WHITE STUDENTS HEALTH RISK CATEGORIES BY GENDER

Health Risk Categories	White Males	White Females
Excellent (85-100)	156 (26.7%)	159 (26.6%)
Fair (70-84	271 (46.3%)	285 (47.7%)
Risky (55-69)	101 (17.3%)	115 (19.3%)
Hazardous (0-54)	57 (9.7%)	39 (6.5%)
Total	585 (100%)	598 (100%)

$X^2 = 4.521$, df = 3, not significant at $p < .05$, N = 1183.

Table 24 presents cross tabulations of nonwhite male students' scores and nonwhite female students' scores with the health risk categories. There was significant difference between the groups regarding the health risk categories at the .05 level of significance when chi-square was applied. Over 40% of the nonwhite male students (42.5%) were in the excellent category compared to 28.5% of the nonwhite female students. It must be noted that chi-square may not be a valid test because 25% of the cells have expected counts less than five. However, the results of the test give an indication of what the outcome would be if all the cells had adequate expected counts.

TABLE 24

NONWHITE STUDENTS HEALTH RISK CATEGORIES BY GENDER

Health Risk Categories	Nonwhite Males	Nonwhite Females
Excellent (85-100)	34 (42.5%)	24 (28.2%)
Fair (70-84)	24 (30.0%)	47 (55.3%)
Risky (55-69)	18 (22.5%)	12 (14.1%)
Hazardous (0-54)	4 (5.0%)	2 (2.4%)
Total	80 (100%)	85 (100%)

$X^2 = 10.900$, df = 3, $p < .05$, N = 165.

Cross tabulations of ninth grade students' scores from rural areas and twelfth grade students' scores from rural areas with the health risk categories are presented in Table 25. There was a

TABLE 25

RURAL STUDENTS HEALTH RISK CATEGORIES BY GRADE

Health Risk Categories	9th Grade Rural	12th Grade Rural
Excellent (85-100)	102 (30.4%)	64 (20.0%)
Fair (70-84)	174 (51.8%)	158 (49.4%)
Risky (55-69)	45 (13.4%)	66 (20.6%)
Hazardous (0-54)	15 (4.5%)	32 (10.0%)
Total	336 (100%)	320 (100%)

$X^2 = 19.213$, df = 3, $p < .05$, N = 656.

significant difference between the groups regarding the health risk categories at the .05 level of significance when chi-quare was applied. A higher percent of the rural ninth graders were in the excellent and fair categories (30.4% and 51.8%, respectively) than the rural twelfth graders (20.0% and 49.4%, respectively). A higher percent of the rural twelfth graders were in the risky and hazardous category (20.6% and 10.0%, respectively) than the rural ninth graders (13.4% and 4.5%, respectively).

Cross tabulations of ninth grade students' scores from urban areas and twelfth grade students' scores from urban areas with health risk categories are presented in Table 26. There was a significant difference between the groups regarding the health risk categories at the .05 level of significance when chi-square was applied. A higher percent of the ninth grade urban students (33.6%) were in the excellent

TABLE 26

URBAN STUDENTS HEALTH RISK CATEGORIES BY GRADE

Health Risk Categories	9th Grade Urban	9th Grade Rural
Excellent (85-100)	129 (33.6%)	78 (25.3%)
Fair (70-84)	161 (41.9%)	134 (43.5%)
Risky (55-69)	71 (18.5%)	64 (20.8%)
Hazardous (0-54)	23 (6.0%)	32 (10.4%)
Total	384 (100%)	308 (100%)

$X^2 = 8.629$, df = 3, $p < .05$, N = 692.

category than the twelfth grade urban students (25.3%). Additionally, a higher percent of the twelfth grade urban students (10.4%) were in the hazardous category than the ninth grade urban students (6.0%).

Table 27 presents cross tabulations of ninth grade students' scores from urban areas and ninth grade students' scores from rural areas with the health risk categories. There was not much difference between the groups regarding the excellent category (ninth grade urban students--33.6%, ninth grade rural students--30.4%). Yet, a much higher percent of ninth grade rural students (51.8%) were in the fair category than the ninth grade urban students (41.9%). There was a significant difference between the groups regarding the health risk categories at the .05 level of significance when chi-square was applied.

TABLE 27

NINTH GRADERS HEALTH RISK CATEGORIES BY URBAN/RURAL AREA

Health Risk Categories	9th Grade Urban	9th Grade Rural
Excellent (85-100)	129 (33.6%)	102 (30.4%)
Fair (70-84)	161 (41.9%)	174 (51.8%)
Risky (55-69)	71 (18.5%)	45 (13.4%)
Hazardous (0-54)	23 (6.0%)	15 (4.5%)
Total	384 (100%)	336 (100%)

$X^2 = 8.008$, df = 3, $p < .05$, N = 720.

Table 28 shows cross tabulations of twelfth grade students' scores from urban areas and twelfth grade students' scores from rural areas with the health risk categories. The differences between twelfth grade urban students and twelfth grade rural students regarding the health risk categories were significant at the .05 level of significance when chi-square was applied.

Table 29 presents cross tabulations of white students' scores from rural areas and nonwhite students' scores from rural areas with the health risk categories. The differences between the groups regarding the health risk categories were not significant at the .05 level of significance when chi-square was applied. Yet, a much higher percent (28.3%) of the rural nonwhite students were in the risky category than the percent (15.9%) of rural white students.

TABLE 28

TWELFTH GRADERS HEALTH RISK CATEGORIES BY URBAN/RURAL AREA

Health Risk Categories	12th Grade Urban	12th Grade Rural
Excellent (85-100)	78 (25.3%)	64 (20.0%)
Fair (70-84)	134 (43.5%)	158 (49.4%)
Risky (55-69)	64 (20.8%)	66 (20.6%)
Hazardous (0-54)	32 (10.4%)	32 (10.0%)
Total	308 (100%)	320 (100%)

$X^2 = 3.156$, df = 3, not significant at $p < .05$, N = 628.

TABLE 29

RURAL STUDENTS HEALTH RISK CATEGORIES BY RACE

Health Risk Categories	White Rural	Nonwhite Rural
Excellent (85-100)	156 (25.9%)	10 (18.9%)
Fair (70-84)	308 (51.1%)	24 (45.3%)
Risky (55-69)	96 (15.9%)	15 (28.3%)
Hazardous (0-54)	43 (7.1%)	4 (7.6%)
Total	603 (100%)	53 (100%)

$X^2 = 5.693$, df = 3, not significant at $p < .05$, N = 656.

In Table 30, cross tabulations of white students' scores from urban areas and nonwhite students' scores from urban areas with health risk categories are presented. For the excellent category, 42.9% of the nonwhite urban students were in this category compared to 27.4% of the white urban students. A much higher percent of the white urban students (9.1%) were in the hazardous category than the nonwhite urban students. The differences between the groups regarding the health risk categories were significant at the .05 level of significance when chi-square was applied.

Table 31 presents cross tabulations of white students' scores from urban areas and white students' scores from rural areas with health risk categories. When chi-square was applied, there was a significant difference between the groups regarding the health risk categories at the .05 level of significance. There were not much differences between the two groups for the excellent and hazardous categories (27.4% of the urban white students and 25.9% of the rural white students were in the excellent category; 9.1% of urban white students and 7.1% of rural white students were in the hazardous category). For the fair category, 51.1% of the rural white students and 42.8% of the urban white students were in this category. A higher percent of urban white students (20.7%) were in the risky category than the percent of rural white students (15.9%).

Table 32 presents cross tabulations of nonwhite students' scores from urban areas and nonwhite students' scores from rural areas with health risk categories. It must be noted that 25% of the cells have expected counts less than five, therefore chi-square may

TABLE 30

URBAN STUDENTS HEALTH RISK CATEGORIES BY RACE

Health Risk Categories	White Urban	Nonwhite Urban
Excellent (85-100)	159 (27.4%)	48 (42.9%)
Fair (70-84)	248 (42.8%)	47 (42.0%)
Risky (55-69)	120 (20.7%)	15 (13.4%)
Hazardous (0-54)	53 (9.1%)	2 (1.8%)
Total	580 (100%)	112 (100%)

$X^2 = 16.445$, df = 3, $p < .05$, N = 692.

TABLE 31

WHITE STUDENTS HEALTH RISK CATEGORIES BY URBAN/RURAL AREA

Health Risk Categories	Urban Whites	Rural Whites
Excellent (85-100)	159 (27.4%)	156 (25.9%)
Fair (70-84)	248 (42.8%)	308 (51.1%)
Risky (55-69)	120 (20.7%)	96 (15.9%)
Hazardous (0-54)	53 (9.1%)	43 (7.1%)
Total	580 (100%)	603 (100%)

$X^2 = 9.768$, df = 3, $p < .05$, N = 1183.

TABLE 32

NONWHITE STUDENTS HEALTH RISK CATEGORIES BY URBAN/RURAL AREA

Health Risk Categories	Urban Nonwhites	Rural Nonwhites
Excellent (85-100)	48 (42.9%)	10 (18.9%)
Fair (70-84)	47 (42.0%)	24 (45.3%)
Risky (55-69)	15 (13.4%)	15 (28.3%)
Hazardous (0-54)	2 (1.8%)	4 (7.6%)
Total	112 (100%)	53 (100%)

$X^2 = 13.664$, df = 3, $p < .05$, N = 165.

not be a valid test. However, the findings give an indication as what to expect regarding the groups. There was a significant difference between the groups regarding the health risk categories at the .05 level of significance when chi-square was applied. A significantly higher percent of urban nonwhites (42.9%) were in the excellent category than the percent of rural nonwhites (18.9%). Yet, a higher percent of the rural nonwhites (28.3%) were in the risky category than the percent of urban nonwhites (13.4%).

Cross tabulations of ninth grade white students' scores and ninth grade nonwhite students' scores with health risk categories are presented in Table 33. Although a higher percent of the ninth grade nonwhite students (42.5%) were in the excellent category than the ninth grade white students (30.8%), a higher percent of ninth grade white students (47.7%) were in the fair category than the percent of

TABLE 33

NINTH GRADERS HEALTH RISK CATEGORIES BY RACE

Health Risk Categories	9th Grade Whites	9th Grade Nonwhites
Excellent (85-100)	197 (30.8%)	34 (42.5%)
Fair (70-84)	305 (47.7%)	30 (37.5%)
Risky (55-69)	103 (16.1%)	13 (16.2%)
Hazardous (0-54)	35 (5.5%)	3 (3.8%)
Total	640 (100%)	80 (100%)

$X^2 = 5.019$, df = 3, not significant at $p < .05$, N = 720.

ninth grade nonwhite students (37.5%). However, the difference between the groups regarding the health risk categories was not significant at the .05 level of significance when chi-square was applied.

Table 34 presents cross tabulations of twelfth grade white students' scores and twelfth grade nonwhite students' scores with health risk categories. The difference between the groups regarding the health risk categories was not significant at the .05 level of significance when chi-square was applied.

Table 35 presents cross tabulations of ninth and twelfth grade white students' scores with health risk categories. There was a significant difference between the groups regarding the health risk categories at the .05 level of significance when chi-square was applied. A significantly higher percent of the ninth grade white students

TABLE 34

TWELFTH GRADERS HEALTH RISK CATEGORIES BY RACE

Health Risk Categories	12th Grade Whites	12th Grade Nonwhites
Excellent (85-100)	118 (21.7%)	24 (28.2%)
Fair (70-84)	251 (46.2%)	41 (48.2%)
Risky (55-69)	113 (20.8%)	17 (20.0%)
Hazardous (0-54)	61 (11.2%)	3 (3.5%)
Total	543 (99.9%)*	85 (99.9%)*

*Due to rounding error.

$X^2 = 5.743$, df = 3, not significant at $p < .05$, N = 628.

TABLE 35

WHITE STUDENTS HEALTH RISK CATEGORIES BY GRADE

Health Risk Categories	9th Grade Whites	12th Grade Whites
Excellent (85-100)	197 (30.8%)	118 (21.7%)
Fair (70-84)	305 (47.7%)	251 (46.2%)
Risky (55-69)	103 (16.1%)	113 (20.8%)
Hazardous (0-54)	35 (5.5%)	61 (11.2%)
Total	640 (100%)	543 (99.9%)*

*Due to rounding error.

$X^2 = 24.775$, df = 3, $p < .05$, N = 1183.

(30.8%) were in the excellent category than the percent of twelfth grade white students (21.7%).

Cross tabulations of ninth grade nonwhite students' scores and twelfth grade nonwhite students' scores with health risk categories are presented in Table 36. The difference between the groups regarding the health risk categories was not significant at the .05 level of significance when chi-square was applied. It must be noted that 25% of the cells have expected counts less than five, therefore chi-square may not be a valid test.

Cross tabulations of white ninth grade female students' scores and nonwhite ninth grade female students' scores with health risk categories are presented in Table 37. There was no significant difference between the groups regarding health risk categories at the .05 level of significance when chi-square was applied.

In Table 38, cross tabulations of white twelfth grade female students' scores and nonwhite twelfth grade female students' scores with health risk categories are presented. There was not much difference between the groups for the excellent category (white twelfth grade females--23.4%, nonwhite twelfth grade females--24%). Yet, a significantly higher percent of nonwhite twelfth grade females (62.0%) were in the fair category than the percent of white twelfth grade females (44.2%). Also a higher percent of the white twelfth grade females were in the risky and hazardous categories, respectively, 21.9% and 10.4%, than the percent of nonwhite twelfth grade females, respectively, 12.0% and 2.0%. There was a significant difference

TABLE 36

NONWHITE STUDENTS HEALTH RISK CATEGORIES BY GRADE

Health Risk Categories	9th Grade Nonwhites	12th Grade Nonwhites
Excellent (85-100)	34 (42.5%)	24 (28.2%)
Fair (70-84)	30 (37.5%)	41 (48.2%)
Risky (55-69)	13 (16.2%)	17 (20.0%)
Hazardous (0-54)	3 (3.8%)	3 (3.5%)
Total	80 (100%)	85 (99.9%)*

*Due to rounding error.

$X^2 = 3.814$, df = 3, not significant at $p < .05$, N = 165.

TABLE 37

NINTH GRADE FEMALES HEALTH RISK CATEGORIES BY GENDER

Health Risk Categories	White 9th Grade Females	Nonwhite 9th Grade Females
Excellent (85-100)	96 (29.2%)	12 (34.3%)
Fair (70-84)	166 (50.5%)	16 (45.7%)
Risky (55-69)	56 (17.0%)	6 (17.1%)
Hazardous (0-54)	11 (3.3%)	1 (2.9%)
Total	329 (100%)	35 (100%)

$X^2 = .443$, df = 3, not significant at $p < .05$, N = 364.

TABLE 38

TWELFTH GRADE FEMALES HEALTH RISK CATEGORIES BY RACE

Health Risk Categories	White 12th Grade Females	Nonwhite 12th Grade Females
Excellent (85-100)	63 (23.4%)	12 (24.0%)
Fair (70-84)	119 (44.2%)	31 (62.0%)
Risky (55-69)	59 (21.9%)	6 (12.0%)
Hazardous (0-54)	28 (10.4%)	1 (2.0%)
Total	269 (99.9%)*	50 (100%)

*Due to rounding error.

$X^2 = 8.156$, df = 3, $p < .05$, N = 319.

between the groups regarding the health risk categories at the .05 level of significance when chi-square was applied.

Table 39 presents cross tabulations of white ninth grade male students' scores and nonwhite ninth grade male students' scores with health risk categories. When chi-square was applied, there was no significant difference between the groups regarding the health risk categories at the .05 level of significance.

Cross tabulations of white twelfth grade male students' scores and nonwhite twelfth grade male students' scores with health risk categories are presented in Table 40. There was a significant difference between the groups regarding the health risk categories at the .05 level of significance when chi-square was applied. A higher percent of the nonwhite twelfth grade males (34.3%) were in the excellent

TABLE 39

NINTH GRADE MALES HEALTH RISK CATEGORIES BY RACE

Health Risk Categories	White 9th Grade Males	Nonwhite 9th Grade Males
Excellent (85-100)	101 (32.5%)	22 (48.9%)
Fair (70-84)	139 (44.7%)	14 (31.1%)
Risky (55-69)	47 (15.1%)	7 (15.6%)
Hazardous (0-54)	24 (7.7%)	2 (4.4%)
Total	311 (100%)	45 (100%)

$X^2 = 5.334$, df = 3, not significant at $p < .05$, N = 356.

TABLE 40

TWELFTH GRADE MALES HEALTH RISK CATEGORIES BY RACE

Health Risk Categories	White 12th Grade Males	Nonwhite 12th Grade Males
Excellent (85-100)	55 (20.1%)	12 (34.3%)
Fair (70-84)	132 (48.2%)	10 (28.6%)
Risky (55-69)	54 (19.7%)	11 (31.4%)
Hazardous (0-54)	33 (12.0%)	2 (5.7%)
Total	274 (100%)	35 (100%)

$X^2 = 8.611$, df = 3, $p < .05$, N = 309.

category than the percent of white twelfth grade males (20.1%), but a higher percent of the white twelfth grade males (48.2%) were in the fair category than the percent of nonwhite twelfth grade males (28.6%). Additionally, 31.4% of nonwhite twelfth grade males were in the risky category compared to 19.7% of the white twelfth grade males, and more than twice the percent of white twelfth grade males (12.0%) were in the hazardous category than the percent of nonwhite twelfth grade males (5.7%).

In Table 41, cross tabulations of white ninth grade students' scores from urban areas and nonwhite ninth grade students' scores from urban areas with health risk categories are presented. There was no significant difference between the groups regarding the health risk categories at the .05 level of significance when chi-square was applied.

Cross tabulations of white twelfth grade students' scores from urban areas and nonwhite twelfth grade students' scores from urban areas with health risk categories are presented in Table 42. There was a significant difference between the groups regarding the health risk categories at the .05 level of significance when chi-square was applied. A higher percent of the urban nonwhite twelfth graders were in the excellent and fair categories (respectively 36.4% and 52.7%) when compared to the percent of urban white twelfth graders (respectively 22.9% and 41.5%). A higher percent of the urban white twelfth graders were in the risky and hazardous categories (respectively 22.9% and 12.7%) when compared to the percent of urban nonwhite twelfth graders (respectively 10.9% and 0.0%).

TABLE 41

URBAN NINTH GRADERS HEALTH RISK CATEGORIES BY RACE

Health Risk Categories	White 9th Grade Urban	Nonwhite 9th Grade Urban
Excellent (85-100)	101 (30.9%)	28 (49.1%)
Fair (70-84)	143 (43.7%)	18 (31.6%)
Risky (55-69)	62 (19.0%)	9 (15.8%)
Hazardous (0-54)	21 (6.4%)	2 (3.5%)
Total	327 (100%)	57 (100%)

$X^2 = 7.466$, df = 3, not significant at $p < .05$, N = 384.

TABLE 42

URBAN TWELFTH GRADERS HEALTH RISK CATEGORIES BY RACE

Health Risk Categories	White 12th Grade Urban	Nonwhite 12th Grade Urban
Excellent (85-100)	58 (22.9%)	20 (36.4%)
Fair (70-84)	105 (41.5%)	29 (52.7%)
Risky (55-69)	58 (22.9%)	6 (10.9%)
Hazardous (0-54)	32 (12.7%)	0 (0.0%)
Total	253 (100%)	55 (100%)

$X^2 = 14.626$, df = 3, $p < .05$, N = 308.

Cross tabulations of white twelfth grade students' scores from rural areas and nonwhite twelfth grade students' scores from rural areas with health risk categories are presented in Table 43. When chi-square was applied, there was no significant difference between the groups regarding the health risk categories at the .05 level of significance.

Table 44 presents cross tabulations of white ninth grade students' scores from rural areas and nonwhite ninth grade students' scores from rural areas with health risk categories. There was no significant difference between the groups regarding the health risk categories at the .05 level of significance when chi-square was applied. It must be noted that 25% of the cells have expected counts less than five, therefore chi-square may not be a valid test.

Table 45 presents a summary of all the cross tabulations of the health risk categories by selected variables (grade, gender, race, and geographical area) (Tables 9-44, pages 61-91) which the chi-square probability value.

V. DATA DESCRIPTION OF SELECTED HEALTH RISK FACTORS

In this section, description of selected health risk factors was presented of all Tennessee teens and selected groups according to gender, grade, race, and geographical area. One of the features of the "Teen Wellness Check" program is its capacity to develop a group profile of selected risk factors based upon the 46 questions in the questionnaire (Marciano, 1985). The profile consists of 19 risk

TABLE 43

RURAL TWELFTH GRADERS HEALTH RISK CATEGORIES BY RACE

Health Risk Categories	White 12th Grade Rural	Nonwhite 12th Grade Rural
Excellent (85-100)	60 (20.7%)	4 (13.3%)
Fair (70-84)	146 (50.3%)	12 (40.0%)
Risky (55-69)	55 (19.0%)	11 (36.7%)
Hazardous (0-54)	29 (10.0%)	3 (10.0%)
Total	290 (100%)	30 (100%)

$X^2 = 5.455$, df = 3, not significant at $p < .05$, N = 320.

