

To the Graduate Council:

I am submitting herewith a dissertation written by Madge McCaffrey Donnellan entitled "A Study to Determine the Relationship Between Knowledge of Health Practices, Amount of Patient Contact, and Personal Health Practices of Hospital Employees." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Health Education.

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A STUDY TO DETERMINE THE RELATIONSHIP BETWEEN  
KNOWLEDGE OF HEALTH PRACTICES, AMOUNT OF  
PATIENT CONTACT AND PERSONAL HEALTH PRACTICES  
OF HOSPITAL EMPLOYEES

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## ABSTRACT

This study examined the relationship between knowledge of health practices, amount of patient contact, and health practices of hospital employees. Subjects were obtained by selecting a random sample of departments from an urban acute-care hospital and requesting participation from employees.

Employees completed a set of 3 surveys. Each subject received a score on their knowledge of health practices (KHPSC) and a score on their actual health practices (HPSC). The mean KHPSC of the sample was less than 70%.

There was a significant and positive relationship between KHPSC and HPSC of subjects. Level of education was also positively correlated with HPSC of subjects. There was a significant difference in the HPSC of subjects when grouped according to type of work. The amount of patient contact of employees did not significantly influence their HPSC. They are aware of the connection between health practices and health status.

The subjects could reduce their risk for disease through health education; role-models are available at the site who are knowledgeable. The unique problems of shift workers and the determinants of health behaviors of registered nurses need to be assessed.

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## CHAPTER I

### HEALTH PRACTICES OF HOSPITAL EMPLOYEES

#### Introduction

The costs of health care in the United States are escalating at an alarming rate. Many health problems that face Americans today are rooted in lifestyle. One approach to curbing costs is lifestyle change and prevention of disease through effective personal health practices.

Personal health practices such as exercise, smoking and diet have been linked to health status and mortality. A pioneer longitudinal study initiated in 1965 in Alameda County, California, showed that seven health habits (never smoking cigarettes, regular physical activity, moderate or no use of alcohol, 7-8 hours sleep/day regularly, maintaining proper weight, eating breakfast, and not eating between meals) were associated with physical health status and mortality (Belloc, 1973). Nine years later Wiley and Camacho (1980) analyzed follow-up data on more than 3800 of the original 6900 subjects from the Alameda County study, and found that five of the health practices (never smoking cigarettes, regular physical activity, 1-45 drinks/month, 7-8 hours of sleep/day regularly, maintaining

proper weight) were significantly associated with overall health outcomes.

Physical activity has been shown to reduce risk of coronary heart disease, facilitate weight control, and decrease symptoms of anxiety and depression. Beneficial effects on the prevention and control of hypertension, diabetes, and osteoporosis have also been noted (Blair, Jacobs, & Powell, 1985; Siscovick, LaPorte, & Newman, 1985; Taylor, Sallis, & Needle, 1985). In a study of Harvard alumni, exercise at specific rates was associated with an additional two years of life (Paffenbarger, Hyde, Wing, & Hsieh, 1986).

There is increasing evidence of a link between diet and cancer. Alcohol and fat, in excess, are thought to be cancer inducing; fiber has cancer prevention potential (Willett & MacMahon, 1984). The relationship of smoking to lung cancer, and more recently to cervical cancer, as well as chronic lung disease, is well established (Brinton, Schairer, Haenszel, Stolley, Lehman, Levine, & Savitz, 1986).

Interest in health knowledge and health practices at the federal level was demonstrated in 1985, by the addition of a special section on health promotion and health knowledge to the ongoing National Health

Interview Survey (NHIS). The instrument contained questions on many of the same health practices as the Belloc and Breslow (1972) and Wiley and Camacho (1980) studies (Thornberry, Wilson & Golden, 1986).

Models to predict health behavior have been developed and include multiple psychological, social, and environmental variables. The Health Belief Model postulates that perceived susceptibility and severity of a health problem, belief in the benefits of a health behavior, and beliefs concerned with the costs of taking a health action determine whether or not a recommended health action will be undertaken. "The PRECEDE (acronym for predisposing, reinforcing, and enabling causes in educational diagnosis and evaluation) Model proposes that in addition to such predisposing perceptions, actual enabling factors and reinforcing factors in the environment will influence the occurrence of prescribed behaviors" (Kolbe, Iverson, Kreuter, Hochbaum, & Christensen, 1981). After an extensive review of the literature, Allen and Allen (1986a) concluded that Americans are well motivated to attempt lifestyle change, but lasting change is dependent on changing the health norms of the various cultures to which they belong--work, social, and community.

Cummings, Becker, and Maile (1980) explored selected approaches and models which have been advanced to explain health actions; they identified 109 different variables from 14 different models and asked a panel of 8 experts to categorize the variables on the basis of similarity. The resultant analysis yielded six major factors:

(1) accessibility to health care, (2) evaluation of health care, (3) perception of symptoms and threat of disease, (4) social network characteristics, (5) knowledge about disease, and (6) demographic characteristics (Cummings et al., 1980, p. 123).

Even though much has been learned about the link between lifestyle and health status, widespread adoption of healthy lifestyles has not occurred. The Alameda County data showed that the health practices of over 6000 adults changed very little over the 9 year period under study (Breslow & Enstrom, 1980). More research is needed to enable health educators to bring about changes in lifestyles. Tailoring a program to the specific needs of the target population has been found to be essential (Dickerson & Mandelbilt, 1983). Since there is a dearth of literature about the unique characteristics of hospital employees, the variables which influence their health practices must be identified if program planners are to achieve their goals.

### Need for the Study

Hospital employees in general, and nurses in particular, constitute a group which might be expected to be models of healthy behavior. They are confronted daily with the consequences of an unhealthy lifestyle. Hospital beds are occupied by individuals who have had heart attacks or strokes; who suffer from chronic lung disease; who are dying of cancer; or who are struggling to overcome substance abuse problems. Nevertheless, what is known about the health practices of hospital employees is not consistent with models that predict health practice.

An earlier investigation by this researcher revealed that large numbers of employees at the target institution smoked, were overweight, and did not exercise regularly. The incidence of chemical dependency among health care workers is estimated to be 10-20% (Cross, 1985) and is 50% higher in nurses than in the general population (Kabb, 1984). Persons working variable shifts report higher rates of heavy drinking, job stress and emotional problems; also female shift workers report higher rates of sleeping pill, tranquilizer, and alcohol use, as well as lower social network scores and more job stress (Gordon, Cleary, Parker, & Czeisler, 1986). Until recently, the

majority of studies in the past decade have suggested that smoking prevalence is higher in nurses than in the general population. That may be changing; an investigation in 1986 showed the prevalence of smoking in hospital nurses was less than women in the general population (Beckler et al., 1986).

Hospital employees present a particularly challenging group to address. While many of them would seem to have the necessary knowledge and motivation to pursue a healthy lifestyle, competing factors seem to prevail. For many their work environment is inherently stressful, due to the nature of the work as well as the shift rotations often necessary. Before developing an intervention program, it is imperative that the needs of the target population be documented. Also, the variables which may predict their health behaviors must be assessed. The similarities and differences between this group and subjects in other studies need to be determined in order to make comparisons to other important research.

#### Statement of the Problem

This study examined the relationship between knowledge of health practices, amount of patient contact and personal health practices of hospital employees.

### Hypotheses

The hypotheses tested in this study were:

1. There was no relationship between knowledge of health practices and personal health practices of subjects.
2. There was no relationship between amount of patient contact and personal health practices of subjects.
3. There was no difference in personal health practices of subjects when grouped according to type of work.
4. There was no relationship between educational level and personal health practices of subjects.

### Delimitations

The delimitations of this study were:

1. The study was limited to a sample from one employee population.
2. The study addressed only the health practices listed previously.
3. A probability/nonprobability sampling method was used.

### Assumptions

An assumption of this study was:

1. Responses of the subjects were honest and accurate within the limits of their perceptions.

### Definitions

The terms used in this study were defined as follows:

Knowledge of health practices - the cognitive knowledge about health effects of selected health practice variables like physical activity, diet, sleep, alcohol and smoking.

Amount of patient contact - the frequency of contact with patients as measured in number of hours/week.

Personal health practices - includes health practices like smoking, physical activity, sleep, alcohol consumption, and eating habits.

Type of work - grouping based on type of work, for example registered nurse, other health professional (physical therapist, dietician), support/technical staff, and administration.

Lifestyle, health practice, and health behavior are used synonymously in this study.

## CHAPTER II

### REVIEW OF LITERATURE

This chapter contains a review of selected literature on health behavior and health status, both aggregate and individual; theories and models to explain health behavior; worksite health promotion; and hospital employee health.

#### Health Behavior and Health Status

The relationship between health practices and health status was demonstrated by the work at the Human Population Laboratory of the California State Department of Public Health in Berkeley. In 1965, a survey of a representative probability sample of 6,928 adults revealed that seven specific personal health practices were highly correlated with the physical health of these Americans:

1. Sleeping seven to eight hours daily;
2. Eating breakfast almost every day;
3. Never or rarely eating between meals;
4. Currently being at or near prescribed height-adjusted weight;
5. Never smoking cigarettes;
6. Moderate or no use of alcohol;
7. Regular physical activity.

