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A DESCRIPTIVE STUDY OF THE HEALTH BEHAVIOR

OF A COLLEGE POPULATION

By

Joann P. Bunce

A Research Project

Submitted to

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To my husband, John, for all

his love and encouragement and

to my delightful daughter, Jennifer.

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ABSTRACT

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A descriptive study was conducted to report the health behavior of a college population. Research questions addressed included exploring the health behavior of a college population in the areas of self-responsibility, physical fitness, nutritional awareness, and stress management.

A convenience sample of 268 male and female students was selected from a larger number of students, all of whom completed a health questionnaire. The frequencies and percents demonstrate that students carry out some positive health behaviors including not smoking cigarettes or marijuana, would use birth control, decreasing the intake of caffeine and salt, including fiber in the diet, and being able to cope with stress.

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CHAPTER I

INTRODUCTION

According to the Surgeon General in Healthy People
(1979) adolescents are relatively healthy if measured
by morbidity and mortality indicators and compared to
other age groups. However, compared to years past,
progress has not been made in reducing the mortality
rate for adolescents. "Americans aged 15 to 24 now
have a higher death rate than 20 years ago" (Healthy
People, 1979, p. 43). Accidents, homicides, and
suicides are the major causes of death in this age
group. In addition, in this age group, health
behaviors are being incorporated into individual
lifestyles and "although chronic diseases are not among
the major causes of death at this period of life, the
lifestyles and behavior patterns shaped during these
years may determine later susceptibility to chronic
diseases" (Healthy People, 1979, p. 43).

There is a need for health prevention and health
promotion in this age (15-24 years) group. Primary
health prevention includes measures designed to
preclude the development of chronic illnesses. Today,
many of the primary health prevention measures focus on
personal behaviors that increase the risk of chronic

diseases. Examples of such high-risk behaviors include: smoking, which contributes to various cancers, cardiovascular disease, chronic obstructive pulmonary disease, and peptic ulcers (Healthy People, Background Papers, 1979 and Botvin and McAllister, 1981); a sedentary lifestyle which contributes to heart disease (Morris, 1980; Paffenbarger, 1975; Blackburn, 1981); diets high in fats which also contribute to cardiovascular disease (Lasser, 1981); and driving habits which contribute to automobile crashes (Accident Facts, 1982). Health promotion includes measures directed toward "...increasing the level of well-being, self-actualization, and fulfillment of a given individual..." (Pender, 1982, p. 65). The focus is on helping healthy persons "...develop lifestyles that can maintain and enhance the state of well-being" (Healthy People, 1979, p. 119).

It is appropriate for nursing to be involved in health prevention and health promotion in the adolescent age group. "Nursing aims to assist people in achieving their maximum health potential. Maintenance and promotion of health, prevention of disease, nursing diagnosis, intervention, and rehabilitation encompass the scope of nursing's goals"

(Rogers, 1970, p. 86). Nursing is concerned with all people and all areas where there are people (Rogers, 1970).

Consequently, when at a large university, nurse run clinics were established in two residence hall complexes, one of the goals identified was to promote high level wellness in the student population. According to Dunn (1977) high level wellness is "an integrated method of functioning which is oriented toward maximizing the potential of which the individual is capable, within the environment where he is functioning" (p. 9). Ardell (1979) describes high level wellness as a lifestyle approach to improving health, reducing risks of disease, and providing a life of greater satisfaction, serenity, and an expanded interest in the future. Promotion of high level wellness is a goal that incorporates health prevention and health promotion. Promotion of high level wellness is also a goal that is congruent with nursing's goal of assisting individuals to achieve their maximum health potential.

In order to promote high level wellness a questionnaire was developed and distributed to assess the health behaviors of the college students that the

nurse-run clinics served. Assessment is the first step
in the nursing process and it "...is an investigative
operation that enables nurses to make judgments about
the existing health care situation and decisions about
what can and should be done" (Orem, 1980, p. 203). By
interpreting the results of this questionnaire, the
strengths and weaknesses of the students' health
behavior can be identified, and appropriate action can
be planned and implemented. An initial description of
students' health behavior may highlight areas in need
of more in depth research or areas in need of immediate
nursing intervention.

PURPOSE

The purpose of this study is to describe the
stated health behaviors of a college population. This
will be done utilizing four of the five dimensions of
high level wellness described by Ardell (1979) that
were incorporated into the questionnaire. This is a
descriptive study to assess student health behavior,
the first step of the nursing process to promote high
level wellness in the student population.

STATEMENT OF THE PROBLEM

In this study, based on Ardell's (1979) model, the
following questions are addressed:

What are the health behaviors of a college
population in the area of <u>self-responsibility</u>?
What are the health behaviors of a college
population in the area of <u>physical fitness</u>?
What are the health behaviors of a college
population in the area of <u>nutritional awareness</u>?
What are the health behaviors of a college
population in the area of <u>stress management</u>?

DEFINITIONS

Definitions of the concepts are presented to
facilitate the understanding of the promotion of high
level wellness.

High level wellness - a lifestyle approach to improving
health and maximizing the potential of which the
individual is capable within the environment. A
process. (Ardell, 1979).

Lifestyle - A unique pattern of behaviors in one's life
resulting from what one thinks, feels and does
(Vierke, 1980, p. 237).

Health behavior - actions taken by an individual to
prevent disease and promote health. Health
behaviors are incorporated into one's lifestyle.

Health - an ideal, dynamic state of perfect integrated
functioning in the biological, psychological,

social, and spiritual spheres of a human being.
An outcome.

College population - the study population came from
individuals attending a mid-western, Big-10, State
university, for the purpose of obtaining a college
degree and living in a residence hall.

Dimension of self-responsibility - an active sense of
accountability for one's own well-being (Ardell,
1979, p. 102).

Dimension of nutritional awareness - a sense of wise
food selection and sensible diet patterns (Ardell,
1979, p. 125).

Dimension of stress management - a sense of knowledge
and recognition of stress, stress symptoms, and
stress management (Ardell, 1979, p. 145).

Dimension of physical fitness - active participation in
regular exercise (Ardell, 1979, p. 156).

ASSUMPTIONS

Assumptions upon which this study was based
included:

1. Students' response to the questionnaire were real
and honest.

2. Students did not confer with others when
responding to the questionnaire.

3. Students were able to identify their own health behaviors among those listed in the questionnaire.

4. Researcher's operationalizing of health behavior is consistent with the meanings by Ardell (1979).

5. Ardell's (1979) model is applicable to a college population.

6. Achievement of high level wellness is a desirable goal and improves the quality of life.

LIMITATIONS

Limitations associated with this study included:

1. The students who completed the questionnaire may have been different from those who refused to complete the questionnaire.

2. This study examines only those health behaviors considered important by the researchers who developed the questionnaire.

3. The dimension of environmental sensitivity of high level wellness was not examined in this study.

4. The type of sample was a convenience sample.

5. The results of this study can only be generalized to those students living in one residence hall of the university and not ot those students living in other residence halls of off-campus.

In the rest of this paper, the investigator describes the conceptual framework, the review of literature, the methodology, the report of the findings and the implications for nursing of the study.

CHAPTER II

CONCEPTUAL FRAMEWORK

According to government statistics the major
causes of death in adolescents (age 15-24) are
accidents, homicides and suicides. In older adults,
those over 44, heart disease, stroke and cancer are the
leading causes of death (Healthy People, 1979).
Personal behavior or habits can play an important role
in preventing death. John Knowles (1977) reports that

> "A large percentage of deaths (estimates
>
> up to 80 per cent) due to cardiovascular
>
> disease and cancer are 'premature,' that is,
>
> occur in relatively young individuals and are
>
> related to the individual's bad habits.
>
> Heart disease and strokes are related to
>
> dietary factors, cigarette smoking,
>
> potentially treatable but undetected
>
> hypertension, and lack of exercise. Cancer
>
> is related to smoking (oral, buccal, lung,
>
> and bladder cancer) and probably to diets
>
> rich in fat and refined foodstuffs and low in
>
> residue (gastrointestinal and perhaps breast
>
> and prostatic cancer) and to the ingestion of
>
> food additives and certain drugs, or the

inhalation of a wide variety of noxious

agents. Certain occupationsl exposures and

personal hygienic factors account for a small

but important fraction of the total deaths

due to cancer. Theoretically, all deaths due

to accidents, homicide, and suicide are

preventable" (p. 62).

Breslow and Belloc (1972) also conclude that following

certain health habits with regards to smoking,

drinking, diet, sleep, and exercise, can add to an

individual's life expectancy. Ardell (1979) emphasizes

that following a wellness lifestyle, besides decreasing

a person's chances of becoming ill, will enhance an

individual's sense of well-being. Pender (1982)

supports this point by concluding that "... health

promoting behaviors are directed toward 'sustaining' or

'increasing' the level of well-being, self-

actualization, and fulfillment of a given individual or

group" (p. 65).

Ardell (1979) describes a high level wellness as a

unique, positive, integrated approach to well-being.

He describes five areas of well-being that need

attention - self-responsibility, nutritional awareness,

physical fitness, stress management, and environmental sensitivty.

Self-responsibility is a sense of accountability for one's health. Ardell (1979) stresses that by being responsible for one's health, one would have the desire and energy to sustain activity in the other four dimensions. The health belief model was developed to explain preventive health behavior (Rosenstock, 1974). In this model, perceived benefits, perceived barriers, perceived susceptibility to disease and perceived seriousness of disease are considered important influences on one's health activity and carrying out preventive measures. One's sense of responsibility or accountability may also be influenced by an internal or external locus of health control (Ardell, 1982; Pender, 1982).

Self-responsible behavior has preventive and promotive health benefits. Self-care activities such as self breast/self testicle exam, periodic health exams and periodic or annual pap smears can help decrease the mortality of certain cancers through early detection and treatment. The number of car accidents can be decreased by responsible driving habits such as using seat belts 100% of the time, following speed

limits, and avoiding drinking and driving (Accident
Facts, 1982). Alchol abuse contributes to chronic
diseases such as cirrhosis, certain cancers, and heart
disease (Lindberg, 1980; Healthy People, Background
Papers, 1979). Smoking increases the risk for
cardiovascular disease, lung cancer and chronic
respiratory diseases. The longer the years of smoking
the greater the risk (Botvin and McAlister, 1981;
Healthy People, 1979). Not smoking and limited alcohol
intake are responsible behaviors in this dimension.
Unwanted pregnancy can be decreased and sexual
enjoyment increased by responsible birth control use
(Ardell, 1982).

Ardell (1979) stresses the need for wise food
selection in describing the dimension of nutritional
awareness. An adequate diet may play a major role in
preventing disease and contributing to alertness and
energy needed for productive living (Pender, 1982).
Activities in this area, that include maintaining ideal
body weight, increasing the intake of fiber, and
decreasing the intake of salt, fats and food additives,
may prevent a number of chronic diseases. An increased
intake of fats is linked to elevated serum lipids, a
risk for cardiovascular disease (Blackburn, 1983;

Lasser, 1981; Stamler, 1979). Salt intake is linked to hypertension which is another risk for cardiovascular disease (Borhani, 1981; Dahl, 1972). Obesity is indirectly linked to heart disease by contributing to hypertension and elevated serum cholesterol (Lasser, 1981). A diet low in fiber may place the individual at risk for cancer of the colon (Burkitt, 1978; Pender, 1982). Food intake should emphasize fresh, whole foods from a variety of sources.

Being physically fit will reduce the hazards of inactivity such as fatigue, poor musculature, inflexibility, obesity, and premature aging (Ardell, 1979). Exercise may be a protection against heart disease (Morris et al, 1980, Paffenbarger et al, 1978, Siscovick, 1982). Regular exercise may also help reduce stress (Randolpy, 1979; Sutterly, 1979). Other benefits of being physically fit and exercising regularly may be improved self-image, improved psychological well-being, and decreased depression (Fair, 1979; Glasser, 1976; Pender, 1982). In the dimension of physical fitness, Ardell (1979) encourages twenty minutes of exercise at eighty percent maximum heart rate four times a week, in an activity that is non-competitive and enjoyable. This type of exercise

is aerobic exercise. Strength building exercises and flexibility exercises are also an important part of physical fitness (Ardell, 1982).

Selye (1976) initially researched stress and defined it as "...the non-specific response of the body to any demand..." (p. 1). Inability to adapt to increasing demands or stressors can have negative results. Pelletier (1977) suggests that stress is a factor contributing to cardiovascular disorders, cancer, arthritis, and respiratory diseases. Insomnia may result from too much stress (Diekelmann, 1977). Stress management is important because stress in and of itself is not always harmful but rather the amount of harm depends on how one reacts to it (Selye, 1976). In the stress awareness and management dimension, Ardell (1979) emphasizes "...ways to develop your power to recognize and deal with stress, approaches to consider and techniques to utilize" (p. 21).

The fifth dimension of high level wellness is environmental sensitivity. In this area, Ardell (1979) focuses on the need to control one's personal and external environment leading to a sense of purpose, higher self-esteem and self-awareness. Activities in this dimension include better use of natural resources

and energy, joining an environmental organization, and minimizing annoyances.

High level wellness is an approach to life that integrates principles or activities of healthful living in all five dimensions. Building a wellness lifestyle takes time as particular behaviors are accepted or rejected and incorporated into one's identity, thus high level wellness is unique to each individual. Being independent and in control of one's behavior is the key to well-being now and in the future.

College students are at an age where they are becoming independent and forming an identity. Freshmen have not formed an identity compared to seniors (Mussen, 1979). "Adolescence is a key point in the life cycle for formulating a personal philosophy about the value and meaning of one's wellness" (Bruhn and Cordova, 1978, p. 17). At this age (15-24 years), health habits and practices are being evaluated and incorporated into one's lifestyle. Social pressures or peer expectations may influence the choice of health behaviors. These health behaviors, positive or negative, will probably be carried into adulthood where once established they may be impossible to modify in the later years. There are health problems unique to

this age group that can be reduced by improved health
behavior. Car accidents, alcohol abuse, suicide, and
unwanted pregnancy are examples of these problems
(Healthy People, 1979). Consequently, the need for
college students to incorporate preventive and
promotive health behaviors or to follow a wellness
lifestyle becomes critical if the health problems of
today and diseases of the future are to be avoided and
positive well-being achieved.

The nurse may be the health care provider who is
ideally suited for helping college students
incorporate positive health behavior into their
lifestyle and therefore lead to improved health. The
aim of nursing is to assist individuals to achieve
their maximum health potential and the arena of service
includes school (Rogers, 1970). Orem's (1980) model of
self-care can be used to describe this process. Within
Orem's framework, high level wellness can be explained.

Before Orem's model is described, a definition of
health is needed. Health is the goal of nursing, self-
care, and high level wellness. Orem (1980) discusses
health in terms of a state of being whole or sound.
"These terms, when used together in regard to health,
signify human functional and structural integrity,

absence of genetic defects, and progressive integrated
development of a human being as an individual unity
moving toward higher and higher levels of integration"
(Orem, 1980, p. 121). Orem (1980, p. 121) also states
that health is "a state of human perfection that
includes continuing human development." Ardell (1979)
defines health as a dynamic state comprised of three
components (physical, emotional, and mental) which is
an outcome of a wellness lifestyle. The physical
component is freedom from pain and illness. The
emotional component is a state of serenity, calm and a
zest for living. A state of compassion and purpose
describes the mental aspect (Ardell, 1979, p. 74).
Based on these definitions, this investigator feels
that health is an ideal dynamic state of perfect
integrated functioning in the biological,
psychological, social, and spiritual spheres of a human
being.

According to Orem (1980, p. 35) self care "is the
practice of activities that individuals initiate and
perform on their own behalf in maintaining life,
health, and well-being." Self care is based on
voluntary actions that individuals are capable of
performing. It is also based on thoughtful judgement

that leads to appropriate action. Self care has a
purpose (Orem, 1980). When individuals are unable to
accomplish self care, nursing is needed. "People can
benefit from nursing because they are subject to
health-related or health-derived limitations that
render them incapable of continuous self-care ..."
(Orem, 1980, p. 27). The purpose of nursing is to
facilitate a person's ability to perform self care,
thereby promoting health or speeding recovery from
disease.

Orem (1980) defines three types of self care.
They are universal self care, developmental self care,
and health deviation self care.

Universal self care requisites are basic human
needs and include:

1. The maintenance of a sufficient intake of
   air.

2. The maintenance of a sufficient intake of
   water.

3. The maintenance of a sufficient intake of
   food.

4. The provision of care associated with
   elimination processes and excrements.

5. The maintenance of a balance between activity and rest.

6. The maintenance of a balance between solitude and social interaction.

7. The prevention of hazards to human life, human functioning, and human well-being.

8. The promotion of human functioning and development within social groups in accord with human potential, known human limitations, and the human desire to be normal" (p. 42).

Developmental self care requisites are those needs which promote the process of development or prevent negative effects of conditions that affect human development (Orem, 1980). College students are completing the developmental tasks of adolescence and entering adulthood. Although this study does not focus on the success or failure of the completion of these tasks, the investigator recognizes that this process may need to be assessed in order to promote high level wellness. Delayed or unsuccessful completion of developmental tasks may interfere with the person's ability to follow preventive or promotive health behavior. On the other hand, successful completion of

the developmental tasks of adolescence may enhance an individual's learning of wellness behavior.

Health deviation self care requisites are needs that arise when a person is ill or injured or requires medical care (Orem, 1980). These self care needs do not apply in this study. Health promotion begins with individuals who are basically healthy and seeks the development of measures that can help these individuals develop lifestyles to maintain and enhance the state of well-being.

Finally, Orem (1980) describes three nursing systems that can be utilized in helping individuals meet their self care needs. These systems are based on the ability of the person to engage in self care. The three systems are wholly compensatory system, the partly compensatory system, and the supportive-educative system. The supportive-educative system is appropriate to use in this study.

In the supportive-educative system, the client is the primary resource. The client is healthy, able to perform self care, and make decisions but may need education or support to improve his or her health behavior. The nurse role is one of being equal with the client, consultive, supportive and educative.

"Health education is a process that informs, motivates, and helps people to adopt and maintain healthful practices and lifestyles..." (Pender, 1982, p. 150). Supporting healthful practices may include physical support, psychological support, or providing an environment that supports development (Orem, 1980). In the supportive-educative system, especially with college students, the nurse needs to assess and capitalize on the existing knowledge, skills, and performance of positive health habits.

The promotion of high level wellness fits nicely into the self care model. High level wellness is defined by Dunn (1977, p. 9) as "an integrated method of functioning which is oriented toward maximizing the potential of which the individual is capable, within the environment where he is functioning." Ardell (1979) expands on this concept. High level wellness is a lifestyle-focused approach that incorporates some aspects of five wellness dimensions- self-responsibility, nutritional awareness, stress management, physical fitness, and environmental sensitivity (Ardell, 1979). Activities in the five dimensions of wellness include preventive and promotive health behaviors. One of the principles of high level

wellness is that the individual is the chairperson of well-being. Self-responsibility is also stressed by Ardell (1979; 1982). This is congruent with Orem's (1980) emphasis on the indiviual performing self care. Accomplishing activities from the five wellness dimensions is similar to meeting some universal self care requisites. Prevention of hazards to human life and promotion of human functioning act as an umbrella encompassing the five wellness dimensions as well as the other universal self care needs. An example would be driving within the speed limit. This is a positive health behavior that fits into the dimension of self responsibility and under the self care requisite of prevention of hazards. Other examples include not smoking, regular exercise, a balanced diet and seven hours of sleep.

Based on this explanation, if a person is not following a wellness lifestyle in order to improve health then this person is not meeting their universal self care needs. Consequently, nursing is needed to facilitate these needs. This is the situation that applies to helping college students incorporate positive health behavior into their lifestyle. If these students are not following positive health

behaviors then there is a self care deficit. Nursing care is needed.