TABLE 44

RURAL NINTH GRADERS HEALTH RISK CATEGORIES BY RACE

Health Risk Categories	White 9th Grade Rural	Nonwhite 9th Grade Rural
Excellent (85-100)	96 (30.7%)	6 (26.1%)
Fair (70-84)	162 (51.8%)	12 (52.2%)
Risky (55-69)	41 (13.1%)	4 (17.4%)
Hazardous (0-54)	14 (4.5%)	1 (4.4%)
Total	313 (100%)	23 (100%)

$X^2 = .445$, df = 3, not significant at $p < .05$, N = 336.

TABLE 45

SUMMARY OF CROSS TABULATIONS OF HEALTH RISK CATEGORIES BY GRADE, GENDER, RACE, AND GEOGRAPHICAL AREA

Variables	X^2 Probabilities
1. Grade (9th and 12th)	.000*
2. Male and Female (9th and 12th)	.100
3. Ninth Grade Males and Females	.028*
4. Twelfth Grade Males and Females	.783
5. Ninth and Twelfth Grade Females	.004*
6. Ninth and Twelfth Grade Males	.001*
7. Race (White and Nonwhite)	.043*
8. White and Nonwhite Males	.004*
9. White and Nonwhite Females	.244
10. White Males and Females	.210
11. Nonwhite Males and Females	.012*
12. White and Nonwhite Rural Teens	.128
13. White and Nonwhite Urban Teens	.001*
14. Urban and Rural White Teens	.021*
15. Urban and Rural Nonwhite Teens	.003*
16. Ninth Grade White and Nonwhite Teens	.170
17. Twelfth Grade White and Nonwhite Teens	.125
18. Ninth and Twelfth Grade White Teens	.000*
19. Ninth and Twelfth Grade Nonwhite Teens	.282
20. Geographical Areas (Urban and Rural)	.033*
21. Urban and Rural Females	.099

TABLE 45 (Continued)

Variables	X^2 Probabilities
22. Urban and Rural Males	.080
23. Rural Males and Females	.050*
24. Urban Males and Females	.444
25. Ninth and Twelfth Grade Rural Teens	.000*
26. Ninth and Twelfth Grade Urban Teens	.035*
27. Ninth Grade Urban and Rural Teens	.046*
28. Twelfth Grade Urban and Rural Teens	.368
29. White and Nonwhite Ninth Grade Females	.931
30. White and Nonwhite Twelfth Grade Females	.043*
31. White and Nonwhite Ninth Grade Males	.149
32. White and Nonwhite Twelfth Grade Males	.035*
33. White and Nonwhite Ninth Grade Urban Teens	.058
34. White and Nonwhite Twelfth Grade Urban Teens	.002*
35. White and Nonwhite Twelfth Grade Rural Teens	.141
36. White and Nonwhite Ninth Grade Rural Teens	.931

*Significant at the .05 level.

factors (see Table 46). According to Marciano (1985), of the risk factors, five are considered major risk factors. These include the following: (1) drive and/or ride under the influence of alcohol, (2) mix alcohol with drugs, (3) drink seven or more alcoholic drinks per week, (4) smoke one or more packs of cigarettes daily, and (5) highly stressed. Additionally, the use of seat belt will be assessed since accidents, particularly vehicular accidents, are the major cause of mortality for adolescents and young adults aged 15 to 24 years, and traffic fatalities are often linked to lack of seat belt use (AMA, 1986; NCHS, 1987; Petosa et al., 1986). These five risk factors will be addressed in this section.

Risk Factors for All Teens

Table 46 shows the selected health risk factors of Tennessee teens. It was found that 29% of the teens drive and/or ride under the influence of alcohol, while 13.9% use alcohol with other drugs. It was further reported that 23.7% of the teens drink alcoholic beverages and 5.3% has five or more drinks in one day. Approximately 5% (4.6%) smoke one pack of cigarettes or more daily but 18.4% reported that they smoke. Also, 8.8% of the teens reported that they were highly stressed. A high percent of the students (67.9%) reported not always wearing seat belts (see Table 46 for other risk factors). Additionally, it should be noted that a high percent of the female students (79.1%) were not performing breast self-examination. Also, a high percent of all teens do not eat from the four basic food groups daily (67.8%) and do not participate in aerobic exercise three times weekly (48.7%).

TABLE 46

SELECTED HEALTH RISK FACTORS FOR ALL TEENS (N = 1348)

Factors	N	%
1. Females--not doing breast self-exam	540	79.1
2. Don't always wear seat belt	915	67.9
3. Don't eat from four food groups daily	914	67.8
4. Don't eat breakfast at least 5 times weekly	745	55.3
5. Not 20 mins. aerobic exercise 3 times weekly	656	48.7
6. Drive/ride under the influence of alcohol	391	29.0
7. Don't know or not fully immunized	330	24.5
8. Any drinking	320	23.7
9. Any smoking	247	18.4
10. Use alcohol with other drugs	187	13.9
11. Don't know how to swim	158	11.7
12. Don't brush teeth daily	130	9.6
13. Highly stressed	118	8.8
14. Overweight 20% or more	116	8.6
15. Often feel life not worth living	115	8.5
16. Has 5 or more drinks in 1 day	72	5.3
17. Smoke cigarettes 1 pack + daily	62	4.6
18. Hitchhikes or picks up hitchhikers	48	3.6
19. Females--underweight 20% or more	10	1.5
Number of Students	1,348	

Risk Factors According to Gender

Table 47 illustrates the selected health risk factors according to gender. Approximately 31.7% of the male students drive and/or ride under the influence of alcohol while 26.4% of the female students drive and/or ride under the influence. It was found that 17.4% of the male students and 10.4% of the female students use alcohol with other drugs. While 9.3% of the male students and 1.6% of the female students reported having five or more drinks in one day, 30.5% of the males and 17.1% of the females reported any drinking of alcoholic beverages. A higher percent of the female students (11.3%) reported being highly stressed than the male students (6.2%). A higher percent of the male students (5.1%) reported smoking one pack of cigarettes or more daily than the percent of female students (4.1%). However, a higher percent of the female students (19.1%) reported any smoking than the percent of male students (17.4%). A high percentage of both male and female students do not always wear seat belt, but a higher percent of the males (71.3%) do not always wear seat belts compared to the percent of females (64.6%). (See Table 47 for other risk factors.) The results indicate that health education efforts should be concentrated in substance abuse toward male students and substance abuse, mental health, and breast self-examination toward female students.

Risk Factors According to Grade

The selected risk factors according to grade are presented in Table 48. A higher percent of twelfth graders reported drinking and

TABLE 47

SELECTED HEALTH RISK FACTORS BY GENDER (N = 1348)

Risk Factors	Males N	Males %	Females N	Females %
1. Don't eat from 4 food groups daily	445	66.9	469	68.7
2. Don't eat breakfast at least 5/weekly	314	47.3	431	63.1
3. Don't brush teeth daily	101	15.2	29	4.3
4. Don't know or not fully immunized	175	26.3	155	22.7
5. Not 20 min. aerobic exercise 3/weekly	262	39.3	394	57.7
6. Smoke cigarettes 1 pack + daily	34	5.1	28	4.1
7. Any smoking	116	17.4	131	19.1
8. Has 5 or more drinks in 1 day	61	9.3	11	1.6
9. Any drinking	203	30.5	117	17.1
10. Use alcohol with other drugs	116	17.4	71	10.4
11. Drink and drive and/or ride	211	31.7	180	26.4
12. Don't always wear seat belt	474	71.3	441	64.6
13. Hitchhikes or picks up hitchhikers	37	5.6	11	1.6
14. Don't know how to swim	64	9.6	94	13.8
15. Highly stressed	41	6.2	77	11.3
16. Often feel life not worth living	38	5.7	77	11.3
17. Overweight 20% or more	53	8.0	63	9.2
18. Females--underweight 20% or more			10	1.5
19. Females--not doing breat self-exam			540	79.1
Number of Students	665		683	
Total		1,348		

TABLE 48

SELECTED HEALTH RISK FACTORS BY GRADE (N = 1348)

Risk Factors	9th N	9th %	12th N	12th %
1. Don't eat from 4 food groups daily	479	66.5	377	60.0
2. Don't eat breakfast at least 5/weekly	368	51.1	435	69.3
3. Don't brush teeth daily	91	12.6	39	6.2
4. Don't know or not fully immunized	225	31.3	105	16.7
5. Not 20 min. aerobic exercise 3/weekly	301	41.8	355	56.5
6. Smoke cigarettes 1 pack + daily	22	3.1	40	6.4
7. Any smoking	113	15.7	134	21.3
8. Has 5 or more drinks in 1 day	25	3.5	47	7.5
9. Any drinking	122	16.9	198	31.5
10. Use alcohol with other drugs	68	9.4	119	18.9
11. Drink and drive/ride	141	19.6	250	39.8
12. Don't always wear seat belt	480	66.7	435	69.3
13. Hitchhikes or picks up hitchhikers	30	4.2	18	2.9
14. Don't know how to swim	77	10.7	81	12.9
15. Highly stressed	73	10.1	45	7.2
16. Often feel life not worth living	70	9.7	45	7.2
17. Overweight 20% or more	53	7.4	63	10.0
18. Females--underweight 20% or more	8	2.2	2	0.6
19. Females--not doing breast self-exam	305	83.8	235	73.7
Number of Students	720		628	
Total		1,348		

driving and/or riding (39.8%), drinking alcoholic beverages (31.5%), drinking five drinks or more in a day (7.5%), mixing alcohol and drugs (18.9%), cigarette smoking (21.3%), smoke one pack of cigarettes or more daily (6.4) than the percent of ninth graders (19.6%, 16.9%, 3.5%, 9.4%, 15.7%, and 3.1%, respectively. A higher percent of the ninth grade students (10.1%) reported being highly stressed than the percent of twelfth grade students (7.2%). Also, a higher percent of ninth grade female students (83.8%) were not performing breast self-exam when compared to twelfth grade female students (73.7%). It should be noted that the percentage at risk for selected risk factors increases as students advance academically except the risk factors related to mental health and breast self-exam, where the ninth graders have a higher percent at risk. There was not much difference between the grades in regard to seat belt use, although a higher percent of twelfth grade students (69.3%) reported not always wearing seat belt than the percent of ninth grade students (66.7%). The results of the study revealed progressive increase in risky behaviors as the students progress in grade level. (See Table 48 for other risk factors.)

Risk Factors According to Race

The selected risk factors according to race are presented in Table 49. White students had a higher percent in the following risk factors than nonwhite students: drinking and driving and/or riding (whites--29.6%, nonwhites--24.8%), drinking alcohol (whites--24.6%,

TABLE 49

SELECTED HEALTH RISK FACTORS BY RACE (N = 1348)

Risk Factors	White N	White %	Nonwhite N	Nonwhite %
1. Don't eat from 4 food groups daily	809	68.4	105	63.6
2. Don't eat breakfast at least 5/wkly	630	53.3	115	69.7
3. Don't brush teeth daily	114	9.6	16	9.7
4. Don't know or not fully immunized	294	24.8	36	21.8
5. Not 20 min. aerobic exercise 3/wkly	581	49.1	75	45.4
6. Smoke cigarettes 1 pack + daily	61	5.2	1	0.6
7. Any smoking	234	19.8	13	7.9
8. Has 5 or more drinks in 1 day	70	5.9	2	1.2
9. Any drinking	291	24.6	29	17.6
10. Use alcohol with other drugs	164	13.9	23	13.9
11. Drink and drive/ride	350	29.6	41	24.8
12. Don't always wear seat belt	816	69.0	99	60.0
13. Hitchhikes or picks up hitchhikers	45	3.8	3	1.8
14. Don't know how to swim	108	9.1	50	30.3
15. Highly stressed	107	9.0	11	6.7
16. Often feel life not worth living	104	8.8	11	6.7
17. Overweight 20% or more	99	8.4	17	10.3
18. Females--underweight 20% or more	9	1.5	1	1.2
19. Females--not doing breast self-exam	482	80.6	58	68.2
Number of Students	1183		165	
Total		1,348		

nonwhites--17.6%), drinking five drinks or more in a day (whites--5.9%, nonwhites--1.2%), cigarette smoking (whites--19.8%, nonwhites--7.9%), smoke one pack of cigarettes or more daily (whites--5.2%, nonwhites--0.6%). An equal percent of both races (13.9%) use alcohol with other drugs. A higher percent of white students (9.0%) reported being highly stressed when compared to the percent of nonwhite students (6.7%). In regard to seat belt use, a higher percent of white students (69.0%) reported not always wearing seat belts than the percent of nonwhite students (60.0%). Additionally, a higher percent of the white female students (80.6%) reported not performing breast self-examination than the percent of nonwhite female students (68.2%). The results of the study suggest that an emphasis on substance use/abuse should be directed toward both nonwhite and white students. However, a stronger emphasis on tobacco use should be aimed at white students. (See Table 49 for other risk factors.)

Risk Factors According to Geographical Area

The selected risk factors according to geographical area are presented in Table 50. A higher percent of students from urban areas drink and drive and/or ride and use alcohol with other drugs (30.6% and 15.9%, respectively) than the percent of students from rural areas (27.3% and 11.7%, respectively). Also, a higher percent of students from urban areas (27.9%) drink alcoholic beverages and/or drink five or more drinks in a day (6.9%) than the percent of students from rural areas (19.4% and 3.7%, respectively). Approximately, an equal percent of students from urban (18.2%) and rural

TABLE 50

SELECTED HEALTH RISK FACTORS BY GEOGRAPHICAL AREA (N = 1348)

Risk Factors	Urban N	Urban %	Rural N	Rural %
1. Don't eat from 4 food groups daily	459	66.3	455	69.4
2. Don't eat breakfast at least 5/wkly	413	59.7	332	50.6
3. Don't brush teeth daily	62	9.0	68	10.4
4. Don't know or not fully immunized	156	22.5	174	26.5
5. Not 20 min. aerobic exercise 3/wkly	341	49.3	315	48.0
6. Smoke cigarettes 1 pack + daily	26	3.8	36	5.5
7. Any smoking	126	18.2	121	18.4
8. Has 5 or more drinks in 1 day	48	6.9	24	3.7
9. Any drinking	193	27.9	127	19.4
10. Use alcohol with other drugs	110	15.9	77	11.7
11. Drink and drive/ride	212	30.6	179	27.3
12. Don't always wear seat belt	431	62.3	484	73.8
13. Hitchhikes or picks up hitchhikers	26	3.8	22	3.4
14. Don't know how to swim	55	7.9	103	15.7
15. Highly stressed	75	10.8	43	6.6
16. Often feel life not worth living	73	10.5	42	6.4
17. Overweight 20% or more	57	8.2	59	9.0
18. Females--underweight 20% or more	4	1.2	6	1.8
19. Females--not doing breast self-exam	270	77.8	270	80.4
Number of Students	692		656	
Total		1,348		

areas (18.4%) smoke cigarettes, while a slightly higher percent of students from rural areas (5.5%) smoke one pack or more cigarettes daily than the percent of students from urban areas (3.8%). A higher percent of the students from urban areas (10.8%) reported being highly stressed when compared to the percent of students from rural areas (6.6%). The lack of seat belt use was high for both students from rural and urban areas, but a much higher percent of students from rural areas (73.8%) reported not always wearing seat belt than the percent of students from urban areas (62.3%). Additionally, a higher percent of female students from rural areas (80.4%) were not performing breast self-examination compared to the percent of female students from urban areas (77.8%). Although a higher percent of students from urban areas reported substance use/abuse than the percent of students from rural areas, there were not much differences according to geographical area. (See Table 50 for other risk factors.)

VI. ANALYSIS OF HYPOTHESES

In this section, four research questions were presented and analyzed. The research questions were presented in the form of null hypotheses and tested at the .05 level of significance using the *t*-test (two-tail test).

Null Hypothesis 1

There was no significant difference in the mean health risk scores between ninth and twelfth grade students.

Table 51 presents the results of the *t*-test between ninth and twelfth grade students. Although the mean health risk score of each group placed them in the fair health risk category, the ninth graders' mean health risk score (77.68) was significantly higher than the twelfth graders' mean health risk score (73.84). The probability value was .0001, therefore it was concluded that there was a significant difference between the mean health risk scores of ninth grade and twelfth grade students. Thus, hypothesis 1 was rejected at the .05 level of significance. The result indicated that grade level appears to influence the students' health risk scores, which were based on their health practices. (Refer to Table 48, page 98.)

Null Hypothesis 2

There was no significant difference in the mean health risk scores between female and male students.

The result of the *t*-test between female and male students is presented in Table 52. A probability value of .1156 was calculated applying the *t*-test. The difference between female and male students was not significant at the .05 level of significance, therefore hypothesis 2 was not rejected. The result indicated that gender did not influence the students' health risk scores. In other words, gender had no impact upon the health behaviors practiced by the students.

Null Hypothesis 3

There was no significant difference in the mean health risk scores between white and nonwhite students.

TABLE 51

DIFFERENCE IN MEAN HEALTH RISK SCORES BETWEEN NINTH AND TWELFTH GRADE STUDENTS (N = 1348)

Groups	N	Mean	Std. Dev.	DF	t-Value
Ninth Graders	720	77.68	12.43	1282.2	5.39*
Twelfth Graders	628	72.84	13.56		

*Significant at the .05 level.

TABLE 52

DIFFERENCE IN MEAN HEALTH RISK SCORES BETWEEN FEMALE AND MALE STUDENTS (N = 1348)

Groups	N	Mean	Std. Dev.	DF	t-Value
Females	683	76.45	11.83	1287.8	-1.57
Males	665	75.32	14.28		

In Table 53, the result of the *t*-test between white and nonwhite students is illustrated. The probability value was .0071, therefore it was concluded that there was a significant difference between the mean health risk scores of white and nonwhite students. Although each group's mean health risk score placed them in the fair category, the nonwhite students' mean health risk score (78.25) was significantly higher than the white students' mean health risk score (75.57). Thus, hypothesis 3 was rejected at the .05 level of significance. According to the result, it appears that race does influence the students' health risk scores, which indicates that the white students are practicing more risky health behaviors than the nonwhite students.

Null Hypothesis 4

There was no significant difference in the mean health risk score between students from urban areas and students from rural areas.

Table 54 illustrates the result of the *t*-test between students from urban areas and students from rural areas. A probability value of .8471 was determined in the *t*-test. It was concluded that the difference between students from urban areas and students from rural areas was not significant at the .05 level of significance. Thus, hypothesis 4 was not rejected. According to the result, it appears that geographical areas do not influence the students' health risk scores. There were no significant differences between the health practices of students from rural areas and urban areas.

TABLE 53

DIFFERENCE IN MEAN HEALTH RISK SCORES BETWEEN WHITE AND NONWHITE STUDENTS (N = 1348)

Groups	N	Mean	Std. Dev.	DF	t-Value
Whites	1183	75.57	13.26	227.2	-2.72*
Nonwhites	165	78.25	11.68		

*Significant at the .05 level.

TABLE 54

DIFFERENCE IN MEAN HEALTH RISK SCORES BETWEEN STUDENTS FROM URBAN AND RURAL AREAS (N = 1348)

Groups	N	Mean	Std. Dev.	DF	t-Value
Urban Teens	692	75.96	13.45	1346.0	0.1929
Rural Teens	656	75.82	12.74		

VII. SUMMARY

The analyses and interpretation of the data were presented in this chapter. The data were created by the administration of the "Teen Wellness Check" questionnaire to ninth and twelfth grade Tennessee teens during the school year 1986-87. The data were coded and entered into the Virtual Address Extension (VAX) program at The University of Tennessee Computer Center and analyzed using Statistical Analysis System (SAS). The statistical analyses included computation of the mean, mode, standard deviation, standard error, and z-scores. Chi-square, Kolmogorov-Smirnov one-sample test, and *t*-test were used to test significance of difference. The .05 level of significance was used as the decision rule governing statistical tests.

The study population consisted of 1,348 ninth and twelfth grade students--720 (53.4%) ninth graders, 628 (46.6%) twelfth graders, 683 (50.7%) females, 665 (49.3%) males, 1183 (87.8%) white students, 165 (12.2%) nonwhite students, 656 (48.7%) students from rural areas, and 692 (51.3%) students from urban areas.

Analyses of the data revealed the following results. On the average, Tennessee teens' health practices were categorized into the fair health risk category, based upon their health risk scores. The results of cross tabulations of grade (ninth and twelfth), race (nonwhite and white), and geographical area (rural and urban) with the health risk categories were significant when chi-square was applied. The results of cross tabulation of gender (male and female) with the health risk categories were not significant when chi-square

was applied. The major health risk factors of Tennessee teens were: drinking and driving and/or riding, using alcohol with drugs, drinking alcoholic beverages, cigarette smoking, lack of seat belt use, lack of adequate amounts of exercise, poor nutritional habits, and females not performing breast self-examination. There were significant differences between the mean health risk scores of ninth grade students and twelfth grade students, and of white students and nonwhite students when *t*-test was applied. However, there were no significant differences between the mean health risk scores of male and female students, and of students from rural areas and students from urban areas when *t*-test was applied.