Further, the relationship of these habits was cumulative; those who reported all or many of the good practices were in better physical health than those who

followed fewer such habits. These relationships were independent of age, sex, and economic status (Belloc & Breslow, 1972).

In a follow-up study 5 1/2 years later, Belloc (1973) analyzed the relationship between the seven personal health practices and mortality rates of the same sample. She found that:

mortality, as measured by age-adjusted rates, was more strongly associated with poor health practices than it was with physical health status or with income level. . . . for the older age groups there was a striking inverse correlation between the number of health practices and the mortality level (pp. 79, 80).

The follow-up by Breslow and Enstrom (1980) 9 1/2 years later also found a striking inverse relationship between age-adjusted mortality rates and the seven health practices. The National Health Interview Survey (NHIS) conducted by the National Center for Health Statistics in 1985 on a representative sample of the total adult U.S. population shows that "while large numbers...have healthy habits, many do not, particularly persons in socially and economically disadvantaged groups" (Schoenborn, 1986, p. 571).

### Smoking

The health consequences of smoking have been well documented, particularly since the 1979 Surgeon General's Report, Smoking and Health, which concluded

that cigarette smoking was the most important environmental factor contributing to premature mortality. Furthermore, the report concluded that smoking-related premature mortality was due primarily to ischemic heart disease, cancers of the respiratory tract, and the chronic obstructive pulmonary diseases, emphysema and bronchitis (Iverson, 1987). More than 30,000 studies link cigarette smoking to increased morbidity and mortality (Klesges & Glasgow, 1986). Estimates regarding excess costs to employers range from \$200-\$500 annually per employee who smokes; these derive "primarily from increased absenteeism, higher medical costs, and decreased worker efficiency and productivity" (Klesges & Glasgow, 1986, p. 231).

Even though 33 million adults have reported giving up the smoking habit, approximately 54 million adults continue to smoke cigarettes (Bell & Levy, 1984, p. 777). The 1985 National Health Interview Survey reported that 31% of the population smoke, with greater percentages among the black population (Shopland & Brown, 1987). The first Adult Use of Tobacco Survey conducted by the Centers for Disease Control (CDC) in 1987, found that just 26.5% of Americans smoke; the researchers suggest that differences between the NHIS data and their own may be due to a smaller percentage of

blacks in the CDC survey (CDC,1987). While these data are encouraging, smoking remains a major threat to the population.

### Alcohol Consumption

The health consequences of alcohol consumption present a complex picture. In some cases the role of alcohol is clear; in others, alcohol is believed to be a contributing factor in mortality and/or morbidity. There is little doubt that excessive drinking is harmful, that it is directly related to most deaths due to cirrhosis of the liver as well as about 50% of fatal motor vehicle accidents, 20% to 37% of suicides and 49% to 70% of homicides. The role of alcohol in deaths due to fires, falls, and certain cancers is less well documented, but nonetheless, is often a factor (Colliver & Malin, 1986). Eckardt and colleagues' review of 348 studies concluded that alcohol abuse has also been implicated in malnutrition, brain dysfunction, depression, hypertension, certain cardiovascular diseases, and cancers of the tongue, mouth, pharynx, esophagus, larynx, and liver. In addition, family violence, child abuse and neglect, and rape cases frequently involve alcohol (Eckardt, Harford, Kaelber, Parker, Rosenthal, Ryback, Salmoiraghi, Vanderveen, & Warren, 1981).

On the other hand, evidence is accumulating that moderate use of alcohol (average of one/day) is associated with certain beneficial effects on health. Turner, Bennett and Hernandez's (1981) review of 72 studies concluded that moderate alcohol use reduces risk of myocardial infarction, reduces stress, and improves the quality of life. They cautioned that these results must be used judiciously; for some populations, e.g. alcoholics and pregnant women, no level of intake is beneficial. Belloc and Breslow (1972) also found that moderate use of alcohol was positively associated with physical health status and inversely related to mortality (Breslow & Enstrom, 1980). The 1985 National Health Interview Survey found that men were more likely to be heavy drinkers than women, that drinking was positively associated with years of education and family income, but inversely related to age. With respect to other health behaviors, heavier drinkers were more likely to be smokers; moderate drinkers were more likely to exercise regularly. Lower lifetime prevalence rates for hypertension and heart trouble were found in the moderate drinkers' category (Williams, Dufour, & Bertolucci, 1986).

Company-incurred costs of employee drinking are not precise, but are substantial. The 1976, the National

Council on Alcoholism figures reported by Jones (1984) included estimates of 3.6 times more accidents, 5 times more compensation claims, and 3 times more sick benefits for alcoholic employees. Poor morale, lack of concentration, decreased productivity, and increased absenteeism also contribute to employer costs.

### Exercise

The health benefits of exercise have been established by numerous studies, some more scientific than others. The type of exercise regime will determine, in part, the results. Vigorous physical activity using large muscle groups for 20 minutes or more, 3 or more days a week at an intensity of 60 percent or greater of the individual's cardiorespiratory capacity, constitutes the gold standard for many researchers. Others cite benefits from any increase in physical activity. Regardless of methodology, few would argue that regular exercise reduces the risk of coronary heart disease, enhances weight control and reduces symptoms of anxiety and mild to moderate depression (Caspersen, Christenson, & Pollard, 1986). Further, evidence is accumulating that exercise also benefits other psychological conditions, hypertension, and osteoporosis. Still others claim an enhanced sense of

well-being derived from looking and feeling better (Caspersen et al., 1986). Paffenbarger's study (1986) of more than 16,000 Harvard alumni found that

death rates declined steadily as energy expended... increased from less than 500 to 3500 kcal per week, beyond which (death) rates increased slightly. . . the amount of additional life attributable to adequate exercise, as compared with sedentariness, was one to more than two years (p. 605).

The authors acknowledge that the population may not be typical; nevertheless the study adds new evidence to the growing body of literature which promotes regular physical activity.

Exercise is not without risks, though many are related to improper approaches. Rates of musculo-skeletal injuries and other adverse effects are poorly documented. Though there is a temporary increase in risk of sudden death during vigorous physical activity, it "is outweighed by the overall reduced risk of coronary heart disease from habitual vigorous activity" (Powell, Spain, Christenson, & Mollenkamp, 1986, p. 15).

According to Powell et al. (1986), only 10-20 percent of the adult population participates in regular physical activity; the NHIS survey found even lower rates, 7.6 percent (Caspersen et al., 1986). Fewer than 5.1 percent of this group knew the frequency, intensity, and duration of activity needed to achieve cardiorespiratory benefits.

Methodological questions have been raised regarding national surveys which claim to estimate the prevalence of physical activity in the general population (Slater, Green, Vernon, & Keith, 1987). While it is clear that more and better quality research is needed, increasing the level of physical activity among most groups still deserves attention.

### Proper Weight

The National Health and Nutrition Examination Survey found that 26 percent of U.S. adults (about 34 million people) are overweight (>20% above desirable weight). Prevalence increased with age and was higher among blacks and the poor (Stephenson, Levy, Sass, & McGarvey, 1987, p. 63).

The health implications of obesity grow with the scientific findings about this complex disease. To resolve questions and address the important issues which multiple professionals were facing, the National Institutes of Health (NIH) convened a consensus development conference in February 1985. The group concluded that there is overwhelming evidence that obesity has adverse effects on health and longevity. It is "clearly associated with hypertension, hypercholesterolemia, non-insulin-dependent diabetes mellitus, and excess of certain cancers" (NIH, 1985, p. 1077). In a

study of 750,000 men and women over a 12 year period, Garfinkel (1985) found significantly higher mortality in overweight men with colorectal and prostate cancer; overweight women had higher rates of cancer of the endometrium, gall bladder, and cervix; and significantly higher rates for ovary and breast cancer. Obesity adversely affects longevity, particularly in those under age 50 (NIH, 1985). Mortality data suggest that being overweight during early adult life is more dangerous than in later life (VanItallie, 1985). Less well-known, obesity has been found to complicate certain conditions, including gall bladder disease, pulmonary problems, gout, and other musculoskeletal disorders (Bray, 1985).

The strong prejudice and discrimination against the obese is seen by some as contributing to the increased incidence of anorexia and bulimia in this country recently. The 1985 NHIS reported frequent attempts to lose weight among lean young women (Stephenson, Levy, Sass & McGarvey, 1987). Despite intense psychological suffering, overweight persons show no greater incidence of psychological disturbance than do the non-obese (Wadden & Stunkard, 1985). These authors believe that the quality and quantity of available research on the social and psychological consequences of obesity is inadequate.

## Theories and Models

Many researchers have studied health behavior in an effort to explain the development, maintenance, and/or modification of behavior related to health. Parcel (1984) examined the results of 121 studies applicable to school health education; the theories and models have relevance for adults as well. He asserts that health education has no single paradigm or dominant theory; the review focused on theories and models which are potentially useful in the study of health-related behavior. Selected examples follow.