Bruhn and Cordova (1977) report that wellness behavior is learned. Ardel (1979) adds that when an individual initiates high level wellness behaviors support may be needed. The nurse, then, would use the supportive-educative system, according to Orem (1980), to promote positive health behavior. In this system, the "...patient's requirements for assistance relate to decision making, behavior control, and acquiring knowledge and skills" (Orem, 1980, p. 101). This applies to college students who may not be performing a preventive exam, such as self breast/testicle exam because they do not understand the importance of such an exam or lack the skill to perform such an exam. In addition, students who are performing positive health behaviors, such as not smoking or infrequent drinking, may need support for appropriate decision-making and self-control as they try new behaviors or are influenced by peers during their college years. Nursing techniques in this system include combinations of support, guidance, provision of a developmental environment, and consultation (Orem, 1980).

Within this system, the nursing process needs to be applied in helping college students incorporate positive health behavior into their lifestyle. Assessment is the first step that is needed to determine the self care needs of the sutdents. What health behaviors do students follow? What are the self care deficits of college students? What are the strengths and weaknesses of the students in following high level wellness? Orem (1980) calls this step diagnosis and prescription. With adequate data, designing and planning appropriate nursing intervention can be accomplished. The final step in the nursing process according to Orem (1980) is producing care to regulate theraputic self care demand. In this step, implementation and evaluation are carried out.

The scope of this study is assessment. Data is collected from students by means of a questionnaire that inquires about health behaviors. A description of the health behavior of a college population is needed before planning and implementing appropriate nursing care. This process is summarized in a diagram based on Orem's (1980) self care model and includes the promotion of high level wellness. See Figure I. The nursing process-assess, plan, implement, evaluate, is

initiated by the nurse. The need for nurse action or intervention is determined by assessment and planning. If a self-care deficit exists, nursing intervenes to assist the college students to overcome the self care limitations (right side of diagram). If there is not a self-care deficit, nursing can still act to assure continued accomplishment of self care demands (left side of diagram).

HEALTH
(high level wellness)

```
┌─────────────────────────┐          ┌─────────────────────────┐
│      ACCOMPLISHES       │          │      ACCOMPLISHES       │
│       SELF CARE         │          │       SELF CARE         │
│ (performing preventive/ │          │                         │
│  promotive behaviors)   │          └─────────────────────────┘
└─────────────────────────┘
```

STUDENT
ACTION

```
                                     ┌─────────────────────────┐
                                     │   OVERCOMES SELF        │
                                     │   CARE LIMITATIONS      │
                                     │   (not performing       │
                                     │    preventive/          │
                                     │    promotive            │
                                     │    behaviors)           │
                                     └─────────────────────────┘
```

NURSE ACTION

support
guidance
education
consultation
providing a
   developmental
   environment

implementation
& evaluation

producing care
to regulate self
care demand

planning   designing and
                            planning

assessment   diagnosis and   scope of
                            prescription   this study

Figure 1.   The Nursing Process Model -
            adopted from Orem's Model (1980, p. 98)

CHAPTER III

REVIEW OF LITERATURE

In this chapter, literature relevant to the major areas of study are reviewed. These areas include self-responsibility, physical fitness, nutritional awareness, and stress management. It is beyond the scope of this study to review all of the literature written on these areas. Relevant literature is reviewed to show the risks and benefits of particular health behaviors within each area to demonstrate the need for health prevention and health promotion. A major area for recent research are studies that report on the attitudes and motivations for carrying out certain health actions. Some of these articles are reviewed. Prevalence reports or studies that report the health behavior of college students of this age group are reviewed. Finally, the writings of Ardell (1979, 1982) are included since his writings are the basis for the theoretical framework.

SELF-RESPONSIBILITY

Behavior in relationship to health practices is complex and difficult to predict. There are many varibles that determine whether an action, healthy or unhealthy, will be carried out. Although this study

reports <u>what</u> college students are doing and <u>not</u> <u>why</u> they are doing it, a brief review of literature related to the variables studied to predict health action is offered for a beginning understanding of this area.

According to Ardell (1979) the means to leading a health enhancing lifestyle is self-responsibility. This is the keystone or basis for all positive action. Self-responsibility is defined by Ardell (1979) as an "...active sense of accountability for your own well-being..."(p.102). He stresses the need for personal accountability to avoid high risk behaviors, the need for a sense of purpose, and being in charge. Motivation to pursue high level wellness comes from a desire for happiness and good health. Ardell (1979) is very upbeat, with a you can do it if you try attitude toward carring out health preventive or health promoting behaviors. In his new book, Ardell (1982) expands on these same themes. Self-responsibility includes being able to understand the limits of medicine and the ability to practice self care and use the medical system effectively. Ardell recognizes the importance of developing an internal locus of control (he doesn't say how to develop it) and that there may be barriers as well as benefits to a wellness

lifestyle. Although Ardell (1979, 1982) cites some research, generally his writing is descriptive based on his own beliefs. Ardell (1982) does realize that self-responsibility in following a wellness lifestyle is a difficult and complex process.

One model, based on research, that begins to explain the many dimensions of health behavior is the health belief model. In this model, Rosenstock (1974) describes individual perceptions (perceived susceptibility of disease and perceived seriousness of disease), modifying factors (demographic variables, socio-psychological variables, structural variables, cues to action and perceived threat of disease), and likelihood of action (perceived benefits and perceived barriers of action) as predictors of preventive health behavior. Rosenstock (1974) reviews research that support or refute the model. The health belief model has been used a a basis for further research.

Pender (1982) modifies the variables in the health belief model that predict preventive health behavior. Under individual perception she adds two variables- importance of health and perceived control. Pender cites several studies that show that concern about protecting health emerge as an important predictor of

preventive behavior. Pender also discusses health locus of control and the research that investigates the relationship between internal-external control and physical health and well-being. According to Pender, the importance of health locus of control has been supported by studies in predicting preventive behavior, smoking behavior, weight loss behavior, use of birth control and use of seat belts.

Pender (1982) also develops a health promotion model to predict health promoting behavior. In a similar fashion to the health belief model, she describes individual perceptions, modifying factors, and the likelihood of action. Some of the variables she includes under individual perceptions are the importance of health, perceived control, desire for competence, self-awareness, self-esteem, definition of health promoting behaviors. Pender reports studies that demonstrate the relationship of these variables to health promoting behaviors but concludes that further research is needed to determine the extent to which each variable contributes to action.

Langlie (1977) studied social networks, health beliefs, and preventive health behavior. Langlie used eleven scales (i.e. driving behavior, smoking, medical

check-ups, etc.) to measure preventive health behavior. She found, after studying the inter-correlations among the eleven scales, that preventive behaviors were not independent of one another. Instead, there were two dimensions of preventive health behavior (PHB) which she labeled indirect risk PHB and risk PHB. The independent variables were the social network variables such as neighborhood and family, socioeconomic status, non-kin and kin interaction, conjugal structure, and religious affiliation. Langlie (1977) reports that "...both social-psychological attributes of the individual and characteristics of his social milieu exert a significant impact on indirect risk PHB" (p. 252). Based on her findings, Langlie supports further research into the two dimensions of PHB, direct risk PHB and indirect risk PHB.

Mechanic and Cleary (1980), in studying factors associated with positive health behavior concluded that positive health behavior is associated with both psychological well-being and subjective health status (perception of health). Other variables predicting positive health behavior include sex (Women had more positive scores), education (persons with higher levels of education had more positive scores), and

conventional behavior orientation (persons more
conventional or in harmony with society had more
positive scores).

Krantz (1980) studied one aspect of self-
responsibility-that of patients becoming more active
and informed in the health care process. He developed
the Krantz Health Opinion Survey made of two subscales,
behavioral involvement (B) and information (I). The
behavioral involvement scale is concerned with
attitudes toward self-care and the information scale is
concerned with the desire to ask questions and be
involved in medical decisions. In the study, Krantz
uses college students who visit the college medical
office with minor complaints as subjects. Some of the
results reveal that higher I scores were associated
with a greater number of questions asked and B scores
related significantly to self diagnosis. Requesting
specific medications related to the total health
Opinion Survey score, showing involvement of both the
elements inquisitiveness and behavioral involvement.
The importance of the Krantz study is that in college
students at least, attitudes toward treatment
approaches can be measured and that these attitudes
influence health and illness behavior.

In summary, the writings of Ardell (1979, 1982) and the research articles reviewed begin to show the complex, multi-faceted nature of self-responsibility in carrying out preventive or promotive health behavior. For nurse researchers, this area presents many questions and research opportunities. For the nurse practitioner, trying to change individual behavior, recognition of the variables influencing action is important and may need assessment. Articles concerning health behavior that require self-responsibility are reviewed in the next sections. These are categarized under four areas - general health behaviors, driving behaviors, self-abuse behaviors, and contraceptive behavior.

GENERAL HEALTH BEHAVIOR

Preventive Health Examination

The need for an annual history, physical exam, and particular screening tests in an asymptomatic adult is being questioned as unnecessary. Morbidity, mortality, available screening tests, available treatments, and costs are considered in making recommendations for preventive health measures. Frame and Carlson (1975) recommend a complete history and physical exam at age 21, including height, weight, blood pressure, and

physician breast check for women. This visit also includes smoking history, history of alcohol use, and history of rheumatic fever. Tests obtained include pap smear, cholesterol, VDRL, and PPD. This examination is used for the opportunity to teach self-breast exam, self neck exam, and self testicle exam. Blood pressure and pap smear is obtained one year later and if normal, then checked every two years.

Somers (1979) recommends one visit at age 18-19 years for a medical and behavioral history, blood pressure check, height, weight, and for women a breast exam. Procedures that should be done once in the 18-24 year age group include eye screen, urinalysis, PPD skin test, VDRL, serum cholesterol, hemoglobin, and rubella titer in unimmunized women. A pap smear should be done every 2-3 years and a tetanus booster should be given if needed (Somers, 1979). Somers also recommends the need for history and counseling at least once for the problems of smoking, unwanted pregnancy, alcoholism, drug abuse, accidents, obesity, and lack of exercise.

Lindberg's (1980) screening flow chart take into account the findings of major studies, so here recommendations are similar to Frame and Carlson (1975) and Somers (1979). Lindberg also recommends teaching

and counseling in the areas of exercise, nutrition, stress reduction, and use of seat belts.

Although the need for a yearly medical check-up is being questioned, the need for a health appraisal, selective screening tests, and counseling is recommended by Frame and Crlson (1975) Somers (1979) and Lindberg (1980) for an individual age 18-24 years, at least once in this age range. In addition, this health visit can be used to teach and encourage health promoting behaviors. Assessment of whether persons in this age group utilize the health care system for this reason needs to be done.

Preventive Dental Examination

To prevent dental caries, Somers (1979) and Lindberg (1980) recommend a dental examination every one to two years for all adults. According to Cohen (1982) college students are very susceptable to peridontal disease and dental caries.

Snyder, Cohen, and Labelle (1982) did a study to examine the dental attitudes that help shape the dental utilization patterns of college students. The independent variables to predict seeking dental care included demographic variables, past dental experience variables, health belief model variables,

satisfaction/attitude variables, anxiety and oral health status. Satisfaction with dentists and attitudes towads dentists had the strongest effect in predicting dental-service utilization. In a review of literature by Haefner (1974), health belief model variables such as perceived susceptibility, perceived seriousness, and benefits do not seem to influence preventive dental behavior. Snyder, Cohen, and Labelle (1982), in their study, also agree with these findings.

A study by Cohen, Snyder, and Carter (1982) found students to be in generally good oral health. The study by Cohen, Snyder and Carter (1982) and the study by Snyder, Cohen, and Labelle (1982) found that the majority of college students, 67.0% and 65.7% respectively, had visited the dentist within the past year. Further assessment of utilization of dental services by college students needs to be done to determine if this high percentage is consistent, since there is a need for annual dental care.

Pap Smear

Affecting younger women, invasive cancer of the cervix occurs in 15.6 of 100,000 women. The mortality rate is 5.2 of 100,000 women (Lindberg, 1980). The pap smear is an inexpensive reliable test to screen for

cervical cancer. There is disagreement as to how often a pap smear needs to be done. There is agreement in the literature that an initial smear should be obtained by age 20 years or at the onset of sexual activity (Frame and Carlson, 1975; Lindberg, 1980; Somers, 1979).

In a study of the reasons for seeking gynecological services by college women, Needle (1976) reports that the primary reason for 33.9% of the women was for a check-up and pap smear. Attitudes of women toward the gynecologic examination was studied by Petravage, Reynolds, Gardner, and Reading (1979). The median age of the women in this study was 28.4 years. They found that women are uncomfortable with pelvic examinations due to physical discomfort. In addition, the study shows that women need and want to be educated about the gynecologic exam and that knowing more would make the women more comfortable during the procedure.

Self Breast Examination

Breast cancer is the most common malignancy for women and 28% of the time it effects women under 50 years of age (Healthy People Background Papers, 1979). Most breast cancers are found by women themselves. Foster, Lang, Costanza et al (1978) report that more

frequent performance of breast self-examination was associated with more favorable clinical stage and fewer axillary lymph node metastases. Monthly self examination of the breasts is an important preventive measure. Consequently, there are many studies that research the factors that influence the performance of self-breast examination.

Bennett, Lawrence, Fleischmann et al (1983) report that women were more likely to practice self breast exam if they were living with their sexual partner, had been shown how to perform breast self examination (BSE) and were confident in their exam technique. They did find that the practice of BSE was not related to the practice of other preventive health activities. In this study, 36% of the respondents report doing self breast exam monthly. Sixty-five percent of the women in this study were age 18-35 years. Trotta (1980) found that only 12% of the subjects had performed BSE monthly in the last six months. Trotta found that women who had been taught by personal interaction tended to practice more frequently. The mean age of the sample in this study was 36 years.

Hallel (1982) reports that 42% of the women in her study sample perform BSE monthly. Hallel found that

women who practice BSE was correlated with higher
levels of health beliefs (perceived benefits and
perceived suceptability) and higher self-concept.
Stillman (1977) does not come to this conclusion. She
found that while a majority of women with high beliefs
in perceived benefits and perceived susceptability
perform BSE to some degree, 24% with high beliefs in
perceived susceptability and 27% with high beliefs in
perceived benefits do not practice BSE at all. In this
study 62% of the women were age 30-39 years and 39%
were found to practice BSE monthly. Schlueter (1980)
concludes that knowledge of breast cancer, beliefs
about breast cancer and BSE or engaging in regular
physical exercises do not affect the practice of BSE.
In this study, over half the women were in the range of
20-29 years and from the total sample, 44.1% practice
BSE regularly.

The articles on BSE begin to show the prevalence
of women practicing BSE, from a low of 12% (Trotta,
1980) to a high of 44.1% (Schlueter, 1980). Women in
the study samples do include women in the age range
(18-24 years) of college women. The reasons for
performing or not performing SBE are being explored.
Assessment, ongoing research, and intervention need to

continue especially if the performance levels for BSE stay low.

Self Testicular Examination

Although the incidence of testicular cancer is low it does affect young men. "In men between the ages of 29 and 35 it is the most common type of cancer." (American Cancer Society, 1978). Testicular cancer is the number two killer, behind accidents, of men age 20 to 35 years of age (Gault, 1981).

The first sign of testicular cancer is enlargement or change in the consistency of the testes. The prognosis improves with early detection and treatment of this cancer. Self palpation of the testicles is an important health action to discover changes early.

Research on self testicular exam (STE) such as prevalence or motivation to do, has not been carried out to the extent that research on self breast exam has been done. Conklin, Klint et al (1978) interviewed 90 male college students about testicular cancer and STE. They found that none of the subjects knew how to examine their testicles correctly and only one knew what changes to palpate for. Initial research in this area is needed to determine knowledge and performance levels of STE in young men.

Craun and Deffenbacher (1981) studied cancer knowledge and examination frequency in college students in relationship to self breast exam, self testicular exam, and getting a pap smear. After a lecture, cancer knowledge significantly increased but performance activities varied. For men, testicular examination frequency increased. For women, self breast exam frequency remained the same. Due to measurement artifact, the number of months since the last pap smear for women increased. In this study, there was a lack of significant correlation between knowledge and behavior.

In summary, intervention to improve performance of these and other general health measures needs to be more than just education. Ongoing research can aid the development of intevention strategies. Decreased morbidities and mortality should result from improved performance in getting health check-ups, dental exams, and doing BSE or STE.

DRIVING BEHAVIORS

The number one cause of death in the 15-24 year age group is car accidents (Healthy People, 1979). In 1981, 17,500 persons aged 15-24 died in motor vehicle accidents (Accident Facts, 1982). Alcohol is indicated

in at least half of the fatal accidents. In Michigan, raising the minimum legal drinking age from 18 to 21 years in 1978 resulted in significant reductions in alcohol-related crashes in 1979 for drivers aged 18-20 years of age (Accident Facts, 1982). Another study in Accident Facts (1982) reports that 55% of the 15 to 21 year olds that were in fatal accidents had a blood alcohol content of .10 or higher which is above the legal limit.

Excessive speed was a factor in 35 to 40 percent of all vehicular fatalities in 1977. Lack of seat belt use also contributes to serious injuries and fatalities (Healthy People, 1979). Research articles that reported seat belt usage alone were not found in the literature. Seat belt usage was studied as one component of several factors contributing to positie health behavior by Langlie (1977) and Mechanic and Cleary (1980). Langlie (1977) reported that seat belt usage, as a part of appropriate indirect risk, preventive health behavior, is related to the perception of control over one's health status, high benefits and low costs of preventive action, and belonging to a social network characterized by high socio-economic status and frequent interaction between

friends and neighbors. Mechanic and Cleary (1980) reported that following positive health behavior, including wearing seat belts, is related to perception of health, psychological well-being, being a woman, being well-educated, and follow conventional behavior.

In summary, there is a need to study driving behavior, including seat belt usage, in this age group (15-24 years) and there is a need for health prevention in this age group to reduce the mortality rate.

SELF ABUSE BEHAVIORS

Smoking

Cigarette smoking is linked to many health problems including cardiovascular disease, various cancers, chronic obstructive lung disease, and peptic ulcers (Botvin and McAlister, 1981; Paffenbarger, 1980; Wynder and Hoffman, 1979). The development of a smoking habit in the college age group or an earlier age group is important to prevent since there is a direct relationship between the number of years smoked and the extent of risk for disease (Botvin and McAlister, 1981). Kaufman et al (1983) report that the risk of myocardial infarction increase with the number of cigarettes smoked.

Two studies report the prevalence of smoking in

college students. Wechsler and Gottlieb (1979)
examined the smoking behavior among college students at
34 New England colleges. The final sample included
7,345 students in seven public and twenty-seven private
colleges. Wechsler and Gottlieb report that 44% of the
women smoke and 32% of the men smoke. Vierke and
McKillip (1980) in studying a sample of 400 students
found only 24% were current smokers. Both studies
(Wechsler and Gottlieb, 1979; Vierke and McKillip,
1980) report that smokers rated themselves as
significantly less healthy.

Drinking and Drug Use

Alcohol and drug use are behaviors that increase
the risk of accidents, suicides, and homicides. In
addition, these behaviors, especially excess alcohol
drinking have the potential for leading to chronic
disease such as cirrhosis of the liver (Healthy People,
1979; Lasser, 1981). In a study of college students by
Wechsler and McFadden (1979), men and women in a
frequent-heavy drinking category were more likely to
report negative consequences of drinking such as having
a car accident, being in trouble with authorities,
getting in a fight, forgetting where they were, or
doing something they would not do otherwise.

Wechsler, McFadden, and Rohman (1980) report the prevalence of drinking and drug use after surveying over 7,000 undergraduates enrolled in 34 colleges in five New England states. More than 95% of both men and women reported current alcohol use although men tend to drink more frequently and in greater quantities than women. Drug use was also reported by 64% of the students, again with drug use more prevalent among men than women. Thirty-nine percent of the students reported smoking marijuana at least once a week. A small number of students, less than 16%, report drug use other than marijuana. The data in this study also suggests that drinking and drug use, other than marijuana smoking, increase over the years in college. Preventive measures such as early case finding or education may be needed if drinking and drug use practices indicate problem drinking or substance dependency (Benforado, 1982; Wechsler et al, 1980). Adequate assessment and intervention of smoking and drinking behavior is needed since these behaviors have immediate and long-term negative health consequences.