CHAPTER V

SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY

The purpose of the study was to identify health risk factors for teens attending selected Tennessee public schools as either ninth or twelfth graders and to provide baseline data for future school health programs in Tennessee. The study specifically sought to address the following questions:

1. What are the major health risk factors for teens (ninth and twelfth graders) in the state of Tennessee as measured by the "Teen Wellness Check" questionnaire?
2. Are there significant differences for the major health risk factors between ninth and twelfth grade students?
3. Are there significant differences for the major health risk factors between male and female students?
4. Are there significant differences for the major health risk factors between white and nonwhite students?
5. Are there significant differences for the major health risk factors between students from rural and urban areas?
6. What recommendations can be made related to the state-wide health education curriculum framework?

The "Teen Wellness Check," a computerized health risk appraisal, was administered to 1,507 students during the school year 1986-87. The scores of 158 students were eliminated from the

study because they were either in the tenth or eleventh grade. Consequently, a total of 1,348 students were analyzed in the study. The study population consisted of: 720 (53.4%) ninth grade students, 628 (46.6%) twelfth grade students; 683 (50.7%) females, 665 (48.3%) males; 364 (50.6%) ninth grade females, 356 (49.4%) ninth grade males; 319 (50.8%) twelfth grade females, 309 (49.2%) twelfth grade males; 1,183 (87.8%) white students, 144 (10.7%) Black students, 4 (0.3%) Hispanics; 7 (0.5%) Asians/Pacific Islanders, 6 (0.4%) Native American Indians/ Alaskan native, 4 (0.3%) students indicated other for their race identification; 656 (48.7%) students were from rural areas, 692 (51.3%) students were from urban areas.

The primary statistical methods used to describe the students' health risk behaviors were to compute the survey responses in terms of frequencies and percentages. The mean, mode, and standard deviation of the health risk scores were calculated. Tests of significance of difference included chi-square, Kolmogorov-Smirnov one sample test, and _t_ test. The .05 level of significance was used as one of the decision rules governing statistical tests conducted.

II. FINDINGS

Based on the analyses of the data in the study, the following major findings were revealed. The findings were presented for all teens and then categorized according to grade, gender, race, and geographical area.

The following is a breakdown of the results of all the subjects' health risk appraisals according to health risk score, health risk categories, and selected health risk factors:

1. The mean health risk score of the 1,348 Tennessee teens was 75.89 with a standard deviation of 13.10 and a mode of 83.

2. Based on the mean health risk score, the students in the state of Tennessee, on the average, fall into the fair health risk category.

3. The students were categorized into the following health risk categories: 27.7% in the excellent category, 46.5% in the fair category, 18.2% in the risky category, and 7.6% in the hazardous category.

4. Twenty-nine percent of the students drive and/or ride under the influence.

5. Approximately 13.9% of the students use alcohol with other drugs.

6. It was revealed that 23.7% of the students drink alcoholic beverages and 5.3% have five or more drinks in a day.

7. The study revealed that 18.4% of the students smoke cigarettes and 4.6% smoke one pack of cigarettes or more daily.

8. Approximately 8.8% of the students reported that they were highly stressed.

9. It was found that 67.9% of the students do not always wear seat belts.

10. A high percent of the students (67.8%) do not eat from the four basic groups daily.

11. Almost half of the students (48.7%) do not exercise, aerobically, at least three times per week.

12. The majority of the female students (79.1%) were not performing breast self-examination.

Grade

The following are the results of the analyses of the health risk appraisals of ninth and twelfth grade students according to health risk scores, health risk categories, and selected health risk factors:

1. The mean health risk score of ninth grade students was 77.68 with a standard deviation of 12.43 and a mode of 86 while the mean health risk score of twelfth grade students was 73.84 with a standard deviation of 13.56 and a mode of 83. Based on the mean health risk scores, both the ninth graders and twelfth graders, on the average, were categorized into the fair health risk category.

2. The following are the results of cross tabulation of grade (ninth and twelfth) with the health risk categories: for the ninth grade students, 32.1% were in the excellent health risk category, followed by 46.5% in the fair category, 16.1% in the risky category, and 5.3% in the hazardous category. The twelfth grade students were categorized into the following health risk categories: 22.6% in the excellent category, 46.5% in the fair category, 20.7% in the risky category, and 10.2% in the hazardous category.

3. The results of cross tabulation of grade (ninth and twelfth) with health risk categories were significant at the .05 level of significance when chi-square was applied.

4. Twelfth grade students had a higher percent (39.8%) of drinking and driving or riding than the percent (19.6%) of ninth grade students.

5. A higher percent (31.5%) of twelfth grade students drink alcoholic beverages than the percent (16.9%) of ninth grade students.

6. A higher percent (7.5%) of twelfth grade students reported drinking five drinks or more in a day than the percent (3.5%) of ninth grade students.

7. Approximately 18.9% of twelfth grade students mix alcohol and drugs while 9.4% of ninth grade students mix alcohol and drugs.

8. A higher percent (21.3%) of twelfth grade students smoke cigarettes than the percent (15.7%) of ninth grade students.

9. Approximately twice the percent (6.4%) of twelfth grade students smoke one pack of cigarettes or more daily than the percent (3.1%) of ninth grade students.

10. A higher percent (10.1%) of the ninth grade students reported being highly stressed than the percent (7.2%) of twelfth grade students.

11. A higher percent (69.3%) of twelfth graders reported not always wearing seat belt than the percent (66.7%) of ninth graders.

12. A higher percent (83.8%) of ninth grade female students were not performing breast self-examination when compared to the percent (73.7%) of twelfth grade female students.

13. There was a significant difference between the mean health risk scores of ninth grade students and twelfth grade students when the *t*-test was applied.

Gender

The following are the results of the analyses of the health risk appraisals of female and male students according to health risk scores, health risk categories, and selected health risk factors:

1. The mean health risk score of female students was 76.45 with a standard deviation of 11.83 and a mode of 83 while the mean health risk score of male students was 75.32 with a standard deviation of 14.28 and a mode of 86. Based on the mean health risk scores, both the female and male students, on the average, were categorized into the fair health risk category.

2. For the female students, 26.8% were in the excellent health risk category, followed by 48.6% in the fair category, 18.6% in the risky category, and 6.0% in the hazardous category.

3. The male students were categorized into the following health risk categories: 28.6% in the excellent category, 44.4% in the fair category, 17.9% in the risky category, and 9.2% in the hazardous.

4. The results of cross tabulation of gender (male and female) with health risk categories were not significant at the .05 level of significance when chi-square was applied.

5. Approximately 31.7% of the male students drive and/or ride under the influence of alcohol while 26.4% of the female students drive and/or ride under the influence of alcohol.

6. It was found that 17.4% of the male students and 10.4% of the female students use alcohol with other drugs.

7. It was revealed that 9.3% of the male students and 1.6% of the female students drink five or more drinks daily.

8. It was found that 30.5% of the male students and 17.1% of the female students drink alcoholic beverage(s).

9. A higher percent (11.3%) of the female students reported being highly stressed than the percent (6.2%) of male students.

10. A higher percent (5.1%) of the male students reported smoking one pack of cigarettes or more daily than the percent (4.1%) of female students.

11. A higher percent (19.1%) of female students reported any smoking than the percent (17.4%) of male students.

12. A high percent of males (71.3%) and females (74.6%) do not always wear seat belts.

13. There was no significant differences between the mean health risk scores of female and male students when the *t*-test was applied.

Race

This section contains the results of the analyses of the health risk appraisal of nonwhite and white students according to their mean health risk scores, health risk categories, and selected health risk factors:

1. The mean health risk score of nonwhite students was 78.25 with a standard deviation of 11.68 and a mode of 91 while the mean health risk score of white students was 75.57 with a standard deviation of 13.26 and a mode of 83. Based on the mean health risk scores,

both nonwhite and white students, on the average, were categorized into the fair health risk category.

2. For the nonwhite students, 35.2% were in the excellent health risk category, followed by 43.0% in the fair category, 18.2% in the risky category, and 3.6% in the hazardous category.

3. The white students were categorized into the following health risk categories: 26.6% in the excellent category, 47.0% in the fair category, 18.3% in the risky category, and 8.1% in the hazardous category.

4. The results of cross tabulation of race (nonwhite and white) with health risk categories were significant at the .05 level of significance when chi-square was applied.

5. It was found that 29.6% of the white students and 24.8% of the nonwhite students drink and drive or ride.

6. It was revealed that 24.6% of the white students and 17.6% of nonwhite students drink alcoholic beverages.

7. Approximately 5.9% of the white students and 1.2% of the nonwhite students reported drinking five drinks or more in a day.

8. A higher percent (19.8%) of white students smoke cigarettes than the percent (7.9%) of nonwhite students.

9. A higher percent (5.2%) of white students smoke one pack of cigarettes or more daily than the percent (0.6%) of nonwhite students.

10. An equal percent (13.9%) of both races (nonwhite and white) use alcohol with drugs.

11. A higher percent (9.0%) of white students were highly stressed than the percent (6.7%) of nonwhite students.

12. A higher percent (80.6%) of white female students not performing breast self-examination than the percent (68.2%) of nonwhite female students.

13. A high percent of nonwhite students (60.0%) and white students (69.0%) do not always wear seat belts.

14. There was a significant difference between the mean health risk scores of nonwhite and white students when the *t*-test was applied.

Geographical Area

This section contains the results of the analyses of the health risk appraisals of students from rural and urban areas according to their mean health risk scores, health risk categories, and selected health risk factors:

1. The mean health risk score of students from rural areas was 75.82 with a standard deviation of 12.74 and a mode of 79 while the mean health risk score of students from urban areas was 75.96 with a standard deviation of 13.45 and a mode of 83. Based on the mean health risk scores, both teens from rural areas and urban areas, on the average were categorized into the fair health risk category.

2. According to the health risk scores, the students from rural areas were categorized into the following health risk categories: 25.3% in the excellent category, 50.6% in the fair category, 16.9% in the risky category, and 7.2% in the hazardous category.

3. Based on the health risk scores, the students from urban areas were categorized into the following health risk categories: 29.9% in the excellent category, 42.6% in the fair category, 19.5% in the risky category, and 7.9% in the hazardous category.

4. The results of cross tabulation of geographical area (rural and urban) with health risk categories were significant at the .05 level of significance when chi-square was applied.

5. It was revealed that 30.6% of the students from urban areas and 27.3% of students from rural areas drink and drive or ride.

6. It was found that 15.9% of students from urban areas and 11.7% of students from rural areas use alcohol with other drugs.

7. A higher percent (27.9%) of students from urban areas drink alcoholic beverages than the percent (19.4%) of students from rural areas.

8. Almost twice the percent (6.9%) of students from urban areas drink five or more drinks in a day than the percent (3.7%) of students from rural areas.

9. Approximately, an equal percent of students from urban areas (18.2%) and rural areas (18.4%) smoke cigarettes.

10. A slightly higher percent (5.5%) of students from rural areas smoke one pack or more cigarettes daily than the percent (3.8%) of students from urban areas.

11. A higher percent (10.8%) of students from urban areas reported being highly stressed than the percent (6.6%) of students from rural areas.

12. A higher percent (80.4%) of female students from rural areas were not performing breast self-examination than the percent (77.8%) of female students from urban areas.

13. A much higher percent (73.8%) of students from rural areas do not always wear seat belt than the percent (62.3%) of students from urban areas.

14. There was no significant difference between the mean health risk scores of students from rural and urban areas when the *t*-test was applied.

Additional Findings

These findings pertain to the cross tabulation of the health risk categories and the following variables: grade, sex, race, and geographical area. Chi-square was applied to determine whether the results of the cross tabulations were significant at the .05 level of significance.

1. The result of cross tabulation of ninth grade male and female students' scores was significant. A higher percent of ninth grade male students (34.5%) were in the excellent category than the percent of female ninth grade students (29.7%).

2. The result of cross tabulation of twelfth grade male and female students' scores was not significant.

3. The result of cross tabulation of ninth and twelfth grade female students' scores was significant. A higher percent of the ninth grade females (29.7%) were in the excellent category than the percent of twelfth grade female students (23.5%).

4. The result of cross tabulation of ninth and twelfth grade male students' scores was significant. A higher percent of the ninth grade male students (34.5%) were in the excellent category than the percent of twelfth grade male students (21.7%).

5. The result of cross tabulation of white and nonwhite male students' scores was significant. A much higher percent of the nonwhite male students (42.5%) were in the excellent category than the white male students (26.7%).

6. The result of cross tabulation of white and nonwhite female students' scores was not significant.

7. The result of cross tabulation of white male and female students' scores was not significant.

8. The result of cross tabulation of nonwhite male and female students' scores was significant. A much higher percent of nonwhite male students (42.5%) were in the excellent category compared with the percent of nonwhite female students (28.5%).

9. The result of cross tabulation of white and nonwhite rural students' scores was not significant.

10. The result of cross tabulation of white and nonwhite urban students' scores was not significant. For the excellent category, 42.9% of the nonwhite urban students were in this category compared to 27.4% of the white urban students. A much higher percent of the white urban students (9.1%) were in the hazardous category than the nonwhite urban students (1.8%).

11. The result of cross tabulation of urban and rural nonwhite students' scores were significant. A significantly higher

percent of urban nonwhites (42.9%) were in the excellent category than the percent of rural nonwhites (18.9%), but a higher percent of the rural nonwhites (28.3%) were in the risky category than the percent of urban nonwhites (13.4%).

12. The result of cross tabulation of urban and rural white students' scores was significant. There was not much difference between the two groups for the excellent and hazardous categories. For the fair category, 51.1% of the rural white students and 42.8% of the urban white students were in this category. A higher percent of the urban white students (20.7%) were in the risky category than the percent of rural white students (15.9%).

13. The result of cross tabulation of ninth grade white and nonwhite students' scores was not significant.

14. The result of cross tabulation of twelfth grade white and nonwhite students' scores was not significant.

15. The result of cross tabulation of ninth and twelfth grade white students' scores was significant. A significantly higher percent of the ninth grade white students (30.8%) were in the excellent category than the percent of twelfth grade white students (21.7%).

16. The result of cross tabulation of ninth and twelfth grade nonwhite students' scores was significant.

17. The result of cross tabulation of urban and rural female students' scores was not significant.

18. The result of cross tabulation of urban and rural male students' scores was not significant.

19. The result of cross tabulation of rural male and female students' scores was significant. There were not much differences between the groups for the excellent category and the risky category. For the fair category, there was a higher percent of female students from rural areas (52.7%) in this category than the percent of male students from rural areas (48.4%). A higher percent of the male students from rural areas (10.0%) were in the hazardous category than female students from rural areas (4.5%).

20. The result of cross tabulation of urban male and female students' scores was not significant.

21. The result of cross tabulation of ninth and twelfth grade rural students' scores was significant. A higher percent of the rural ninth graders were in the excellent and fair categories (30.4% and 51.8%, respectively) than the rural twelfth graders (20.0% and 49.4%, respectively). A higher percent of the rural twelfth graders were in the risky and hazardous category (20.6% and 10.0%, respectively) than the rural ninth graders (13.4% and 4.5%, respectively).

22. The result of cross tabulation of ninth and twelfth grade urban students' scores was significant. A higher percent of the ninth grade urban students (33.6%) were in the excellent category than the twelfth grade urban students (25.3%).

23. The result of cross tabulation of ninth grade urban and rural students' scores was significant. There was not much difference between the groups regarding the excellent category. Yet, a much higher percent of ninth grade rural students (51.8%) were in the fair category than the percent of ninth grade urban students (41.9%).

24. The result of cross tabulation of twelfth grade urban and rural students' scores was not significant.

25. The result of cross tabulation of white and nonwhite ninth grade female students' scores was not significant.

26. The result of cross tabulation of white and nonwhite twelfth grade female students' scores was significant. There was not much difference between the groups for the excellent category, but a significantly higher percent of nonwhite twelfth grade females (62.0%) were in the fair category than the percent of white twelfth grade females (44.3%). A higher percent of the white twelfth grade females were in the risky and hazardous categories, respectively, 21.9% and 10.4%, than the percent of nonwhite twelfth grade females, respectively, 12.0% and 2.0%.

27. The result of cross tabulation of white and nonwhite ninth grade male students' scores was not significant.

28. The result of cross tabulation of white and nonwhite twelfth grade male students' scores was significant. A higher percent of the nonwhite twelfth grade males (34.3%) were in the excellent category than the percent of white twelfth grade males (20.1%), but a higher percent of the white twelfth grade males (48.2%) were in the fair category than the percent of nonwhite twelfth grade males (28.6%). Additionally, 31.4% of nonwhite twelfth grade males were in the risky category compared to 19.7% of the white twelfth grade males, and more than twice the percent of white twelfth grade males (12.0%) were in the hazardous category than the percent of nonwhite twelfth grade males (5.7%).

29. The result of cross tabulation of white and nonwhite ninth grade urban students' scores was not significant.

30. The result of cross tabulation of white and nonwhite twelfth grade urban students' scores was significant. A higher percent of the urban nonwhite twelfth graders were in the excellent and fair categories (respectively, 36.4% and 52.7%) when compared to the percent of urban white twelfth graders (respectively, 22.9% and 41.5%). A higher percent of the urban white twelfth graders were in the risky and hazardous categories (respectively, 22.9% and 12.7%) when compared to the percent of urban nonwhite twelfth graders (respectively, 10.9% and 0.0%).

31. The result of cross tabulation of white and nonwhite twelfth grade rural students' scores was not significant.

32. The result of cross tabulation of white and nonwhite ninth grade rural students' scores was not significant.

III. CONCLUSIONS

Based upon the findings of the study, the following conclusions were made:

1. Overall, the health of Tennessee teens is fair. Driving and/or riding under the influence of alcohol, substance use/abuse, lack of seat belt use, lack of adequate amount of exercise, and poor nutritional habits were the risk factors most implicated in the subjects' practice of risky health behaviors.

2. The grade of the subjects is a factor regarding the major health risk factors. As students progress in grade, they increase their practice of risky health behaviors.

3. The gender of the subjects appears not to be a factor concerning the practice of risky health behaviors. Both male and female students are practicing risky health behaviors.

4. According to the "Teen Wellness Check" questionnaire, the race of the subjects is a factor regarding the major health risk factors. White students are more likely to engage in risky health behaviors than nonwhite students.

5. It appears, generally, that the geographical area of the subjects is not an influencing factor concerning the major health risk factors. However, geographical area seems to be a factor regarding the health risk categories. Students from urban areas are more likely to practice risky health behaviors than students from rural areas.

IV. RECOMMENDATIONS

Based upon the findings, conclusions, and literature review of the study, the following recommendations were made:

1. Data sets are limited/missing for risk factors for Black and other nonwhite teens; therefore, epidemiological studies are needed on Black and other nonwhite teens in order to compile a data base for these groups.

2. Follow-up study should be conducted to validate/assess changes in health beliefs and behaviors of the ninth grade students.

3. A study that is similar to this research should be conducted, using grades seventh through twelfth in the state of Tennessee to further assess risk behaviors according to grade.

CHAPTER VI

EPILOGUE

I. INTRODUCTION

The purpose of the study, as stated in Chapter I, was to identify major health risk factors of teens attending selected Tennessee public schools as either ninth or twelfth graders and to provide baseline data for future school health programs in Tennessee. The data were collected from 1,348 students through the administration of the "Teen Wellness Check" questionnaire. In this chapter, the researcher is given an opportunity to express observations encountered in the study that go beyond the scope of this research. This chapter encompasses the following divisions: (1) Introduction, (2) Purpose of Teen Health Risk Appraisal (HRA), (3) Comparison to Connecticut Study, (4) Observations about the Study, (5) Significance of the Study, and (6) Recommendations.

II. PURPOSE OF TEEN HRA

Since the introduction of the first HRA by Robbins and Hall in the late 1950s, many HRAs have been developed, including the development of teen HRAs. They range from simple self-scored questionnaires to computer-scored and analyzed reports with extensive data presentations. The first HRA was developed largely out of efforts to make the public aware of their risks of preventable

cancers. Practicing physicians were the major targeted audience for Robbins's original manual to be used as a tool to identify risk factors and to screen their patients. Since that time, the audience has expanded to include nonmedical personnel, health educators, employee groups, and community organizations and also the purpose of HRA has expanded/changed. Thus, the purpose of this section is to address the purpose(s) of teen HRA.

Teen HRA probably has as many uses as users. The major uses include data collection, intervention, raising the participants' health awareness, and health behavior modification. Teen HRAs are sometimes used as a mean for collecting and summarizing epidemiologic data. These instruments provide useful statistics for research and surveillance. They are useful tools for the assessment of risk-taking behaviors. They can also provide risk information on a defined population for a number of preventable diseases and deaths. Surveillance is more for the user's concern to track events than for providing intervention programs.