Social learning theory is based on operant conditioning and the association among stimulus, response, and reinforcement. It "views learning as a reciprocal interaction between the individual's environment, cognitive processes, and behavior" (p.40). Applications of the theory are found in contracting and self-monitoring, effective techniques used in health education.

Communications theory focuses on changing attitudes and behavior through the spoken or written word. Theorists divide the persuasion process into several steps for purposes of study and application to practice. Included in the concept are presentation, attention, comprehension, yielding, retention, and overt behavior.

Health educators design programs using these concepts to achieve desired program goals.

Self-control is a component of several theories, including behaviorism, psychodynamic theory, and social learning theory. Application involves teaching individuals methods to analyze their own behavior and assume personal responsibility for it. One example can be found in the work of Williams and Long, in their book, Toward a self-managed life-style (1983).

Implicit in many unhealthy behaviors is the individual's response to stress. Coping theory seeks to address this by teaching alternate ways to view events and shape the future. Effective coping techniques have wide use for health educators, as found in many stress management programs and assertiveness training groups.

Social support and family theories have direct relevance for the development and facilitation of health behaviors. The relationship between the social system and behavior has been demonstrated in studies of smoking, obesity, and alcoholism. Health educators suggest enlisting the support of family or colleagues to change behavior. Sometimes the entire social system is the target group. Allen and Allen (1986a; 1986b; 1987) contend that the failure of long-term behavior change is due to the fact that cultural norms prevail. Sloan

(1987) also found that the focus of health behavior modification programs is the individual, rather than organization wide change.

Parcel (1984) also discusses models which incorporate elements of multiple theories to explain health behavior. The Health Belief Model (HBM) postulates that certain perceptions of the individual determine action, perceptions related to susceptibility to a disease, seriousness of the disease, and threat of the disease. Janz and Becker (1984) reviewed the findings from 46 studies focused on the HBM and found substantial empirical support for the model.

The PRECEDE model is widely used in health education. It proposes that certain enabling factors and reinforcing factors in the environment (in addition to perceptions) will influence the occurrence of behaviors (Kolbe, Iverson, Kreuter, Hochbaum, & Christensen, 1981).

The Activated Health Education Model is described as eclectic, applying self-management theories, the HBM, operant conditioning, cognitive dissonance, and values clarification (Parcel, 1984). It is based on the belief that health education must:

- (1) actively involve the participants in the instructional process;
- (2) make participants aware of the various positive and negative influences upon their health, and
- (3) help participants develop responsibility for their own health (p. 45).

This is primarily a model for curriculum development, rather than to explain health behavior.

In an attempt to reduce the confusion which exists among the multiple models and develop a unified conceptual framework, Cummings, Becker, and Maile (1980) invited the authors of 14 different models to categorize the 109 variables derived from the models. Six major factors emerged from the analysis:

(1) accessibility to health care, (2) evaluation of health care, (3) perception of symptoms and threat of disease, (4) social network characteristics, (5) knowledge about disease, and (6) demographic characteristics (p. 123).

These results support the contention that the number of truly distinct concepts related to health behavior is much lower than the number currently employed in research.

### Worksite Health Promotion

The involvement of industry in health promotion is primarily a result of rising costs of health benefits. United States companies spend approximately 10 percent of their operating budgets on health-related costs (Reinertsen, 1983). "General Motors spends more on employee health insurance than on steel, and Chrysler Corporation estimates that for every new car it sold in

1980, \$220 went for employee health benefits" (Brennan, 1982, p. 9).

Corporations are also aware that the diseases which are increasing their costs are, in many cases, largely preventable. It is estimated that between 48 and 53 percent of U.S. mortality is due to unhealthy lifestyles (Ainsworth, 1984; Opatz, 1985). Changes in lifestyle have yielded decreased health care costs (Gibbs, Mulvaney, Henes, & Reed, 1985); additional benefits include reduced absenteeism, improved morale, improved productivity, and improved corporate image (Fielding, 1984; Novelli & Ziska, 1982; O'Donnell & Ainsworth, 1984).

Worksite health promotion is in its infancy as a discipline. Many of the studies which claim economic benefits have methodological flaws; few have considered long range costs of increased retirement benefits for longer-living employees. Evidence is accumulating that health promotion programs reduce absenteeism and improve productivity. Nevertheless, experts advise that it is misleading to focus on the economic incentives for initiating health promotion; rather, health and not profit is the principal benefit (Kristein, 1982; Warner, 1987).

## Hospital Employee Health

The American Hospital Association Policy and Statement issued in 1979 asserts that "hospitals have a responsibility to take a leadership role in helping ensure the good health of their communities" (AHA, 1979). They urge hospitals to develop community-wide health education activities, to serve as catalysts among health professionals and other health agencies and businesses; and to serve as sources of information about health as well as sickness. The Statement claims that "people look to health professionals as exemplars or models", and that hospitals should provide health information and education to their employees as well as to their communities.

The literature which addresses the health of hospital employees serves as testimony to the response which the 1979 Statement generated. There is a conspicuous absence of studies related to health behaviors of potential role models in hospitals. A computer search revealed that communicable disease and workplace hazards receive most attention. A few reports describe a comprehensive approach in hospital employee health programs; none discuss results in any systematic way (Lewy, 1985; Lewy, 1986; Lowenthal, 1982; Parker, 1982; Steinberg & DeMello, 1983). One review cites stress as

an occupational hazard; however, hospital employees to the health office are related to that (Lewy, 1986).

As stated in Chapter I, nurses' health practices are particularly paradoxical. Theories and models which explain health behavior cite knowledge, attitudes, and perceptions as determinants of actions. Nurses are educated about causes of disease and prevention, consequences of unhealthy behavior, and methods to influence and modify health behavior. Nevertheless studies reveal that the incidence of substance abuse among nurses is significantly higher than in the general population (Kabb, 1984). Large numbers of nurses continue to smoke and were more likely than nonsmokers to hold attitudes which would decrease their efficacy in helping patients to discontinue the habit (Becker, Myers, Sacci, Weida, Swank, Levine, & Pearson, 1986; Haughey, O'Shea, Dittmar, Bahn, Mathewson, Smith, & Brasure, 1986).

The physiological and emotional changes caused by shiftwork are well documented (Winget, Hughes, & LaDou, 1978). Its impact on health behaviors includes higher rates of heavy drinking, stress, emotional problems, sleeping pill and tranquilizer use (Gordon, Cleary, Parker, & Czeisler, 1986; Jung, 1986).

These inherent risks of hospital workers require intervention. In spite of the stated mission of many hospitals, health behaviors of their employees are no better, and perhaps worse than the general population. If health educators are to achieve the 1990 goals, more efficient and effective methods of improving health behaviors must be found.

### Most Relevant Studies

In 1974, Wiley and Camacho (1980) re-interviewed 3,892 participants from the 1965 Alameda County sample (Belloc & Breslow, 1982). They found that "cigarette smoking, alcohol consumption, physical exercise, hours of sleep per night, and weight in relation to height are significantly associated with overall health outcomes 9 years later" (p. 1). Their analysis did not find a relationship between eating habits and health status, which they attribute in part to be due to a different measurement of the outcome variable.

The National Health Interview Survey (NHIS) was initiated in 1957 to

secure on a noncompulsory basis accurate and current statistical information on the amount, distribution, and effects of illness and disability in the United States and the services rendered for or because of such conditions (Thornberry, Wilson, & Golden, 1986, p. 567).

Questions on health promotion and disease prevention topics were added in 1985 to monitor progress toward the 1990 national health objectives. This addition to the survey included questions on knowledge of exercise, weight management, smoking, and heart disease risk factors. However, the analyses reported do not address the relationship between knowledge and behavior.

It is clear that the health behaviors of hospital employees constitute a matter of importance to their employers, the community, and themselves. Previous studies have examined the smoking behavior of nurses, the effects of shiftwork on employees, and the incidence and prevention of worksite hazards. No studies have focused comprehensively on the health behaviors of this unique group; furthermore, the variables which predict their behaviors are not well understood, but seem to differ from existing models.

## CHAPTER III

### METHODOLOGY

This chapter consists of nine sections. In the first sections, the design, hypotheses, population, sampling procedure, and sample characteristics are described. Subsequently, the instruments, operational definitions, data collection and analyses are discussed.

#### Design

This was an ex post facto study design of the survey research type. The independent variables were knowledge of health practices, amount of patient contact, type of employment, and educational level. The dependent variable was personal health practices of subjects.

#### Hypotheses

The hypotheses tested in this study were:

1. There was no relationship between knowledge of health practices and personal health practices of subjects.
2. There was no relationship between amount of patient contact and personal health practices of subjects.

3. There was no difference in personal health practices of subjects when grouped according to type of work.

4. There was no relationship between educational level and personal health practices of subjects.

### Population

The 2047 employees of an urban, acute-care hospital in the southeast comprised the population of interest to this researcher. Administratively, they were organized according to the unit on which they worked or the department to which they were assigned (Appendix A.) This included patient units like cardiac care unit, intensive care unit, nursery; and support services such as pharmacy, radiology, hematology, physical therapy, dietary, engineering. Within these units/departments, there were administrative, professional, technical and support personnel. Some were dedicated to direct patient care, others to ancillary services. Educational level varied from less than high-school to doctoral degree. Ages ranged from 16 years to 73 years; the mean age was 36. Females comprised 81% of the population--males, 19%.