CONTRACEPTIVE BEHAVIOR

Unwanted pregnancy is risky, mentally and physically, for adolescents and college age students.

The morbidity and number of pregnancies for sexual activity without contraception, is higher than the morbidity or pregnancy rate for using any method of birth control (Rauh, Burket, Brookman, 1975). Teenage pregnancy is considered an important problem in the 15-24 year age group by the U.S. government (Healthy People, 1979). Effective birth control is the major means of preventing unwanted pregnancies in sexually active adolescents.

There are several studies on the contraceptive use of college students. In assessing, by questionnaire, the sexual experience and behavior of college students, Murphy, Dazzo, Yost, and Parelius (1981) report on contraceptive use. The final sample included 321 female and 235 male undergraduate students at Rutgers University. According to the authors, the contraceptive practices reported by sexually men and women are ineffective. Only 23% of the sexually active single females and their partners always used an effective method such as condom, condom and foam, foam, diaphram, or the pill. This study does not report the use of the intrauterine device. Rindskopf (1981) reviews relevant literature reporting contraceptive use and summarizes, "... the degree of nonuse or unreliable

use is high at the time of the first intercourse. Contraceptive use improves some-what with age and experience, and it is used most frequently in the context of affectionate, committed relationships" (p. 114).

In a study on male contraceptive responsibility, 109 male students at the University of Melbourne were interviewed (Cole and Allen, 1979). Only thirty-two percent of the sexually active men used an adequate contraceptive method such as condoms, diaphrams, IUDs, oral contraceptives, or sterilization. Two reasons were found for poor contraceptive use - the belief that contraception is a female responsibility and the belief that sexual intercourse should be spontaneous. Awareness of these beliefs in men is important to consider in planning programs to prevent unwanted pregnancy but the limitation of this study is that it takes place in Australia. Further studies are needed at universities to determine if U.S. college men hold similar beliefs and if their contraceptive use is similarly ineffective.

In a study at the University of Arkansas, Young (1982) reports that religiousity is an influencing factor both in the sexual behavior and contraceptive

use of college females. Young concludes that religious

values should be addressed in settings that are

concerned with contraceptive use and pregnancy

prevention.

The use of contraceptives to prevent pregnancy is

influenced by many factors and so is an area of

research by itself. Assessment of contraceptive use by

college students in this study, was done as one part of

assessing several health behaviors.

In summary, there is a wide range of behaviors

included under self-responsibility. The literature

reports a variety of health consequences for action or

inaction, motivations to carry out certain health

activities, and the prevalence of certain health

activities in college students. The next section

reports on health activities that also require self-

responsibility but are separated out by Ardell (1979)

to emphasize their importance. These areas include

physical fitness, nutritional awareness, and stress

management.

PHYSICAL FITNESS

Ardell (1979) stresses the importance of exercise

by claiming that inactivity is linked to hypertension,

chronic fatigue, physiological inefficiency, premature

aging, poor musculature, inadequate flexibility, and the development of arteriosclerosis and heart disease. Ardell reports the physiological benefits of exercise as decreased heart rate, decreased blood pressure, decreased body fat, and decreased blood cholesterol. The psychological benefits of regular exercise are also described by Ardell, as an increased ability to manage stress, greater self-confidence, improved eating habits, and an improved overall ability to relate to other people. This litany of benefits of exercise and risks of inactivity is stressed by Ardell in order to motivate participation in regular exercise. Physical fitness is an important component in order to achieve high level wellness.

Most of the current research on physical fitness focuses on the physiological benefits of exercise especially in relationship to preventing heart disease. Paffenbarger and Hale (1975) studied work activity and coronary heart mortality in 635 longshoremen. The men were aged 35 to 74 years upon entry into the study and followed for twenty-two years, to death, or to age 75 years. The longshore work was computed into categories of high, medium, or low caloric outputs. The age adjusted coronary death rate was lower for the high

activity category. Paffenbarger and Hale conclude that repeated bursts of high energy output may have protection against coronary heart disease.

In another study, Paffenbarger, Wing, and Hyde (1978), after studying 16,936 Harvard male alumni aged 35-74 years, report that the risk of first heart attack was found to be related inversely to energy expenditure. Men with a physical activity index below 2,000 kilocalories per week were at 64% higher risk than persons with a higher activity index. Morris, Pollard, Everitt, Chave, and Semmence (1980) report that men engaged in vigorous sports and keeping fit had an incidence of coronary heart disease somewhat less than half that of their colleagues who did not exercise. They studied 17,944 middle aged office workers over eight and a half years.

Siscovick, Weiss, Hallstrom, Inui, and Peterson (1982) studied physical activity and primary cardiac arrest and conclude that persons who engage in high intensity leisure time activity have a decreased risk of primary cardiac arrest. Taylor (1983) concludes that physical activity is not a primary risk factor for heart disease but that increased activity can change cardiovascular risk factors in a favorable direction

through weight loss, decreased blood lipids, and improved blood pressure.

Studies that research the relationship between heart disease and activity levels use subjects that are older and most often men. Although research is needed on the cardiovascular benefit of exercise for both men and women and in younger age groups, long term follow-up make this difficult. Assessment of activity levels and short term benefits of regular exercise is needed to strengthen the rationale for exercise in sedentary groups.

Koplan, Powell, Sikes, Shirley, and Campbell (1982) report some general, short-term benefits and risks of recreational running. A questionnaire was sent to 1,250 randomly selected men and 1,250 randomly selected women who had registered to run in a 10-kilometer road race. Benefits identified include giving up smoking and losing weight. The major risk reported was musculoskeletal injury.

In Positive Addiction, Glasser (1976), describes the mental or psychological benefits derived from running. He had a questionnaire printed in Runner's World asking runners to describe their running habits and their mental state while running. He received

almost 700 replies from runners who ran regularly 5-7
days a week for one half to one hour or more. The
descriptions of state of mind while running included
meditative, a feeling of non self-critical
satisfaction, floating, and euphoria. In addition,
these runners wrote about their ability to overcome bad
habits such as smoking or drinking. Although not a
research-based study, this survey begins to report that
persons are able to achieve an increasing level of
well-being or self-actualization. This may be the most
convincing argument to encourage college students to
exercise.

The activity levels of people need to be assessed
and behavior change encouraged since regular exercise
has physiological (health preventive) and psychological
(health promotive) benefits. This should be done in
any age group as well as the college age group.

NUTRITIONAL AWARENESS

Health enhancement can be achieved through a
sensible diet and "wellness dining" (Ardell, 1982, p.
111). Principles to improve nutrition include avoiding
food additives (contribute to cancer), avoiding refined
sugar (empty calories), avoiding coffee and tea
(stimulants) and controlling the intake of salt and

saturated fats (implicated in chronic diseases). In addition, other nutritional improvements include eating fresh fruits, vegetables, and natural foods (highest in nutrient value) and including high fiber foods (to speed the passage of wastes through the digestive tract and avoid disease) (Ardell, 1982, 1979). Ardell feels that for optimal performance one needs an optimal diet.

Current research is attempting to study the benefits or risks of certain dietary habits. There is much controversy in the area of nutrition and disease.

Caffeine

There is disagreement as to whether caffeine is harmful. Some researchers have studied the relationship between caffeine and heart disease. Hennekens, Drolette, Jesse, Davies, and Hutchison (1976) studied 649 patients who died or coronary heart disease and the same number of neighborhood controls to obtain information on a number of variables including coffee intake. Their findings suggest that the risk of death from coronary heart disease associated with coffee drinking is small. Rosenberg, Slone, Shapiro, Kaufman, Stolley, and Miettinen (1980) come to a similar conclusion. In this study, 487 patients with first myocardial infarctions were compared with 980

controls whose admissions were for acute emergencies. In this sample, there were only women and the age ranged from 30-49 years. For women who drank five cups of coffee a day or more the relative risk for MI was 1.2 compared to nondrinkers of coffee. This is a weak association.

Most recently, Dobmeyer, Stine, Leier, Greenberg, and Schaal (1983) studied the arrhythmogenic effects of caffeine in normal volunteers (aged 20-31 years) and in patients with heart disease (aged 17-61 years). They could only conclude that persons prone to arrhythmias should not drink coffee. The data are insufficient to make recommendations to the general public on coffee consumption. Many questions are unresolved and in need of further research.

In another study, MacMahon, Yen, Trichopoulos, Warren, and Nardi (1981) found a strong association between coffee consumption and cancer of the pancreas in both sexes even after controlling for cigarette smoking. They emphasize that the association between coffee consumption and cancer of the pancreas needs to be studied further to determine if this association is casual in nature.

Fiber

Burkitt (1978) reports that epidemiological evidence suggest that a low fiber diet may lead to a number of diseases including diverticulitis, appendicitis, hemorrhoids, varicose veins and cancer of the colon. Lasser (1981) reports that low fiber diets permit an increase in cholesterol absorption and so possibly contribute to the development of heart disease. The benefits of a high fiber diet in preventing disease need to be studied further.

Foods high in fat

Elevated serum cholesterol is considered one of three major risk factors of coronary heart disease (Healthy People, 1979). Carlson and Bottiger (1972) studied the relationship between plasma triglyceride and cholesterol values and the development of ischemic heart disease in a follow-up of 3,168 men They report that the rate of heart disease increases linearly with increasing fasting concentration of plasma triglyceride and plasma cholesterol. Stamler (1978) cites the Pooling Project as one study linking elevated serum cholesterol and elevated coronary heart disease risk. Recent studies have been evaluating the contribution of low density lipoprotein (LDL), very low density lipo- protein (VLDL), and high density lipoprotein (HDL) to

heart disease. Elevation of high density lipoprotein may have a cardio-protective effect (Lasser, 1981; Pender, 1982; Stamler, 1978).

Stamler (1978) reviewed international and national epidemiological studies and concluded that diet and dietary lipids are important factors influencing serum cholesterol levels. Improved dietary habits, with a decreaed consumption of saturated fats and cholesterol, should contribute to the prevention of premature coronary heart disease. Using this as a hypothesis, recent research is focusing on interventions to reduce risk factors (smoking, high blood pressure, and elevated cholesterol) for coronary heart disease (Fortmann et al, 1981; Kornitzer et al, 1980; McAlister et al, 1982; MRFIT Research Group, 1983). The men and women in these studies are generally older, over age 30 years.

Some research is being done on younger age groups. Hautvast, Knuiman, West, Brussaard, and Katan (1983) report the serum cholesterol concentrations of 7 and 8 year old boys in 16 countries and found the levels were lower in less developed countries. They also report that controlled trials support that the concentration of serum cholesterol increases under the influence of a

more affluent diet. Stamler (1979) provides data on the association between diet and mean serum cholesterol levels of several countries. From youth on, the levels are markedly higher in the western (including the U.S.A.) populations compared to Japan. Using these and other population studies, Stamler links the habitual diet, high in fats, with long term risks of coronary heart disease death and concludes that efforts are needed to improve the lifestyles, including diet, of all Americans not just high risk individuals.

Dietary habits are improving but many questions remain unanswered. At what age should dietary changes begin for optimal benefit? Will a changed diet, with a decrease in intake of fats, prevent heart disease if initiated in the late teens or is this too late? Long term effects of dietary changes may not be known for years. This study does not attempt to answer these unresolved questions, but instead begins to assess the dietary habits of college students to report trends in this age group.

Salt/Sodium

Hypertension is a major risk factor for heart disease and it increases the risk for strokes (Healthy People, 1979). The Joint National Committee on

Detection, Evaluation, and Treatment of High Blood Pressure (1980) and W.H.O./I.S.H. Mild Hypertension Liaison Committee (1982) report that treatment of hypertension, including mild hypertension, with a lowering of blood pressure, reduces morbidity and mortality. With emphasis on reducing high blood pressure, the relationship between dietary salt and hypertension is being examined more closely.

Dahl (1972) studied the relationship between dietary salt and hypertension in human and animal experiments. In rats, there is evidence that salt "...induces permanent and fatal hypertension" (p. 242). In man the evidence is not as clearcut and requires further investigation. Swales (1980) also concludes more conclusive evidence is needed before massive efforts are made to reduce the sodium content of foods. Most recently, Trevisan, Cooper, Stamler, Gosch, Allen, Liu, Ostrow, and Stamler (1983) report that "...data supporting a causative relationship between dietary sodium (Na), sodium metabolism, and hypertension come from clinical, animal-experimental, epidemiologic, and anthropologic research" (p. 133). There is only limited evidence from controlled experiments in human nutrition. They feel there are many unanswered

questions such as--what is the relationship between dietary sodium and blood pressure for most people, linear, curvilinear, or a threshold one?, are there synergistic effects between sodium reduction and other nutrients?, what is the role of dietary sodium reduction and hypertension over the life span?

As with a change to a diet with less fats, what are the long term benefits for decreasing the salt in the diet at an early age or in the late teens. Recommendations are difficult to make and more research is needed.

Obesity

Chronic obesity is a threat to the health of adults. The death rate among obese adults is 50% greater than normal weight adults. Overweight adults are more likely to have myocardial infarctions or cerebrovascular accidents than normal weight adults (Pender, 1982).

Lasser (1981) reports that increasing weight is associated with an increasing incidence of cardiovascular disease. Two of the major risk factors of cardiovascular disease, cholesterol and hypertension, are influenced by weight. Cholesterol, blood pressure, uric acid, and blood glucose all rise

as body weight increases. Some studies report that weight loss produces a decrease very low density lipoprotein, a smaller but independent and significant decrease in low density lipoprotein, and an increase in high density lipoprotein, which are all potentially beneficial to reducing coronary risk (Lasser, 1981).

Mann (1974) reports that high blood pressure is more common in obese people and that hypertension is a potent risk factor in cardiovascular disease. The cause of this effect, the relationship of obesity to high blood pressure, needs more study. Simis (1983) concludes that the prevention of obesity should begin in the intrauterine stage and be continued through early childhood, adolescence, and adulthood.

Obesity and its relation to health and disease will continue to be studied. This study assesses whether college students are within normal weight or not, so that preventive efforts can be initiated if needed.

In summary, the relationship between nutrition and the prevention of disease and the promotion of health raise many unanswered questions. This is a broad area with many factors to consider and an area in need of more research. Despite this, the U.S. Dietary goals

include reducing the consumption of overall fat,

saturated fat, and cholesterol, limiting the intake of

sodium, and increasing the consumption of fruits,

vegetables, and whole grains (Suitor and Hunter, 1980).

This study cannot attempt to answer all the needed

questions but it does assess some of the dietary habits

of college students. Suggestions to improve diet to a

more healthful direction can be made if necessary.

STRESS MANAGEMENT

Stress was first described by Selye (1976) as "the

nonspecific response of the body to any demand" (p.

55). Selye called the entire response the general

adaptation syndrome which includes three stages - the

alarm reaction, the stage of resistance, and the stage

of exhaustion. In the course of his research, Selye

reports that there are chemical (neuro, endocrine, and

immunological) changes of the body that occur in

response to stress. The stress reaction may have good

or bad effects depending on the individual response to

it. Responding to stress in a positive way enables an

individual to adapt to perform activities and face the

demands of living. Responding to stress in a negative

way can produce health damaging effects. Selye felt

that the course of many diseases was influenced by the

individual's response to stress. Much of his research was spent showing this to be true.

In describing the need for stress management, Ardell (1979) uses the work of Selye and others to describe the negative effects of stress. Stress may be a factor in illnesses such as headaches, ulcers, heart attacks, hypertension, bowel irritations, diabetes, and mental illness. Ardell supports that need to manage stress in order to become more alert, creative, and productive.

Pelletier (1977) suggests that stress is a factor contributing to cardiovascular disorders, cancer, arthritis, and respiratory diseases. He describes stress triggers. These include social changes, such as economic instability, developmental changes, such as marriage, job conflicts, and technological innovations. Awareness of stressors is an important part of adaptation and stress reduction.

Holmes and Rahe developed a tool to measure the extent of life change as a predictor of becoming ill within the next one to two years (Pender, 1982; Pelletier, 1977). This tool, the Social Readjustment Rating Scale, has been used with college students to measure their levels of stress. Caldwell (1978) used

the social readjustment rating scale combined with the problem oriented record to help students identify stressors, gain a new understanding of recent stressors, and improve self care. Marx, Garrity, & Bowers (1975) studied college freshmen to examine the association between stressful episodes or life change events and subsequent illness. A College Schedule of Recent Experience, modified from the Holmes and Rahe scale, was used to measure life change events. They report that there is a significant association between high levels of life change and increased illness within the next sixty days.

Garrity, Somes, and Marx (1977) examined the role of personality characteristics of college students as they influenced the life change-health change process. The three personality types were labeled as social conformity, liberal intellectualism, and emotional sensitivity. They found that personality factors play a role in predicting life change and psychophysio-logical strain symptoms. Social conformity is negatively predictive of life change and strain. The more conforming students had less strain. Students with high scores on the intellectualism and sensitivity variables report more life change and strain.

Marx, Garrity, Somes (1977) studied college students' ability to cope as a variable influencing the recent life changes and altered health states process. They concluded that coping capacity is an intervening variable between life change and health outcome. These studies show that if the number of life changes or stressful events is going to be measured to predict illness, consideration must be given to other variables effecting this process. This area needs more research.

Effective coping or stress management may prevent negative health outcomes. Hill, Smith, and Jasmin (1981) divided two hundred ninety-nine beginning college students into control and experimental groups to study a self-paced learning method to reduce stress. They concluded that predicted illness rates may be decreased through knowledge of personal stress factors and stress management skills. In an exploratory study, Ziemer (1982) questioned sixty-one college students about what behaviors they engaged in when confronted with a stressful event. Behaviors identified included talking with someone, doing something else for distraction, and denial. Although coping strategies are not studied in relationship to illness, this study does show that students are able to recognize their

coping strategies. The benefit of coping measures that are effective and stress management techniques need to be studied further.

College students are completing the developmental tasks of adolescence and entering adulthood, which may be stressful. Modification of the Holmes and Rahe Social Readjustment Rating Scale to a College Schedule of Recent Experience indicates other potential stressors unique to students. Consequently, the area of stress, illness, and stress management of college students is beginning to receive more attention from researchers. Since stress may lead to illness, the stress levels and stress management abilities of students needs to be assessed. This study attempts to assess if students are adequately dealing with stress. If students are having difficulty in the area of stress and stress management, more research may be needed or intervention may be needed to teach students more effective stress management strategies.

INTEGRATION OF HEALTH BEHAVIORS

Ardell (1979) emphasizes that integration of the four components is important to achieve high level wellness. Wellness initiatives in one area will reinforce health-enhancing behaviors in other areas.

Pursuing all areas of wellness behavior, not only reduces risks of illness but allows one to become full of vitality and become alive clear to the tips of one's fingers.

Belloc and Breslow (1972) and Belloc (1973) conclude that good health practices are associated with positive health and decreased mortality. The good health practices include not smoking, sleeping 7-8 hours per night, eating regular meals including breakfast, not snacking between meals, exercising regularly, maintaining desirable weight for height, and limiting the intake of alcohol. The relationship of these activities was cumulative - following all the good practices resulted in better health than if one followed less than seven habits.

Taylor and McKillip (1980) studied personal health habits of college students and perceived illness and use of health services. Personal health habits included cigarette consumption, alcohol consumption, coffee consumption, sexual activity, stress, sleep, exercise, work, study, and being overweight. They conclude that personal habits can be shown to have immediate health related consequences. Promotion of

positive health activities needs to stress short term as well as long term effects of certain habits.