Teen HRAs have been used as intervention devices for school health program planning, risk reduction programs, and evaluation of curriculum. In other instances, teen HRAs can be used principally as a conscious awareness/raising strategy or "attention getter" to stimulate participation in risk reduction programs or to modify/change risk-taking behaviors. Lastly, teen HRAs have served as behavior modification/health promotion devices. Probably, all HRAs were developed with some hope of directly stimulating health behavior

change of clients/students, but the expectations vary with the users of the instruments. When used as part of a comprehensive health promotion package, HRAs seem to facilitate more behavior change than HRAs used independently. The instruments serve little purpose to the client when used as a "hit-and-run" screening tool with limited opportunity to put new knowledge to use and to modify/change lifestyle.

Again, the questions are: what is the purpose of teen HRA and what audience is served by the purpose? HRAs for the purpose of data collection mainly serve as surveillance tools for epidemiological data, which basically is for the concerns of users such as researchers or epidemiologists. School curriculum supervisors use HRAs to determine the needs for curriculum and evaluate curriculum. This purpose also is more beneficial to the user rather than the client. Health educators use teen HRAs to change behavior. When used as an integral part of a comprehensive health promotion package, it seems to enhance behavior change which is beneficial to the client. Teen HRAs utilized to cause conscious awareness are definitely for the client concerns. The feedback from the HRA raises questions concerning risk factors which in turn stimulates the client to seek help for reducing preventable mortality or morbidity.

Although teen HRAs have many purposes/uses, the actual potential individual benefits should not be overlooked because of concerns with problems of use/misuse. Teen HRAs are very useful as tools of prevention (primary prevention). These instruments can forecast and identify high risk groups for selected risky behaviors. Thus, teen HRAs can provide a system to coordinate preventive strategy for

dealing with risky behaviors of those targeted as "high risk." The first step in this system is to identify those who are at high risk for particular risky behaviors. The next section presents two studies that used a teen HRA, the "Teen Wellness Check" questionnaire, to identify groups at risk for selected risky behaviors.

III. COMPARISON TO CONNECTICUT STUDY

An investigation similar to the Tennessee Teen Wellness Check Project was conducted in Connecticut schools in 1985 and again in 1986. The data were generated through the administration of the "Teen Wellness Check" questionnaire to 14,127 students in grades seventh through twelfth (DeMusis and Dewey, 1987).

In this section, comparison of some of the findings of the Connecticut study and this study (Tennessee Teen Wellness Check Project) will be presented. The comparison will focus on seven risk behaviors as they are distributed across grade, sex, race, and highest grade expected. The risk behaviors include: non-exercisers, cigarette smoking, drinking alcohol, drive or ride under the influence of alcohol, use alcohol with other drugs, no close family or friends to turn to when troubled, and often feeling life is not worth living. Also, the percent of scores in the risky or hazardous health risk categories (scores less than 70) will be compared.

Grade

Table 55 presents the percentage of ninth and twelfth graders by risk behaviors for Connecticut teens and Tennessee teens. In the

TABLE 55

PERCENTAGE RISK BEHAVIORS BY GRADE

	Connecticut		Tennessee	
	9th	12th	9th	12th
1. Risky/hazardous	17.1	37.1	21.4	30.9
2. Non-exercisers	16.9	32.1	41.8	56.5
3. Cigarette smokers	14.9	25.9	15.7	21.3
4. Drink alcohol	26.1	48.9	16.9	31.5
5. Drink and drive/ride	17.0	43.9	19.6	39.8
6. Mix alcohol/drugs	11.4	28.4	9.4	18.9
7. No family/friends	6.6	6.4	5.2	3.5
8. Often feel life not worth living	9.0	8.7	9.7	7.2
Total Respondents	4,544	1,056	720	628
	(N = 5,600)		(N = 1,348)	

Connecticut study, it was found that as students advanced in grades, the percent at risk increased for all behaviors except those related to mental health, where the level remained fairly constant. Similarly, results were reported for Tennessee teens except for mental health, where the percent at risk slightly decreased as students advanced academically. It must be noted that a much higher percent of Tennessee teens (ninth grade--41.8%, twelfth grade--56.5%) were classified as non-exercisers than Connecticut teens (ninth grade--16.9%, twelfth grade--32.1%). These data indicate that the schools in Tennessee need to increase the emphasis and provide opportunities for students' participation in aerobic exercise.

Gender

The analysis depicted in Table 56 looks at differences in risk behaviors according to gender. For Connecticut, approximately an equal percentage of each sex scored in the risky or hazardous category (score below 70). However, for Tennessee, a higher percent of the male students (27.1%) scored in the risky or hazardous category than the percent of females (24.6%). Male students from Tennessee and Connecticut had a higher percentage in drinking alcohol, mixing alcohol and drugs, and having no family or friends to turn to when troubled. Also, a higher percent of Tennessee male students drive and/or ride under the influence of alcohol than the percent of females whereas in Connecticut approximately an equal percent of female and male students drink and drive or ride. Female students

TABLE 56

PERCENTAGE RISK BEHAVIORS BY GENDER

	Connecticut		Tennessee	
	Males	Females	Males	Females
1. Risky/hazardous	20.0	19.5	27.1	24.6
2. Non-exercisers	13.0	26.2	39.3	57.7
3. Cigarette smokers	13.6	17.9	17.4	19.1
4. Drink alcohol	33.1	26.9	30.5	17.1
5. Drink and drive/ride	21.4	22.2	31.7	26.4
6. Mix alcohol/drugs	15.7	13.6	17.4	10.4
7. No family/friends	7.4	4.4	6.0	3.1
8. Often feel life not worth living	6.4	10.8	5.7	11.3
Total Respondents	6,682	7,445	665	683
	(N = 14,127)		(N = 1,348)	

from both Connecticut and Tennessee had a higher percentage in non-exercising, cigarette smoking, and often feeling life was not worth-living.

Race

Table 57 presents percent of risk behaviors by race. The Tennessee sample size of Hispanics, Asians, Native Americans, and others is very small, and probably the risk factors are nonrepresentative of these races, therefore analysis of risk behaviors by race will be between white and Black students. White teens from both Connecticut and Tennessee had a much higher percent at risk for cigarette smoking and drinking alcohol than Black teens. Also, white teens from Connecticut had a higher percentage for non-exercising and driving or riding under the influence of alcohol and mixing alcohol with drugs, but there was not much difference between whites and Blacks from Tennessee in regard to non-exercising, drinking and driving or riding, and mixing alcohol with drugs. There was not much difference between white teens and Black teens from Connecticut and Tennessee concerning risk behaviors related to mental health. In addition, a higher percentage of white teens from Connecticut and Tennessee scored in the risky or hazardous category than the percentage of Black teens.

Highest Grade Expected

Table 58 presents an analysis of the difference in percent of risk behaviors of those not expecting to finish twelfth grade,

TABLE 57

PERCENTAGE RISK BEHAVIORS BY RACE

	Connecticut		Tennessee	
	White	Black	White	Black
1. Risky/hazardous	21.2	13.1	26.4	22.9
2. Non-exercisers	20.5	17.0	49.1	48.0
3. Cigarette smokers	17.5	9.1	19.8	7.0
4. Drink alcohol	33.7	15.9	24.6	17.4
5. Drink and drive/ride	24.4	12.2	29.6	27.1
6. Mix alcohol/drugs	16.5	7.4	13.9	14.6
7. No family/friends	5.1	6.2	4.2	6.3
8. Often feel life not worth living	8.0	10.3	8.8	6.9
Total Respondents	10,593	1,751	1,183	144
	N = 14,127)		(N = 1,327)	

TABLE 58

PERCENTAGE RISK BEHAVIORS BY HIGHEST GRADE EXPECTED TO ATTAIN

	Connecticut			Tennessee		
	<12th	12th	College	12th	12th	College
1. Risky/hazardous	40.4	35.5	15.8	44.4	36.4	20.2
2. Non-exercisers	25.4	25.5	18.7	52.2	53.4	46.6
3. Cigarette smokers	31.1	29.6	12.6	34.4	27.5	13.4
4. Drink alcohol	39.3	36.2	28.1	26.7	26.3	22.5
5. Drink and drive/ride	30.4	27.1	20.4	40.0	32.2	26.8
6. Mix alcohol/drugs	28.2	22.9	12.3	22.2	16.7	12.0
7. No family/friends	33.2	8.4	5.1	11.1	4.5	3.9
8. Often feel life not worth living	17.8	13.3	7.4	11.1	11.0	7.4
Total Respondents	720	1,913	11,494	90	335	923
	(N = 14,127)			(N = 1,348		

those expecting to complete twelfth grade, and those who expect to graduate from college for both Connecticut teens and Tennessee teens. For all risk behaviors except non-exercising and risky/hazardous category, those (both Connecticut and Tennessee teens) expecting higher academic attainment had a lower percent at risk for risky behaviors. For Tennessee, the risk of non-exercising was slightly higher for those expecting to finish twelfth grade than for those not expecting to complete twelfth grade. It must be noted that a much higher percentage of students from Tennessee were non-exercisers than the percentage of students from Connecticut. Also, the largest difference was found between those who expected to graduate from college and those who did not expect to graduate from college.

Summary

In comparing results of these two studies, some generalizations can be made about adolescents (ninth graders and twelfth graders) in regard to selected health risk behaviors as measured by the "Teen Wellness Check" questionnaire. Both studies were statewide (cross-sectional studies) projects, wherein students across the states were surveyed. An interesting feature of this comparison is that the studies were conducted in two distinctly different regions of the United States (Southeast and Northeast). Yet, the findings of both studies were very similar.

As a result of comparing the two studies, the following generalizations were made for Connecticut teens and Tennessee teens at the ninth and twelfth grade levels:

1. As students progress in grades, there is an increase in risky behaviors, therefore there is a need for early and consistent school health education.

2. Males have the highest percentage of alcohol drinkers, mixing alcohol and drugs, and having no family or friends to turn to when troubled, therefore school health education efforts should be concentrated in these areas for males.

3. Females have the highest percentage in non-exercising, cigarette smoking, and often feeling life was not worth living, and school health education efforts should be targeted for females in these areas.

4. White teens are more likely than Black teens to practice risky behaviors such as cigarette smoking, drinking alcohol, and drive or ride under the influence of alcohol. Special emphasis should be placed upon these areas for white teens, while other risk areas probably should be targeted for Black teens.

5. Students expecting higher academic attainment (i.e., graduating from college) are less likely to practice risky behaviors, therefore it seems likely special school health education efforts should be targeted for non-college bound students.

IV. OBSERVATIONS ABOUT THE STUDY

Limitation of the "Teen Wellness Check" Questionnaire

Health Hazard/Health Risk Appraisal (HHA/HRA) is a health promotion technique that assesses risk factors for premature death

or morbidity and encourages the adoption of positive health behaviors. HRAs appear to be aimed primarily toward white, middle-class Americans. For that reason HRAs have been criticized in the literature for not also targeting other populations (e.g., Blacks, Hispanics, Native Americans, and teenagers) at greatest risk for premature morbidity and mortality (Wagner et al., 1982; Moriarty, 1985; and Rowley, Mills, Kellum, and Avery, 1985). In 1978, the first health risk appraisal for use with teenagers was developed by the Florida Cooperative Extension Service (Moody and Rienzo, 1981). Subsequently, other health risk appraisals have been developed for teenagers, including the "Teen Wellness Check" (TWC) (Goulding and Peterson, 1983; Moody and Moriarty, 1983; and Rhode Island Department of Health, 1984).

The "Teen Wellness Check" faces some of the same criticism as other HRAs; that is, it seems to be racially biased. It appears to be more of a valid indicator of risk factors present among white middle and upper class adolescents than for black teens and other minority teens. One of the main problems with the TWC questionnaire is that it does not include questions that would elicit responses for the identification of risk factors that are the major causes of mortality and morbidity for Black and other nonwhite teens. As a result of using TWC, white teenagers appear to be at much greater risk for risky behaviors than nonwhite teenagers.

Using the TWC, Marciano (1985) reported that in the state of Rhode Island white middle and upper class suburban students were the

ones with serious risk factors for dangerous lifestyle rather than inner-city students and minority students. Similar results were reported in the pilot test for this study, using the TWC, it was reported that inner-city black students were at less risk than white suburban students for risky behaviors. In this study, it was concluded that white students were more likely than nonwhite students to practice risky behaviors, particularly for substance abuse/misuse. Based upon these results, the assumption is that nonwhite teens do not practice risky behaviors. Quite the contrary, nonwhite teens have a different set of risk factors than white middle and upper class teens. The leading causes of death for white teens and nonwhite teens (particularly Blacks) are different.

Homicide is the leading cause of death for Black males between the ages of 15 and 44, and for Black females between the ages of 15 and 24. In 1980, the lifetime chance of a white person becoming a victim of homicide was 1 in 240; for Blacks and other nonwhites, the chance was 1 in 47. Further, in 1983, Black males had a 1 in 21 lifetime chance of becoming a homicide victim whereas for white males the chance was 1 in 131. Additionally, Black females had a 1 in 104 lifetime chance of becoming a homicide victim, and the chance for white females was 1 in 369 (Task Force on Black and Minority Health, 1986).

Homicide or potential violent crimes are related to many factors, which include: availability or access of weapons, overcrowded and substandard housing, high employment, broken homes, working

mothers, low levels of education and vocational skills, anti-social and violent behavior, and high population density. The TWC does not include any questions that elicit responses for risk factors for homicide such as overcrowded and inadequate housing, availability or access of weapons, and violent interpersonal characteristics. Homicide now is considered a public health problem. If the TWC is going to be used as a health promotion tool, particularly with Blacks and other nonwhites, it must include questions that would identify those at risk for homicide.

Drug abuse is also a major health problem for Blacks and other nonwhites. Drug use is generally higher in urban areas than in suburban or rural areas. Nonwhites tend to reside in inner-city areas, therefore they may be at greater risk of drug abuse and the negative social and health consequences associated with drug abuse. The health consequences of drug abuse are probably greater for nonwhites than whites because of the route used to administer the drugs. Generally, nonwhites are more involved in the intravenous use of drugs which places them at an increased risk of infection from hepatitis B virus (potetially fatal) and acquired immune-deficiency syndrome (AIDS). The TWC does not include any questions that singularly address the use of drugs (Task Force on Black and Minority Health, 1985).

Not only is the TWC racially biased, but it does not contain enough pertinent questions related to suicide. There are basically two questions that somewhat assess the potential risk of suicide: (#37--In the past six months, have you had feelings that life wasn't

worth living? and #38--Do you have friends or relatives that you can turn to for help when something is troubling you?). With the increase in suicide among adolescents and being the third leading cause of death for this group, the questions for eliciting risk factors for potential suicide should be more direct, such as: Have you had thoughts about or attempted suicide in the last year? Other areas not adequately represented or covered, specifically, are: sexuality, sexually transmitted diseases including AIDS.

In summary, the TWC as defined now, does not adequately identify risk factors that are prevalent among Black teens and other nonwhite teens. The instrument needs major modifications before it can serve as an useful tool for identifying risk factors and encourage health enhancing behaviors among teenagers, particularly Black and other nonwhite teens.

Strengths and Weakness of the Study

One of the real strengths of this study is data collection. The data were collected with the use of a microcomputer program, which included a card reader, and an eight-minute instructional videotape. The videotape, professionally produced, was utilized to standardized instructions to the students participating in the study. The following information was provided by the videotape: purpose of the study, the agencies involved, defined "health risk," informed the students how to complete the "Teen Wellness Check," and assured the students their anonymity and confidentiality.

The card reader (scanning device) was a very important feature of data collection in this study because of its ability to provide confidentiality, particularly on information that is sensitive to adolescents. This study sought to gather valid information on current knowledge and behaviors regarding health risk factors among adolescents by using a self-reported health risk behaviors questionnaire. One of the major concerns of self-reported data pertaining to health habits is validity. As stated, an advantage to using the card reader to collect data is its ability to provide maximum confidentiality, which increases the chance of gathering data that are valid.

The card reader works by the students marking their responses to the 46 lifestyle questions of TWC onto a mark sensing card with a number two pencil. "The card is immediately fed into a card reader (scanner) which in a micro-second reads the card, activates a computer which prints a lifestyle profile within 30 seconds" (Marciano, p. 14, 1985). The students' individualized profiles are confidential and contain no identification. Use of the card reader and videotape in data collection are the real strengths of this study, but the study has weakness also.

The major weakness of the study was no follow-up and behavioral counseling on the data generated by the students' responses were provided for the students. The only type of follow-up that was given was a booklet entitled, The Way to Wellness for Teens. These booklets were given to the students as a resource to all of the major risk

factors. Better follow-up is, indeed, needed. "The use of HRAs is most appropriate in settings where students receive long-term, comprehensive health education" (Petosa et al., p. 54, 1986). Using HRAs as "hit-and-run" screening tools provide limited opportunities for students to put new knowledge to use in modifying/changing risky behaviors.

V. SIGNIFICANCE OF THE STUDY

This study is the first, to the knowledge of the researcher, systematic study using the "Teen Wellness Check" program that was conducted in Tennessee to assess adolescents health issues. One of the most important aspects of this study is that it provides baseline data for future school education programs in Tennessee. Thus, the school health education programs will be based on data generated from Tennessee adolescents rather than extrapolation from national data concerning adolescents health needs. Further, the data could be useful to the teacher in planning learning experiences directed at addressing health implications of risky behaviors for targeted population. The data are also useful to school administrators for curriculum development of expansion. Additionally, the data provide support for the need of health education programs in the schools.

Another important feature of the study is that the "Teen Wellness Check" program provides collective data that may help the teacher/health educator target high-risk groups for specific health

risk behaviors; for instance, females may need special emphasis on mental health. In order to be more responsive to the needs of the students, the school health program should focus on the main health behaviors that most influence the health of students.

Last, a very important aspect of the study is that this study, unlike many studies, did not just collect data from the subjects but were given something tangible (e.g., a computer printout with detailed individualized advisory health messages in regard to each participant's health behavior). Johnathan Fielding has summed it up best by stating: "For the individual, health risk appraisal provides a permanent document with personalized information that can be taken home, referred to at will, discussed with family, and used to track progress (or lack of it) in ameliorating health risks over time" (Fielding, p. 338, 1982).

Perhaps the greatest value of the existing study is to provide convincing documentation to support the unmet health needs of adolescents in our society. Future studies need to focus on how best to address primary prevention methods based upon predictive models which identify those adolescents at the highest risk. The Tennessee and Connecticut studies demonstrate the application of microcomputer technology in its early developmental stage. Hopefully, other researchers will be challenged to move forward as a result of these findings.

VI. RECOMMENDATIONS

Based upon the results of this study, recommendations were made in regard to the state health curriculum framework for high schools in the following areas: substance use/abuse, highway safety, aerobic exercise, nutrition, mental health, and family life education.

Substance Use/Abuse

Tennessee data. According to the study, 23.7% of Tennessee teens drink alcoholic beverages, 13.9% use alcohol with other drugs, and 18.4% smoke cigarettes. A higher percent of white students (19.8%) smoke cigarettes than the percent (7.9%) of nonwhite students.

Goal. In the Tennessee Health Curriculum Framework, the following goal was stated with regard to substance use/abuse: "The student will learn that drug use may be useful, harmful or non-essential for a healthy, happy life" (Health Curriculum Framework, 1985, p. 27).

Recommendations.

1. Health education programs should increase their emphasis on substance use/abuse.
2. Stronger emphasis on tobacco use/abuse should be aimed at white students.

Safety

Tennessee data. Twenty-nine percent of the students drive or ride under the influence of alcohol and 67.9% do not always wear seat a seat belt. A higher percent of students from rural areas (73.8%) do not always wear seat belts than the percent (62.3%) of students from urban areas.

Goal. In the Tennessee Health Curriculum Framework, the following goal was stated with regard to safety: "The student will recognize that accidents generally result from a combination of human error and environmental factors, and that proper knowledge and skills can lead to safer lives" (Health Curriculum Framework, 1985, p. 27).

Recommendations.

1. Health education programs should increase their emphasis in highway safety.
2. Stronger health education efforts should be directed toward dispelling myths concerning seat belt use and a stronger emphasis should be aimed at students from rural areas.

Aerobic Exercise

Tennessee data. Approximately 48.7% of the students do not perform aerobic exercise at least three times weekly.

Goal. In the Tennessee Health Curriculum Framework, the following goal was stated with regard to exercise: "They will recognize

that appearance, health, and fitness are interrelated and dependent upon the degree to which personal health needs are met" (Health Curriculum Framework, 1985, p. 27).

Recommendation.

1. Health education programs need to increase their emphasis and provide opportunities for students' participation in aerobic exercise.

Nutrition

Tennessee data. Approximately 67.8% of Tennessee teens do not eat from the four basic food groups daily, and 55.3% do not eat breakfast at least five times weekly.

Goal. In the Tennessee Health Curriculum Framework, the following goal was stated with regard to nutrition: "The student will know that food selection and eating patterns are determined by social, psychological, environmental, economic, and cultural factors" (Health Curriculum Framework, 1985, p. 27).

Recommendation.

1. Health education programs should increase their emphasis on the importance of eating from the four basic food groups daily and eating breakfast daily.

Mental Health

Tennessee data. The study revealed that 8.8% of Tennessee teens were highly stressed, and 8.5% often felt life not worth living.

However, a higher percent of the female teens were highly stressed and often felt life not worth living (11.3% and 11.3%, respectively) than the percent of male teens (6.2% and 5.7%, respectively).