### Sampling Procedure

A combination of probability and non-probability sampling was used in this study. To obtain subjects from the selected population, a purposive method of sampling was followed. This method is based on the premise that a researcher's knowledge about the population, its elements, and the nature of the research aims, can be used to pick the cases to be included. It permits the selection of the widest possible variety of respondents who are judged to be "typical" of the population. An underlying assumption is that any errors of judgment will, in the long run, tend to balance out (Babbie, 1986; Polit & Hungler, 1978).

Employees at the institution of interest were classified by the unit on which they work. To obtain the best possible representation of employees, these units were placed into one of two categories, reflecting the nature of services. The first category was comprised of units dedicated to direct patient care; the second was made up of diagnostic and support services. Units were then randomly selected from each category until 10% of the target population was obtained (200 subjects). Table 1. presents the

Table 1. Number of employees and the departments which participated in the study, according to nature of services, either diagnostic/support or patient care.

| Diagnostic/Support           | Patient Care                |
|------------------------------|-----------------------------|
| Dietary<br>50                | Social Services<br>6        |
| Secretarial Pool<br>4        | Elderly Services<br>2       |
| Administrative Services<br>5 | Renal Dialysis<br>3         |
| Quality Assurance<br>12      | Speech Therapy<br>2         |
| Payroll<br>3                 | CCU<br>10                   |
| Nuclear Medicine<br>4        | Physical Therapy<br>19      |
| Biomedical Maintenance<br>8  | COU<br>11                   |
| Lab<br>21                    | Anesthesia<br>4             |
| Echocardiology<br>2          | Home Health<br>6            |
|                              | Patient Representative<br>1 |
|                              | Nursing Unit 3<br>11        |
|                              | Emergency Admission<br>10   |
|                              | Alzheimer's Unit<br>6       |
|                              | Behavioral Center<br>4      |

departments in both categories which were used, and the number of employees who participated.

Due to the way employees were organized by the institution and the variables of interest to the researcher, it was necessary to use this method. Population parameters, such as educational level and nature of employment, were not used by the institution to classify employees. It would have been necessary to collect information on these parameters on a case by case method. Practicality and expense precluded any other sampling method.

#### Characteristics of the Sample

The sample obtained for this study represented 23 different departments at the target institution, as shown in Table 1. There were 162 females (79.8%) and 41 males (20.1%) who were between 16 and 64 years of age. The mean age was 34.5; the median was 33. These figures compare to 81% females and 19% males in the population, an age range of 16-73, and a mean age of 36.

Eighty-two subjects (40.4%) worked as health professionals, including RN's, LPN's, dieticians, physical therapists, social workers, and laboratory technicians. One hundred and twenty-one (59.6%) were

employed in support-type positions, or in administration. These data are shown in Table 2. There were 55 (27.4%) subjects who reported management responsibilities as part of their work; 146 (72.6%) had no management responsibility, and 2 did not respond to this question.

Table 3 shows the educational level of the subjects. The largest percentage (30.7%) completed high school; 26.7% completed technical training and 23.8% had a bachelor's degrees (23.8%).

### Instruments

#### Health Practices Survey

An instrument to assess knowledge of health practices related to health problems was developed by the researcher. The questions concerned topics related to smoking, drinking, exercise, sleep and weight. Selection of items was consistent with the landmark studies of Belloc and Breslow (1972) and Wiley and Camacho (1980). Subject matter experts were consulted during the development of the questions.

Questions about health knowledge from the NHIS were used when appropriate. Since certain information of interest to the researcher was not included in the NHIS, questions were added.

Table 2. Number and percentage of all subjects  
(N=203) by type of work.

| Type of Work              | N   | (%)  |
|---------------------------|-----|------|
| Registered Nurse          | 38  | 18.7 |
| Licensed Practical Nurse  | 9   | 4.4  |
| Nursing Assistant         | 7   | 3.4  |
| Other Health Professional | 35  | 17.2 |
| Support/Technical Staff   | 109 | 53.7 |
| Administrative Staff      | 5   | 2.5  |

Table 3. Number and percentage of all subjects  
(N=202)\* by educational level.

| Educational Level | No. of Subjects | % of Subjects |
|-------------------|-----------------|---------------|
| <HS               | 9               | 4.5           |
| HS                | 62              | 30.7          |
| Tech/Dipl         | 54              | 26.7          |
| AD                | 11              | 5.4           |
| BA/S              | 48              | 23.8          |
| MA/S              | 18              | 8.9           |

\*Number of subjects is <203 due to missing data

The Health Practice items appear in Appendix B. A scoring range of 0-65 was selected; each question was worth 5 points, except for heart disease risk factors, which were worth 1 point each.

#### Health Risk Appraisal

The Health Risk Appraisal (HRA) used in this study was developed by the Center for Disease Control in Atlanta, Georgia. It contains 37 questions on personal and family history, alcohol and cigarette use, exercise, and other topics. Computer analysis of these data yields a comparison of the client's chronological age to his/her appraised age and achievable age, along with advice on how to improve. Answers to questions on exercise, smoking, weight/height, alcohol use and sleep were used to obtain the health practice score for each subject, according to the method of Wiley and Camacho (1980). In this study, the HRA is being used as an incentive for participation and as a tool to obtain information about selected health behaviors. Use of this type of instrument as a motivational tool has been established. A copy of the instrument appears in Appendix C.

### Demographic Survey

A 4 item demographic survey was developed by the researcher to obtain demographic information of interest which is not elicited by the Health Risk Appraisal, such as hours of patient contact/week, type of education and type of employment. A question on the subject's personal health status rating was included to assess the subject's perception of his/her own health status, and the explanation for it. A copy of the survey may be found in Appendix D.

### Operational Definitions

Knowledge of health practices was operationalized as the subject's score on the health practice survey test developed by the researcher.

Amount of patient contact was operationalized as the number of hours/week the subject spent in interaction with patients, as reported on the Demographic Survey.

Type of employment was operationalized as one of six: (1) nurse (RN); (2) licensed practical nurse (LPN); (3) nurse's aide (NA); (4) other health professional (OHP); (5) support/technical staff(S/T); (6) administration (ADM).

Personal health practices were operationalized by computing an index of health practices in the manner of Wiley and Camacho (1980). The score was calculated by dichotomizing each of the five key health practice items (smoking, drinking, exercise, sleep, weight) and assigning one point for each on which the subject fell in the positive half of the dichotomy. Subjects received the point if they never smoked, had 1-45 drinks/month, exercised regularly 3 times a week, got 7-8 hours of sleep, and were between  $+29$  and  $-10$  of their ideal weight. Wiley and Camacho have demonstrated that equal weighting of these items is empirically tenable and that each characteristic makes a significant contribution to the prediction of health scores. The necessary information to calculate the personal health practices score was obtained from items on the HRA.

#### Data Collection

The data collection took place at the target hospital. The investigator obtained permission from administration to contact department managers regarding attendance at a scheduled meeting or to request

participation directly from the employees. This approach allowed direct contact with potential subjects, rather than a less personal contact through the mail. Previous researchers have had lower response rates using the latter method.

An explanation of the study was presented, and an opportunity to ask questions was provided. As an incentive for participation, personal results and study results were promised. Informed Consent was obtained; a copy of the Consent Form can be found in Appendix E. Persons who agreed to participate completed the questionnaires immediately. This process was repeated until the target number was reached.

### Analysis

Statistical analysis of the data was performed using Statistical Analysis System (SAS) computer programs. To examine relationships among the dependent and independent variables, Pearson product-moment and Spearman rho correlation procedures were used. To examine differences between groups, one-way analysis of variance was performed.

In addition, measures of central tendency and frequency distributions were generated in order to provide a descriptive overview of the sample as a whole and of various subgroups of particular interest, e.g. nurses' health practices compared to other health professionals'. An alpha level of .05 was selected as the criterion of significance.

The comments obtained in answer to the request for explanation of the subjects' personal health status ratings were classified first according to their own rating, i.e. excellent, good, and fair. Then the comments were placed into four categories: health practices only, disease only, both health practices and disease, and non-specific. Comments which used only health practices (e.g. "I know I am a few pounds overweight" or "I exercise regularly" or "I don't smoke") comprised the first. The second included comments like "I have no heart problems" or "I don't have to go to the doctor". The third was made up of explanations that included both the type found in the first and the type in the second. Comments like "I feel good" or "I have good attendance" or "I have enough energy" were placed in the fourth category.

## CHAPTER 1V

### RESULTS

This study examined the relationship between knowledge of health practices, amount of patient contact, and the health practices of hospital employees. The descriptive data for each of the variables used in the study are presented in the first section. The second section contains the results of the tests of hypotheses. The third section discusses the quantitative and qualitative information reported by the subjects on rating their health. The last section summarizes the findings of this study.