In conclusion, the review of literature shows evidence of benefits and risks of selected health behaviors; periodic health exams, self breast exams, self testicle exams, smoking, drinking alcohol, driving habits, contraceptive behaviors, physical fitness, nutrition habits, and stress management. The health behavior of college students was reported where known. Assessment of the health behavior of college students will add to the knowledge base in the area of health prevention and health promotion. This would give direction for further assessment, research, and intervention.

CHAPTER IV

METHODOLOGY AND PROCEDURE

This is a descriptive study designed to report the health behaviors of a college population. The questions that were asked of the students regarding specific health behavior will be categorized under four broad areas - self-responsibility, nutritional awareness, physical fitness, and stress management. A detailed report of the results of each area will be provided and a description of interrelationships among the areas will be given. Each area or component will be correlated against the age and sex of the students.

SETTING AND POPULATION

At a large, midwestern, Big-10, State university there are twenty student resident halls. The residence halls are organized into complexes. The majority of the residence halls are co-educational. Students at the university are men and women studying to obtain a degree. In two of the dormitory complexes, nurse run clinics were established. The questionnaire on health behavior was distributed to students living in nine residence halls that were in closest proximity to the nurse run clinics. The returned questionnaires were kept separate by residence hall. For the purpose of

this research paper, a sample of convenience was drawn from the returned questionnaires of the students living in one residence hall in one of the dormitory complexes.

THE QUESTIONNAIRE

The thirty question instrument was developed by two nurse practitioners, who managed the nurse-run health clinics in the residence hall complexes. The nurse practitioners' purposes in collecting this data were: 1. To use as a data base for individual clients. 2. To increase students' awareness of positive health behaviors by asking particular questions. 3. To collect information on the health behaviors of a college population. The primary purpose was not for research. The development of the questionnaire was not a research-based procedure, resulting in problems of validity, reliability, and data analysis. Limitations of the instrument are reviewed in Chapter 6. The complete questionnaire is in Appendix II.

PROCEDURE

In this section, a description of the procedure used at the time of data collection is given. A

description of the procedure used by the investigator is also given.

After the questionnaire was developed by the nurse practitioners, and printed, permission was obtained from the Director of Residence Hall Programs and the Manager of Residence Halls to distribute the questionnaire. The nurse practitioners met with the head advisors of the residence halls in a group meeting. At this meeting, the purpose of the questionnaire was described and the process of distribution and collection of the questionnaire was decided. Maintenance of anonymity was stressed. Head advisors then met with resident advisors to explain the purpose of the questionnaire and explain the distribution and collection process. Again, anonymity was stressed.

The resident advisors distributed the questionnaire to the students in a group meeting on each floor. The purpose of the questionnaire was described to the students and the options available to the students in completing the questionnaire were outlined: a. student can fill out questionnaire anonymously; b. student can refrain from answering particular questions; c. student can fill in

questionnaire completely; d. student does not have to fill out questionnaire. The students then filled out the questionnaire on their own and returned to collection envelopes. Anonymity was stress throughout the process. A cover letter accompanied each questionnaire. See Appendix I.

The completed questionnaires in collection envelopes were returned to the nurse practitioners at the nurse-run clinics. Completed questionnaires, kept separate by residence halls, were stored in four boxes at the two nurse-run clinics. Then the four boxes of completed questionnaires were moved from the nurse-run clinics and stored in the investigator's basement.

The investigator arbitrarily selected, from one box, a group of questionnaires representing one residence hall for data analysis. The items in the questionnaires were coded and transferred to coding sheets. Each student was given an ID number to maintain anonymity. After coding, the raw data were keypunched into a computer for data analysis. Data analysis is presented in Chapter 5.

In summary, the process used to collect data was carried out as described. An effort to maintain

confidentiality and ananymity persisted throughout this process.

OPERATIONAL DEFINITIONS

In this section the four dimensions of high level wellness, self-responsibility, physical fitness, nutritional awareness, and stress management, are operationalized based on the items in the questionnaire.

Dimension of self-responsibility - an active sense of `accountability for one's own well-being. This dimension is divided into four areas - general health behavior, driving behavior, self abuse behavior, and birth control behavior. The area of general health behavior includes questions about health examinations (See Appendix III-a). The items in this area include:

1. Having a medical exam in the past year

2. Having a dental exam in the past year

3. Having an eye exam in the past 2 years

4. For females, having a pelvic exam and pap smear

5. For females, doing self breast examination

    6.   For males, doing self testicle
         examination

The area of driving behavior includes questions
about driving habits (See Appendix III-b). The
items in this area include:

    18.   Driving within the speed limit

    19.   Using seat belts

    20.   Avoiding drinking and driving

The area of self-abuse behavior includes questions
on the use of cigarettes, alcohol, and drugs (See
Appendix III-c). The items in this area include:

    21.   Do you smoke cigarettes

    22.   How much alcohol do you drink

    23.   Do you smoke marijuana

    24.   Do you use other mind-altering drugs

The area of birth control behavior includes one
question (25) on using a means of contraception if
having sex (See Appendix III-d).

Dimension of physical fitness - active participation in
    regular exercise. The dimension of physical
    fitness is measured by one question (9)
    concerning how often one exercises (See Appendix
    III-e).

Dimension of nutritional awareness - a sense of wise

food selection and sensible diet patterns. The
dimension of nutritional awareness includes
questions on a variety of areas, such as caffeine
intake, eating breakfast, number of meals a day,
including fiber in the diet, use of salt, and
minimizing refined and fatty foods (See Appendix
III-f). Items in this area include:

7. Weight appropriate for height

10. Amount of coffee, tea, colas one drinks

11. Number of meals eaten per day

12. Do you eat breakfast

13. Do you snack between meals

14. Adding salt to foods

15. Do you minimize refined foods

16. Do you include fiber daily

17. Do you minimize fatty foods

Dimension of stress management - a sense of knowledge
and recognition of stress, stress symptoms, and
stress management. The dimension of stress
includes questions on evidence of dealing with
stress such as falling asleep easily and amount of
sleep, ability to cope with stress, being aware of
feelings, and releasing frustrations (See Appendix
III-g). Items in this area include:

26.   Do you fall asleep easily

27.   How much sleep do you get

28.   Can you cope with a reasonable amount
       of stress

29.   Are you aware of feelings and able to
       express them satisfactorily to self and
       others

30.   Are you able to release anger and
       frustration safely

The length of the questionnaire was two pages (See Appendix II). A section for the students to identify health concerns was included but not used for the purpose of this research paper. In addition, based on the investigator's judgement, question 8 was eliminated in the operationalization of nutritional awareness. The result was 29 items used for data analysis.

VALIDITY AND RELIABILITY

Validity refers to the degree which an instrument measures what it is supposed to be measuring (Polit and Hungler, 1978). Three types of validity are used to evaluate an instrument - content, construct, and criterion-related. Content validity is the concern that the items in the questionnaire adequately measure the content area under consideration. Construct

validity is the degree to which the particular test or items can be shown to measure the abstract concept under investigation. In criterion-related validity, the emphasis is on showing a relationship between the instrument and some other criterion (Polit and Hungler, 1978). Content validity was considered at the time the questionnaire was developed. Questions were generated based on literature concerning positive health behaviors. Construct validity and criterion-related validity were not considered at the time the questionnaire was developed.

Reliability is the degree of consistency of the instrument in measuring the attribute it is supposed to measure. The Guttman analysis technique was used with this instrument to measure reliability. This technique was used due to the diverse type of responses in the items and because of the small number of items (3 to 8) under each broad component. For the Guttman technique or Guttman scaling, the 29 items in the questionnaire are divided into two portions - pass or carrying out positive health behavior and fail, not behaving in a healthful way. This cutting was done based on the investigator's judgement so that positive health behaviors are assigned a +1 and negative health

behaviors are assigned a 0 (See Appendix IV). Then the
items or questions within each broad area or dimension
are scaled and the statistics calculated. Two
coefficients are calculated and utilized to determine
reliability. The coefficient of reproducibility
measures the extent which a respondent's scale score is
a predictor of one's response pattern. This measure
should reach .9 or higher to indicate a valid score.
The coefficient of scalability measures if the scaled
items are unidimensional. Ideally, this coefficient
should measure above .6 to indicate a valid scale (Nie,
Hull, Jenkins, Steinbrenner, and Bent, 1975).

ANALYSIS AND SCORING

Measures of frequency and percent will be
calculated and reported for each of the 29 items. In
the area of self-responsibility four subscales were
developed due to the diverse number of questions.
Scoring was done as a part of the Guttman scaling
process. Each item is given a score of +1 or carrying
out positive health behavior or 0, not acting in a
healthful way. Measures of central tendency - the mean
and standard deviation, will be calculated for three of
the broad areas (physical fitness, nutritional
awareness, and stress management) and for the four

subscales of self-responsibility (general health behavior, driving behavior, self-abuse behavior, and birth control behavior). In this way, the mean will fall between 0 and +1, with 0 indicating poor health behavior and +1 indicating positive health behavior.

Correlation procedures are used as a method to describe the relationship between two measures or two variables. The direction and strength of the relationship is reported utilizing the appropriate numerical index or correlation coefficient. Each component of high level wellness, self-responsibility, physical fitness, nutritional awareness, and stress management, is correlated against the sex of the students using the statistical formula to calculate the point biserial correlation coefficient. Each component is correlated against the age of the students and against the other components of high level wellness using the statistical formula to calculate the Pearson Product-Moment correlation coefficient.

RESEARCH QUESTIONS

1. What are the health behaviors of a college population in the area of self-responsibility?

   a. How do men score in the 4 subscales in the area of self-responsibility?

     b.   How do women score in the 4 subscales in the area of self-responsibility?

2.   What are the health behaviors of a college population in the area of physical fitness?

     a.   How do men score in the area of physical fitness?

     b.   How do women score in the area of physical fitness?

3.   What are the health behaviors of a college population in the area of nutritional awareness?

     a.   How do men score in the area of nutritional awareness?

     b.   How do women score in the area of nutritional awareness?

4.   What are the health behaviors of a college population in the area of stress management?

     a.   How do men score in the area of stress management?

     b.   How do women score in the area of stress management?

5.   How does the sex of students relate to general health behavior, driving behavior, self-abuse behavior, nutritional awareness, and stress management?

6.   How does age of the students relate to

general health behavior, driving behavior, self-abuse
behavior, nutritional awareness, and stress management?

7.   How do the 4 subscales of self-responsibility
- general health behavior, driving behavior, self-abuse
behavior, contraceptive behavior and physical fitness,
nutritional awareness, and stress management relate to
one another?

In the final two chapters, the investigator will
present the data and the nursing implications.

CHAPTER V

DATA PRESENTATION

In this chapter, the data is presented to describe
the health behavior of college students in the areas of
self-responsibility, physical fitness, nutritional
awareness, and stress management. The findings are
presented based on the responses of 268 students. The
data are utilized to report the relationships between
the four broad areas, the age, and the sex of the
students. The findings are presented in the following
manner:

    1.   Descriptive findings of the population

    2.   Guttman Technique of scaling for reliability

    3.   Data presentation for research questions

        a.   Descriptive findings of the population
in each broad area of health behavior –
self-responsibility, physical fitness,
nutritional awareness, and stress
management.

        b.   The relationship of the scores of each
broad area to the sex of the
respondents.

    c.   The relationship of the scores of each

           broad area to the age of the

           respondents.

    d.   The relationship of the scores of each

           broad area to each other broad area.

  4.   Summary of the chapter

To test for the reliability of the instrument, the statistical formula for Guttman coefficients of reproducibility and scalability was used. The statistical formulas for point biserial and Pearson Product-Moment correlation were used to correlate the broad components of self-responsibility, physical fitness, nutritional awareness, and stress management with the sex and ages of the population and with the scores of each other broad area. In the area of self-responsibility, four subscales were developed and analyzed using this same process.

DESCRIPTIVE FINDINGS OF THE POPULATION

The study population consisted of college students, men and women, who lived in nine of the residence halls at a large, Midwestern, Big-10, State university. The students are at the university for the purpose of studying to obtain a degree. One month after the start of fall term, the questionnaires were

distributed to the students in the dormitory at a group floor meeting by a resident advisor. The purpose of the questionnaire was described to the students by the resident advisor at this meeting. Students could complete or not complete the written questionnaire.

A limitation of the study is that those students who chose not to complete the questionnaire may be different from those students who did fill out the questionnaire. The resident advisor returned the completed questionnaires to a nurse practitioner by residence hall. From the completed questionnaires from the nine residence halls, a convenience sample of the completed questionnaires of one residence hall was selected for study and data analysis. This study sample consisted of 268 questionnaires completed by 81 male students (30.2%) and 187 female students (69.8%). The overall response rate was 43%. The response rate for the female students alone was 59.9%. The response rate for male students was much lower, 25.9%. The investigator can only speculate as to the reasons for this large difference - perhaps the male students were less concerned about their health or perhaps they didn't like filling out questionnaires.

The students' age range in the study sample was from age 17 years to age 24 years. The summary of the ages of the students is presented in Table 1.

Table 1

Number and Ages of the Students

of the Sample Population

(N=268)

Age	Number of Students	Percentage
17	2	.7%
18	142	53.0%
19	78	29.1%
20	24	9.0%
21	9	3.4%
22	1	.4%
24	1	.4%
Missing Data	11	4.0%
Total	268	100.0%

The majority of the students (53%) were age 18 years and presumably freshmen. Two students (.7%) were age 17 years. Seventy-eight (29%) of the students were age 19 years, and twenty-four (9%) were age 20 years. Nine students (3%) were 21 years of age and 1 student was age 22 and 1 student was age 24. The study sample is composed of primarily younger students with almost 80%

being age 19 or younger. Most of the study sample probably consists of freshmen and sophomore students.

GUTTMAN TECHNIQUE OF SCALING FOR RELIABILITY

The reliability of the questionnaire was measured by using the Guttman technique of scaling as described in Chapter 4. Using this formula, the coefficient of reproducibility and the coefficient of scalability were computed for three of the four subscales of self-responsibility, and for nutritional awareness, and stress management. Birth control behavior and physical fitness are measured by one question apiece and therefore not scaled.

Self Responsibility

This area of health behavior is divided into 4 subscales. Reliability coefficients were determined for three subscales - general health behavior, self-abuse behavior, and driving behavior. Birth control behavior was not scaled since it consists of only one question (25). The general health scale consists of six items (1, 2, 3, 4, 5, 6). After removing one item (4 - pelvic exam and pap smear) the coefficient of reproducibility is .857 and the coefficient of scalability is .471. The driving behavior scale consists of three items (18, 19, 20) and the

coefficient of reproducibility is .922 and the coefficient of scalability is .661. There are four items in the self-abuse scale (21, 22, 23, 24) and the coefficient of reproducibility is .931 and the coefficient of scalability is .507. The driving behavior scale is the most unidimensional and consistent. The coefficient of reproducibility is $>.90$ and the coefficient of scalability is $>.60$. The self-abuse scale is also fairly reliable scale since the coefficient of reproducibility is $>.90$. The self-abuse scale is not as unidimensional as the driving scale since the coefficient of scalability is $<.60$. The general health scale is the least reliable since both coefficients are below desirable levels.

Physical Fitness

The area of physical fitness is not scaled since it is only one item or question (9).

Nutritional Awareness

The area of nutritional awareness consists of eight items (10, 11, 12, 13, 14, 15, 16, 17, 7). Item 7 (weight for height) is not included in the scaling since it is an exact measurement. Even after removing one item (12 - eating breakfast) the coefficients are low indicating the multidimensional nature of this

scale or the variety in the questions. The coefficient of reproducibility is .849 and the coefficient of scalability is .371. In the area of nutritional awareness, the coefficient of reproducibility does approach the desirable level of .90 but the coefficient of scalability is below .60, so that this scale is not very reliable.

Stress Management

The area of stress management includes 5 items (26, 27, 28, 29, 30). To improve this scale, one item was removed (26 - falling asleep easily). After computation, the coefficient of reproducibility is .939 and the coefficient of scalability is .633. The stress management scale is the best scale. The high coefficients indicate that this scale meets the test of unidimensionality, cumulativeness, and ability to predict the pattern of responses.

PRESENTATION OF THE FINDINGS FOR EACH AREA OF HIGH LEVEL WELLNESS

The findings are presented for each broad area of high level wellness for college men and women.

Self Responsibility

In this section the research question - what are the health behaviors of men and women in the 4

subscales in the area of self-responsibility?; how do
men score in the 4 subscales of the area of self-
responsibility?; and how do women score in the 4
subscales of the area of self-responsibility? are
addressed. In the area of self-responsibility the four
subscales are general health behavior, driving
behavior, self-abuse behavior and birth control
behavior.

The frequencies and percents are reported for men
and women for the six items of general health behavior,
in Table 2.

Table 2

Descriptive Findings in the Area of Self-Responsibility

Subscale General Health Behavior

(N=268; 81 men and 187 women)

Item	Variable		MEN No.	%	WOMEN No.	%
1	Medical check-up	yes	42	51.9	116	62.0
		no	39	48.1	69	36.9
		missing data			2	1.1
		total	81	100.0	187	100.0
2	Dental exam	yes	70	86.4	165	88.2
		no	11	13.6	22	11.8
		total	81	100.0	187	100.0

			MEN		WOMEN	
Item	Variable		No.	%	No.	%
3	Eye exam	yes	54	66.7	136	72.7
		no	27	33.3	48	25.7
		missing data			3	1.6
		total	81	100.0	187	100.0
4	Pelvic exam &	yes			73	39.0
	pap smear	no			112	68.4
		missing data			2	1.1
		total			187	100.0
5	Self breast	yes			49	26.2
	exam	no			128	68.4
		missing data			10	5.4
		total			187	100.0
6	Self testicle	yes	17	21.0		
	exam	no	62	76.5		
		missing data	2	2.5		
		total	81	100.0		

High percentages of both men and women get medical
check-ups, dental exams and eye exams, although the
percentage of women is slightly greater than men on all
three items. Less than half (39%) of the women sampled
have had a pelvic exam and pap smear. An even lower

percent (26.2%) of the female sample report doing breast self examination monthly. Of the men, only 21% check their testicles for unusual lumps. In the area of general health behavior, the mean scores for men is .570 and for women is .638 (see Table 9), indicating the women have slightly higher levels of wellness behavior in this area.

The findings in the area of driving behavior are reported in Table 3.

Table 3

Descriptive Findings in the Area of Self-Responsibility

Subscale Driving Behavior

(N=268; 81 men and 187 women)

Item	Variable		MEN		WOMEN	
			No.	%	No.	%
18	Drive within	usually	54	66.7	160	85.6
	speed limit	seldom	18	22.2	16	8.5
		never	8	9.9	5	2.7
		missing data	1	1.2	6	2.2
		total	81	100.0	187	100.0

Item	Variable		MEN No.	%	WOMEN No.	%
19	Use seat belt	usually	20	24.7	30	16.0
		seldom	29	35.8	83	44.5
		never	32	39.5	73	39.0
		missing data			1	.5
		total	81	100.0	187	100.0
20	Avoid drinking	always	39	48.1	139	74.3
	& driving	sometimes	31	38.3	41	22.0
		never	8	9.9	1	.5
		missing data	3	3.7	6	3.2
		total	81	100.0	187	100.0

Sixty-six and seven tenths percent of the men and 88.4% of the women usually drive within the speed limit. A high percentage of both men and women seldom or never use seat belts, 75.3% and 83.5% respectively. Women (74.3%) are more likely to avoid drinking and driving than men (48.1%). In the area of driving behavior, the mean score for men is .477 and for women is .592 (see Table 9). Again, the female students have higher wellness behavior than the male students in this area.

The findings in the area of self-abuse behavior are reported in Table 4.