Goal. In the Tennessee Health Curriculum Framework, the following goal was stated with regard to mental health: "The student will know that each person is unique and special and has many good qualities" (Health Curriculum Framework, 1985, p. 27).

Recommendation.

1. Stronger health education efforts in the area of mental health should be directed toward female students.

Family Life Education

Tennessee data. Approximately 79.1% of Tennessee female teens were not performing breast self-examination.

Goal. In the Tennessee Health Curriculum Framework, the following goal was stated with regard to family life education: "The student will understand the importance of refraining from sexual activity until mature and capable of undertaking commitments and family responsibilities" (Health Curriculum Framework, 1985, p. 27).

Recommendation.

1. The family life education program needs to be expanded to include information, demonstration, and practice sessions on breast self-examination for females.

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APPENDIXES

APPENDIX A

APPENDIX A

TEEN WELLNESS CHECK

PLEASE ANSWER EVERY QUESTION **MARK ANSWERS ON CARD**

1 Are you

Male ( ) Female ( )

2 Your age is

13 or under ( ) 14 ( ) 15 ( )
16 ( ) 17 ( ) 18 or over ( )

3 What do you consider your race/ethnic group to be?

(A) White (non-Hispanic origin)
(B) Black (Afro-American origin)
(C) Hispanic (D) Asian or Pacific Islander
(E) Native American Indian or Alaskan native (F) Other

4 What grade are you in now?

7th ( ) 8th ( ) 9th ( )
10th ( ) 11th ( ) 12th ( )

5 What is the highest grade you plan to complete?

7th ( ) 8th ( ) 9th ( ) 10th ( )
11th ( ) 12th ( ) College ( )

6. Has a blood relative (parent, grandparent, brother, or sister) had either a heart attack, a stroke, high blood pressure, or diabetes before the age of 60?

(A) Yes (B) No (C) Don't know

7 How would you describe your body frame?

(A) Largeboned (B) Average (C) Smallboned

8 How tall are you (with shoes — one inch heels)?

(A) 4'9" or under (B) 4'10" - 4'11" (C) 5' - 5'1"
(D) 5'2" - 5'3" (E) 5'4" - 5'5" (F) 5'6" - 5'7"
(G) 5'8" - 5'9" (H) 5'10" - 5'11" (I) 6' - 6'1"
(J) 6'2" - 6'3" (K) 6'4" - 6'5" (L) 6'6" or over

9 What is your weight? (wearing indoor clothes)

(A) 89 lbs. or less (B) 90 to 99 (C) 100 to 109
(D) 110 to 119 (E) 120 to 129 (F) 130 to 139
(G) 140 to 149 (H) 150 to 159 (I) 160 to 169
(J) 170 to 179 (K) 180 to 189 (L) 190 to 199
(M) 200 to 209 (N) 210 to 219 (O) 220 to 229
(P) 230 lbs. or more

10 How many days in a typical week do you eat breakfast?

(A) Every day (B) 5 or 6 days a week
(C) 2 to 4 days a week (D) 1 day or none

11 How many days in a typical week do you eat foods from each of the four food groups?

The four food groups are

1) Fruits and vegetables;
2) breads, grains and/or cereals;
3) milk or milk products;
4) meat, fish, or plant proteins?

I eat something from each of these four food groups

(A) Every day (B) 5 or 6 days a week
(C) 2 to 4 days a week (D) 1 day or none

12 How often do you snack on foods like pastries, candy, sweets, soft drinks, or other sugary foods?

(A) Daily (B) At least 3 times a week
(C) Seldom (D) Never

13 How often do you brush your teeth?

(A) Daily (B) At least 3 times a week
(C) Seldom (D) Never

14 How often do you use dental floss on your teeth and gums?

(A) Daily (B) At least 3 times a week
(C) Seldom (D) Never

15. Have you had your teeth checked and/or cleaned at a dentist's office or clinic in the past 12 months?

Yes ( ) No ( )

16 Have you been immunized (received shots) to protect you against measles and German measles (rubella)?

(A) Yes, both (B) Yes, one (C) Neither (D) I don't know

17 How often do you walk at least one mile without stopping?

(A) Daily (B) At least 3 times a week (C) Seldom (D) Never

18 Aerobic exercise is any physical activity that greatly increases both heart rate and breathing. Aerobics can include exercising, jogging, swimming, jumping rope, cross-country skiing, brisk walking, or other strenuous activities. How often do you get at least 20 minutes of non-stop aerobic exercise?

(A) Daily (B) At least three times a week (C) Once or twice a week
(D) Seldom (E) Never

19 How often do you participate in recreational activities — such as bowling, golf, tennis, basketball, softball, dancing, or similar activities?

(A) Daily (B) At least three times a week (C) Once or twice a week
(D) Seldom (E) Never

20 How many cigarettes (tobacco) do you smoke?

(A) None, I have never smoked (B) None, I quit smoking
(C) A pack or less per week
(D) More than a pack per week but less than a pack per day
(E) 1 pack per day (F) Between 1 and 2 packs per day
(G) 2 or more packs per day

21 If you are a cigarette smoker, do you plan on quitting some day?

(A) I do not smoke
(B) No, I do not plan on quitting
(C) Yes, I plan to quit today or in the very near future
(D) Yes, I plan to quit before I get out of high school
(E) Yes, I plan to quit before I turn 21 years old
(F) I will only quit if forced to by illness or disease

22 Does marijuana smoke contain more cancer-causing agents than tobacco smoke?

Yes ( ) No ( )

23 In a typical week, what is the most alcohol you drink in any one day? (A drink of alcohol is either 12 oz. of beer, a 5 oz. glass of wine, or a 1½ oz. shot of hard liquor) In a typical week, the most I drink in any one day is

(A) None. I do not drink (B) 1 or 2 drinks in one day
(C) 3 or 4 drinks in one day (D) 5 or 6 drinks in one day
(E) 7 or 8 drinks in one day (F) 9 or 10 drinks in one day
(G) 11 or more drinks in one day

24 Is the abuse of alcohol (a depressant) or any other drug dangerous?

Yes ( ) No ( )

25. Do you ever use alcohol with other drugs?

(A) No I don't (B) Yes, often
(C) Yes, sometimes (D) Yes, but very seldom

26. Do you ever drive under the influence of alcohol or drugs — or ride with a driver who is?

(A) No I don't (B) Yes, often
(C) Yes, sometimes (D) Yes, but very seldom

27 How often do you use seatbelts when you drive or ride in a car?

(A) Always or nearly always (B) Sometimes (C) Seldom (D) Never

28. When driving a car, do you ever exceed the speed limit by more than 10 miles per hour?

(A) Not driving yet
(B) Never exceed speed limit by 10 mph
(C) Rarely exceed speed limit by 10 mph
(D) Sometimes exceed speed limit by 10 mph
(E) Often exceed speed limit by 10 mph

29 If you ride a motorcycle or moped, do you wear a helmet?

(A) Don't ride a motorcycle/moped (B) Never wear a helmet
(C) Rarely wear a helmet (D) Sometimes wear a helmet
(E) Always wear a helmet

30 When walking or jogging on a road, which side of the road do you walk or jog on?

(A) Facing on-coming traffic
(B) In same direction as traffic
(C) Either side

31 When walking, jogging or riding a bike after dark do you wear light-colored or reflective clothing or have reflectors on your bike?

(A) No (B) Yes, sometimes
(C) Yes, often or always (D) I don't walk, jog/ride a bike after dark

32 Do you have a smoke detector in your home or apartment?

(A) No (B) Yes, and I'm sure that it works
(C) Yes, but it may not work (D) I don't know

33 Do you ever hitchhike or pick up hitchhikers?

(A) No (B) Yes, often
(C) Yes, sometimes (D) Yes, but very seldom

34 Do you know how to swim or stay afloat in water that is over your head?

Yes ( ) No ( )

35 Have you lost more than five pounds in the past few months without dieting?

Yes ( ) No ( )

36 Do you usually get enough sleep and feel rested in the morning?

(A) Yes, usually (B) Yes, sometimes (C) No

37 In the past six months, have you had feelings that life wasn't worth living?

(A) Yes, often (B) Yes, sometimes
(C) Yes, rarely (D) No I haven't

38 Do you have friends or relatives that you can turn to for help when something is troubling you?

(A) Yes, usually (B) Yes, sometimes (C) No

39. Can sexual intercourse even once, without effective birth control, result in pregnancy?

(A) Yes (B) No (C) I'm not sure

40 Will sexual activity with several partners increase a person's chances of getting sexually transmitted diseases (STD's)? Sexually transmitted diseases are sometimes called veneral diseases (V.D.).

(A) Yes (B) No (C) I'm not sure

MALES STOP! You have completed the appraisal. Thank you.

FEMALES please continue.

FEMALES ONLY SHOULD ANSWER THESE LAST SIX QUESTIONS .....

41 Do you examine your breasts each month to detect lumps?

Yes ( ) No ( )

42 Has your mother or sister had a breast removed or an operation on her breast?

(A) Yes (B) No (C) I don't know

43 Has your mother or sister had a hysterectomy (uterus removed)?

(A) Yes (B) No (C) I don't know

44 If you've started having menstrual periods, do they ever last for more than 10 days at a time?

(A) I've not started having periods yet
(B) Yes, my periods have lasted for more than 10 days
(C) No, I've not had a period last for more than 10 days

45 Do you know what caused your period to last more than 10 days?

(A) Does not apply (B) Yes (C) No

46 Are women who take birth control pills and smoke cigarettes at an increased risk of blood clotting?

(A) Yes (B) No (C) I don't know

You have completed the Wellness Check health risk assessment questionnaire. THANK YOU!

State Form 11214
3BHCS-139
12-85

WC2 HEB

WELLNESS CHECK was developed by the Rhode Island Department of Health

TEEN WELLNESS CHECK

Please mark answers clearly and press firmly with your No. 2 pencil. Thank you

MARK ANSWERS BELOW

1	M		F							
2	13		14		15					
	16		17		18					
3	A		B		C					
	D		E		F					
4	7th		8th		9th					
	10th		11th		12th					
5	7th		8th		9th					
	10th		11th		12th		COLLEGE			
6	A		B		C					
7	A		B		C					
8	A		B		C		D		E	
	F		G		H		I		J	
	K		L							
9	A		B		C		D		E	
	F		G		H		I		J	
	K		L		M		N		O	
	P									
10	A		B		C		D			
11	A		B		C		D			
12	A		B		C		D			
13	A		B		C		D			
14	A		B		C		D			
15	YES		NO							
16	A		B		C		D			
17	A		B		C		D			
18	A		B		C		D		E	
19	A		B		C		D		E	
20	A		B		C		D		E	
	F		G							
21	A		B		C					
	D		E		F					
22	YES		NO							
23	A		B		C		D		E	
	F		G							
24	YES		NO							
25	A		B		C		D			
26	A		B		C		D			
27	A		B		C		D			
28	A		B		C		D		E	
29	A		B		C		D		E	
30	A		B		C					
31	A		B		C		D			
32	A		B		C		D			
33	A		B		C		D			
34	YES		NO							
35	YES		NO							
36	A		B		C					
37	A		B		C		D			
38	A		B		C					
39	A		B		C					
40	A		B		C					

FOR FEMALES ONLY

41	YES		NO							
	A		B		C					
42	A		B		C					
43	A		B		C					
44	A		B		C					
45	A		B		C					

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APPENDIX B

APPENDIX B

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*****************************************************************************
*                        WELLNESS CHECK FOR TEENAGERS                       *
*          COURTESY DEPT HLS, UTK, DR. JACK PURSLEY (615-974-5041)          *
*****************************************************************************

  * * * *  YOUR SCORE ON THE HEALTH RISK APPRAISAL IS  96  OUT OF A POSSIBLE 100 POINTS.
  * * * *  YOUR SCORE PLACES YOU IN THE FOLLOWING HEALTH RISK CATEGORY:  ——>>  EXCELLENT  <<----

YOU SCORED WELL IN THE FOLLOWING AREAS ON THE QUESTIONNAIRE:


 * —>  DIET   DENTAL HEALTH   IMMUNIZATIONS   EXERCISE   SMOKING   ALCOHOL   AUTO SAFETY  <--  *

YOU SHOULD BE PROUD OF THE WAY YOU TAKE CARE OF YOURSELF IN THESE CATEGORIES.  IF YOU WOULD LIKE INFORMATION TO HELP YOU TO MAINTAIN
OR FURTHER IMPROVE THESE GOOD HEALTH HABITS, PLEASE REFER TO 'THE WAY TO WELLNESS FOR TEENS' BOOKLET YOU RECEIVED.


 ——>> NO MATTER HOW YOU ANSWERED THE QUESTIONS ABOUT DRUGS AND SEXUALITY, EVERYONE IS RECEIVING THE FOLLOWING MESSAGES:  <<----

 * BESIDES MARIJUANA'S CANCER-CAUSING AGENTS, YOU SHOULD KNOW THAT MARIJUANA USE CAN AFFECT YOUR THINKING, MEMORY, AND
CONCENTRATION.  IT CAN LOWER MALE HORMONES IN BOYS AND FEMALE HORMONES IN GIRLS, WHICH MAY AFFECT YOUR PHYSICAL OR SEXUAL
DEVELOPMENT.  IT CAN INTERFERE WITH DRIVING ABILITY AND COORDINATION.  FOR MORE INFORMATION READ PAGE 18 OF 'THE WAY TO
WELLNESS FOR TEENS.'

 * ALCOHOL CAN BE A DANGEROUS DRUG.  ABUSE OF MANY KINDS OF DRUGS CAN LEAD TO PERMANENT PHYSICAL AND MENTAL DAMAGE AND/OR
ADDICTION.  OVERDOSES OF SOME DRUGS CAN AND DO KILL.  SNIFFING OR INHALING SUBSTANCES IS ESPECIALLY DAMAGING AND DEADLY.
READ PAGE 14 OF 'THE WAY TO WELLNESS FOR TEENS.'

 * SEXUAL INTERCOURSE —EVEN ONCE-- WITHOUT EFFECTIVE BIRTH CONTROL CAN LEAD TO PREGNANCY.  READ PAGE 20 OF 'THE WAY TO
WELLNESS FOR TEENS.'

 * A PERSON MAY HAVE A SEXUALLY TRANSMITTED DISEASE (STD) AND NOT KNOW IT UNTIL PERMANENT DAMAGE IS DONE.  YOU SHOULD KNOW
THAT PERSONS WHO ARE SEXUALLY ACTIVE WITH DIFFERENT PARTNERS SHOULD BE CHECKED FREQUENTLY FOR SEXUALLY TRANSMITTED DISEASES.

 * SMOKING CAN RESULT IN CONSTRICTION OF BLOOD VESSELS AND POOR CIRCULATION.  WHEN COMBINED WITH POSSIBLE CLOTTING EFFECTS
OF THE PILL, THE RESULT CAN BE A STROKE.  IF YOU ARE TAKING THE PILL, YOU HAVE A SPECIAL REASON NOT TO SMOKE.  READ PAGE 12
OF 'THE WAY TO WELLNESS FOR TEENS.'


              * *  YOUR IDENTIFIED HEALTH RISK FACTORS  * *

YOUR RESPONSES TO THE HEALTH RISK APPRAISAL QUESTIONS INDICATE THAT THE FOLLOWING ARE THE AREAS OF GREATEST DANGER TO YOUR HEALTH:


 * CLOSE RELATIVES OF YOURS HAVE HAD ONE OR MORE OF THE FOLLOWING: HEART ATTACK, STROKE, HIGH BLOOD PRESSURE OR DIABETES.  THIS
FAMILY HISTORY INCREASES YOUR CHANCES OF DEVELOPING THE SAME CONDITION.  REDUCING RISK FACTORS IS VERY IMPORTANT FOR YOU.

 * TRY TO LIMIT SUGARY FOODS ESPECIALLY IF YOU ARE OVERWEIGHT OR IF YOU TEND TO GET CAVITIES.

 * AN UNINTENTIONAL LOSS OF WEIGHT OR APPETITE MAY BE CAUSED BY STRESS AND ANXIETY, OR MAY BE THE RESULT OF A PHYSICAL PROBLEM.  IF
YOU HAVE EXPERIENCED AN UNEXPLAINED WEIGHT LOSS, YOU SHOULD CHECK WITH YOUR SCHOOL NURSE, COUNSELOR OR FAMILY DOCTOR.

 * WHILE BREAST CANCER IS VERY RARE IN YOUR AGE GROUP, IT IS A GOOD IDEA TO BEGIN THE HABIT OF MONTHLY BREAST SELF-EXAMINATION.
THIS HABIT WOULD REDUCE YOUR RISK FOR BREAST CANCER IN THE FUTURE.


AND BY THE WAY,
****INFORMATION IS AVAILABLE ON HOW YOU CAN TAKE CONTROL OF YOUR HEALTH AND REDUCE YOUR IDENTIFIED RISKS****
   PLEASE REFER TO THE FOLLOWING PAGES IN THE 'WAY TO WELLNESS FOR TEENS' BOOKLET:

 PAGE 7  PAGE 17  PAGE 24  PAGE 26  PAGE 28

THESE SUGGESTIONS WERE PROVIDED TO MAKE YOUR LIFE BETTER AND MORE ENJOYABLE COURTESY DEPT HLS,UTK-KEEP SMILING !!
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*                          WELLNESS CHECK FOR TEENAGERS                     *
*            COURTESY DEPT HLS, UTK, DR. JACK PURSLEY (615-974-5041)        *
*****************************************************************************
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* * * * YOUR SCORE ON THE HEALTH RISK APPRAISAL IS 36 OUT OF A POSSIBLE 100 POINTS.
* * * * YOUR SCORE PLACES YOU IN THE FOLLOWING HEALTH RISK CATEGORY: ---->> HAZARDOUS <<----

---->> NO MATTER HOW YOU ANSWERED THE QUESTIONS ABOUT DRUGS AND SEXUALITY, EVERYONE IS RECEIVING THE FOLLOWING MESSAGES: <<----

* BESIDES MARIJUANA'S CANCER-CAUSING AGENTS, YOU SHOULD KNOW THAT MARIJUANA USE CAN AFFECT YOUR THINKING, MEMORY, AND CONCENTRATION. IT CAN LOWER MALE HORMONES IN BOYS AND FEMALE HORMONES IN GIRLS, WHICH MAY AFFECT YOUR PHYSICAL OR SEXUAL DEVELOPMENT. IT CAN INTERFERE WITH DRIVING ABILITY AND COORDINATION. FOR MORE INFORMATION READ PAGE 18 OF 'THE WAY TO WELLNESS FOR TEENS.'

* ALCOHOL CAN BE A DANGEROUS DRUG. ABUSE OF MANY KINDS OF DRUGS CAN LEAD TO PERMANENT PHYSICAL AND MENTAL DAMAGE AND/OR ADDICTION. OVERDOSES OF SOME DRUGS CAN AND DO KILL. SNIFFING OR INHALING SUBSTANCES IS ESPECIALLY DAMAGING AND DEADLY. READ PAGE 14 OF 'THE WAY TO WELLNESS FOR TEENS.'

* SEXUAL INTERCOURSE --EVEN ONCE-- WITHOUT EFFECTIVE BIRTH CONTROL CAN LEAD TO PREGNANCY. READ PAGE 20 OF 'THE WAY TO WELLNESS FOR TEENS.'

* A PERSON MAY HAVE A SEXUALLY TRANSMITTED DISEASE (STD) AND NOT KNOW IT UNTIL PERMANENT DAMAGE IS DONE. YOU SHOULD KNOW THAT PERSONS WHO ARE SEXUALLY ACTIVE WITH DIFFERENT PARTNERS SHOULD BE CHECKED FREQUENTLY FOR SEXUALLY TRANSMITTED DISEASES.

* SMOKING CAN RESULT IN CONSTRICTION OF BLOOD VESSELS AND POOR CIRCULATION. WHEN COMBINED WITH POSSIBLE CLOTTING EFFECTS OF THE PILL, THE RESULT CAN BE A STROKE. IF YOU ARE TAKING THE PILL, YOU HAVE A SPECIAL REASON NOT TO SMOKE. READ PAGE 12 OF 'THE WAY TO WELLNESS FOR TEENS.'

* * YOUR IDENTIFIED HEALTH RISK FACTORS * *

YOUR RESPONSES TO THE HEALTH RISK APPRAISAL QUESTIONS INDICATE THAT THE FOLLOWING ARE THE AREAS OF GREATEST DANGER TO YOUR HEALTH:

* TRY NOT TO SKIP BREAKFAST, IT IS THE MOST IMPORTANT MEAL OF THE DAY. YOUR BODY NEEDS THE ENERGY TO GET YOU THROUGH EACH DAY.

* WHAT YOU EAT DEFINITELY AFFECTS YOUR HEALTH. TRY TO EAT A VARIETY OF FOODS FROM THE FOUR FOOD GROUPS AND MAINTAIN YOUR IDEAL WEIGHT.

* YOU SHOULD FLOSS YOUR TEETH DAILY TO PROTECT YOUR TEETH AND GUMS. NOT FLOSSING REGULARLY INCREASES THE RISK OF TOOTH LOSS AND GUM DISEASE EVEN IF YOU HAVE FEW OR NO CAVITIES.