#### Descriptive Statistics

##### Knowledge of Health Practices

The frequency distribution for the knowledge of health practices (KHPSC) variable may be found in Table 4. A score of 46 was needed to achieve 70% on the test. Less than 37% of the total sample scored 70%; 26% scored between 70% and 80%; 8.4% scored between 80% and 90%; and 2.5% scored over 90%. The mean score for the sample was 42.38, the median and mode were 44--all below 70%. The variable was roughly normally distributed.

Table 4. Number and percentage of all subjects  
(N=203) according to their scores on the  
Knowledge of Health Practices Instrument

| Score | Number of Subjects |   |   |   |    | % of Subjects |   |   |   |      |
|-------|--------------------|---|---|---|----|---------------|---|---|---|------|
| 63    |                    |   |   |   | 1  |               |   |   |   | 0.5  |
| 59    |                    |   |   |   | 4  |               |   |   |   | 2.0  |
| *—    | —                  | — | — | — | —  | —             | — | — | — | —    |
| 55    |                    |   |   |   | 2  |               |   |   |   | 1.0  |
| 54    |                    |   |   |   | 8  |               |   |   |   | 3.9  |
| 53    |                    |   |   |   | 6  |               |   |   |   | 3.0  |
| 52    |                    |   |   |   | 1  |               |   |   |   | 0.5  |
| **—   | —                  | — | — | — | —  | —             | — | — | — | —    |
| 51    |                    |   |   |   | 1  |               |   |   |   | 0.5  |
| 50    |                    |   |   |   | 7  |               |   |   |   | 3.4  |
| 49    |                    |   |   |   | 23 |               |   |   |   | 11.3 |
| 48    |                    |   |   |   | 11 |               |   |   |   | 5.4  |
| 47    |                    |   |   |   | 7  |               |   |   |   | 3.4  |
| 46    |                    |   |   |   | 4  |               |   |   |   | 2.0  |
| ***—  | —                  | — | — | — | —  | —             | — | — | — | —    |
| 45    |                    |   |   |   | 3  |               |   |   |   | 1.5  |
| 44    |                    |   |   |   | 27 |               |   |   |   | 13.3 |
| 43    |                    |   |   |   | 9  |               |   |   |   | 4.4  |
| 42    |                    |   |   |   | 6  |               |   |   |   | 3.0  |
| 41    |                    |   |   |   | 1  |               |   |   |   | 0.5  |
| 40    |                    |   |   |   | 4  |               |   |   |   | 2.0  |
| 39    |                    |   |   |   | 21 |               |   |   |   | 10.3 |
| 38    |                    |   |   |   | 15 |               |   |   |   | 7.4  |
| 37    |                    |   |   |   | 5  |               |   |   |   | 2.5  |
| 36    |                    |   |   |   | 1  |               |   |   |   | 0.5  |
| 34    |                    |   |   |   | 11 |               |   |   |   | 5.4  |
| 33    |                    |   |   |   | 1  |               |   |   |   | 0.5  |
| 32    |                    |   |   |   | 2  |               |   |   |   | 1.0  |
| 31    |                    |   |   |   | 3  |               |   |   |   | 1.5  |
| 30    |                    |   |   |   | 3  |               |   |   |   | 1.5  |
| 29    |                    |   |   |   | 4  |               |   |   |   | 2.0  |
| 28    |                    |   |   |   | 1  |               |   |   |   | 0.5  |
| 26    |                    |   |   |   | 2  |               |   |   |   | 1.0  |
| 25    |                    |   |   |   | 2  |               |   |   |   | 1.0  |
| 24    |                    |   |   |   | 2  |               |   |   |   | 1.0  |
| 23    |                    |   |   |   | 1  |               |   |   |   | 0.5  |
| 22    |                    |   |   |   | 1  |               |   |   |   | 0.5  |
| 20    |                    |   |   |   | 1  |               |   |   |   | 0.5  |
| 19    |                    |   |   |   | 2  |               |   |   |   | 1.0  |

\*Above this line is 90% and higher

\*\*Above this line is 80% and higher

\*\*\*Above this line is 70% and higher

Given the diverse nature of the sample, three subsets were examined: one consisting of registered nurses (RN, N=38); one composed of other health professionals (OHP, N=35), e.g. dieticians, social workers, physical therapists; and one made up of support and technical staff (S/T, N=109). The KHPSC variable was examined for each group and showed some differences which may be found in Table 5. In the R.N. group, the mean KHPSC score was 44.3, less than a baseline level of 46 (70%), but higher than the sample mean of 42.4. The OHP group had a mean KHPSC score of 47, higher than the sample mean and higher than the R.N. mean score. The S/T group had a mean KHPSC score of 40.3, which is the lowest of all the groups. A one-way analysis of variance was used to compare the mean KHPSC of the groups. The difference between the groups was significant ( $F=11.41$ ,  $df=2/179$ ,  $p<0.0001$ ). The Scheffé test for post-hoc comparisons showed that the RN and the OHP groups had significantly higher scores than the S/T group.

The results of the individual questions on the KHPSC test for the full sample may be found in Table 6. From these data, it can be seen that a preponderance of the sample knew the advisable number of hours of sleep, the frequency of exercise, the best ways to

Table 5. Knowledge of Health Practices Scores for registered nurses, other health professionals and support/technical staff by mean score and percentage of group scoring at or above 46 (70%).

| Sub-group                  | N   | Mean  | % $\geq 46$ |
|----------------------------|-----|-------|-------------|
| Registered Nurses          | 38  | 44.34 | 39.5        |
| Other Health Professionals | 35  | 47.03 | 65.7        |
| Support/Tech Staff         | 109 | 40.27 | 25.7        |

Table 6. Number and percentage of all subjects (N=203) who answered specific questions correctly on Knowledge of Health Practices Test

| Question Number & Content                  | # Subjects Correct | % Subjects Correct |
|--------------------------------------------|--------------------|--------------------|
| 9. Smokeless tobacco                       | 196                | 96.6               |
| 7. Smoking                                 | 192                | 94.6               |
| 5. Weight loss ( $\uparrow$ activity)      | 184                | 90.6               |
| 1. Hours of sleep                          | 164                | 80.8               |
| 5. Weight loss (eat $\downarrow$ calories) | 158                | 77.8               |
| 2. Exercise frequency                      | 138                | 68.0               |
| 4. Exercise intensity                      | 107                | 52.7               |
| 8. Correct weight (a little over)          | 104                | 51.2               |
| 8. Correct weight (a little under)         | 92                 | 45.3               |
| 3. Exercise duration                       | 58                 | 28.6               |
| 6. Alcohol use                             | 4                  | 2.0                |

lose weight, the health hazards of smoking and smokeless tobacco, and the risk factors for heart disease. Approximately 50% of the group knew how intensely to exercise and what one should weigh. However, less than 30% knew how long to exercise, and only 2% of the sample knew how much alcohol is associated with a healthy lifestyle.

When the answers to questions on exercise and weight are combined, the results are as shown in Table 7. On the subject of exercise, 15% of the sample got all three answers on exercise correct; 5% got two answers correct; 65% got one answer correct; and 15% missed all three. On weight loss, 70% got both answers correct; 28% got one answer; 2% missed both answers. Of the answers on appropriate weight, 31.5% responded correctly to both questions; 33.5% had one answer correct; and 35% missed both.

These results were compared with those obtained from a probability sample of a civilian, noninstitutionalized population of the United States in the 1985 National Health Interview - Health Promotion and Disease Prevention Survey, and appear in Table 7. The hospital employee sample had a higher percentage who knew the specifics of exercise, even though the

Table 7. Number and percentage of full sample (N=203) who answered combined questions correctly, compared to percentage of subjects in NHIS

| Content        | Hospital Employees<br>Number - %<br>Correct |       | NHIS Study<br>% Correct |
|----------------|---------------------------------------------|-------|-------------------------|
| Exercise       |                                             |       |                         |
| 3 correct      | 31                                          | 15.3% | 5.1%                    |
| 2 correct      | 10                                          | 4.9%  | 23.5%                   |
| 1 correct      | 132                                         | 65.0% | 33.6%                   |
| 0 correct      | 30                                          | 14.8% | 37.9%                   |
| Weight loss    |                                             |       |                         |
| 2 correct      | 143                                         | 70.4% | >70.0%                  |
| 1 correct      | 56                                          | 27.6% | -----*                  |
| 0 correct      | 4                                           | 2.0%  | -----*                  |
| Correct weight |                                             |       |                         |
| 2 correct      | 64                                          | 31.5% | -----*                  |
| 1 correct      | 68                                          | 33.5% | -----*                  |
| 0 correct      | 71                                          | 35.0% | -----*                  |

\*Comparison data not available

percentages were 15.3% and 5.1%. Both groups were relatively knowledgeable about weight loss.

### Health Practice Score

The mean for the HPSC was 2.67; the range was 0-5. A majority (58%) of the sample scored a 3 or better on their health practices, as shown in Table 8, This compares with 87.6% of the sample of 3,892 adults who scored 3 or higher in the Wiley & Camacho study (1980).