Table 4

Descriptive Findings in the Area of Self-Responsibility

Subscale Self Abuse Behavior

(N=268; 81 men and 187 women)

Item	Variable		MEN		WOMEN	
			No.	%	No.	%
21	Smoke cigarettes	yes	6	7.4	24	12.8
		no	74	91.4	163	87.2
		missing data	1	1.2		
		total	81	100.0	187	100.0
22	Drink alcohol	never	15	18.5	59	31.6
		1-2 drinks/wk	8	9.9	17	9.1
		3-5 drinks/wk	4	4.9	6	3.2
		5 drinks/wk	15	18.5	11	5.9
		drink-weekends	37	45.7	86	45.9
		missing data	2	2.5	8	4.3
		total	81	100.0	187	100.0
23	Smoke	never	52	64.2	136	72.7
	marijuana	occ.	25	30.8	46	24.7
		freq.	2	2.5	3	1.6
		5 joints/day	0	0.0	1	.5
		missing data	2	2.5	1	.5
		total	81	100.0	187	100.0

			MEN		WOMEN	
Item	Variable		No.	%	No.	%
24	Use other	never	74	91.4	185	99.0
	drugs	occ.	6	7.4	1	.5
		freq.	0	0	1	.5
		missing data	1	1.2		
		total	81	100.0	187	100.0

Most students do not smoke, with the percentage of men
(91.4%) not smoking greater than the percentage of
women (87.2%) not smoking. Most students report
drinking alcohol, with most drinking done on the
weekends. A higher percentage of the women (31.6%)
report never drinking alcohol compared to 18.5% of the
men reporting this. The majority of male (64.2%) and
female (72.7%) students do not smoke marijuana and most
students report not using other mind altering drugs
(men 91.4% and women 99.0%). In the area of self-abuse
behavior, the mean score for men is .817 and for women
the mean score is .873 (see Table 9). Students are
carrying out positive health behaviors in this area.

In the area of birth control behavior, a high
percentage of both men and women would use birth
control if they were having sex (see Table 5).

Table 5

Descriptive Findings in the Area of Self Responsibility

Subscale Birth Control Behavior

(N=268; 81 men and 187 women)

			MEN		WOMEN	
Item	Variable		No.	%	No.	%
26	Would use birth	yes	68	83.9	173	92.5
	control	no	11	13.6	5	2.7
		missing data	2	2.5	9	4.8
		total	81	100.0	187	100.0

In the area of birth control behavior, male and female students report they would act in a preventive way. This is reflected in the means .860 for men and .972 for women (see Table 9).

In summary, for self-responsibility, students report following some wellness behaviors. The strongest area is that the students report they would use birth control methods if having sex. The weakest area is driving behavior. Self-abuse behavior and general health behavior fall between these two. Generally, the women score slightly better than the men in all areas.

Physical Fitness

In the area of physical fitness the research questions - what are the health behaviors of a college population in the area of physical fitness?; how do men score in the area of physical fitness?; and how do women score in the area of physical fitness?, are addressed.

The numbers and percents are reported for men and women for item 9 in Table 6.

Table 6

Descriptive Findings in the Area of Physical Fitness

(N=268; 81 men and 187 women)

Item	Variable		MEN No.	MEN %	WOMEN No.	WOMEN %
9	How often	rarely	15	18.5	57	30.5
	exercise	once/wk	22	27.2	68	36.3
		3x/wk	32	39.5	35	18.7
		every day	12	14.8	25	13.4
		missing data			2	1.1
		total	81	100.0	187	100.0

The area of physical fitness is measured by one question. Over half the men (54.3%) report exercising three times a week or more. Only 32.1% of the women report exercising this often. Thirty and five tenths percent of the women rarely exercise compared to 18.5% of the men who rarely exercise. In the area of physical fitness, the mean score for men is .543 and for women is .316 (see Table 9). In summary, both male and female students report exercising some, with men exercising more than women.

Nutritional Awareness

In the area of nutritional awareness the research questions - what are the health behaviors of a college population in the area of nutritional awareness?; how do men score in the area of nutritional awareness?; and how do women score in the area of nutritional awareness?, are addressed.

The findings in the area of nutritional awareness are presented in Table 7.

Table 7

Descriptive Findings in the Area of Nutritional Awareness

(N=268; 81 men and 187 women)

			MEN		WOMEN	
Item	Variable		No.	%	No.	%
10	Coffee, tea	none	5	6.2	12	6.4
	colas drink	6/day	40	49.4	95	50.8
		5/wk	32	39.5	61	32.6
		6/day	4	4.9	18	9.7
		missing data			1	.5
		total	81	100.0	187	100.0
11	Meals eat/	5/day	1	1.2	1	.5
	day	3/day	40	49.4	59	31.6
		2/day	34	42.1	96	51.3
		irreg.	4	4.9	24	12.8
		other	1	1.2	2	1.1
		missing data	1	1.2	5	2.7
		total	81	100.0	187	100.0
12	Do you eat	always	20	24.7	35	18.7
	breakfast	sometimes	45	55.6	104	55.6
		never	16	19.7	47	25.2
		missing data			1	.5
		total	81	100.0	187	100.0

			MEN		WOMEN	
Item	Variable		No.	%	No.	%
13	Snack between	yes	49	60.5	151	80.7
	meals	no	27	33.3	23	12.3
		missing data	5	6.2	13	7.0
		total	81	100.0	187	100.0
14	Add salt	consistently	16	19.8	25	13.4
	to food	selectively	36	44.4	87	46.5
		never	29	35.8	75	40.1
		total	81	100.0	187	100.0
15	Minimize	yes	31	38.3	84	44.9
	refined foods	no	47	58.0	99	52.9
		missing data	3	3.7	4	2.2
		total	81	100.0	187	100.0
16	Include fiber	yes	60	74.1	147	78.6
		no	20	24.7	39	20.9
		missing data	1	1.2	1	.5
		total	81	100.0	187	100.0
17	Minimize fatty	yes	24	29.6	94	50.3
	foods	no	56	69.2	90	48.1
		missing data	1	1.2	3	1.6
		total	81	100.0	187	100.0

			MEN		WOMEN	
Item	Variable		No.	%	No.	%
7	Weight within	yes	74	91.4	169	90.4
	15% of normal	no	7	8.6	11	5.9
	for height	missing data			7	3.7
		total	81	100.0	187	100.0

(Calculation based on Table in Suitor and Hunter, 1980, p. 435)

Most students, 49.4% of the men and 50.8% of the women report drinking less than six cups of coffee, tea, or colas a day. Almost half the men (49.4%) report eating 3 meals a day, although 75.3% report sometimes or never eating breakfast. Only 31.6% of the female students eat 3 meals a day. Eighty and eight tenths percent of the women report sometimes or never eating breakfast. Most students, especially women snack between meals (60.5% of the men and 80.7% of the women). For the item of adding salt to food, 44.4% of the men and 46.5% of the women report only adding salt to selected items. Thirty-five and eight tenths percent of the male students and 40.1% of the female students in the study sample report never or seldom using salt. Most students, 58% of the men and 52.9% of the women, do not minimize refined foods. A high percentage of both men

and women, 74.1% and 78.6% respectively, report including fiber in their diets. Most male students (69.2%) do not minimize fatty foods in their diets. About half of the female students (50.3%) report minimizing fatty foods in their diets. A high percentage of both the men and women, 91.4% and 90.4% respectively, are at the appropriate weight for their height. In the area of nutritional awareness, the mean score for men is .573 and the mean score for women is .605 (see Table 9).

In summary, there is a wide range of positive health behavior being followed in the area of nutritional awareness such as, not drinking too much caffeine, not using or using salt selectively, and including fiber in the diet. There are areas that the students report carrying out negative health behaviors such as snacking between meals and not minimizing refined or fatty foods. More men eat breakfast and three meals a day than women but overall the female students score slightly better than male students. Most students' weight is appropriate for their height.

Stress Management

In the area of stress management the research questions - what are the health behaviors of a college

population in the area of stress management?; how do

men score in the area of stress management?; and how do

women score in the area of stress management?, are

addressed.

The frequencies and percents for men and women in

the area of stress management are reported in Table 8.

Table 8

Descriptive Findings in the Area of Stress Management

(N=268; 81 men and 187 women)

Item	Variable		MEN No.	%	WOMEN No.	%
26	Fall asleep	yes	61	75.3	135	72.2
	easily	no	19	23.5	46	24.6
		missing data	1	1.2	6	3.2
		total	81	100.0	187	100.0
27	Sleep/night	7 hrs. or more	36	44.5	92	49.2
		7 hrs.	44	54.3	92	49.2
		missing data	1	1.2	3	1.6
		total	81	100.0	187	100.0
28	Cope with	yes	76	93.9	179	95.7
	stress	no	4	4.9	7	3.8
		missing data	1	1.2	1	.5
		total	81	100.0	187	100.0

Item	Variable		MEN No.	%	WOMEN No.	%
29	Aware of feelings					
	express satisfac-	yes	75	92.6	173	92.5
	tory to self	no	5	6.2	12	6.4
		missing data	1	1.2	2	1.1
		total	81	100.0	187	100.0
	Satisfactory	yes	66	81.5	154	82.3
	to others	no	11	13.6	20	10.7
		missing data	4	4.9	13	7.0
		total	81	100.0	187	100.0
30	Able to	yes	73	90.1	161	86.1
	release	no	7	8.7	21	11.2
	frustration	missing data	1	1.2	5	2.7
		total	81	100.0	187	100.0

Most students, 75.3% of the men and 72.2% of the women
report falling asleep easily. More than half (54.3%)
of the men sleep less than 7 hours a night. Almost
half (49.2%) of the women sleep less than 7 hours a
night. A high percentage of the students, 93.9% of the
men and 95.7% of the women, report being able to cope
with a reasonable amount of stress. Most students are
aware of their feelings and are able to express them in

a way satisfactory to themselves - 92.6% of the men and 92.5% of the women. Eighty-one and five tenths percent of the men and 82.3% of the women report being able to express their feelings in a way that is satisfactory to others. Both men and women, 90.1% and 86.1% respectively, are able to release their anger and frustration safely. In the area of stress management, the mean score for men is .820 and for women is .831.

In summary, male and female students generally score well in all areas of stress management.

In Table 9, the mean and standard deviation are reported for the four subscales of self-responsibility, and the other three areas of high level wellness, physical fitness, nutritional awareness, and stress management. The mean score will fall between 0 and +1, with +1 indicating following a wellness lifestyle and 0 indicating following a worseness lifestyle.

Table 9

The Mean Scores* for the 4 Subscales of Self-Responsibility

and for the Areas of Physical Fitness, Nutritional

Awareness, and Stress Management

Area	MEN		WOMEN	
	Mean	St. Deviation	Mean	St. Deviation
Self Responsibility				
General Health Behavior	.570	.259	.638	.238
Driving Behavior	.477	.310	.592	.251
Self Abuse Behavior	.817	.235	.873	.200
Birth Control Behavior	.860	---	.972	---
Physical Fitness	.543	---	.316	---
Nutritional Awareness	.573	.224	.605	.193
Stress Management	.820	.183	.831	.202

*Mean score falls between 0 and +1, with 0 being the

least healthful and +1 indicating perfect health

behavior.

Women score better than men in the four subscales

of self-responsibility. The weakest area of self-

responsibility for both men and women is driving

behavior, with mean scores .477 and .592 respectively.

The strongest area is birth control behavior, with the

mean score for men .860 and for women .972. In the area of physical fitness, men score better than women. The mean score for men is .543 and the mean score for women is .316. In the area of nutritional awareness, the scores are fair, with women doing slightly better than men. In this area the mean for men is .573 and the mean for women is .605. In the area of stress management both men and women score well with the mean scores .820 and .831 respectively.

CORRELATIONAL FINDINGS

In this section, the research question - how does sex relate to general health behavior, driving behavior, self-abuse behavior, nutritional awareness, and stress management is addressed.

Three areas of self-responsibility - general health behavior, driving behavior, and self-abuse behavior, and the areas of nutritional awareness and stress management were correlated against the sex of the college students using the statistical formula for point biserial correlation. The correlation coefficients are reported in Table 10.

Table 10

Point Biserial Correlation Coeffients

Calculation Between Sex and 3 Subscales of

Self-Responsibility, Nutritional Awareness

and Stress Management

Area	Correlation Coefficient
Self-Responsibility	
General Health Behavior	.1275*
	P < .019
Driving Behavior	.1915*
	P < .001
Self Abuse Behavior	.1227*
	P < .022
Birth Control Behavior	Calculation not done
Physical Fitness	Calculation not done
Nutritional Awareness	.0728
	P < .118
Stress Management	.0252
	P < .341

*significantly different from zero

P = the probability of this correlation occuring by error or

chance is less than the value reported

In analyzing the data, the investigator realized this calculation was not done for the areas of birth control behavior and physical fitness. This oversight is a limitation of the study.

There are three areas in which the correlation coefficient is significantly different from zero for men and women. Female students score better than male students in the areas of general health behavior (correlation coefficient .1257), driving behavior (correlation coefficient .1915), and self-abuse behavior (correlation coefficient .1227). There is not a significant correlation between sex and nutritional awareness and stress management.

The research question - how does age relate to general health behavior, driving behavior, self-abuse behavior, nutritional awareness, and stress management is addressed next.

The statistical formula to calculate a Pearson Product-Moment correlation coefficient was carried out between the ages of the sample population and three subscales of self-responsibility, nutritional awareness, and stress management. The correlation coefficients are reported in Table 11.

Table 11

Pearson Correlation Coefficients

Calculation Between Age and 3 Subscales of

Self-Responsibility, Nutriational Awareness

and Stress Management

Area	Correlation Coefficient
Self-Responsibility	
General Health Behavior	-.1073*
	P < .043
Driving Behavior	.1054*
	P < .046
Self Abuse Behavior	.0886
	P < .078
Birth Control Behavior	Calculation not done
Physical Fitness	Calculation not done
Nutritional Awareness	-.1490*
	P < .008
Stress Management	.0658
	P < .147

* significantly different from zero

P = the probability of this correlation occurring by error or chance is less than the value reported

In analyzing the data, the researcher realized that this calculation was not done for the areas of birth control behavior and physical fitness. This oversight is a limitation of the study.

There are three areas and ages of college students, in which the correlation coefficient is significantly different from zero. Between the area of general health behavior and age the coefficient calculated is -.1073. As college students get older, the scores in general health behavior get smaller, indicating that health behavior worsens with age. Driving behavior improves with age. The correlation coefficient calculated between driving behavior and age is .1054. Between the area of nutritional awareness and age, there is a negative correlation, -.1490. As college students get older their nutritional health habits are less positive in nature. There is not a significant relationship between age and self-abuse behavior and age and stress management.

The research question - how do the 4 subscales of self-responsibility - general health behavior, driving behavior, self-abuse behavior, birth control behavior and physical fitness, nutritional awareness, and stress

management relate to one another is addressed in this section.

A Pearson Product-Moment correlation was calculated between all the areas of high level wellness (4 subscales of self-responsibility, physical fitness, nutritional awareness, and stress management) to show the interrelationships between these areas. Through an oversight, the area of birth control was not correlated with physical fitness. In Table 12, the findings are presented.

In several areas the correlation coefficient is significantly different from zero. This indicates that following certain positive health behaviors in one area is somewhat related or can be partially explained by following positive health behavior in another area.

The correlation coefficient calculated between general health behavior and driving behavior is .1055. Students who report following positive health behavior in the area of general health are more likely to have positive driving habits or vice versa. Students who have positive health behavior in the area of general health are also more likely to have positive nutritional habits or vice versa. The correlation coefficient calculated between these two

Table 12

Pearson Product-Moment Correlation Coefficients

The Interrelationships of the Areas

of High Level Wellness

Self-Responsibility		GHB	DB	SAB	BCB	PF	NA	SM
General Health Behavior	(GHB)	1	.1055* P<.042	.0153 P<.402	.0482 P<.221	.0388 P<.265	.1464* P<.008	.0371 P<.273
Driving Behavior	(DB)		1	.3288* P<.001	.0489 P<.217	.0686 P<.133	.2305* P<.001	.0255 P<.339
Self Abuse Behavior	(SAB)			1	-.0275 P<.330	.0247 P<.345	.0961 P<.058	.0688 P<.131
Birth Control Behavior	(BCB)				1	not done	.0456 P<.233	.0614 P<.164
Physical Fitness	(PF)					1	.1714* P<.003	.0143 P<.402

Table 12 (Continued)

	GHB	DB	SAB	BCB	PF	NA	SM
Nutritional Awareness (NA)						1	
Stress Management (SM)						.2249* P<.001	1

*significantly different from zero

P = the probability of this correlation occurring by error or chance is less than the value reported

is .1464. There is a positive correlation between positive driving behaviors and positive health habits in the area of self-abuse behaviors (.3288). Driving behavior also correlates with nutritional awareness. The correlation coefficient calculated between these two is .2305.

There is a significant correlation (.1714) calculated between nutritional awareness and physical fitness. Students who report that they are physically active are likely to report following good nutrition habits. This relationship can also be explained in the opposite way. Students who report positive health behavior in the area of nutritional awareness are more likely to say they exercise regularly. Nutritional awareness and stree management are also related. The correlation coefficient calculated between these two is .2249. Students who report eating well, also report managing stres and vice versa.

In summary, the results of the data were reported in this chapter. Guttman coefficients of reliability were reported. Frequencies and percents were reported for the twenty-nine items. Correlation coefficients were calculated and reported between sex, age and the areas of high level wellness. Tables 2 - 12 can be

reviewed for these results. In the last chapter,
nursing implications will be discussed.

CHAPTER VI

NURSING IMPLICATIONS, PROBLEMS

AND RECOMMENDATIONS

The purpose of the study was to describe the stated health behaviors of a college population utilizing four of the five dimensions of high level wellness. The nursing implications of the findings will be considered in this chapter. This will be done by reviewing the four subscales of self-responsibility and the other three areas, physical fitness, nutritional awareness, and stress management. The interrelationships between these areas will also be discussed. Finally, problems encountered, education implications, implications for university health care services and recommendations for future study will be discussed.

SELF-RESPONSIBILITY

General Health Behavior

It is encouraging to note that the majority of the college men and women in this study have had recent medical check-ups, dental exams, and eye exams. Over 50% of the men and over 60% of the women have had recent medical exams. The percentage of students in this sample having had a recent dental exam is over

86%. This is higher than the findings of Cohen et al (1982) and Snyder et al (1982). They found that 67% and 65.7% respectively, of the students had visited the dentist in the last year. Since the majority of the sample are freshmen, these results may indicate that the students were still influenced by their parents and not making independent decisions about health care. The high number of students having had recent medical exams may be due to artifact since a preadmission physical exam may have been required for freshmen entering the university.

Periodic health exams are needed so selective screening tests can be done and counseling in the areas of health promotion can be done (Frame and Carlson, 1975, Somers, 1979, Lindberg, 1980). College students are susceptable to peridontal disease and dental caries (Cohen, 1982) and so need adequate dental care. So despite the encouraging results, clinical nurse specialists need to continue to encourage periodic health exams, eye exams and yearly dental exams, especially if students are seen only for single acute illnesses. Ongoing assessment of students' need for these exams should be done.

Despite the high percentage of women having had a

recent medical check-up according to this study, only 39% of the female college students in this sample had had a pelvic exam and pap smear. Since most of the students in this study are under twenty, it may be too soon to expect a higher percentage of women to have had this exam. The pre-admission physical exam for freshmen may not have required a pelvic exam and pap smear for women. Assessment of older female students may yield different data.

The pap smear is an inexpensive reliable test to screen for cervical cancer. Young women need to incorporate getting a pelvic exam and pap smear into their health behavior so that cervical cancer is detected early. Clinical nurse specialists seeing college students individually or in groups (i.e. hall programs) can educate women about the need for this exam and the procedure itself. Pelvic models and equipment used during a pelvic exam can be utilized to enhance the education process. Women want to be educated about the pelvic exam (Needle, 1976) and effective education by the clinical nurse specialist may improve compliance with getting needed gynecologic exams.