* YOU MAY NOT BE UP TO DATE ON YOUR IMMUNIZATIONS, WHICH WOULD INCREASE YOUR RISK OF GETTING MEASLES OR RUBELLA (GERMAN MEASLES). CHECK WITH YOUR PARENTS, SCHOOL NURSE, FAMILY DOCTOR, OR LOCAL CLINIC.

* A REGULAR PROGRAM OF AEROBIC EXERCISE WOULD BE GOOD FOR YOUR HEALTH. TO BE CONSIDERED AEROBIC THE ACTIVITY MUST GREATLY INCREASE YOUR BREATHING AND HEART RATE, AND CONTINUE NON-STOP FOR AT LEAST 20 MINUTES, THREE OR MORE TIMES EACH WEEK. AEROBIC EXERCISE CAN INCLUDE BRISK WALKING, JOGGING, SWIMMING, CROSS-COUNTRY SKIING, DANCING, BIKING, OR ANY OTHER FORM OF VIGOROUS ACTIVITY.

* SMOKING IS A MAJOR HEALTH HAZARD, EVEN AT YOUR AGE. IT'S COSTLY, GIVES YOU BAD BREATH, MAKES YOUR CLOTHES SMELL, CAUSES PREMATURE WRINKLES ON YOUR FACE, AND SHORTENS YOUR BREATH. IT IS ALSO THE MAJOR CAUSE OF LUNG CANCER, HEART DISEASE, EMPHYSEMA, AND SUDDEN DEATH. IF YOU QUIT NOW, YOUR BODY CAN RETURN TO NORMAL IN A VERY SHORT TIME.

* ALCOHOL, WHEN COMBINED WITH OTHER DRUGS, CAN BE FATAL. ALCOHOL AND BARBITURATES OR TRANQUILIZERS TOGETHER CAN SLOW DOWN BREATHING AND HEARTBEATS TO THE POINT OF DEATH. WHEN ALCOHOL IS COMBINED WITH STIMULANTS THE EFFECTS OF EITHER ONE MAY BE DANGEROUSLY INCREASED. COMBINING ALCOHOL AND MARIJUANA CAN CAUSE MORE PROBLEMS THAN EITHER ALONE, ESPECIALLY WHEN DRIVING.

* ALCOHOL RELATED TRAFFIC ACCIDENTS KILL AND CRIPPLE TENS OF THOUSANDS OF INNOCENT PEOPLE EVERY YEAR. BOTH ALCOHOL AND DRUGS GREATLY REDUCE REACTION TIME, INCREASING YOUR CHANCES OF CAUSING OR BEING UNABLE TO AVOID A SERIOUS ACCIDENT

* EACH YEAR AUTOMOBILE ACCIDENTS KILL AND CRIPPLE TENS OF THOUSANDS OF TEENS AND YOUNG ADULTS. IT IS THE NUMBER ONE CAUSE OF DEATH AND SERIOUS INJURY FOR YOUR AGE GROUP. BY WEARING SEAT BELTS YOU GREATLY DECREASE YOUR CHANCES OF SERIOUS INJURY OR DEATH.

* WHEN WALKING OR JOGGING ON A ROAD, YOU SHOULD ALWAYS WALK OR JOG SO THAT YOU ARE FACING THE ONCOMING TRAFFIC.

* WHEN JOGGING, WALKING, OR RIDING A BIKE AFTER DARK ALWAYS WEAR LIGHT-COLORED CLOTHING, PREFERABLY A REFLECTIVE VEST, OR BE SURE YOUR BIKE HAS REFLECTORS. YOU MAY SEE A CAR'S HEADLIGHTS AFTER DARK, BUT WITHOUT REFLECTIVE CLOTHING THE DRIVER MAY NOT BE ABLE TO SEE YOU.

* PROPERLY INSTALLED AND WORKING SMOKE DETECTORS IN THE HOME CAN WARN YOUR FAMILY OF A FIRE WHILE THERE IS STILL TIME TO GET TO SAFETY.

* YOUR OWN MOODS AND STRESSES MAY BE ENDANGERING YOUR OVERALL HEALTH. PROLONGED STRESS IS ASSOCIATED WITH ILLNESSES SUCH AS HIGH BLOOD PRESSURE, HEART DISEASE, GASTRIC ULCERS, ALCOHOLISM AND MENTAL OR EMOTIONAL ILLNESS. FIND HEALTHY WAYS TO RELAX, LIKE EXERCISING. YOU MAY NEED TO TALK THINGS OVER WITH SOMEONE IN YOUR FAMILY, A CLOSE FRIEND, OR SOMEONE ELSE WHO IS A GOOD LISTENER.

* FEELING REALLY DOWN EMOTIONALLY HAPPENS TO ALMOST EVERYONE OCCASIONALLY --BUT-- IT CAN SERIOUSLY HARM YOUR HEALTH. IF YOU FIND YOURSELF FEELING THAT LIFE ISN'T WORTH LIVING, DONT DO ANYTHING HASTY - SEEK OUT THOSE SOURCES OF HELP THAT ARE AVAILABLE TO YOU.

* WHILE BREAST CANCER IS VERY RARE IN YOUR AGE GROUP, IT IS A GOOD IDEA TO BEGIN THE HABIT OF MONTHLY BREAST SELF-EXAMINATION. THIS HABIT WOULD REDUCE YOUR RISK FOR BREAST CANCER IN THE FUTURE.

AND BY THE WAY,
++++INFORMATION IS AVAILABLE ON HOW YOU CAN TAKE CONTROL OF YOUR HEALTH AND REDUCE YOUR IDENTIFIED RISKS++++
PLEASE REFER TO THE FOLLOWING PAGES IN THE 'WAY TO WELLNESS FOR TEENS' BOOKLET:

PAGE 7 PAGE 10 PAGE 12 PAGE 14 PAGE 15 PAGE 17 PAGE 22 PAGE 24 PAGE 28

THESE SUGGESTIONS WERE PROVIDED TO MAKE YOUR LIFE BETTER AND MORE ENJOYABLE COURTESY DEPT HLS,UTK-KEEP SMILING !!

<< WELLNESS CHECK WAS DEVELOPED BY THE RHODE ISLAND DEPARTMENT OF HEALTH >> CR

APPENDIX C

APPENDIX C

WELLNESS CHECK SCORING METHOD (Teen Version)

Included here is a copy of the health risk appraisal questionnaire for teens marked with the number of points assigned to each response under each response. Also indicated is the number of the advisory message which the computer prints out and those responses that trigger each advisory. A list of all possible advisory messages is also included. Printed under the advisory message number is the page number of The Way to Wellness for Teens booklet that is listed at the bottom of the risk appraisal printout if that advisory message is given. Each teen starts out with a base score of 76 points. Points are added to or subtracted from the base score to determine the final score.

TEEN WELLNESS CHECK QUESTIONNAIRE
(With weights for each response)

Question 1

Are you:

Male ( ) **Female ( )**

Question 2

Your age is:

13 or under ( ) **14 ( )** **15 ( )**

16 ( ) **17 ( )** **18 or over ( )**

Question 3

What do you consider your race/ethnic group to be?

(A) White (non-Hispanic origin)

(B) Black (Afro-American origin)

(C) Hispanic **(D) Asian or Pacific Islander**

(E) Native American Indian or Alaskan native **(F) Other**

Question 4

What grade are you in now?

7th ( ) **8th ( )** **9th ( )**

10th ( ) **11th ( )** **12th ( )**

Question 5

What is the highest grade you plan to complete?

7th ( ) **8th ( )** **9th ( )**

10th ( ) **11th ( )** **12th ( )** **College ( )**

Question 6

Has a blood relative (parent, grandparent, brother, or sister) had either a heart attack, a stroke, high blood pressure, or diabetes before the age of 60?

(A) Yes (B) No (C) Don't know Message # 1

Question 7

How would you describe your body frame?

(A) Largeboned (B) Average (C) Smallboned

Question 8

How tall are you (with shoes -- one inch heels)?

(A) 4'9" or under	(B) 4'10" - 4'11"	(C) 5' - 5'1"
(D) 5'2" - 5'3"	(E) 5'4" - 5'5"	(F) 5'6" - 5'7"
(G) 5'8" - 5'9"	(H) 5'10"- 5'11"	(I) 6' - 6'1"
(J) 6'2" - 6'3"	(K) 6'4" - 6'5"	(L) 6'6" or over

Question 9

What is your weight? (wearing indoor clothes)

(A) 89 lbs. or less	(B) 90 to 99	(C) 100 to 109
(D) 110 to 119	(E) 120 to 129	(F) 130 to 139
(G) 140 to 149	(H) 150 to 159	(I) 160 to 169
(J) 170 to 179	(K) 180 to 189	(L) 190 to 199
(M) 200 to 209	(N) 210 to 219	(O) 220 to 229
(P) 230 lbs. or more		

20%-29.9% overweight (Message # 2) 30%+ overweight (Message # 32)
20%+ underweight (Message # 33)

Question 10

How many days in a typical week do you eat breakfast?

(A) Every day +1 (B) 5 or 6 days a week 0 (Message # 3)

(C) 2 to 4 days a week -1 (D) Never -2

Question 11

How many days in a typical week do you eat foods from each of the four food groups?

The four food groups are:

1) Fruits and vegetables;
2) breads, grains and/or cereals;
3) milk or milk products;
4) meat, fish, or plant proteins?

I eat something from each of these four food groups .....

(A) Every day +1 (B) 5 or 6 days a week 0

(C) 2 to 4 days a week -2 (D) Never -4 (Message # 4)

Question 12

How often do you snack on foods like pastries, candy, sweets, soft drinks, or other sugary foods?

(A) Daily -1 (B) At least 3 times a week 0

(C) Seldom 0 (D) Never 0 (Message # 5)

Question 13

How often do you brush your teeth?

(A) Daily +1 (B) At least 3 times a week 0

(C) Seldom -1 (D) Never -1 (Message # 6)

Question 14

How often do you use dental floss on your teeth and gums?

(A) Daily +1 (B) At least 3 times a week 0

(C) Seldom -1 (D) Never -1 (Message # 35)

Question 15

Have you had your teeth checked and/or cleaned at a dentist's office or clinic in the past 12 months?

Yes ( ) +1 No ( ) -1
(Message # 6)

Question 16

Have you been immunized (received shots) to protect you against measles and German measles (rubella)?

(A) Yes, both +1 (B) Yes, one 0 (C) Neither -1

(D) I don't know 0 (Message # 7)

Question 17

How often do you walk at least one mile without stopping?

(A) Daily +1 (B) At least 3 times a week +1 (C) Seldom 0

(D) Never 0 (Message # 8)

Question 18

Aerobic exercise is any physical activity that greatly increases both heart rate and breathing. Aerobics can include exercising, jogging, swimming, jumping rope, cross country skiing, brisk walking, or other strenuous activities. How often do you get at least 20 minutes of non-stop aerobic exercise?

(A) Daily +2 (B) At least three times a week +2

(C) Once or twice a week 0 (D) Seldom 0 (E) Never 0
(Message # 8)

Question 19

How often do you participate in recreational activities -- such as bowling, golf, tennis, basketball, softball, dancing, or similar activities?

(A) Daily +1 (B) At least three times a week +1

(C) Once or twice a week 0 (D) Seldom 0 (E) Never 0

If Q(17) + Q(18) + Q(19) all = E) then -2 (Message # 8)

Question 20

How many cigarettes (tobacco) do you smoke?

(A) None, I have never smoked +3 (B) None, I quit smoking +2

(C) A pack or less per week -2

(D) More than a pack per week but less than a pack per day -4

(E) 1 pack per day -6 (F) Between 1 and 2 packs per day -6

(G) 2 or more packs per day -6 (Message # 9)

Question 21

If you are a cigarette smoker, do you plan on quitting some day?

(A) I do not smoke 0

(B) No, I do not plan on quitting -4

(C) Yes, I plan to quit today or in the very near future -1

(D) Yes, I plan to quit before I get out of high school -1

(E) Yes, I plan to quit before I turn 21 years old -2

(F) I will only quit if forced to by illness or disease -3

Question 22

Does marijuana smoke contain more cancer-causing agents than tobacco smoke?

Yes ( ) 0 No ( ) 0 (Message # 10)

Question 23

In a typical week, what is the most alcohol you drink in any one day? (A drink of alcohol is either 12 oz of beer, a 5 oz glass of wine, or a 1 1/2 oz. shot of hard liquor)

In a typical week, the most I drink in any one day is . . .

(A) None, I do not drink +1 (B) 1 or 2 drinks in one day 0

(C) 3 or 4 drinks in one day -2 (D) 5 or 6 drinks in one day -4

(E) 7 or 8 drinks in one day -6 (F) 9 or 10 drinks in one day -6

(G) 11 or more drinks in one day -6 (Message # 9)

Question 24

Is the abuse of alcohol (a depressant) or any other drug dangerous?

Yes ( ) 0 No ( ) 0 (Message # 12)

Question 25

Do you ever use alcohol with other drugs?

(A) No I don't +1 (B) Yes, often -9 (C) Yes, sometimes -6

(D) Yes, but very seldom -3 (Message # 13)

Question 26

Do you ever drive under the influence of alcohol or drugs -- or ride with a driver who is?

(A) No I don't +1 (B) Yes, often -11 (C) Yes, sometimes -6

(D) Yes, but very seldom -3 (Message # 14)

Question 27

How often do you use seatbelts when you drive or ride in a car?

(A) Always or nearly always +1 (B) Sometimes -1

(C) Seldom -3 (D) Never -5

(Message # 15)

Question 28

When driving a car, do you ever exceed the speed limit by more than 10 miles per hour?

(A) Not driving yet 0

(B) Never exceed speed limit by 10 mph +1

(C) Rarely exceed speed limit by 10 mph 0

(D) Sometimes exceed speed limit by 10 mph -2

(E) Often exceed speed limit by 10 mph -5 (Message # 16)

Question 29

If you ride a motorcycle or moped, do you wear a helmet?

(A) Don't ride a motorcycle/moped +1 (B) Never wear a helmet -4

(C) Rarely wear a helmet -3 (D) Sometimes wear a helmet -1

(E) Always wear a helmet 0

Message # 17

Question 30

When walking or jogging on a road, which side of the road do you walk or jog on?

(A) Facing on-coming traffic +1

(B) In same direction as traffic -1 (C) Either side -1

Message # 18

Question 31

When walking, jogging or riding a bike after dark do you wear light-colored or reflective clothing or have reflectors on you bike?

(A) No -1 (B) Yes, sometimes 0 (C) Yes, often or always +1

(D) I don't walk/jog/ride a bike after dark +1

Message # 19

Question 32

Do you have a smoke detector in your home or apartment?

(A) No -1 (B) Yes, and I'm sure that it works +1

(C) Yes, but it may not work 0 (D) I don't know 0

Message # 34

Question 33

Do you ever hitchhike or pick up hitchhikers?

(A) No +1 (B) Yes, often -3 (C) Yes, sometimes -1

(D) Yes, but seldom 0

Message # 20

Question 34

Do you know how to swim or stay afloat in water that is over your head?

Yes ( ) +1 No ( ) -1

Message # 21

Question 35

Have you lost more than five pounds in the past few months without dieting?

Yes ( ) -1 No ( ) 0

(***For Q #36-38 Message # 23***)

Question 36

Do you usually get enough sleep and feel rested in the morning?

(A) Yes, usually 0 (B) Yes, sometimes 0 (C) No -1

Question 37

In the past six months, have you had feelings that life wasn't worth living?

(A) Yes, often -7 (B) Yes, sometimes -3 (C) Yes, rarely -1

(D) No I haven't 0

Message # 24

Question 38

Do you have friends or relatives that you can turn to for help when something is troubling you?

(A) Yes, usually 0 (B) Yes, sometimes 0 (C) No -1

Question 39

Can sexual intercourse even once, without effective birth control, result in pregnancy?

(A) Yes 0 (B) No -1 (C) I'm not sure -1

Message # 25

Question 40

Will sexual activity with several partners increase a person's chances of getting sexually transmitted diseases (STD's)? Sexually transmitted diseases are sometimes called veneral diseases (V.D.).

(A) Yes 0 (B) No -1 (C) I'm not sure -1
Message # 26

MALES STOP! You have completed the appraisal. Thank you.

FEMALES please continue.

FEMALES ONLY SHOULD ANSWER THESE LAST SIX QUESTIONS . . . . .

Question 41

Do you examine your breasts each month to detect lumps?

Yes ( ) +1 No ( ) -1
Message #27

Question 42

Has your mother or sister had a breast removed or an operation on her breast?

(A) Yes 0 (B) No 0 (C) I don't know 0
Message # 28

Question 43

Has you mother or sister had a hysterectomy (uterus removed)?

(A) Yes 0 (B) No 0 (C) I don't know 0
Message # 29

Queston 44

If you've started having menstrual periods, do they ever last for more than 10 days at a time?

(A) I've not started having periods yet 0

(B) Yes, my periods have lasted for more than 10 days 0

(C) No, I've not had a period last for more than 10 days 0
Message # 30

Question 45

Do you know what caused your period to last more than 10 days?

(A) Does not apply 0 (B) Yes 0 (C) No 0

Question 46

Are women who take birth control pills and smoke cigarettes at an increased risk of blood clotting?

(A) Yes 0 (B) No 0 (C) I don't know 0

Message # 31

You have completed the WELLNESS CHECK health risk assessment questionnaire. THANK YOU!

TEEN WELLNESS CHECK ADVISORY MESSAGES

Your score on the health risk appraisal is ____ out of 100 points.

Your score places you in the following health risk category:

Excellent	(85-100)
Fair	(70-84)
Risky	(55-69)
Hazardous	(0-54)

You scored well in the following areas of the questionnaire:

Criteria for printing (S13 means score for question 13). See scored questionnaire.

Diet	S10 + S11 = 2
Dental Health	S13 + S14 + S15 = 3
Immunization	S3 = 1
Exercise	S17 + S18 + S19 = 2
Smoking	S20 + S21 greater than 1
Alcohol	S23 + S25 greater than 0
Auto Safety	S26 + S27 + S28 + S29 + S30 + S31 + S32 greater than 5
Hazardous activities	S33 + S34 = 1

You should be proud of the way you take care of yourself in these categories. If you would like information to help you to maintain or further improve these good health habits, please refer to "The Way To Wellness For Teens" booklet you received.

No matter how you answered the questions about drugs and sexuality, everyone is receiving the following messages, (messages 9, 11, 24, 25 and 30 (females only) are printed here.)

(Any of the following messages may be printed. The criteria are listed in the questionnaire given in the previous section.)

1. Your responses to the health risk appraisal questions indicate that the following are the areas of greatest danger to your health:

   * Close relatives of yours have had one or more of the following before age 60: Heart Attack
     Stroke
     High Blood Pressure
     Diabetes

   This family history increases your chances of developing the same condition. Eliminating the risk factors you can control becomes even more important for you.

2. * You may be over your ideal weight. You would probably look and feel better if you ate sensibly and exercised regularly. Since you may still be growing, don't try to lose weight without consulting a doctor or your school nurse.

3. * You would definitely benefit from a more healthful diet. Try to eat regular meals, eat a variety of foods from the four food groups, and maintain your ideal weight.

4. * Try to avoid sugary foods if you are overweight or if you tend to get cavities.

5. * By neglecting the care of your teeth you place yourself at an increased risk of tooth decay and gum disease. Teeth are particularly prone to cavities during the teen years and gum disease is the major cause of tooth loss beyond the middle years. You should brush your teeth and use dental floss everyday.

6. * Your immunization record is incomplete. You may, therefore, be susceptible to tetanus, diphtheria, measles or rubella. Proper immunization would protect you against these diseases.

7. * Maybe you already play sports or do other kinds of exercise. To protect your health, choose exercise that gives your heart a good workout. Exercise non-stop for at least 20 minutes three times a week or more. Enough of the right kind of exercise--like swimming, jogging, cross-country skiing, aerobic dancing or biking--could protect you against heart disease as you get older. And it will help you look and feel better.

8. * By smoking you are increasing your chances of a heart attack, lung cancer, or emphysema as you get older. Quit now before irreparable damage is done.

9. * Besides marijuana's cancer-causing agents, you should know that marijuana use can affect your thinking, memory, concentration; it can lower male hormones in boys and female hormones in girls which may affect your physical or sexual development; it can interfere with driving ability and coordination.

10. * If you continue to drink alcoholic beverages at your present rate you may become an alcoholic even at your age. You are also more likely to encounter physical and social problems associated with alcoholism, like trouble relating to people, trouble concentrating in school, lower resistance to infection.

11. * You should know that alcohol can be a dangerous drug. You should also know that abuse of many kinds of drugs can lead to permanent physical and mental damage and/or addiction. Overdoses of some drugs can and do kill. Sniffing or inhaling substances is especially damaging and deadly. Illegal drug users can never be sure of the "quality" of drugs they are using. Drug abuse results in loss of self-control.