The distribution of specific health behaviors which were used to compute a health practice score may be found in Table 9. A large percentage (69.7%) got the recommended 7-8 hours of sleep a night; 66.8% never smoked; 66% were within the boundaries of weight consistent with good health, as defined by Wiley and Camacho (1980); 39.2% of the sample reported regular exercise; and 22.4% drank between 1 and 45 drinks a month.

Comparisons of the sub-groups of interest appear in Table 10. The RN group had a lower mean HPSC than the total sample; in addition, the RN group had a poorer showing in the weight and exercise categories than the other groups. The mean HPSC and the scores on individual behaviors (shown in Table 11) in the OHP group were higher than the full sample and the RN group as well. A one-way analysis of variance revealed that

Table 8. Number and percentage of Health Practice Scores for full sample (N=194)\*, compared to percentage in Wiley & Camacho study.

| Health Practice Score | Sample Number | %    | W & C % |
|-----------------------|---------------|------|---------|
| 5                     | 10            | 5.2  | 26.2    |
| 4                     | 32            | 16.5 | 36.6    |
| 3                     | 71            | 36.6 | 24.8    |
| 2                     | 52            | 26.8 | 9.9     |
| 1                     | 23            | 11.9 | 2.4     |
| 0                     | 6             | 3.1  | 0.2     |

\*Number of subjects is <203 due to missing data.

Table 9. Number and percentage of full sample (N=194)\* who obtained 1 point on specific health behaviors.

| Behavior            | Number | %    |
|---------------------|--------|------|
| 7-8 hours sleep     | 140    | 69.7 |
| Never smoked        | 135    | 66.8 |
| Weight within range | 134    | 67.7 |
| Regular exercise    | 78     | 39.2 |
| 1-45 drinks/month   | 45     | 22.4 |

\*Number of subjects is <203 due to missing data

Table 10. Health Practice Score mean, standard deviation, minimum and maximum for selected sub-groups: Registered nurses, other health professionals, and support/technical staff.

| Sub-group                  | N   | $\bar{X}$ | SD   | Min | Max |
|----------------------------|-----|-----------|------|-----|-----|
| Registered Nurses          | 37  | 2.59      | 1.01 | 0   | 5   |
| Other Health Professionals | 35  | 3.40      | 1.03 | 1   | 5   |
| Support/Tech Staff         | 102 | 2.49      | 1.16 | 0   | 5   |

Table 11. Percentage of selected sub-groups who obtained 1 point on specific health behaviors.

|                     | Registered Nurses | Other Health Professionals | Support/Technical Staff |
|---------------------|-------------------|----------------------------|-------------------------|
| Behavior            | %                 | %                          | %                       |
| 7-8 Hrs Sleep       | 75.7              | 82.9                       | 63                      |
| Never Smoked        | 71.1              | 85.7                       | 62                      |
| Weight Within Range | 57.9              | 71.4                       | 70.2                    |
| Regular Exercise    | 28.9              | 65.7                       | 34.3                    |
| 1-45 Drinks Month   | 28.9              | 34.3                       | 17.6                    |

the group differences were significant ( $F=9.03$ ,  $df=2/171$ ,  $p<0.0002$ ). A Scheffé test for post-hoc comparisons showed that the mean HPSC of the OHP group was significantly higher than either of the other 2 sub-groups (RN, S/T).

#### Patient Contact

The amount of patient contact reported by the subjects resulted in a skewed distribution. The mean for the sample was 15.38 hours per week, while the mode and median were 0; the range was 0-40. The distribution of responses appears in Table 12. For purposes of analysis, the variable was dichotomized; 51.2% of the subjects had no patient contact and 48.8% of the subjects had between 1 and 40 hours a week of patient contact. The second hypothesis was revised as follows: There was no difference in personal health practices of those who had patient contact and those who had no patient contact.

When the sub-groups were examined relative to the patient contact variable, 76% of the RN group reported between 8 and 40 hours a week; 80% of the OHPs reported between 2 and 40 hours a week; and 24% of the S/T group showed between 1 and 40 hours a week.

Table 12. Hours of patient contact/week for full sample (N=201)\* by number of subjects and percentage of sample.

| Hours/Wk | Number | %    |            |
|----------|--------|------|------------|
| 40       | 59     | 29.4 |            |
| 38       | 1      | 0.5  |            |
| 35       | 3      | 1.5  |            |
| 32       | 1      | 0.5  |            |
| 30       | 5      | 2.5  |            |
| 28       | 1      | 0.5  |            |
| 24       | 7      | 3.5  |            |
| 20       | 2      | 1.0  |            |
| 16       | 4      | 2.0  |            |
| 12       | 2      | 1.0  |            |
| 10       | 4      | 2.0  |            |
| 8        | 3      | 1.5  |            |
| 6        | 1      | 0.5  |            |
| 5        | 1      | 0.5  |            |
| 2        | 3      | 1.5  |            |
| 1        | 1      | 0.5  | Contact    |
| 0        | 103    | 51.2 | No Contact |

\*Number of subjects is <203 due to missing data.

### Education

The distribution of the levels of education for subjects in this study appear in Table 3, p. 33. The vast majority (95.5%) have completed high school; nearly 65% have pursued education or training beyond high school, with 23.8% holding bachelor's degrees and 8.9% of the sample having a master's degree.

In the sub-groups of interest, 15 (39.5%) in the RN group had a diploma in nursing, 8 (21%) had an associate degree, 13 (34.2%) held a bachelor's degree, and 1 (2.6%) was master's prepared. In the OHP category, 27 (77%) held a bachelor's degree and 8 (33%) had master's preparation. The majority of the S/T group were high school graduates (51.9%) followed by 29.6% who had technical training.

### Type of Work

With 23 departments represented, the sample is a diverse group. As shown in Table 2, p. 33, the largest group of subjects (53.7%) were classified as support/technical staff; registered nurses comprised 18.7% and the other types of health professionals made up 17.2% of the sample.

## Test of Hypotheses

### Hypothesis One

The first null hypothesis stated that there was no relationship between knowledge of health practices and personal health practices of subjects. Pearson product moment correlation was used to test the relationship between the two variables as measured by the KHPSC and the HPSC. There was a positive and significant relationship between knowledge of health practices (KHPSC) and the personal health practices (HPSC) of subjects in this sample ( $r=0.15$ ,  $p<0.03$ ). Therefore, the first null hypothesis was rejected.

### Hypothesis Two

The second null hypothesis stated that there was no difference in personal health practices between those who had patient contact and those who did not have patient contact. The results of the t-test showed that the difference in means was not significant ( $t=-1.37$ ,  $p<0.17$ ). Therefore the second null hypothesis was not rejected.

### Hypothesis Three

The third null hypothesis stated that there was no difference in the personal health practices of subjects when grouped according to type of work. To test the third hypothesis, the major sub-groups of the sample were examined: nurses, other health professionals, and support/technical staff. A one-way analysis of variance was used to compare the personal health practice scores of the groups. The difference between the groups was significant ( $F=9.03$ ,  $df=2/171$ ,  $p<0.0002$ ). The Scheffé test for post-hoc comparisons showed that the mean score for the OHP group had a significantly higher mean (3.4) than the mean scores for the other two groups ( $RN=2.59$ ,  $S/T=2.49$ ). Therefore the third null hypothesis was rejected.

### Hypothesis Four

The fourth null hypothesis stated that there was no relationship between educational level and the personal health practices of subjects. To test this relationship, the Spearman rho formula was used. The level of education was positively correlated with health practices ( $r=0.27$ ,  $p<0.0001$ ). Therefore the fourth null hypothesis was rejected.

### Health Rating Information

Individuals' ratings of their own health are presented in Tables 13, 14 and 15. Three out of the 4 possible categories were used by the respondents; no one selected a poor rating.

#### Excellent Health Rating

There were 34 subjects who rated their health status as excellent. Their mean age was 36. Of the group, 3% were administrative staff, 17.6% were RN's, 38.2% were S/T staff, and 41.2% were OHP's. Educationally, 17.6% had a master's degree, 47.1% had a bachelor's degree, 23.5% had technical training, and 11.8% completed high school. On the KHPSC instrument, they had a mean score of 44.68, 69% out of 100%; they had a mean score of 3.32 on the HPSC.