The number of men (21%) doing self testicle exam

(STE) and the number of women (26.2%) doing self breast exam (SBE) is low. Less than a third of the sample do these examinatins. In studies that report the number of women performing self breast exam, the range is from a low of 12% (Trotta, 1980) to a high of 44.1% (Schlueter, 1980). The investigator even wonders if the number of men who report checking their testicles in this study, do so for the purpose intended. In young men between the ages of 20 and 35 years, testicular cancer is the number two killer behind accidents (Gault, 1981). Breast cancer is the most common malignancy for women. Therefore, intervention by the clinical nurse specialist needs to be initiated.

Education can take place in group sessions with discussions, models and/or films. Teaching of the technique or reinforcement of the technique of self breast exam or self testicle exam can be done through personal interaction since this results in more frequent practice (Trotta, 1980). Follow-up and evaluation is needed so that teaching techniques can be improved. Education strategies also need to be changed or improved as more research is done.

Ongoing research by the clinical nurse specialist as to why SBE or STE is or is not being performed can

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take place. Further studies correlating health belief

model variables and performance of SBE and STE can be

done since the research to date yield inclusive

results. Hallel (1982) concludes that higher levels of

health beliefs (perceived benefits and perceived

susceptability) correlated with more women performing

SBE. Stillman (1977) does not come to this conclusion.

In addition, Craun and Deffenbacher (1981) found no

correlation between knowledge and performing SBE and

STE. Consideration of other variables that may

influence behavior in carrying out SBE or STE, such as

self-esteem, importance of health, or locus of control,

may need to be researched by the clinical nurse

specialist.

There is a significant negative correlation

(-1.073) between age and general health behavior, in

this study. As students get older, their scores

decrease, indicating less positive health habits.

There are several possible explanations for this

negative correlation: 1. less concern for health as a

priority at this time in the student's life; 2. less

time to schedule exams; 3. expense and/or no coverage

by health insurance are possibilities. Older students

may be paying less attention to their physical health

due to the fact they are involved with career decisions, job interviews or selecting a mate. Further investigation into this area is needed so that the underlying causes can be studied and possible solutions considered.

Driving Behavior

In the area of driving behavior, the mean scores for male students (.477) and female students (.592) in this sample are only fair indicating a need to improve positive health habits. Most students (80%) seldom or never use seat belts. This is an important finding. Only recently have statistics been collected on seat belt usage on persons involved in car accidents, but not on seat belt usage in the general population. Routine usage of seat belts was studied by Mechanic and Cleary (1980) and Langlie (1977) as a part of several health behaviors, so that seat belt usage was not reported separately.

Intervention is needed to change seat belt habits since lack of seat belt use contributes to serious injuries and fatalities (Healthy People, 1979). Most people, including students, don't relate seat belt use to health. Education that this is a positive, preventive behavior can be done by the clinical nurse

specialist in group sessions or individually.
Strategies to increase peer pressure to encourage seat
belt usage may be beneficial. Assessment of seat belt
use by the clinical nurse specialist must be done since
questioning students about their seat belt usage may
increase their awareness of this as a positive health
habit. Clinical nurse specialists can support laws
that require mandatory seat belt use. This would
improve seat belt usage in the general population as
well as for students.

Most students (80%) in this sample generally drive
within the speed limit and 66% of the students avoid
drinking and driving. These positive health behaviors
need to be encouraged. Students' driving habits do
improve with age. Clinical nurse specialists need to
be aware of this and direct their efforts at younger
students. College women in this sample had a
significantly better driving score than college men.
The reasons for this may need to be explored. Men of
this age may have less regard for their health, may
feel it is "macho" to drive fast, and may feel
invulnerable to accidents. Due to social roles, men
usually drive on dates and so have a greater
opportunity to drink and drive. Clinical nurse

specialists need to direct their efforts at male
college students. Strategies that provide alternatives
to drinking and driving especially for men need to be
developed. For example, non-alcoholic parties for
students can be arranged. Encouraging students to go
to nearby bars so they can walk is another alternative.
Group discussions and/or values clarification with
students about choices related to drinking or not
drinking can be held. Students can develop strategies
acceptable to themselves to solve the problem of
drinking.

Self-Abuse Behavior

In the area of self-abuse behavior, most students
report positive health habits. High percentages of
students in this don't smoke cigarettes (88%), don't
smoke marijuana (70%), and don't use other mind
altering drugs (97%). The percentage of students who
don't smoke cigarettes or marijuana in this sample is
higher than the percentages reported in the literature.
Wechsler and Gottlieb (1979) report that 62% of the
students in their study don't smoke. Wechsler,
McFadden, and Rohman (1980) report that 61% of the
students in their study don't smoke marijuana.

The encouraging results in this study may be

misleading. Since the sample population is young, mostly 18-19 years old, negative habits may not have had a chance to develop. These habits may develop over the years due to peer pressure, social or academic stressors, or the need to explore different behavior. Students may have responded in a socially desirable way, especially to questions about marijuana and drug use. Clinical nurse specialists need to support and encourage positive health habits especially as students progress through school. Emphasis on individual choice may help students withstand peer pressure.

Students may be drinking more alcohol instead of using drugs. Less than a third of the women and less than a fourth of the men report not drinking in this study. In a study by Wechsler, McFadden, and Rohman (1980) less than 5% of the students in their sample report not drinking. Since students are drinking alcohol, further assessment is needed as to whether this is creating problems. Interruption in schoolwork, destructive activities, short term negative effects, and the use of alcohol to cope with stress are some areas of concern. Clinical nurse specialists need to be aware of and can be involved with campus groups dealing with alcoholic students.

The overall mean score of female students (.873) in the area of self-abuse behavior is higher than the mean score (.817) of the male students in this study. The health behavior of women in this area is significantly better than men. Again, greater efforts by clinical nurse specialists to improve health behavior in college men is needed.

Birth Control Behavior

In the area of birth control behavior, most students (almost 90%) report they would use a method of birth control if having sex. Even with this positive result clinical nurse specialists need to be involved in this area. Assessment of what methods students are using or what knowledge students have about birth control may yield better data in terms of problem areas. If students would use a birth control method, education is needed so students have adequate knowledge of effective and ineffective methods when making a choice. Although men report they would use a birth control method, stressing the responsibility of both men and women in preventing pregnancy needs to be reinforced. Assessment and management of other problems in the area of fertility and sexuality (i.e. herpes, vaginal infection, VD, etc.) can and should be

done by clinical nurse specialists.

In summary, in the area of self-responsibility, students in this study have positive health habits in the areas of self-abuse behavior and birth control behavior. These behaviors need to be supported and encouraged. Intervention needs to be directed at promoting high level wellness in the areas of general health behavior and driving behavior. Clinical nurse specialists especially need to be concerned with improving the positive health behavior of male students.

PHYSICAL FITNESS

In the area of physical fitness, the mean score for men (.543) and women (.316) in this sample are only fair indicating a need for improvement in this area of high level wellness. This is one area where women score worse than men. The low scores for women may reflect socialization. Sports and competition are encouraged more for men. Physical activity is important in reducing cardiovascular risk factors (Taylor, 1983) and improving mental states (Glasser, 1976) so that increased activity should be encouraged equally for men and women.

The low scores for both men and women in this

study, may reflect that the young students (probably
freshmen) in this sample, may not have organized their
schedule to include regular exercise. The newness of
classes, dormitory living, the number of activities,
and the self-responsibility for scheduling are all
possibilities interfering with regular exercise.
Clinical nurse specialists need to be aware that
improvement is needed in the number of college students
exercising vigorously. Besides assessing the number of
students doing aerobic or vigorous exercise, assessment
of the number of students carrying out other exercises
such as strength building and flexibility exercises is
also needed. The nurse specialist would be better able
to evaluate the physical fitness of college students
using a questionnaire with more items asking about
physical fitness and/or actual measuring techniques.
Methods such as measuring skinfold thickness, stress
testing for cardiovascular fitness, and testing
muscular strength can be used to evaluate physical
fitness.

For intervention, a strong knowledge base of
community and campus resources (i.e. organized sports,
pool hours, jazzercise classes, etc.) is needed by the
clinical nurse specialist in counseling individual or

groups of students about options to increase physical fitness. Demonstrations of warm-up exercises, breathing techniques, and stretching exercises should be given by the clinical nurse specialist. Return demonstration by the students should be done so the exercises can be evaluated and improved. Follow-up is also needed to assess and help maintain desired levels of activity.

In summary, high level wellness in the area of physical fitness needs to be promoted by the clinical nurse specialist since the scores for men and women in this study are low. Further assessment is also needed.

NUTRITIONAL AWARENESS

In the area of nutritional awareness, the mean score for college men (.573) and college women (.605) are fair in this study. Students report carrying out some positive behavior but there is room for improvement.

Over 90% of the students are at the appropriate weight for their height. Other positive behavior reported by the students in the sample include not drinking too much caffeine, using salt selectively, and including fiber in the diet. Negative behaviors reported include not eating breakfast regularly,

snacking between meals, and not minimizing refined or fatty foods. These findings are beneficial to know since most research studies report the consequences of certain dietary habits but not what habits people are actually carrying out.

The investigator has to wonder why some positive behaviors such as including fiber, limiting salt, and not drinking too much caffeine are carried out and other positive behaviors such as minimizing refined or fatty foods, eating breakfast, and not snacking are not carried out by the students. Dietary patterns and food likes have probably developed early in life, making it difficult to give up certain refined or fatty foods. Lack of knowledge about the negative health consequences of fatty and refined foods may contribute to poor food selection. Not eating breakfast and snacking between meals may reflect an on the run lifestyle or ineffective scheduling of college students. Students in residence halls also complain they can't control what they eat since they don't cook it. Biologic factors or the nutrient requirements, psychologic factor, such as emotions, habits, or control, sociocultural factors, or the ethnic and cultural background, and environmental factors all

influence eating patterns and dietary habits. These areas may need to be assessed especially if the clinical nurse specialist is working with individual students to change nutrition habits.

Nutritional awareness is an area to promote positive health behavior based on the findings from this study. Continued support of students' efforts to carry out positive health behavior is needed. Education by the clinical nurse specialist about the health consequences of certain dietary practices may reinforce positive habits and increase an awareness of negative habits. This education can be done in group sessions to reach larger number of students. Group sessions that promote peer support and reinforcement (such as TOPS or Weight Watchers) can also be initiated by the clinical nurse specialist.

Actual dietary change might be better accomplished through one to one interaction, or a clinical nurse specialist working with one student. Such techniques as recording in diet diaries, contracting, behavior modification, counseling, or a combination of techniques can be used. Clinical nurse specialists could work with the residence hall cooks to help increase food options. Effort is needed in the area of

nutritional awareness since there is a significant negative correlation (-.1490) between this area and age. According to the results of this study, nutrition habits worsen with age. Ongoing assessment of dietary habits is needed as students progress through college. Why nutrition worsens with age may need to be explored.

In summary, students report carrying out some positive and some negative health actions in the area of nutritional awareness. Promotion of improved diet habits is needed to promote high level wellness.

STRESS MANAGEMENT

In the area of stress management, the mean scores for college men (.820) and college women (.831) are high. According to these results in this study, students report they are coping or managing their stress. This is somewhat surprising since the sample population is mostly 18 year olds and probably freshmen. Freshmen have a number of stresses to deal with such as separation from parents and friends, new roommates, new classes and possible value conflicts. Students are also completing the developmental tasks of adulthood which may also be stressful. Studies by Marx, Garrity, and Bowers (1975), Garrity, Somes, and Marx (1977), and Marx, Garrity, and Somes (1977)

assume that students are experiencing stress and so their research efforts are directed at studying student stress in relationship to other variables such as illness, personality and coping capacity.

Since this is a time of seemingly high stress, it is encouraging to note that students report managing their stress. Perhaps it is early enough in the term, one month after classes started, that the novelty of a new setting, especially for freshmen, hasn't worn off and the stress of exams hasn't come up yet. Students may be responding in a socially desirable way, influenced by the expectation that adults can cope with stress.

Despite the high scores, clinical nurse specialists still need to be concerned with the stress and stress management of students. Assessment of this area at different time periods may yield different results. Using the College Schedule of Recent Experience (Marx et al, 1975) as an assessment tool may reveal students with high stress scores and at risk for illness. This questionnaire could also be used as an intervention tool to help students identify stressors and improve self-care. Assessment of actual coping techniques may show poor techniques that can be

improved with intervention. Group sessions or individual counseling can be done by the clinical nurse specialist to minimize the frequency of stress-inducing situations through time management or environmental modification. Encouraging exercise, enhancing self-esteem, and increasing assertiveness might help students increase their stress resistance. Finally, relaxation techniques can be taught.

In summary, students indicate by their high scores in this study that they are able to manage stress. Focusing on improving stress management techniques and coping abilities of students by the clinical nurse specialist might help students learn new and better methods to manage stress and develop habits to deal with stressors in the future.

CORRELATIONAL FINDINGS

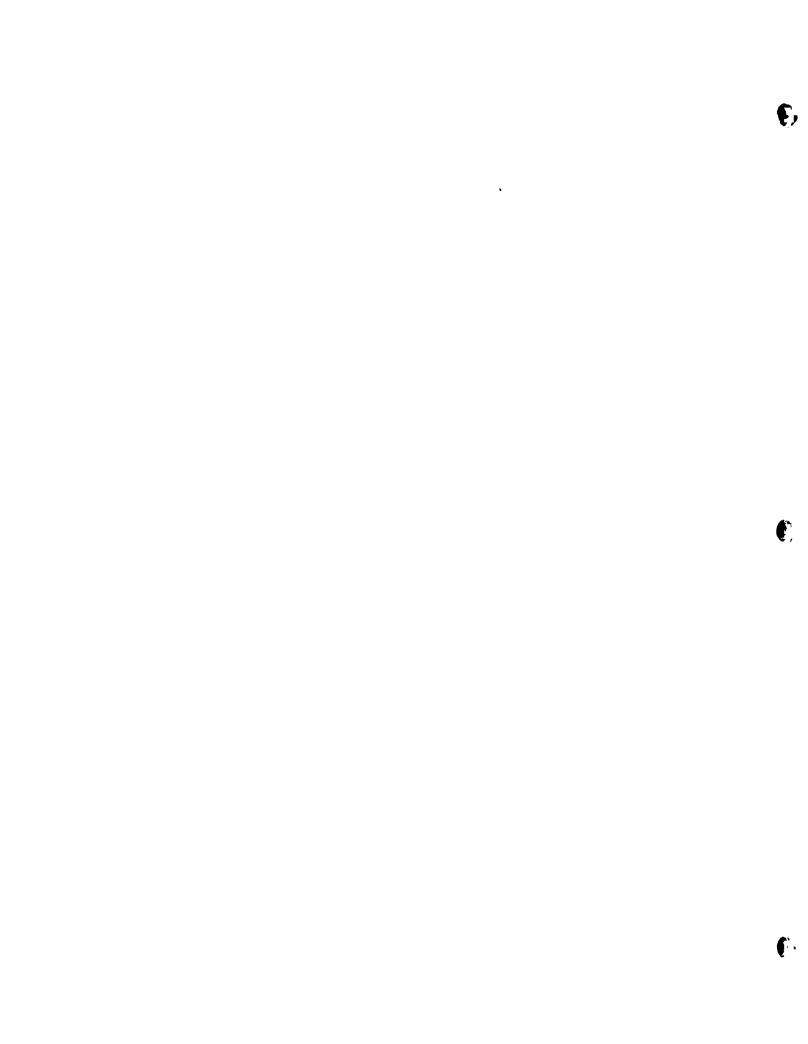A Pearson Product-Moment correlation coefficient was calculated between each of the four subscales of self-responsibility, and physical fitness, nutritional awareness, and stress management, to see what interrelationships exist between these broad areas. Out of twenty possible interrelationships, six are significantly different from zero. Significant positive correlation coefficients exist between:

general health behavior and driving behavior; general
health behavior and nutritional awareness; driving
behavior and self-abuse behavior; driving behavior and
nutritional awareness; physical fitness and nutritional
awareness; nutritional awareness and stress management.

The investigator will try to explore the
implication of these results. If college students are
concerned enough to get medical check-ups, dental
exams, etc. (i.e. score high in general health
behavior) then these students are also likely to have
good driving habits and good nutrition habits. This
may possibly be explained by students having a high
value of health or internal health locus of control.
These students are concerned about taking care of
themselves. This doesn't explain why general health
behavior doesn't correlate significantly with other
areas of high level wellness.

Students who have good driving habits also have
positive scores in the area of self-abuse behavior.
This makes some sense because if a student doesn't
drink much (item in self-abuse behavior) then this same
student may be less likely to be drinking and driving
(item in driving behavior). But again, why is it that
high scores in self-abuse behavior do not correlate

with other areas of high level wellness.

Nutritional awareness is positively correlated with driving behavior, physical fitness, and stress management. It makes sense that if a student is concerned about weight control, then this same student might make a greater effort to exercise and watch their diet (high score in physical fitness and nutritional awareness). Clinical nurse specialists need to be aware of this relationship in promoting high level wellness. Promoting exercise may result in an improvement in dietary habits or vice versa. Based on the results from this study, students with poor nutrition habits are probably not exercising. Assessment of both areas is needed.

Clinical nurse specialists also need to be aware of the significant positive correlation between nutritional awareness and stress management. Students that have good nutrition habits are alo better at managing stress. Adequate nutrition may give these students the energy to deal with stress and problems. Another explanation is that if a student is in control and coping with stress, this student may be eating better or in control of the area of nutrition too. If students are being seen by clinical nurse specialist

for stress symptoms, then their dietary habits should be assessed. Improvement in one area, either nutritional awareness or stress management may bring about positive change in the other area. Intervention can focus on both areas. Stress management only correlated significantly with nutritional awareness. One wonders why there are not significant correlations between stress management and other areas of high level wellness.

As described, the results from this study show significant positive correlations between some areas of high level wellness. Why these particular interrelationships are significant and not others are difficult to explain. Mechanic and Cleary (1980) examined eight positive health behaviors and reported that "...the patterns of associations found support the hypothesis that positive health behavior is part of a complex life-style that may reflect the ability to anticipate problems, mobilize to meet them, and cope actively" (p. 805). Langlie (1977) in examining intercorrelations among eleven positive health behavior scales, concluded that some behaviors involve a direct risk and other behavior involves indirect risk. The type or risk involved may influence the number and

interrelationships of health behavior carried out. In the development of a model for health-promoting behavior Pender (1982) describes the determinants of health promoting behaviors. These are categorized into individual perceptions, modifying factors, and variables affecting the likelihood of action. These components influence the patterns of behavior and if examined or researched closely may explain the reason for the existing interrelationships found in this study.

In summary, the fact that some significant correlations exist show that there are interrelationships between the broad areas of high level wellness, something Ardell (1979) stressed. Clinical nurse specialists need to be aware of the significant correlations so they can improve their assessment and intervention techniques by not focusing on just one area of high level wellness.

Although these study results are limited to the college students in one residence hall at the Midwestern, Big-10, State university, some implications for nursing are important to consider and need to be summarized.

There is a need to promote high level wellness in

this population. There are areas in need of improvement such as self breast exam and self testicle exam in general health behavior, driving behavior, especially seat belt usage, physical fitness, and nutritional awareness, especially minimizing refined and fatty foods.

Despite high scores in other areas, ongoing assessment needs to be done in all areas of high level wellness since health habits change over time. Achieving high level wellness is a dynamic process. There is a need to make greater effort to reach college men for assessment and intervention since less college men completed the questionnaires and generally their scores were worse than college women. Awareness of the interrelationships among the areas of high level wellness to improve assessment and intervention is also needed.

<div align="center">PROBLEMS</div>

Limitations of the instrument

The original purpose in collecting data and development of the questionnaire was not for research. This created problems in data analysis.