12. * Alcohol, when combined with other drugs can be fatal. Alcohol and barbiturates or tranquilizers together can slow down breathing and heartbeats to the point of death. When alcohol is combined with stimulants the effects of either one may be dangerously increased. Combining alcohol and marijuana can cause more problems than either alone, especially when driving.

13. * Driving under the influence of alcohol or drugs greatly increases your risk of causing a life-threatening auto accident. Riding with drivers who are under the influence places you at greater risk of being involved in a life-threatening auto accident.

14. * By wearing a seat belt, your chances of being injured in an auto accident would be considerably reduced.

15. * By driving no faster than the speed limit and driving defensively, your chances of being involved in an auto accident would be considerably reduced.

16. * Riding a motorcycle without a helmet places you at increased risk of serious injury or death in the event of an accident.

17. * When walking on a road with no sidewalks, always walk on the left, where you can see the oncoming traffic.

18. * When jogging or walking after dark, on streets with no sidewalks, always wear light clothing, preferably a reflective vest. You may see car headlights after dark, but with no reflector, the driver cannot see you until you may be too close to avoid an accident.

19. * Be sure your bicycle is equipped with visible reflectors for riding after dark or wear a reflective vest. You may see car headlights after dark, but with no reflector, the driver cannot see you until you may be too close to avoid an accident.

20. * Hitchhiking is a dangerous practice that can result in kidnapping, injury, murder and rape. Picking up hitchhikers places you at the same risks.

21. * If you spend time in or near the water, you should learn proper water safety precautions.

22. * An unintentional loss of weight or appetite may be caused by stress and anxiety or may be the result of a physical problem. You should probably see a physician to find out.

23. * Your own moods and stresses may be endangering your overall health. Prolonged stress is associated with illnesses such as high blood pressure, heart disease, gastric ulcers, alcoholism and mental or emotional illness. Find healthy ways to relax, like exercising.

24. * You should know that sexual intercourse without effective birth control will lead to pregnancy. You should also be aware that a condom with foam or jelly is an effective method of birth control and can protect against veneral disease.

25. * You should know that persons who are sexually active with different partners should be checked for sexually transmitted diseases (STD) frequently so that they can be treated, if necessary. A person may have a sexually transmitted disease and not know it until permanent damage is done.

26. * You are not taking proper precautions against breast cancer. By practicing breast self-examination, your risk from this disease would be greatly reduced.

27. * Although breast cancer is extremely rare in women your age, you may be at a greater risk if your mother or sister had breast cancer. Be sure to get in the habit of breast self-examination.

28. * Although cancer of the uterus is extremely rare in women your age, you might be at a greater risk if your mother or sister had her uterus removed. Be sure to check with your doctor about how often you should have a Pap test, which detects cancer early while it can be cured.

29. * Bleeding for long periods of time may be a signal of some disorder. See your doctor to identify the problem.

30. * You should know that smoking can result in constriction of blood vessels and poor circulation. When combined with possible clotting effects of the pill, the result can be a stroke. If you are taking the pill, you have a special reason to not smoke.

VITA

Deborah Ann Fortune was born in Carthage, Mississippi. She attended public schools in Walnut Grove, Mississippi, and after graduating from South Leake High School in 1974, Deborah entered Mississippi University for Women where she received the Bachelor of Science degree in Biology in 1978.

After several years experience as a laboratory technologist at Mississippi State Board of Health, Deborah matriculated into the Graduate School at The University of Southern Mississippi, and received the Master of Science degree in Community Health Education in 1985. She entered the Doctor of Philosophy program in Health Education at The University of Tennessee, Knoxville, in the fall of 1984. From 1984 to 1988, while working on her doctorate, Deborah served as a doctoral teaching assistant in the Department of Health, Leisure, and Safety. She received the Doctor of Philosophy degree in Health Education with a collateral area in Anthropology in August 1988.

In addition to her studies and teaching, Deborah has served as a health consultant for a regional community health agency.

She is a member of the American Public Health Association; the American Alliance for Health, Physical Education, Recreation, and Dance; and Eta Sigma Gamma.

The Way To Wellness For Teens

Wellness Check

For use with Rhode Island Department of Health **Wellness Check** Program.

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Take Care of Yourself

How well we feel and how long we live depends, to a considerable extent, on how we take care of ourselves...on whether we eat properly, exercise regularly, refrain from smoking and adopt the various other habits of a healthy lifestyle.

The Way to Wellness For Teens is designed to help you better understand "risk factors" that threaten your health, so that you can deal with them effectively.

The message of this booklet is that you can make a difference in your health. It may improve your chances...and those of your family...for a long, healthy life.

A Daily Food Guide

Meat & Meat Substitute Group For Protein, Iron, Vitamins	2 moderate servings a day poultry, eggs, meat, fish, shellfish, dry beans and peas, lentils, soybeans, seeds, nuts.
Dairy Products For Calcium, Protein, Vitamins	4 daily servings for teenagers, pregnant and nursing women 3 daily servings for children 2 daily servings for adults milk, cheese, yogurt, ice cream and ice milk, and foods made with large amounts of milk, such as cream soups, custards and puddings.
Fruits and Vegetables For Vitamins, especially A and C, Fiber, Carbohydrate	4 or more servings a day Include a citrus fruit or juice daily and a dark green, leafy vegetable or orange fruit or vegetable 3 times a week.
Grains For B-vitamins, Iron,Fiber, Carbohydrate	4 or more servings a day Choose whole grain, enriched or fortified products: bread, rice, crackers, corn bread, breakfast cereals, grits, noodles, pasta products, and other grain products.

Other foods, such as butter and margarine, salad dressings, cream, pastries, cake, cookies, and condiments, add mostly calories. The amounts you use should be determined by your calorie needs.

Eating a variety of wholesome foods is the best way to insure good nutrition. If you follow the recommendations in this guide, you will get a good balance of nutrients and about 1100 calories. If your calorie requirements are higher, extra calories can be obtained from additional servings of "The Big 4" or from "Other Foods".

Personal Food Diary:

Today's Diet **Date:** _____

	Foods	Amounts	Calories	Food Group Servings
BREAKFAST				Meat/Meat Sub. _____ Dairy _____ Fruit/Veg. _____ Grains _____ Other _____
LUNCH				Meat/Meat Sub. _____ Dairy _____ Fruit/Veg. _____ Grains _____ Other _____
DINNER				Meat/Meat Sub. _____ Dairy _____ Fruit/Veg. _____ Grains _____ Other _____

Did you eat the recommended number of servings in each food group?

Did you keep your calorie intake at an acceptable level?

The Good News Is... We Can Do Something About It.

No longer are Americans victimized by such dread diseases as typhoid, tuberculosis, smallpox and cholera. No longer are our hospitals filled with children stricken by polio, scarlet fever, diphtheria and whooping cough.

Advances in medicine and public health...especially the introduction of antibiotics and vaccines...have made these diseases preventable and have virtually wiped them out. Today our health is largely threatened by ourselves...by the way we live...by a lifestyle characterized by too much to eat and drink, excessive speed on the highways and unrelieved tension in our daily routines.

We are endangered by what we do — such as smoking...and by what we don't do — such as exercise.

Slowly...and sometimes not so slowly...we seem to be killing ourselves.

The good news is that we can do something about it.

By practicing seven simple health habits, experts say, Americans could add up to 11 years to their lives:

- Eat 3 meals at regular times each day, and don't snack between meals
- Eat breakfast every day
- Get moderate daily exercise
- Sleep 7 or 8 hours a night
- Don't smoke
- Maintain your recommended weight
- Restrict your use of alcohol to moderate amounts

The way we live, then, may be the central factor in how healthy, or unhealthy, we become...and remain.

Do we take this responsibility seriously, and act accordingly, or do we continue to rely on the marvelous technology of our hospitals to rescue us...or attempt to rescue us...from illnesses and disabilities we may bring on ourselves?

That's a question we alone can answer.

How will we respond to the choices...the challenges...that confront us day after day: whether to light up that cigarette...postpone that exercise (again)...take that drink before driving home...and other decisions like them.

Do we believe that our decisions will really make a difference...perhaps a major difference...in our lives?

This booklet is intended to persuade you to take these choices seriously...and to make your decisions wisely, for the sake of you and your family.

The Way to Wellness For Teens provides some basic advice on how you can reduce health risks, and where to get assistance and more information if you need it.

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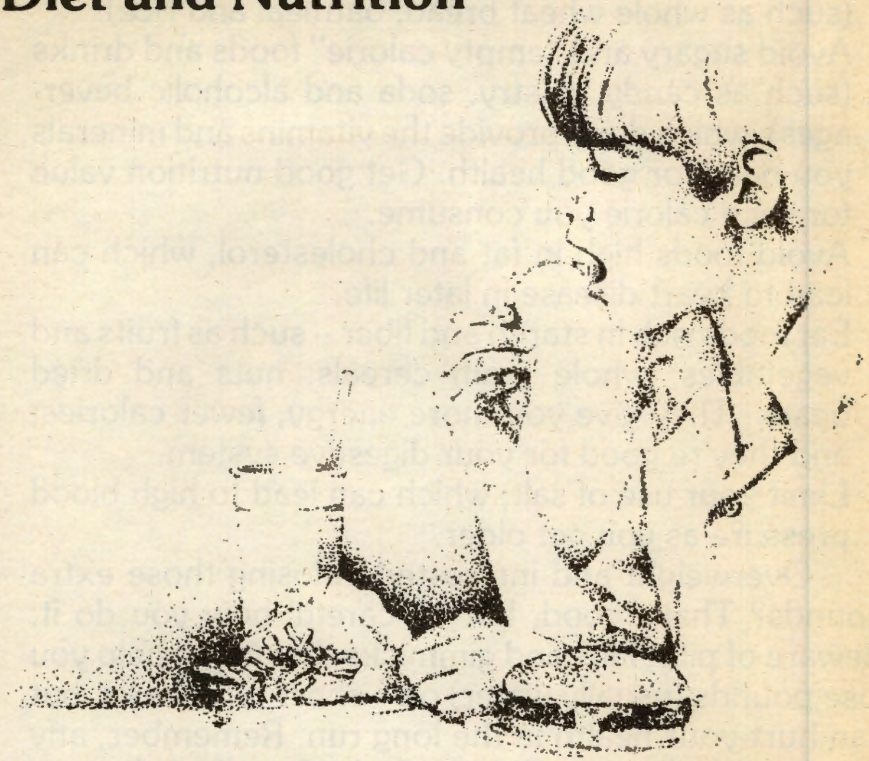
Diet and Nutrition



What you eat, and how much you eat, will make a big difference in how healthy you are -- especially as you get older.

At your age, when your body is developing so rapidly, it's especially important that you eat those foods with the nutrients you need for good health. You need to eat enough nutritious foods to develop well, but don't overdo it. Keep your weight under control; pick and choose wisely whether you eat at home or away from home.

Choosing wisely means knowing some basics about good nutrition:

- For healthy variety, eat every day from the "four basic food groups": **meats** and meat substitutes (such as peanut butter and dried beans); **dairy** pro-

ducts; **fruits** and **vegetables**; and whole **grains** (such as whole wheat bread, oatmeal and rice).

- Avoid sugary and "empty calorie" foods and drinks (such as candy, pastry, soda and alcoholic beverages), which don't provide the vitamins and minerals you need for good health. Get good nutrition value for each calorie you consume.
- Avoid foods high in fat and cholesterol, which can lead to heart disease in later life.
- Eat foods rich in starch and fiber -- such as fruits and vegetables, whole grain cereals, nuts and dried beans. They give you more energy, fewer calories; and they're good for your digestive system.
- Limit your use of salt, which can lead to high blood pressure as you get older.

Overweight and interested in losing those extra pounds? That's good, but be careful how you do it. Beware of pills, fads and gimmicks that might help you lose pounds (usually water) on a short-term basis, but can hurt your health in the long run. Remember, any good weight-loss program calls for **increased exercise,** eating a **well balanced diet** of nutritious foods, **eating less,** losing weight **gradually** (just 1-2 pounds a week). Don't lose too much weight. Being underweight is unattractive and unhealthy.

Avoid such practices as "binge" eating, self-induced vomiting and "starvation" diets. They usually cause excessive weight loss and, often, serious medical problems.

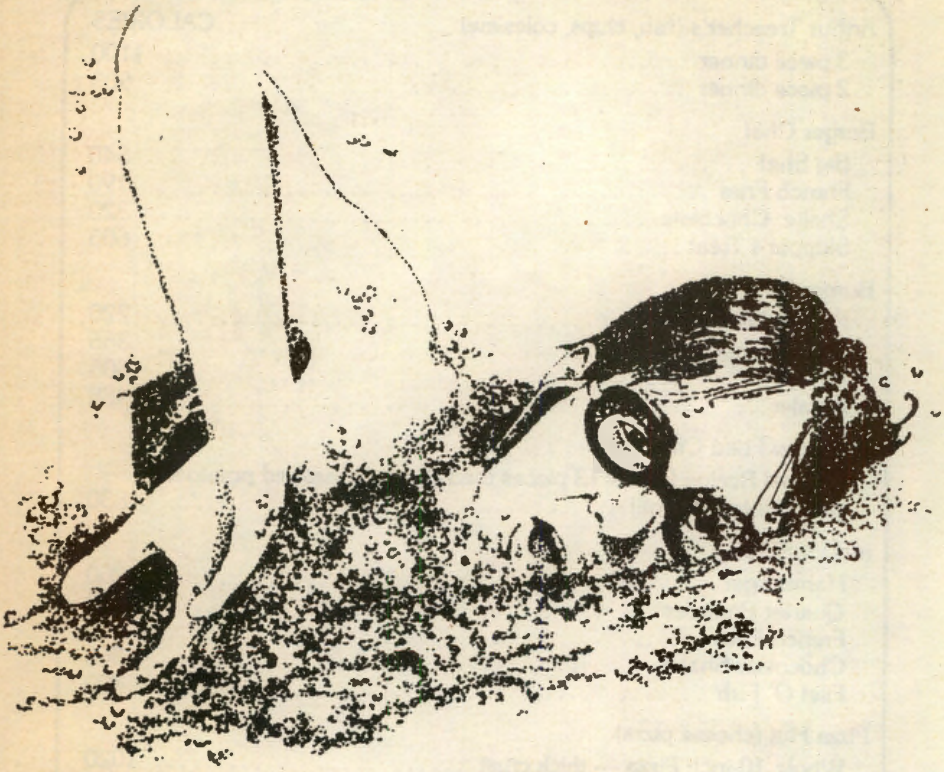
See your doctor first if you're planning to diet away more than 20 pounds, just to make sure you don't hurt yourself. Remember that we don't all have the same body frame. Some people are naturally slim and wiry; others aren't. Learn to be happy with the body frame you have, and make the best of it!

Here is the calorie count for some fast-food favorites:

	CALORIES
Arthur Treacher's (fish, chips, coleslaw)	
3 piece dinner	1100
2 piece dinner	905
Burger Chef	
Big Shef	540
French Fries	190
Shake, Chocolate	320
Skipper's Treat	605
Burger King	
French Fries	220
Shake, Chocolate	365
Whopper	605
Whaler	485
Kentucky Fried Chicken	
Original Recipe Dinner (3 pieces fried chicken, mashed potatoes, gravy, coleslaw, roll)	830
McDonald's	
Hamburger	260
Quarter Pounder	420
French Fries	210
Chocolate Shake	365
Filet O' Fish	400
Pizza Hut (cheese pizza)	
Whole 10-inch Pizza — thick crust	1020
— thin crust	900
½ of 13-inch — thick crust	900
— thin crust	850
½ of 15-inch — thick crust	1200
— thin crust	1150

See section of insert sheet on **Diet and Nutrition** for referral to local sources of additional information and assistance.

Physical Fitness



Exercise can be fun, but it's more than that. It can make you feel better, look better, work and think better...and maybe even live longer.

Whether you're athletic or not, exercise can give your body strength, endurance and flexibility. It can help you control your weight, and improve your level of energy and concentration.

If continued on a regular basis, the exercise you do today can make you healthier in later life. For example, it can help protect you against heart disease and high blood pressure.

But you won't need to wait until then to see the benefits of exercise. Right now, you'll enjoy the good feeling of knowing you're in shape.

For best results in getting into shape, all exercises are **not** equal. For fitness, pick exercises that keep your heart beating at a fast rate for at least 20 minutes straight. And do them at least three times a week.

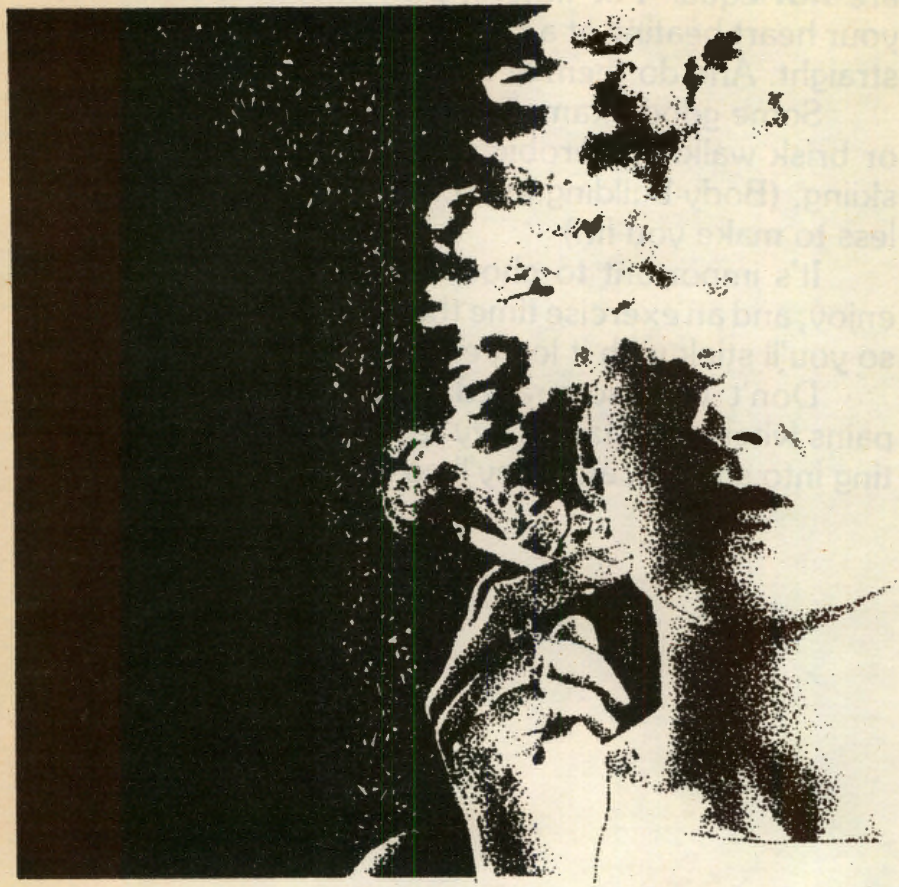
Some good examples: swimming, jogging, biking or brisk walking, aerobic dancing and cross-country skiing. (Body-building exercises like weight lifting do less to make you fit.)

It's important to choose a type of exercise you enjoy, and an exercise time that's convenient for you... so you'll stick with it long enough to see results.

Don't be discouraged by muscular aches and pains when you start. They're a sign your body's getting into shape... and they'll go away soon.

See section of insert sheet on **Physical Fitness** for referral to local sources of additional information and assistance.

Smoking



Cigarette smoking is dangerous to your health. You know that. But maybe you think it really doesn't apply to you because you're young. Besides, you can always quit later.

Young or old, you pay a price when you smoke. It narrows your blood vessels, hurting your circulation and your breathing capacity... and making you more vulnerable to lung and mouth diseases. It can start small changes in your body cells that, years later, can lead to diseases like cancer, emphysema and heart disease.

If you're a woman using birth control pills, smoking combined with the clotting effects of the pill can cause stroke, even at your young age.

Smoking during pregnancy can deprive the baby in the uterus of the oxygen it needs, sometimes resulting in an infant born so early and so small that its health is endangered. To protect the baby, it's important to quit smoking **before** pregnancy.

Some bad effects of smoking are especially immediate and obvious. It makes your fingers and teeth yellow (not to mention your lungs). It makes your breath smell... and your hair and clothes.

Also, cigarette smoke really bothers some people, and they may resent you for "sharing it" with them.

The decision about whether to smoke is yours. Don't underrate how difficult it is to quit once you start. Remember that two out of three people **don't** smoke, despite what the cigarette ads say.

If you don't smoke, don't start. If you do, make some definite plans to quit. Get some help if you need it. You can do it.

See section of insert sheet on **Smoking** for referral to local sources of additional information and assistance.

Alcohol Abuse

Drunk driving kills more teenagers than any other cause, and accounts for more than half the nation's traffic deaths each year.

Alcohol abuse isn't just something that happens to older people. It happens to teenagers, too.

Alcohol is a drug. If you're not careful, it can control you, instead of the other way around. (Mixing alcohol with other kinds of drugs can knock you out or kill you.)

Drinking too much dulls your thinking, awareness and coordination. It can make you a less likeable person... less able to do well in school, or on the job, or get along with your friends and family. Your drinking problem becomes other people's problem, too.