Looking at individual health behaviors, 85.3% never smoked, 82.4% of the group were at a weight compatible with health, 82.4% slept 7-8 hours a night, 64.7% exercised regularly, and 17.6% drank "appropriately",

Not only were their health practices relatively high, 78% of the group ascribed their perceived health status to one or more health behaviors. Frequently mentioned were comments about exercise, diet and

Table 13. Number and percentage of sample, mean age, mean Knowledge of Health Practices score (KHPSC), mean Health Practice score (HPSC), and percentage who obtained 1 point on specific behaviors, according to health status rating.

| Parameter             | Health Status Rating |       |       |
|-----------------------|----------------------|-------|-------|
|                       | Excellent            | Good  | Fair  |
| Number                | 34                   | 136   | 33    |
| %/Sample              | 16.7                 | 67    | 16.3  |
| Mean Age              | 36                   | 34    | 34    |
| Mean KHPSC            | 44.68                | 42.01 | 41.55 |
| Mean HPSC             | 3.32                 | 2.62  | 2.14  |
| <b>Behaviors</b>      |                      |       |       |
| % NeverSmoked         | 85.3                 | 68.1  | 42.4  |
| % 7-8 Hrs Sleep       | 82.4                 | 69.4  | 57.6  |
| % Weight Within Range | 82.4                 | 64.9  | 63.3  |
| % Regular Exercise    | 64.7                 | 37.3  | 19.4  |
| % 1-45 Drinks Month   | 17.6                 | 23.9  | 21.2  |

Table 14. Type of work and educational level, according to health status rating.

| Type of Work                | Health Status Rating |      |      |
|-----------------------------|----------------------|------|------|
|                             | Excellent            | Good | Fair |
| % Registered nurse          | 17.6                 | 18.4 | 21.2 |
| % Licensed practical nurse  | 0                    | 5.9  | 3.   |
| % Nursing assistant         | 0                    | 4.4  | 3.   |
| % Other health professional | 41.2                 | 13.2 | 9.1  |
| % Support/technical         | 38.2                 | 55.1 | 63.6 |
| % Administration            | 3.                   | 2.9  | 0    |
| Education                   |                      |      |      |
| % <HS                       | 0                    | 5.1  | 6.3  |
| % HS                        | 11.8                 | 35.3 | 31.3 |
| % TECH                      | 23.5                 | 26.5 | 31.3 |
| % AD/S                      | 0                    | 7.4  | 3.1  |
| % BA/S                      | 47.1                 | 18.4 | 21.9 |
| % MA/S                      | 17.6                 | 7.4  | 6.3  |

Table 15. Percentage who ascribed health status to only health practices, only absence of disease, both health practices and absence of disease, non-specific reasons, and behaviors specifically mentioned, according to health status rating.

|                                    | Health Status Rating |      |      |
|------------------------------------|----------------------|------|------|
|                                    | Excellent            | Good | Fair |
| <hr/>                              |                      |      |      |
| Ascribed Status To                 |                      |      |      |
| Only Health Practices              | 26%                  | 38%  | 59%  |
| Only Disease                       | 15%                  | 21%  | 18%  |
| Both Health Practices<br>& Disease | 52%                  | 31%  | 23%  |
| Non-specific Reasons               | 7%                   | 9%   | 0    |
| No Comments                        | 26%                  | 32%  | 30%  |
| <br>                               |                      |      |      |
| Specifically Mentioned             |                      |      |      |
| <hr/>                              |                      |      |      |
| Weight                             | 37%                  | 32%  | 55%  |
| Exercise                           | 63%                  | 38%  | 45%  |
| Diet                               | 48%                  | 26%  | 23%  |
| Smoking                            | 30%                  | 10%  | 18%  |
| Alcohol                            | 26%                  | 7%   | 5%   |
| Sleep                              | 4%                   | 3%   | 5%   |
| Stress                             | 7%                   | 6%   | 18%  |
| Doctor                             | 7%                   | 9%   | 5%   |
| <hr/>                              |                      |      |      |

weight, e.g. "I get regular exercise" or "I know I need to lose some weight" or "I avoid red meat and foods with fat" Only 15% perceive their health status in terms of disease, e.g. "I have no heart problems" or "I am rarely sick" or "I never see my doctor".

#### Good Health Status Rating

The vast majority of the total sample (N=136, 67%) rated their health status as good. The mean age of this group was 34. The preponderance came from the S/T work category (N=75, 55.1%); the rest of the group were spread over the other 5 work categories. Educationally, 35.3% completed high school, 26.5% had technical training, 18.4% have a bachelor's degree; the other educational levels were represented by smaller percentages.

The KHPSC level of this group was lower than the excellent rating category, with a mean score of 42.01. Their mean HPSC was 2.62, also lower than the excellent rating group. The majority slept 7-8 hours a night, were at a healthy weight, and never smoked.

Many of this category mentioned exercise, weight, and diet as an explanation for their health status. and 69% of them mentioned one or more health practices

as a reason for their health status, slightly less than the excellent rating group.

#### Fair Health Status Rating

The mean age for the group of 33 subjects who rated their health status fair was 34. Again, the S/T work group was heavily represented with 63.6% of the total. RN's comprised 21.2% of this category; LPN's, NA's, and OHP's made up the rest of the category. No administrative staff rated their health status as fair. Roughly a third graduated from high school, another third had technical training, and 21.9% had a bachelor's degree.

The KHPSC was slightly lower ( $\bar{X}=41.55$ ) than the good rating category ( $\bar{X}=42.01$ ). The HPSC score was also lower, with a mean of 2.14 (Table 13). As might be expected, the individual health behaviors were not as good; 63.3% of the group were at a healthy weight, 57.6% slept 7-8 hours a night, 42.4% never smoked, but only 19.4% exercised regularly.

Most striking in this category was the percentage who attributed their health status to health practices: 82%. This was higher than the other two groups. In specific health practices, 55% mentioned weight, 45%

mentioned exercise, and 23% referred to diet. More than double the percentage of this group cited stress as a factor in their health status.

### Summary

This research generated information about the health practices of a representative sample of hospital employees in an urban, southeast city. It also provided insight into some of the variables which affect these practices.

A majority (58%) of the sample scored 3 or higher on their personal health practices. A large percentage got 7-8 hours of sleep a day, never smoked and are between  $+ .29$  and  $- .10$  of ideal body weight. However less than 40% reported regular exercise at work or home and less than 23% drank between 1 & 45 alcoholic drinks a month.

Few would argue that knowledge is a prerequisite to appropriate health behavior. In this sample, less than 37% of the total received a score of 46 (70%) on the knowledge of health practices instrument. Furthermore, on specific content, only 31.5% knew what weight

is healthy, 15.3% knew the specifics of exercise for cardiorespiratory fitness, and 2% knew how much alcohol is compatible with good health. These data contrast with the educational level of the sample, 95.5% of which were high school graduates with 65% prepared beyond high school. Education and health practices showed a positive, significant association.

With respect to direct contact with patients, the sample was divided about half-and-half. Examination of the impact of this on health practices revealed little effect. However, the type of work which the participants reported did make a difference in the health practices. The other health professionals (e.g. dieticians, physical therapists, social workers) had significantly higher health practice scores than the RN group and the S/T group.

## CHAPTER V

### SUMMARY, FINDINGS, CONCLUSIONS, DISCUSSION AND RECOMMENDATIONS

#### Summary

This study examined the health practices of a sample of hospital employees, and selected factors which influence health practices. Data for the study were obtained by using the following procedures:

1. A sample of 203 was obtained from the 2047 employees of an urban acute care hospital by randomly selecting departments and then directly requesting participation from the employees.

2. Participants completed an Informed Consent form and 3 questionnaires, resulting in the computation of a score for knowledge of health practices and a score for personal health practices.

3. Results were analyzed using Pearson product moment and Spearman correlations, and one-way analysis of variance procedures.

## Findings

### Principal Findings

Analyses of these data revealed that:

1. The health practice scores of the subjects were lower than the national sample of Wiley and Camacho (1980).
2. The mean knowledge of health practices score for the sample was 42.38, which is equivalent to 65%.
3. There was a significant, positive correlation between knowledge of health practices and personal health practices of subjects.
4. The amount of patient contact did not make a significant difference in health practices of subjects.
5. After subjects were grouped according to type of work, other health professionals had significantly higher mean health practice scores than registered nurses and support/technical staff.
6. There was a significant, positive correlation between educational level and health practices of subjects.
7. Seventy percent of subjects cited one or more health behaviors in their explanations of their health status rating.
8. Subjects who rated their health status as excellent had the highest knowledge of health practice

scores and the highest health practices scores; subjects who categorized their health status as fair had the lowest scores of the three groups.

### Subsidiary Findings

In addition to the findings related to the major variables of this study, the following outcomes were noted:

1. A preponderance of the sample knew the advisable number of hours of sleep, the frequency of exercise, the best ways to lose weight, the health hazards of smoking and smokeless tobacco, and the risk factors for heart disease.

2. Approximately half of the sample knew how intensely to exercise and what one should weigh.

3. Less than 30% of the subjects knew how long to exercise, and only 2% of the sample knew how much alcohol is associated with a healthy lifestyle.

4. Only 15% of the sample knew the 3 parameters of exercise for cardiorespiratory fitness (intensity, frequency and duration).

5. Seventy percent of the subjects knew the 2 best ways to lose weight (eat fewer calories and increase exercise); 31% knew that healthy weight is a "little over" or a "little under" ideal body weight.

6. Regarding specific health behaviors, 70% of the sample got the recommended 7-8 hours of sleep; 66.8% never smoked; 66% were within the boundaries of weight consistent with good health; 39.2% reported getting regular exercise; 22.4% drank between 1-45 drinks a month.

7. The percentage of registered nurses who exercise regularly was lower than the percentages of the other sub-groups and the sample.