The decision to use Ardell's (1979) model of the five dimensions of high level wellness (self-

responsibility, physical fitness, nutritional awareness, stress management, and environmental sensitivity) was made after the questionnaire was written and distributed. Although this helped make the 29 item questionnaire easier to manage for analysis, with the focus on four of the five major areas, there wre still inadequacies with this method. The concept of self-responsibility was measured by behaviors requiring self-responsibility not by attributes of self-responsibility. The area of self-responsibility also had to be subdivided into four subscales. One subscale of self-responsibility, birth control behavior and a major area, physical fitness were only measured by one item. The items in the area of stress management did not specify actual coping or management techniques but only alluded to the ability to deal with stress. The area of environmental sensitivity, the fifth dimension of high level wellness, was not measured at all.

The items in the questionnaire required a variety of responses. Some questions were yes/no type responses while other questions offered three to five alternative responses. In scaling the items in order to test for reliability and for data analysis, the

investigator had to divide all items into ordinal responses, slightly changing the intended meaning and information to be collected.

The reliability of some of the scales was inadequate. According to the reliability coefficients calculated using the statistical formula for the Guttman technique, the nutritional awareness scale and the general health behavior scale were not reliable or internally consistent. In addition, validity of the instrument was not tested.

To overcome the limitations of the instrument, several approaches need to be considered. The literature needs to be reviewed in order to generate questions that more accurately reflect the concepts of high level wellness intended by Ardell (1979). For example, attributes of self-responsibility need to be measured or stress management approaches utilized by students need to be measured. For the area of physical fitness, more than one question needs to be utilized. Items in this area can measure the carrying out of flexibility exercises or strength building exercises. The area of environmental sensitivity needs to be included especially since students are often interested in the environment. Questions can be generated

regarding personal environment and community environment. Consideration can be given to using instruments already in existence, such as the health hazard appraisal, Travis' wellness index (Pender, 1983) or the questions Ardell (1979) suggests to measure wellness.

To improve reliability, a large number of items should be generated for each dimension, including environmental sensitivity. The instrument should be pilot tested and improved as needed. With a large number of items for each area, the statistical formula for coefficient alpha can be used to test for reliability and internal consistency. To change the variation in response patterns a Likert scale or a yes/no response pattern can be used for all items to improve readability and consistency of the instrument.

Validity of the instrument also needs to be tested for. Content validity should be considered when rewriting the instrument by a thorough review of the literature and generation of a large number of items. Construct validity should also be considered. Comparison of the instrument to another instrument already in use measuring positive health behavior can be done. Observation or measurement of actual behavior

can be compared to the responses on the questionnaire to check validity.

In summary, since there were limitations in the instrument used, a research-based methodology in questionnaire development needs to be carried out to overcome the problems identified.

Limitations of Ardell's Model of High Level Wellness

Although Ardell's (1979) model provides a useful framework to promote positive health behavior, there are limitations that need to be considered. Central to Ardell's (1979) model are the concepts of high level wellness and individual responsibility for health behavior.

High level wellness is a lifestyle approach or process to improving health. This process is concerned with increasing the level of well-being or the self actualization of an individual. In using this model as a basis for intervention, the individuals, in this case college students, need to be able to conceptualize health as a self-actualizing process. Some time may have to be spent by the clinical nurse specialist to help students understand this definition. A future orientation, or being able to delay gratification is also needed since the benefits of positive health

behavior may not be realized for several years. Self-discipline will be needed by students to overcome peer pressure and the instant gratification of some negative behaviors. The clinical nurse specialist will have to develop strategies, such as increasing self-esteem or assertiveness, or using peer groups to improve health habits. The abstract nature of self-actualization is a limitation, too, when doing evaluation research to measure the effects of intervention. Tools to measure a sense of well-being or a self-actualized state will have to be developed.

Self-responsibility is also an important concept underlying the promotion of high level wellness using Ardell's (1979) model. The individual is in control and responsible for health behavior. The belief that one's actions make a difference and that one is not controlled by external events is a part of the concept of self-responsibility. College students are at an age where they are just separating from their parents and becoming responsible adults. This developmental step will need to be assessed by and/or encouraged by the clinical nurse specialist as a part of promoting high level wellness. In addition, the consequences of students' actions can be pointed out in areas other

than health (i.e. not reading assignments and failing a
quiz) to emphasize the cause-effect relationship and
the importance of self-responsibility and control.

Although Ardell (1979), stresses self-
responsibility and the benefits of high level wellness,
he does not describe how persons can act on good
intentions, except to say one can do it if one tries.
Pender (1982) in her model of health promotion,
considers individual perceptions and modifying factors
that may increase the likelihood of action. Some of
the individual perceptions that the clinical nurse
specialist may need to assess and consider in
intervention include the importance of health,
perceived control, definition of health, perceived
health status, desire for competence, self awareness,
self-esteem, and perceived benefits. Overcoming
barriers may need to be included in the intervention
phase.

In summary, the clinical nurse specialist, if
using Ardell's (1979) model for assessment or
intervention with individual students or with groups of
students need to be aware of the limitations of the
model. This model may not be appropriate for all
students. Consideration needs to be given to a

student's ability to conceptualize health and high level wellness and the ability to take responsibility for his or her actions. Factors that increase the likelihood of action in carrying out positive health behavior also need to be considered.

Limitations in General

Other problems identified with this study include; limited sociodemographic data, a limited sampling technique, more women in the sample population than men, and omission of some of the statistical calculations. These problems can be overcome by careful attention to methodological procedures.

Sociodemographic questions such as income, parents educational level, rural or urban background, can be included in the instrument. A random stratified sampling technique would help ensure that students from each class (freshmen, sophomores, juniors, and seniors) were selected and improve the generalizability of the study results to a larger population. A plan for follow-up of students who didn't complete the questionnaire may yield more men respondents. Finally, thorough review of the statistical calculations and data results should eliminate incomplete results.

EDUCATION IMPLICATIONS

The results from this study indicate that there is
a need to promote high level wellness in college
students. Assessment of other age groups may reveal
this same need. Health preventive measures need to be
taught since the major causes of death are influenced
by lifestyle. Health promotive measures need to be
taught for the benefit of increased well-being and
fulfillment of a given individual or group. Nurses are
assuming (and should assume) an increasing role in
health prevention and health promotion. Education of
the clinical nurse specialist should emphasize this
aspect of nursing care.

This education should include teaching of models
of high level wellness or preventive/promotive health
behavior. Ardell's (1979) model of high level wellness
stresses five dimensions. Another model of wellness
includes six dimensions (Hettler, 1980). The wellness
index is based on a model with four dimensions (Pender,
1982). The factors that influence preventive or
promotive health behaviors need to be taught to
clinical nurse specialists. Health Belief Model
variables or Pender's (1982) model variables are
examples to be taught. Clinical nurse specialists need

to be exposed to the variety of instruments used to assess positive health behavior. Nursing strategies useful in promoting positive health especially need to be emphasized and reinforced in the education of clinical nurse specialists.

Clinical nurse specialists learning about high level wellness should turn a critical eye on themselves and their own lifestyle and habits. Successfully achieving lifestyle changes, a clinical nurse specialist can be a powerful role model for her clients.

The importance of research in the area of health promotion also needs to be in the curriculum of a clinical nurse specialist program. Descriptive research needs to be done as well as research reporting the benefits of lifetyle change. Research showing the effectiveness of nursing interventions in changing clients behavior is also needed.

One of nursing's unique contributions to the health care system is the promotion of high level wellness. Clinical nurse specialists need to be educated with the knowledge and skills to give high quality care in the promotion of positive health.

IMPLICATIONS FOR UNIVERSITY HEALTH CARE SERVICES

The function of a university is to provide the setting and opportunity for students to increase their knowledge, skills and attitudes. Most of the focus is on intellectual growth as colleges attempt to educate students so they have the necessary qualifications or degree to obtain future employment. Universities should also promote high level wellness. A student exhibiting a healthy lifestyle has additional knowledge that would benefit a future employer through less absenteeism and perhaps longer life. The results of this study indicate that students need improvement in following a health promoting lifestyle.

There are several ways a university could facilitate the promotion of positive health behaviors. A university needs to use its resources to coordinate the efforts of the diverse interest groups on campus and in the community and provide the environment for wellness promotion. Initially, instead of the usual pre-admission history and physical exam required by freshmen, a wellness questionnaire or health hazard appraisal could be used instead. Programs, classes, and individual counselors need to be available for students. Adequate physical education facilities need

to be available. Nutritious food selections need to be available in the residence halls. Even at the traditional health care facility, providers need to be encouraged to and have time allotted to assess and promote wellness behavior. Consideration could be given to requiring a class on health and physical education for all freshmen. A high level wellness resource library could be developed.

The list is endless as to what a university could do. It only takes committment on the part of the administration to change and move in the direction of promoting high level wellness.

RECOMMENDATIONS

With the knowledge gained from this beginning, descriptive study, the investigator suggests several ideas for future study. The study can be replicated with consideration given to overcoming the limitations previously discussed. A description of the positive health behavior of college students should include older students and students living off-campus as well as those students living in the residence halls. The study could be replicated using persons in this age group (18-24 years) but not attending college. The question of whether the behavior of this group is

similar or different than a college group would be addressed.

Intervention studies could be planned and implemented. For example, an intervention to increase the performance of self breast exam and self testicle exam could be developed. Group teaching of SBE or STE could be compared to individual teaching. Comparison between the methodology used to teach SBE or STE within groups could be done. Evaluation of the intervention should focus on actual behavior change as well as the effectiveness of the nursing action that brought about the change.

Determinants of positive health behavior could be studied. Locus of health control, importance of health, or self-esteem could be studied in relationship to one or all five of the dimensions of high level wellness. Results from these type of studies should help improve the development of interventions by the clinical nurse specialist.

In conclusion, this is a beginning study that adds to the knowledge base of nursing by reporting the health behaviors of a college population.

APPENDIX I
COVER LETTER
MICHIGAN STATE UNIVERSITY
Residence Hall Health Clinic

Clinics have been established in the Hubbard and Brody dormitory complexes to provide you with convenient and accessible health care. Some of the services offered in the clinic include screening tests, illness prevention, and illness treatment. One of the goals of the health clinic is to help you develop a healthy lifestyle. Completion of the health survey is an initial step in reaching this goal. The nurse practitioner will be available to work with you in partnership to help you learn to live in a healthy manner.

Following good health habits has been found to reduce the likelihood of certain diseases and to prolong life. The responses you give to the questions in the attached health survey will provide information about your health habits and health status. Based on your responses and needs, you will then have an opportunity to work with the nurse practitioner to 1) identify potential health risks and 2) learn how to adapt a healthy lifestyle that minimizes health risks.

This questionnaire will be kept confidential and will be kept with your health record in the clinic. Only the nurse practitioner or a physician will have access to your record without your written permission. You may review the survey and any of your responses with the nurse practitioner.

Please return the completed health survey by October 31, 1980. You may drop it in the designated collection box at the reception desk of your dorm, or bring it to the health clinic during open hours, or if the clinic is closed, slide it under the door.

Take a step toward better health and complete this survey now.

Jody Bunce, R.N., B.S.N., N.P.   Mira Strieter, R.N., B.S.N., N.P.
Brody Health Clinic   Hubbard Health Clinic

APPENDIX II
QUESTIONNAIRE
MICHIGAN STATE UNIVERSITY
Residence Hall Health Clinic

HEALTH SURVEY

Name_____Student No._____

Campus Address_____

Phone number_____Sex_____Birthdate_____

1. Have you had a medical checkup within the past year?   ____Yes____No

2. Have you had a dental exam within the past year?   ____Yes____No

3. Have you had an eye exam in the last 2 years?   ____Yes____No

4. If you are a female, have you ever had a pelvic exam and pap smear?   ____Yes____No
    Has it been within the last year?   ____Yes____No

5. If you are a female, do you check your breasts each month for lumps?   ____Yes____No

6. If you are a male, do you check your testicles for unusual lumps?   ____Yes____No

7. Height:_____   Weight:_____

8. Do you feel you are within 15% of your recommended weight?   ____Yes____No

9. How often do you exercise (vigorously)? - For example: running,
    swimming, tennis, racquetball.

    ____Rarely   ____Once a week   ____About 3 times/week   ____Almost every day

10. How much coffee, tea, Pepsi, Coke/other cola drinks do you drink? (totally)

    ____None   ____Less than 6 drinks/day   ____Less than 5 drinks/week

    ____More than 6 drinks/day

11. Do you generally eat?

    ____5 meals/day   ____3 meals/day   ____2 meals/day   ____Irregular meals

    ____Other

12. Do you eat breakfast?

    ____Always   ____Sometimes   ____Never

13. Do you snack between meals?   ____Yes____No

14. Do you add salt to your food?

    ____Quite consistently to most foods   ____Only to selected items

    ____Never or very seldom add salt

15. Do you minimize refined foods (white sugar, white flour, preservatives)
    in your diet?   ____Yes____No

16. Do you include fiber (bran, whole wheat, certain fruits and vegetables)
    in your diet daily?   ____Yes____No

17. Do you minimize fatty foods (fried foods, beef, soft cheese, etc.) in
    your diet?   ____Yes____No

18. When driving a motor vehicle, do you stay within five miles per hour of
    the speed limit?

    ____Usually   ____Seldom   ____Never

19. Do you use seat belts?

    ____Always   ____Sometimes   ____Never

HEALTH SURVEY, page two....   Student no._____

20. Do you avoid drinking alcohol or using drugs and then driving?

____Always   ____Sometimes   ____Never

21. Do you smoke cigarettes?   ____Yes____No

____1-5/day   ____6-10/day   ____11-20/day   ____Over one pack/day

22. How much alcohol do you drink per week?

____Never drink alcohol   ____1-2 drinks/week   ____3-5 drinks/week

____Over 5 drinks/week   ____Drink on weekends only

23. Do you smoke marijuana?

____Never   ____Occasionally   ____Frequently   ____More than 4-5 joints/day

24. Do you use other mind-altering drugs?

____Never   ____Occasionally   ____Frequently

25. If you were to have sex, would you use some means of contraception
    or birth control?   ____Yes____No

26. Do you fall asleep easily at night?   ____Yes____No

27. How much sleep do you usually get per night?

____7 hours/night or more   ____Less than 7 hours/night

28. Do you feel you can cope with a reasonable amount of stress? ____Yes____No

29. Are you aware of your feelings (mad, glad, sad, frightened) and are
    you able to express them in a way that is satisfactory to you? ____Yes____No

    ....satisfactory to others?   ____Yes____No

30. Are you able to release your frustration and anger safely and
    effectively?   ____Yes____No

Please identify any health related topics you would like more information on either
individually or in a group session:

_____

_____

_____

_____

_____

_____

_____

_____

_____

APPENDIX III

OPERATIONAL DEFINITIONS

APPENDIX III-a

1. Have you had a medical checkup within the past year? _____Yes_____No

2. Have you had a dental exam within the past year? _____Yes_____No

3. Have you had an eye exam in the last 2 years? _____Yes_____No

4. If you are a female, have you ever had a pelvic exam and pap smear? _____Yes_____No
   Has it been within the last year? _____Yes_____No

5. If you are a female, do you check your breasts each month for lumps? _____Yes_____No

6. If you are a male, do you check your testicles for unusual lumps? _____Yes_____No

APPENDIX III-b

18. When driving a motor vehicle, do you stay within five miles per hour of the speed limit?

   _____Usually _____Seldom _____Never

19. Do you use seat belts?

   _____Always _____Sometimes _____Never

20. Do you avoid drinking alcohol or using drugs and then driving?

   _____Always _____Sometimes _____Never

APPENDIX III-c

21. Do you smoke cigarettes? _____Yes_____No

   _____1-5/day _____6-10/day _____11-20/day _____Over one pack/day

22. How much alcohol do you drink per week?

   _____Never drink alcohol _____1-2 drinks/week _____3-5 drinks/week

   _____Over 5 drinks/week _____Drink on weekends only

23. Do you smoke marijuana?

   _____Never _____Occasionally _____Frequently _____More than 4-5 joints/day

24. Do you use other mind-altering drugs?

   _____Never _____Occasionally _____Frequently

APPENDIX III-d

25. If you were to have sex, would you use some means of contraception or birth control? _____Yes_____No

APPENDIX III-e

9. How often do you exercise (vigorously)? - For example: running, swimming, tennis, racquetball.

____Rarely ____Once a week ____About 3 times/week ____Almost every day

APPENDIX III-f

7. Height:_____ Weight:_____
Student within 15% of recommended weight? ____Yes____No

10. How much coffee, tea, Pepsi, Coke/other cola drinks do you drink? (totally)

____None ____Less than 6 drinks/day ____Less than 5 drinks/week

____More than 6 drinks/day

11. Do you generally eat?

____5 meals/day ____3 meals/day ____2 meals/day ____Irregular meals

____Other

12. Do you eat breakfast?

____Always ____Sometimes ____Never

13. Do you snack between meals? ____Yes____No

14. Do you add salt to your food?

____Quite consistently to most foods ____Only to selected items

____Never or very seldom add salt

15. Do you minimize refined foods (white sugar, white flour, preservatives) in your diet? ____Yes____No

16. Do you include fiber (bran, whole wheat, certain fruits and vegetables) in your diet daily? ____Yes____No

17. Do you minimize fatty foods (fried foods, beef, soft cheese, etc.) in your diet? ____Yes____No

APPENDIX III-g

26. Do you fall asleep easily at night? ____Yes____No

27. How much sleep do you usually get per night?

____7 hours/night or more ____Less than 7 hours/night

28. Do you feel you can cope with a reasonable amount of stress? ____Yes____No

29. Are you aware of your feelings (mad, glad, sad, frightened) and are you able to express them in a way that is satisfactory to you? ____Yes____No

....satisfactory to others? ____Yes____No

30. Are you able to release your frustration and anger safely and effectively? ____Yes____No

APPENDIX IV

Division of Questions into
Positive (+1) and Negative
(0) Health Behavior

1. **Have you** had a medical checkup within the past year? | Yes O No

2. Have you had a dental exam within the past year? | Yes O No

3. Have you had an eye exam in the last 2 years? | Yes O No

4. If you are a female, have you ever had a pelvic exam and pap smear? | Yes O No
   Has it been within the last year? | Yes O No

5. If you are a female, do you check your breasts <u>each month</u> for lumps?   / Yes O No

6. If you are a male, do you check your testicles for unusual lumps?   / Yes O No

7. Height:___ _____   Weight:_____

   Student within 15% of recommended weight?   / Yes O No

9. How often do you exercise (vigorously)? - For example: running,
   swimming, tennis, racquetball.

   _O_Rarely   _O_Once a week   _|_About 3 times/week   _|_Almost every day

10. How much coffee, tea, Pepsi, Coke/other cola drinks do you drink? (totally)

    _|_None   _|_Less than 6 drinks/day   _|_Less than 5 drinks/week

    _O_More than 6 drinks/day

11. Do you generally eat?

    _O_5 meals/day   _|_3 meals/day   _O_2 meals/day   _O_Irregular meals

    _O_Other

12. Do you eat breakfast?

    _|_Always   _O_Sometimes   _O_Never

13. Do you snack between meals?   _O_Yes_|_No

14. Do you add salt to your food?

    _O_Quite consistently to most foods   _|_Only to selected items

    _|_Never or very seldom add salt

15. Do you minimize refined foods (white sugar, white flour, preservatives)
    in your diet? |_Yes C No

16. Do you include fiber (bran, whole wheat, certain fruits and vegetables)
    in your diet daily? |_Yes C No

17. Do you minimize fatty foods (fried foods, beef, soft cheese, etc.) in
    your diet?   / Yes C No

18. When driving a motor vehicle, do you stay within five miles per hour of
    the speed limit?

    _|_Usually / _C_Seldom   _O_Never

19. Do you use seat belts?

    _|_Always / _C_Sometimes   _O_Never

20. Do you avoid drinking alcohol or using drugs and then driving?

    _/_ Always / _O_ Sometimes   _O_ Never

21. Do you smoke cigarettes?   _O_ Yes _/_ No

    ___1-5/day   ___6-10/day   ___11-20/day   ___Over one pack/day

22. How much alcohol do you drink per week?

    _/_ Never drink alcohol   _/_ 1-2 drinks/week   _O_ 3-5 drinks/week

    _O_ Over 5 drinks/week   _/_ Drink on weekends only

23. Do you smoke marijuana?

    _/_ Never   _O_ Occasionally   _C_ Frequently   _C_ More than 4-5 joints/day

24. Do you use other mind-altering drugs?

    _/_ Never   _O_ Occasionally   _O_ Frequently

25. If you were to have sex, would you use some means of contraception
    or birth control?   _/_ Yes _C_ No

26. Do you fall asleep easily at night?   _/_ Yes _O_ No

27. How much sleep do you usually get per night?

    _/_ 7 hours/night or more   _O_ Less than 7 hours/night

28. Do you feel you can cope with a reasonable amount of stress?   _/_ Yes _O_ No

29. Are you aware of your feelings (mad, glad, sad, frightened) and are
    you able to express them in a way that is satisfactory to you?   _/_ Yes _O_ No

    ....satisfactory to others?   _/_ Yes _O_ No

30. Are you able to release your frustration and anger safely and
    effectively?   _/_ Yes _O_ No

LIST OF REFERENCES

Accident Facts. Chicago, Illinois: National Safety
    Council, 1982.