Alcohol abuse over a long period of time can cause serious, permanent health problems... such as liver disease and certain types of cancer.

If you're concerned that you, or perhaps someone close to you, may have a drinking problem, don't delay in doing something about it. Help is available if you need it.

Be in control. Don't allow yourself to be pressured into drinking. (And don't "apologize" for not drinking.) **Never** drive after drinking, even in moderation, and don't allow your family or friends to do so either. And don't ride with a driver who has been drinking. Instead, take a bus or a taxi, or call a friend or relative for a ride.

See section of insert sheet on **Alcohol Abuse** for referral to local sources of additional information and assistance.

Traffic Safety

Each year highway accidents injure and kill thousands of motorists, pedestrians and bicyclists. Many of these tragedies are preventable.

What can you do? Don't speed. Drive defensively; "watch out for the other guy" is excellent advice. Don't take chances. Don't show off.

Alcohol

Alcohol can be deadly. Even a little can dull your vision and reflexes, making you less able to handle highway emergency situations. If you drink and drive, you gamble on killing someone. If you ride with a driver who has been drinking, you risk your life.

Safety Belts

Wearing a seat belt can double your chances of escaping injury or death in a crash. It helps you absorb the crash impact, and prevents you from being thrown out of the vehicle, perhaps through the windshield --where chances of survival are much less.

Seat belts can also help avoid accidents. They hold you upright, lessening your chances of falling asleep at the wheel, and providing support in case you have to maneuver quickly in an emergency.

Seat belts aren't just for long highway trips. Most traffic accidents happen close to home and at relatively low speeds.

Walking and Jogging

If you're travelling on streets without sidewalks, be sure to face oncoming traffic. In case drivers don't see you, you'll see them.

At dusk or after dark, wear light colored clothing,

preferably with a reflective vest, so drivers can see you more easily.

Bicycling

The law requires that you travel in the same direction as auto traffic. That means you have to be especially careful because the drivers behind you may not be paying enough attention to you. Stay along the side of the road. Don't weave into the path of auto traffic, and be careful going through intersections. After dark, be sure your bike has a reflector or you wear a reflective vest. Go slowly and give yourself plenty of room to stop on slippery wet pavement. Watch out for car doors that may be opened into your path.

Hitchhiking

No matter how many safe experiences you may have had, hitchhiking is a bad idea. It's dangerous whether you're female or male. It has often led to kidnapping, murder and rape. Don't hitchhike; don't pick up hitchhikers -- day or night, no matter where you are.

See section of insert sheet on **Traffic Safety** for referral to local sources of additional information and assistance.

Stress

Being a teenager isn't easy. It's a time full of changes, with pressures coming from all directions --school, work, parents and friends. Sometimes you may feel these pressures are more than you can handle. If you do feel that way, don't feel you're alone. You're not.

Stress is part of life. Sometimes it can even help us perform more effectively. But we have to try to control the pressures so they don't get the best of us.

What can you do about stress in your life? First, don't be too hard on yourself. Give yourself the credit you deserve. Avoid setting goals higher than you or those around you can reasonably be expected to reach. Don't worry about tomorrow or yesterday, or things out of your control.

Exercise is a good way to relieve stress. So is talking things out with family or friends. Just doing something you enjoy can relax the tensions away.

Also, don't worry too much about being worried. It happens to the best of us.

Finally, if you feel sad and depressed, for no obvious reason, over long periods of time, don't try to carry the burden by yourself. Talk to someone you're comfortable with. There are lots of people who can help you, and want to help you.

See section of insert sheet on **Stress** for referral to local sources of additional information and assistance.

Marijuana and Other Drugs

Playing with drugs, legal or illegal, is a dangerous business. You've probably heard that before. Believe it, because it's true.

Sometimes the damage to your mind and body can be gradual; other times sudden and deadly.

Drugs make you "high" by causing abnormal changes in your body chemistry -- changes that can be dangerous.

Marijuana

Sometimes marijuana is portrayed as being pretty harmless to your health. But it isn't. It contains more cancer-causing chemicals than cigarettes do. It hurts your memory and your ability to concentrate -- and learn in school. It destroys your coordination and ability to react quickly -- which makes you a traffic hazard if you drive under the influence.

Medical studies have also shown that marijuana can disrupt the natural balance of hormones that produce healthy sexual and physical development.

Special Dangers

The quality of legal drugs is reasonably well protected by the government. That's not true with illegal drugs. Illegal drug users never can be sure the drugs are what they're claimed to be. For example, PCP ("Angel Dust") -- so lethal it's used as a horse tranquilizer -- is often sold as something else. Marijuana and other drugs sometimes have poisons mixed in with them or are stronger than claimed. The results can be frightening and unpredictable.

With illegal drugs, you have no place to complain, except the hospital emergency room.

Sniffing and Inhaling

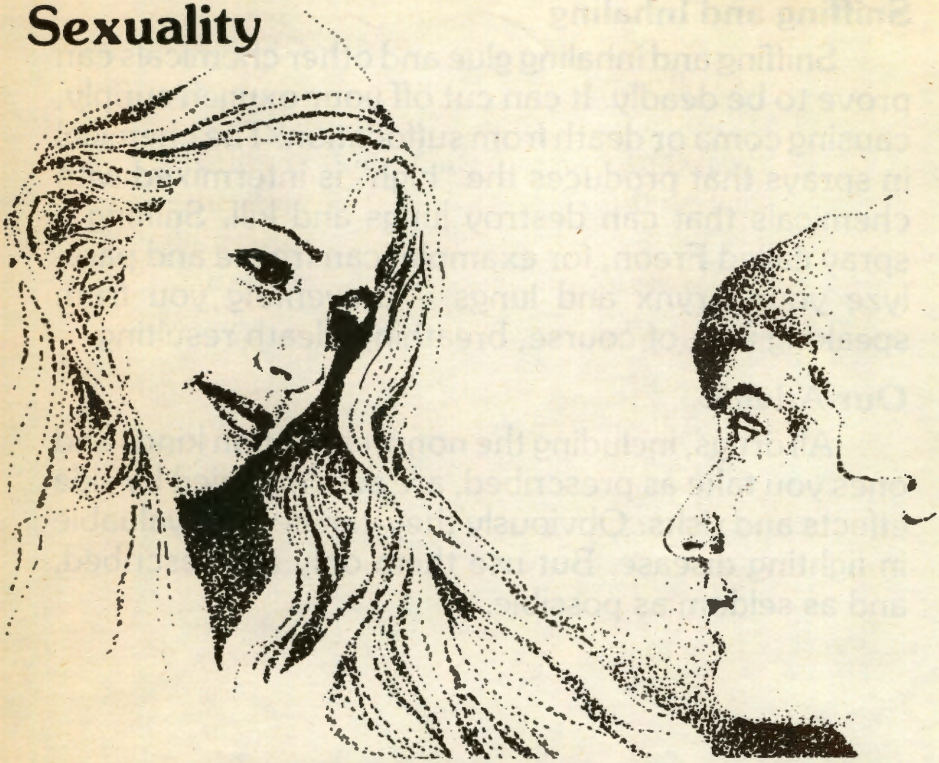
Sniffing and inhaling glue and other chemicals can prove to be deadly. It can cut off your oxygen supply, causing coma or death from suffocation. The chemical in sprays that produces the "high" is intermixed with chemicals that can destroy lungs and kill. Sniffing a spray called Freon, for example, can freeze and paralyze your larynx and lungs -- preventing you from speaking and, of course, breathing, death resulting.

Our Advice

All drugs, including the nonprescription kinds and ones you take as prescribed, are accompanied by side effects and risks. Obviously they can be very valuable in fighting disease. But use them only as prescribed, and as seldom as possible.

See section of insert sheet on **Marijuana and Other Drugs** for referral to local sources of additional information and assistance.

Sexuality



A proper attitude toward sex is important, not only to your own healthy development as a person, but also to the preservation of a healthy society.

It is essential that you protect certain basic values in your life... such as recognizing yourself and others as human beings deserving of respect. Doing so can make a permanent difference in your life.

Responsible sexual relationships require the ability to make intelligent and mature decisions. Such decisions can not be made without certain basic knowledge. You must realize that sexual intercourse... even once... without effective birth control protection can lead to pregnancy.

Virtually all the birth control methods have their advantages and disadvantages. We shall not detail them here. For more information, check with your

doctor or one of the various organizations available to advise you.

You must also understand that sexual activity, especially with a number of partners, carries the risk of "sexually transmitted diseases" (STD's)...also known as venereal diseases.

There are many types of sexually transmitted diseases. Some have very serious, permanent effects. (A woman could be left unable to become pregnant, for example).

Most types are curable. Some, like herpes, which affects hundreds of thousands of Americans each year, are not.

No vaccination against these diseases is available. Often there are no symptoms or the symptoms are difficult to detect, especially in women. If you have reason to believe you have a sexually transmitted disease, your best protection against permanent damage is to seek medical help immediately. (If you have more than one sexual partner, you should receive frequent medical check-ups).

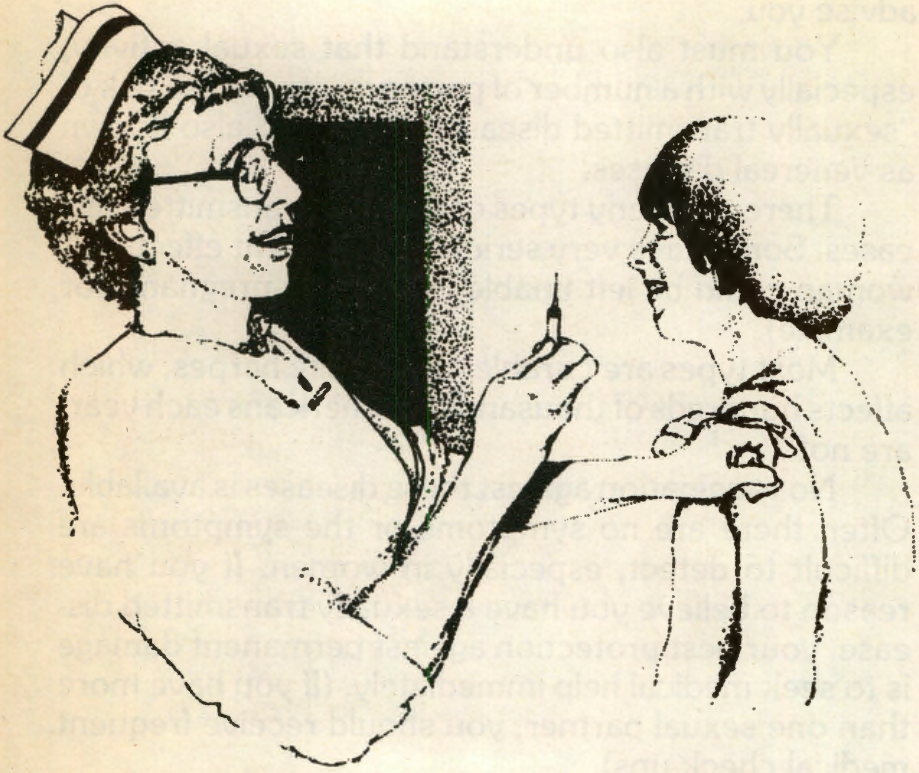
State law guarantees your right to medical attention for such diseases on an absolutely confidential basis. In other words, nobody knows but you and the health professionals who take care of you.

Once it is determined that you do have a sexually transmitted disease, you should tell those with whom you've had sexual contact. (Even though they show no symptoms, they may already have the disease).

So you don't further infect others, refrain from sexual relations until your doctor says it is safe.

See section of insert sheet on **Sexuality** for referral to local sources of additional information and assistance.

Immunization



Not so long ago thousands of Americans were killed or crippled each year by contagious diseases that today are entirely preventable by immunization (vaccination).

The sad fact is that once dread diseases like polio are now so rare that parents no longer fear them, and therefore fail to get their children immunized.

If you're not sure whether you have been fully protected against these diseases, check with your parents or your doctor. For information on which immunizations you need, check with your doctor or state health department.

What can happen if you're not adequately immunized against these preventable diseases? Here are some examples:

- Measles can cause inflammation of the brain, mental retardation and other disorders. In extreme cases, it can cause death.
- Polio can cause permanent paralysis. It kills 10 percent of its paralyzed victims.
- Rubella is usually not dangerous to a child who contracts it. But, when a pregnant woman is infected, the result can be miscarriage or birth defects.
- Diphtheria can cause suffocation, heart failure and paralysis.
- Tetanus can cause painful convulsions and death.
- Pertussis can cause convulsions, mental retardation and other disorders. It is especially dangerous to infants.
- Mumps can cause deafness in children. The disease can be particularly serious for teenagers and adults, and can cause sterility in males.

See section of insert sheet on **Immunization** for referral to local sources of additional information and assistance.

Dental Health

It's easy to take our teeth for granted, and hard to imagine doing without them. They certainly make eating more enjoyable, and they add a lot to our smiles.

But, hard and durable as they seem, teeth don't come with a guarantee to last forever. In fact, it's estimated that one out of every five Americans lose most of their teeth by age 39.

Hopefully you'll want to continue chewing and smiling for your entire life. That means you'll have to take care of your teeth, so they can keep on taking care of you.

There's nothing complicated about good dental care. All you need to do is brush your teeth thoroughly, covering all the tooth surfaces, every single day...at

least in the morning and evening. Fluoride toothpastes help strengthen your teeth. For best results, also use dental floss every day to clean the areas between your teeth, especially around the gum line.

Don't count on mouth wash to substitute for brushing and flossing. It will sweeten your breath for a while, but won't do a thing to protect your teeth or gums.

Teeth are especially vulnerable to cavities during the teen years. Regular visits to your dentist are especially important then. The dentist can detect and treat problems before they get serious.

Also, watch your diet. Too many sweets increase the chances of tooth decay.

The best dental health protection is to prevent the problems before they start. That's what you can do by daily brushing and flossing, restricting sugary foods and visiting your dentist regularly.

See section of insert sheet on **Dental Health** for referral to local sources of additional information and assistance.

Family History of Disease

You can do something about most factors affecting your health. You can decide not to smoke, for example, or to watch your weight or exercise. One thing you can't control is the "history" of medical problems in your family tree.

This history can make a difference in your health. If members of your immediate family (parents, brothers, sisters) developed certain medical problems before age 60, it's more likely that you'll develop them, too. Among the more common "hereditary" medical problems are heart disease, high blood pressure and diabetes.

Does that mean you should throw up your hands and do nothing to avoid these medical problems? On the contrary, it means you need to be extra careful now to lessen the chances you'll have these problems later on.

Do heart attack, stroke, or high blood pressure run in your family? Then you have a special reason for keeping your weight down and not smoking.

Heart atttack and stroke happen when a substance called cholesterol clogs the arteries, blocking the flow of blood to the heart or brain. What can you do? Exercise more and restrict your use of foods containing cholesterol and saturated fats... such as red meats, butter, lard and cream.

Have your blood pressure checked regularly. Then you'll know which blood pressure is "normal" for you, and you'll notice if it starts getting high.

Generally, high blood pressure is easily treatable. It is important to stay on the medication prescribed by the doctor because, untreated, high blood pressure

can be dangerous.

One last bit of advice. If it seems likely you have high blood pressure, or a strong tendency to get it, avoid salt in your diet. For some people, salt can raise blood pressure, worsening the problem.

Is there a history of diabetes in your family? That, too, tends to be an inherited disease. Try to remember common symptoms of diabetes, so you'll recognize them in yourself: frequent urination, excessive thirst, persistent hunger, weight loss, fatigue and infections that fail to heal. Obesity seems to be a factor in causing diabetes, so control your weight.

If you suspect you have diabetes, see your doctor. Only doctors can determine whether you have it. Diabetes is controllable though proper treatment.

See section of insert sheet on **Family History of Disease** for referral to local sources of additional information and assistance.

For Women

It's important that women take certain special precautions to protect their health.

One is the **Pap smear**, a simple, painless test for cancer of the cervix. The doctor collects a very small sample of cells from the uterus and cervix (the opening of the uterus) and the cells are analyzed in a laboratory. The test reveals cervical cancer before it shows any symptoms and when it's most curable.

It's recommended that women undergo Pap tests regularly once they reach age 20, or younger if they're sexually active.

While cancer of the uterus is extremely rare in women your age, you should be particularly careful if your mother or sister had to have her uterus removed. Also, if you experience abnormal bleeding or an

abnormal vaginal discharge, see your doctor promptly. Don't be afraid, however; most often the reason is nothing serious.

Another important precaution is **breast self-examination**, a simple procedure that enables early detection of breast cancer. If detected and treated early enough, breast cancers have an excellent chance of being cured.

If you notice a lump or some other unusual development in your breast, see your doctor without delay. Don't be frightened, however; most breast lumps or changes are not cancerous, especially at your age.

For more detailed information, read the American Cancer Society's publication, **How to examine your breasts.**

See section of insert sheet on **For Women** for referral to local sources of additional information and assistance.

Suggested Readings

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Wurtman, Judith. *Eating Your Way Through Life*. New York, NY: Raven Press, 1979.

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Here's how to check your heart rate

First, take your pulse. It's easy. All you need is a watch with a second-hand. Place the first two fingertips of one hand against the base of the thumb of your other hand. Press lightly until you feel your pulse. Count the beats for 10 seconds. Multiply by 6 to get your minute pulse . . . or heart rate.

If you want to check whether you're getting about the right amount of exercise, check your heart rate *immediately* after exercise. For teenagers, the exercise heart rate range should be about 135-170 beats per minute. For the first 4-6 weeks, your "exercise heart rate" should be at the lower end of your range. As you progress to a higher level of fitness, your "exercise heart rate" will move toward the top of your range.

As you get older, your exercise heart rate range will drop.

Age	Exercise Heart Rate Range*	Age	Exercise Heart Rate Range*
20	135-170	45	110-145
25	130-165	50	105-140
30	125-160	55	100-135
35	120-155	60	95-130
40	115-150	65	90-125

*Beats per minute

Calorie Expenditure per Minute for Various Activities

Body Weight	90	99	108	117	125	134	143	152	161	170	178	187	193	205	213	222	231	240
Baseball	2.8	3.1	3.4	3.6	3.9	4.2	4.5	4.7	5.0	5.3	5.5	5.8	6.1	6.4	6.6	6.9	7.2	7.5
Basketball (moderate)	4.2	4.6	5.0	5.5	5.9	6.3	6.7	7.1	7.5	7.9	8.3	8.8	9.2	9.6	10.0	10.4	10.8	11.2
Bicycling (level 13 mph)	6.4	7.1	7.7	8.8	9.4	9.8	10.2	10.8	11.4	12.1	12.7	13.4	14.0	14.6	15.2	15.9	16.5	17.1
Calisthenics	3.0	3.3	3.5	3.9	4.2	4.5	4.8	5.1	5.4	5.6	5.9	6.2	6.5	6.8	7.1	7.4	7.7	8.0
Dancing (vigorous)	3.4	3.7	4.1	4.4	4.7	5.1	5.4	5.7	6.1	6.4	6.7	7.1	7.4	7.7	8.1	8.4	8.7	9.1
Racquetball	5.9	6.4	7.0	7.6	8.1	8.7	9.3	9.9	10.4	11.0	11.6	12.1	12.7	13.3	13.9	14.4	15.0	15.8
Running (7 min. mile)	9.3	10.2	11.1	12.9	13.1	13.9	14.8	15.7	16.6	17.5	18.9	19.3	20.2	21.1	22.1	23.0	23.9	24.8
Skiing (downhill)	5.8	6.4	6.9	7.5	8.1	8.6	9.2	9.8	10.3	10.9	11.4	12.0	12.6	13.1	13.7	14.3	14.8	15.4
Skiing (level, 5 mph)	7.0	7.7	8.4	9.1	9.8	10.5	11.1	11.8	12.5	13.2	13.9	14.6	15.2	15.9	16.6	17.3	18.0	18.7
Swimming (crawl, 20 yds./min.)	2.9	3.2	3.4	3.8	4.0	4.3	4.6	4.9	5.1	5.4	5.7	5.8	6.3	6.5	6.8	7.1	7.3	7.7
Tennis (recreation)	4.2	4.6	5.1	5.4	5.8	6.2	6.5	7.0	7.4	7.8	8.2	8.6	9.0	9.4	9.8	10.2	10.8	11.0
Volleyball (moderate)	3.4	3.8	4.0	4.4	4.8	5.1	5.4	5.8	6.1	6.4	6.8	7.1	7.4	7.8	8.1	8.3	8.8	9.1
Walking (4.5 mph)	4.0	4.4	4.7	5.1	5.5	5.9	6.3	6.7	7.1	7.5	7.8	8.2	8.6	9.0	9.4	9.8	10.1	10.6
Weight Training	4.7	5.4	5.7	6.2	6.7	7.0	7.5	7.9	8.4	8.9	9.4	9.9	10.3	10.8	11.1	11.7	12.2	12.6

Remember that 3500 calories equal one pound. (source: CANADIAN AIR FORCE)

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For more information about wellness check contact your local health department, or the

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Office of Health Promotion
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75 Davis Street
Providence, R.I. 02908

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