Ardell, Donald. 14 days to a wellness lifestyle. Mill
    Valley, Calif.: Whatever Publishing, Inc., 1982.

Ardell, Donald. High level wellness (23nd ed.). New
    York: Bantam Books, 1979.

Ardell, Donald. The nature and implication of high
    level wellness, or why "normal health" is a rather
    sorry state of existence. Health Values:
    Achieving High Level Wellness, January/February
    1979, 3(1), 17-24.

Baranowski, Tom. Toward the definition of concepts of
    health and disease, wellness and illness. Health
    Values: Achieving High Level Wellness,
    November/December 1981, 5(6), 246-256.

Belloc, Nedra and Breslow, Lester. Relationship of
    physical health status and health practices.
    Preventive Medicine, 1972, 1(3), 409-421.

Benedict, Virginia, Lundeeen, Kirsten, and Morr, Brian.
    Self assessment by adolescents of their health
    status and perceived health needs. Health Values:
    Achieving High Level Wellness, November/December
    1981, 5(6), 239-245.

Benforado, Joseph. Alcoholism in college: Early case
    finding. Journal of the American College Health
    Association, Feb., 1982, 39, 163-165.

Bennett, Lawrence Fleischmann, Gifford, and Slack.
    Profile of women practicing breast self-
    examination. J.A.M.A., Jan. 28, 1983, 249(4),
    488-491.

Blackburn, Henry. Diet and atherosclerosis:
    Epidemiologic evidence and public health
    implications. Preventive Medicine, 1983, 12,
    2-10.

Borhani, Nemat. In Arnold, Charles (Ed.), Advances in
    disease prevention. New York: Springer
    Publishing Company, 1981.

Botvin and McAlister. In Arnold, Charles (Ed.),
    Advances in disease prevention. New York:
    Springer Publishing Company, 1981.

Breslow, Lester and Somers, Anne. The lifetime health-
    monitoring program. The New England Journal of
    Medicine, March 17, 1977, 296(11), 601-608.

Bruhn, John and Cordova, F. David. A developmental
    approach to learning wellness behavior part I:
    infancy to early adolescence. Health Values:
    Achieving High Level Wellness. November/December
    1977, 1(6), 246-254.

Bruhn, John and Cordova, F. David. A developmental
    approach to learning wellness behavior part II:
    adolescence to maturity. Health Values:
    Achieving High Level Wellness, January/February
    1978, 2(1), 16-21.

Burkitt, Denis. The link between low-fiber diets and
    disease. Human Nature, Dec., 1978, 35-41.

Caldwell, Laura. Use of the Social Readjustment Rating
    Scale combined with the P.O.R. in a college health
    service. Nurse Practitioner, January-February,
    1978, 24-26.

Carlson and Bottiger. Ischaemic heart-disease in
    relation to fasting values of plasma triglycerides
    and cholesterol. The Lancet, April 22, 1972, 865-
    868.

Clark, Carolyn. The Wellness Newsletter,
    January/February 1980, 1, 1-4.

Cohen, Marc. The student wellness resource center: a holistic approach to student health. Health Values: Achieving High Level Wellness, September/October 1980, 4(5), 209-212.

Cohen, Snyder, and Carter. Dental attitudes, perception, and treatment needs in a university population. Journal of the American College Health Association, Dec., 1980, 29, 110-114.

Cole and Allen. Contraceptive responsibility among male university students. Journal of the American College Health Association, December, 1979, 28, 168-172.

Conklin, Klint, Morway, Sawyer, and Shepard. Should health teaching include self-examination of the testes? American Journal of Nursing, Dec., 1978, 2073-2075.

Craun and Deffenbacher. Cancer knowledge and examination frequency in college students. Journal of the American College Health Association, Dec., 1981, 30, 123-126.

Dahl, J.M. Salt and hypertension. The American Journal of Clinical Nutrition, Feb., 1972, 25, 231-244.

Diekelmann, Nancy. Primary health care of the well
    adult. New York: McGraw-Hill Book Company, 1977.

Dobmeyer, Stine, Leier, Greenberg, and Schaal. The
    arrhythmogenic effects of caffeine in human
    beings. The New England Journal of Medicine,
    April 7, 1983, 308(14), 813-816.

Downey, Kenneth. Elementary social statistics. New
    York: Random House, 1975.

Duncan, David, Russell, Robert and Petosa, Richard.
    Educational outreach: an experimental evaluation
    of wellness center involvement in classes. Health
    Values: Achieving High Level Wellness,
    September/October 1980, 4(5), 234-236.

Dunn, Halbert. What high-level wellness means. Health
    Values: Achieving High Level Wellness,
    January/February 1977, 1(1), 9-16.

Dwore, Richard and Kreuter, Marshall. Update:
    reinforcing the case for health promotion. Family
    and Community Health, 1980, 103-119.

Eckert, Patricia. Bottoms up: an alcohol abuse
    prevention model for college campuses. Health
    Values: Achieving High Level Wellness,
    September/October 1980, 4(5), 222-228.

Facts on Testicular Cancer. American Cancer Society,
    Inc., 1978.

Fair, Rosenaur, and Thurston. Exercise management.
    Nurse Pracitioner, May-June, 1979, 13-18.

Foster, Lang, Costanza, Worden, Haines, and Yates.
    Breast self-examination practices and breast-
    cancer stage. The New England Journal of
    Medicine, Aug. 10, 1978, 299(6), 265-270.

Frame and Carlson. A critical review of periodic
    screening using specific screening criteria Parts
    1-4. The Journal of Family Practice, 1975, 2(1-
    4), 29-36, 123-129, 189-194, and 283-289.

Garrity, Somes, and Marx. The relationship of
    personality, life change, psychophysiological
    strain and health status in a college population.
    Social Science and Medicine, 1977, 11, 257-263.

Gault, Patricia. Testicular cancer. Nursing 81, May,
    1981, 47-50.

Glasser, William. Positive Addiction. New York:
    Harper & Row, Publishers, 1976.

Greifinger, Robert and Grossman, Richard. A language
    of health. Health Values: Achieving High Level
    Wellness, September/October 1977, 1(5), 207-209.

Haefner, Don. In Becker, Marshall (Ed.), The health
    belief model and personal health behavior. New
    Jersey: Charles B. Slack, Inc., 1974.

Haggerty, Robert. Changing lifestyles to improve
    health. Preventive Medicine, 1977, 6, 276-289.

Halfman and Hojnacki. Exercise and the maintenance of
    health. Topics in Clinical Nursing, July, 1981,
    3(2), 1-11.

Hallel, Janice. The relationship of health beliefs,
    health locus of control, and self concept to the
    practice of breast self-examination in adult
    women. Nursing Research, May/June, 1982, 31(3),
    137-142.

Hautvast, Knuiman, West, Brussaard, and Katan.
    Nutrition and HDL in children and young adults.
    Preventive Medicine, 1983, 12, 2-10.

Healthy People: The surgeon general's report on health
    promotion and disease prevention. DHEW (PHS)
    Publication No. 79-55071, 1979.

Healthy People: The surgeon general's report on health
    promotion and disease prevention. Background
    papers. DHEW (PHS) Publication No. 79-55071A,
    1979.

Hennekens, Drolette, Jesse, Davies, and Hutchison.
    Coffee drinking and death due to coronary heart
    diesease. The New England Journal of Medicine,
    March 18, 1976, 294(12), 633-636.

Hettler, Bill. Wellness promotion on a university
    campus. Family and Community Health, May 1980, 3,
    77-94.

Hill, Smith, and Jasmin. Modularized stress management
    for reduction of predicted illness. Journal of
    the American College Health Association, Oct.,
    1981, 30, 69-74.

Jeffers, Jeanette. Wellness: teaching students to
    assess. Health Values: Achieving High Level
    Wellness, May/June 1980, 4(3), 119-123.

Johnson-Saylor, Margaret. Seize the Moment: health
    promotion for the young adult. Topics in Clinical
    Nursing, July 1980, 2(2), 9-19.

Joseph, Lynda. Self-care and the nursing process.
    Nursing Clinics of North America, March 1980,
    15(1), 131-143.

Kaufman, Helmrich, Rosenberg, Miettinen, and Shapiro.
    Nicotine and carbon monoxide content of cigarette
    smoke and the risk of myocardial infarcting young
    men. The New England Journal of Medicine, Feb.
    24, 1983, 308(8), 409-413.

Kemper, Donald. Medical self-care: a stop on the road
    to high level wellness. Health Values: Achieving
    High Level Wellness, March/April 1980, 4(2), 63-
    68.

Knowles, John. The responsibility of the individual.
    In John Knowles (Ed.), Doing better and feeling
    worse in the United States, New York: W. W.
    Norton & Company, Inc., 1977.

Koplan, Powell, Sikes, Shirley and Campbell. An
    epidemiologic study of the benefits and risks of
    running. J.A.M.A., Dec. 17, 1982, 248(23), 3118-
    3121.

Kuller, Lewis. Editorial: Prevention of
    cardiovascular disease and risk-factor
    intervention trials. Circulation, Jan., 1980,
    61(1), 26-28.

Landis, Sandra. Human sexuality services: a holistic approach to sex education and counseling in a university setting. <u>Health Values: Achieving High Level Wellness</u>, September/October 1980, <u>4</u>(5), 229-233.

Lasser, Norman. In Arnold, Charles (Ed.), <u>Advances in disease prevention</u>. New York: Springer Publishing Company, 1981.

Leichtman and Friedman. Social and psychological development of adolescents and the relationship to chronic illness. <u>The Medical Clinics of North America</u>, Nov. 1975, 1319-1328.

Leon and Blackburn. In Arnold, Charles (Ed.), <u>Advances in disease prevention</u>. New York: Springer Publishing Company, 1981.

Lindberg, Suzanne. Periodic preventive health screening for adults. <u>Nurse Practitioner</u>, 1980, <u>5</u>(5), 9-13.

MacKenzie, R.G. Caring for the adolescent drug user. <u>The Medical Clinics of North America</u>, Nov. 1975, 1439-1444.

MacMahon, Yen, Trichopoulos, Warren, and Nardi. Coffee
and cancer of the pancreas. The New England
Journal of Medicine, March 12, 1981, 304(11), 630-
633.

Mann, George. The influence of obesity on health
(First of two parts). The New England Journal of
Medicine, July, 1974, 291(4), 178-185.

Mann, George. The influence of obesity on health
(Second of two parts). The New England Journal of
Medicine, Aug., 1974, 291(5), 226-232.

Margolis, Simeon. The hyperlipoproteinemias in
adolescence. The Medical Clinics of North
America, Nov. 1975, 1359-1370.

Marx, Garrity, and Bowers. The influence of recent
life experience on the health of college freshmen.
Journal of Psychosomatic Research, 1975, 19, 87-
98.

Marx, Garrity, and Somes. The effect of imbalance in
life satisfactions and frustrations upon illness
behavior in college students. Journal of
Psychosomatic Research, 1977, 21, 423-427.

McKillip and Vierke. College smokers: Worried, sick but still puffing. Journal of the American College Health Association, April, 1980, 28, 280-282.

Mechanic, David and Cleary, Paul. Factors associated with the maintenance of positive health behavior. Preventive Medicine, 1980, 9, 805-814.

Medical Practice Committee. Periodic health examination: A guide for designing individualized preventive health care in the asymptomatic patient. Annals of Internal Medicine, 1981, 95, 729-732.

Michael and Sewall. Use of the adolescent peer group to increase the self-care agency of adolescent alcohol abusers. Nursing Clinics of North America, March, 1980, 15(1), 157-176.

Milsum, John. Health, risk factor reduction and life-style change. Family and Community Health, May 1980, 3, 1-13.

Morris, Pollard, Everitt, Chave, and Semmence. Vigorous exercise in leisure-time: Protection against coronary heart disease. The Lancet, Dec. 6, 1980, 1207-1210.

169

Murphy, Dazzo, Yost, and Parelius. The sexually
liberated college student--fact or fancy. Journal
of the American College Health Association,
October, 1981, 30, 87-89.

Mussen, Paul et al. Psychological development: a
lifespan approach. New York: Harper & Row
Publishers, 1979.

Needle, Richard. Patterns of utilization of health
services by college women. Journal of the
American College Health Association, June, 1976,
24, 307-312.

Nie, Hull, Jenkins, Steinbrenner, and Bent.
Statistical package for the social sciences (2nd
Edition). New York: McGraw-Hill Book Company,
1975.

Orem, Dorothea. Nursing: concepts of practice (2nd
ed.). New York: McGraw-Hill Book Company, 1980.

Paffenbarger and Hale. Work activity and coronary
heart mortality. The New England Journal of
Medicine, March 13, 1975, 292(11), 545-549.

Paffenbarger and Hyde. Exercise as protection against
heart attack. The New England Journal of
Medicine, May 1, 1980, 302(18), 1026-1027.

Paffenbarber, Wing, and Hyde, Physical activity as an
    index of heart attack risk in college alumni.
    American Journal of Epidemiology, September, 1978,
    108(3), 161-174.

Pender, Nola. Health promotion in nursing practice.
    Norwalk, Conn.: Appleton-Century-Crofts, 1982.

Pelletier, Kenneth. Mind as healer, mind as slayer.
    New York, New York: Dell Publishing Co., Inc.,
    1977.

Petravage, Reynolds, Gardner, and Reading. Attitudes
    of women toward the gynecologic examination. The
    Journal of Family Practice, 1979, 9(6), 1039-1045.

Polit, Denise and Hungler, Bernadette. Nursing
    research: Principles and methods. Philadelphia:
    J. B. Lippincott Company, 1978.

Randolph, Gretchen. The yin and yang of clinical
    practice. Topics in Clinical Nursing, April 1979,
    1(1), 31-41.

Reif, Arnold. High level wellness and low level
    wellness: an overview. Health Values: Achieving
    High Level Wellness, July/August 1978, 2(4), 198-
    210.

Rindskopf, Kathryn. A perilous paradox: The
    contraceptive behavior of college students.
    Journal of the American College Health
    Association, Dec., 1981, 30, 113-118.

Rogers, Martha. An introduction to the
    theoretical basis of nursing. Philadelphia:
    F. A. Davis Company, 1970.

Rosenberg, Slone, Shapiro, Kaufman, Stolley, and
    Miettinen. Coffee drinking and myocardial
    infarction in young women. American Journal of
    Epidemiology, 1980, 111(6), 675-681.

Rosenstock, Irwin. In Becker, Marshall (Ed.), The
    health belief model and personal health behavior.
    New Jersey: Charles B. Slack, Inc., 1974.

Ruffing, Mary Ann. Preventive health behavior: a
    theoretical review and synthesis. Health Values:
    Achieving High Level Wellness, September/October
    1979, 3(5), 235-240.

Schlueter, Linda. Knowledge and beliefs about breast
    cancer and breast self-examination among athletic
    and nonathletic women. Nursing Research,
    November/December 1982, 31(6), 348-353.

Selye, Hans. The stress of life (revised edition).
    New York: McGraw-Hill Book, Co., 1976.

Simic, Bozidar. Childhood obesity as a risk factor in
adulthood and its prevention. Preventive
Medicine, 1973, 12, 47-52.

Siscovick, Weiss, Hallstrom, Inui, and Peterson.
Physical activity and primary cardiac arrest.
J.A.M.A., Dec. 17, 1982, 248(23), 3113-3117.

Snyder, Cohen, and LaBelle. Determinants of dental-
services utilization in a university population.
Journal of the American College Health
Association, Dec., 1982, 31, 109-114.

Stamler, Jeremiah. Public health aspects of optimal
serum lipid-lipoprotein levels. Preventive
Medicine, 1979, 8, 733-759.

Stamler, Jeremiah. Lifestyles, major risk factors,
proof and public policy. Circulation, July 1978,
58(1), 3-19.

Stillman, Margot. Women's health beliefs about breast
cancer and breast self-examination. Nursing
Research, March/April, 1977, 26(2), 121-127.

Suitor, Carol and Hunter, Merrily. Nutrition:
Principles and application in health promotion.
Philadelphia: J. B. Lippincott, 1980.

Sutterley, Doris. Stress and health: A survey of
  self-regulation modalities. Topics in Clinical
  Nursing, April, 1979, 1(1), 1-21.

Swales, J. D. Dietary salt and hypertension. The
  Lancet, May 31, 1980, 1177-1179.

Taylor, Henry. Physical activity: Is it still a risk
  factor? Preventive Medicine, 1983, 12, 20-24.

Taylor, Marc and McKillip, Jack. Immediate health-
  related consequences of student lifestyles.
  Health Values: Achieving High Level Wellness,
  September/October 1980, 4(5), 213-216.

The Joint National Committee of Detection, Evaluation,
  and Treatment of High Blood Pressure. The 1980
  report of the Joint National Committee on
  Detection, Evaluation, and Treatment of High Blood
  Pressure. Archives of Internal Medicine, Oct.,
  1980, 140, 1280-1285.

Trevisan, Cooper, Stamler, Gorsch, Allen, Liu, Ostrow,
  and Stamler. Dietary salt and blood pressure.
  Preventive Medicine, 1973, 12, 133-137.

Trotta, Patricia. Breast self-examination: Factors
  influencing compliance. Oncology Nursing Forum,
  Summer, 1980, 7(3), 13-17.

Vierke, Scott. The lifestyling program: moving toward high level wellness. Health Values: Achieving High Level Wellness, September/October, 1980, 4(5), 237-241.

Wechsler and Gottlieb. Smoking among New England college men and women. Journal of the American College Health Association, Dec., 1979, 28, 280-282.

Wechsler and McFadden. Drinking among college students in New England. Journal of Studies on Alcohol, 1979, 40(11) 969-996.

Wechsler, McFadden, and Rohman. Drinking and drug use among college students in New England. Journal of the American College Health Association, April, 1980, 28, 275-279.

W.H.O./I.S.H. Mild Hypertension Liaison Committee. Trials of the treatment of mild hypertension. The Lancet, Jan. 16, 1982, 149-156.

Woods, Nancy. Women's health. Nursing Clinics of North America, March, 1982, 17(1), 113-119.

Wynder and Hoffmann. Tobacco and health. The New England Journal of Medicine, April 19, 1979, 300 (16), 894-903.

Young, Michael. Religiosity, sexual behavior, and

contraceptive use of college females. Journal of

the American College Health Association, April,

1982, 30, 216-220.

Ziemer, Mary. Coping behavior: A response to stress.

Topics in Clinical Nursing, July, 1982, 4(2), 4-

19.