8. Fewer registered nurses were within the boundaries of healthy weight than the sample and the other sub-groups.

9. Registered nurses and other health professionals had significantly higher mean knowledge of health practices scores than support/technical staff.

10. After the RN group was divided according to educational level, the scores of those nurses who held a bachelor's degree (N=13, 34% of the nurses in this sample) were higher than those prepared at the diploma level (N=15, 40% of the nurses in this sample) and higher than nurses prepared at the A.D. level (N=8, 21% of the nurses in this sample).

11. Even though subjects who had patient contact did not have significantly higher health practice

scores, they did have significantly higher knowledge of health practice scores than those who did not have patient contact.

12. Subjects who rated their health status as excellent were more likely to be college graduates than subjects in the other 2 categories; slightly more than half of those in the excellent category related their health status to both health practices and presence or absence of disease. Fewer individuals in the other two categories held perceptions of multiple health determinants.

13. Participants in the fair category also mentioned stress as a contributing factor to their health status twice as often as either of the other 2 groups.

### Conclusions

As a result of this study it may be concluded that:

1. Individuals who have knowledge of healthy lifestyles are more likely to have good health practices.

2. The participants are aware of the link between their behavior and their health status,

although their knowledge of the specifics of healthy lifestyles (e.g. how long to exercise) is deficient.

3. The target population could reduce their risks of lifestyle related diseases by learning more about health behavior and improving their health practices.

4. Employees who possess scientifically accurate knowledge in regard to healthy lifestyles and exhibit healthful behavior may be used in the development of a health-focused culture at the worksite.

5. No single variable examined in this study explained the subjects' health practices; rather, their behavior seems to be a function of multiple factors, some of which were not investigated in this study.

### Discussion

The work of Cummings and colleagues (1980) synthesized many models developed to predict health behavior. One of the factors identified by them was knowledge level, and was assessed in this study. The significant correlation between knowledge of health practices and actual health practices confirms previous studies in the literature. Knowledge of health

behavior is prerequisite to performing it, and emerged as a factor common to many models of health action. Even though a significant correlation was found in this sample, it is important to note that the majority of subjects did not achieve a 70% score on the instrument. The group is aware of the link between behavior and health status, but their scores on the knowledge of health practices instrument clearly indicate that they are not conversant with the specific information essential for a healthy lifestyle. Furthermore, considering the results on their knowledge assessments, it is not surprising that the subjects' health practice scores were low.

It is less clear why the relationship between patient contact and health practices was not significant. Several factors may account for the results. Besides knowledge, perception of threat of disease has been associated with health action also (Cummings, Becker, & Maile, 1980; Janz & Becker, 1984). It would seem logical that those who care for patients exhibiting the consequences of unhealthy lifestyles would be acutely aware of their risks and consequently, have better than average health behaviors.

In addition to patient contact, perceptions are also influenced by knowledge, and though the subjects in this study who had patient contact had significantly higher knowledge scores than those who did not have patient contact ( $\bar{X}=44.05$  compared to  $\bar{X}=41.10$ ), it is important to note that the mean score of 44.05 is equivalent to 68%. It may be that the gaps in knowledge prevent the subjects from mobilizing the expected effects of patient contact.

Demographic characteristics are also cited by Cummings et al. (1980) as determinants of health action. The type of work of the participants in this study had a significant effect on both their knowledge level and health practice scores, as did educational level. The mean health practice scores of the support/technical staff would be expected to be lower than the health practice scores of those groups with more education, particularly health-related education. The scores of the registered nurses in this study do not support that contention. On the surface it appears that something about other health professionals--their work and/or their education--accounts for the differences. However, when the registered nurses were further divided according to their educational backgrounds

the scores of those who had a baccalaureate degree are more what might be expected. The mean health practice score for support/technical staff is 2.49; for registered nurses, 2.59; for registered nurses with a BSN, 2.92; and for other health professionals, 3.40.

The comparison of the knowledge of health practice scores shows even greater differences. The mean knowledge of health practices score for support/technical staff was 40.27; for registered nurses, 44.34; for registered nurses with a BSN, 49.00; and for other health professionals, 47.03. Since all of the other health professionals have at least a baccalaureate degree and 91% of the support/technical staff have less than baccalaureate education, these data suggest that the type of education accounts for the differences between groups, rather than the type of work. This interpretation would be congruent with the belief of many nurse educators who contend that the nurses prepared at the baccalaureate level have a more holistic education than nurses prepared in AD and diploma programs. However, the sample size of nurses prepared at the baccalaureate level (12) requires that caution be exercised in drawing any conclusions about these data.

Social network characteristics have an impact on health behavior, according to Cummings and colleagues (1980; Allen & Allen, 1986a, 1986b, 1987). In this study, the subjects' low scores indicate that the effect of the social group would not be supportive of a healthy lifestyle, and would have a negative impact on individuals who were trying to practice healthy behaviors.

Access to health care and evaluation of health care are cited in Cummings' work, but were not assessed in this study. Application of those criteria is not relevant to health promoting behaviors; the models included in Cummings et al. are focused on disease prevention. Models appropriate for health promotion need to be tested.

### Recommendations

Further study is needed to clarify questions that were generated by this study. While the focus of the study was the specific health behaviors examined by Wiley and Camacho (1980), the unique health problems associated with shift workers deserve attention. The target population falls into a high-risk group for substance abuse, and merits investigation of the

variables which have been identified as relevant. The presence and/or extent of these problems in the target population should be addressed specifically.

Identification of the barriers to healthy lifestyles of this population should be investigated also, to provide additional data necessary for effective intervention. While knowledge is prerequisite to a healthy lifestyle and there is a clear need for health education in this group, other variables which should be assessed include self-management skills and health values of the work culture (social network). Both of these factors have been found to significantly affect health behavior of individuals and groups and may be improved with appropriate strategies.

More information is needed about the health behavior of registered nurses prepared in different types of educational programs. The small numbers of each type in this study did not permit any conclusions, although the data suggest that differences exist in their knowledge and behavior.

The data from this study are enough to enable a health educator to initiate interventions, even though questions remain unanswered about the target

population. In particular, educational programs which are most important for the target institution are:

1. Specific guidelines on exercise for physical fitness; benefits and risks of regular exercise; and methods to develop, maintain, and evaluate an individualized exercise program.

2. Health effects of alcohol use and abuse, and identification of risk factors for abuse.

3. Comprehensive stress management information, including positive and negative effects of stress and coping strategies.

4. Principles of self-management skills to enable individuals to change and/or manage their lifestyles, even in the face of negative environmental forces.

Concurrent with the development and implementation of health education programs, support groups need to be established to address the predictable need for participants to share successes and failures, encourage each other, and to influence the culture at the worksite.

The health status of employees and their quality of life can be improved immediately by starting these health education activities, while at the same time,

seeking more information about the questions raised by this study. Furthermore, the institution can become a worksite model in the community it serves.

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## APPENDIXES

## APPENDIX A

### HOSPITAL DEPARTMENTS

Nursing Administration\*  
Intern Rotation  
Nursing Unit M  
Nursing Unit N  
Nursing Unit O  
Nursing Unit P  
Nursing Unit W  
Substance Abuse Unit  
Nursing Unit 2  
Nursing Unit 3  
Nursing Unit 4  
Eating Disorders Unit  
Behavioral Center  
Pediatrics  
Nursing C  
Nursing D  
Nursing E  
I.C.U.  
C.C.U.  
C.O.U.  
Nursery  
Orderlies  
PRN  
Labor & Delivery  
Emergency Nursing  
Renal Dialysis  
Surgical Services  
One Day Surgery  
Recovery Room  
Anesthesia  
Respiratory Care  
Physical Therapy  
Occupational Therapy  
Speech Therapy  
Social Services  
Home Health (Administration)  
Home Health (Nursing)  
Home Health (Social Work)  
Home Health (Occupational Therapy)  
Home Health (Aides)  
Home Health 2  
Alzheimer's Treatment Center  
Elderly Services

\*=Unit names changed when necessary, to prevent identification of the institution

Laser Surgery  
Pain Management  
P.B.X.  
Admitting  
Emergency Admitting  
Discharge Planning  
Volunteer Services  
Patient Representative  
Pastoral Care  
Evening Lab  
Chemistry  
Reference Lab  
Hematology  
Microbiology  
Anatomical Pathology  
Information Center  
Laboratory Administration  
Computer Lab  
E.K.G.  
Vascular Lab  
Echocardiology  
Radiology  
Nuclear Medicine  
Radiation Therapy  
Special Procedures  
C.T.Scan  
Neurodiagnostic  
G.I. Lab  
Orthopedic Traction  
Blood Bank  
Pharmacy  
Administrative Services  
Administration  
Dietary  
Employee Cafeteria  
Dining Room  
Engineering  
Security  
Housekeeping  
Laundry  
Materials Management  
Supply & Distribution  
Central Supply  
Print Shop  
Purchasing  
Bio-Medical Maintenance  
Accounting  
Payroll  
Accounts Receivable  
Insurance Billing

Patient Finance  
Patient Billing  
Management Systems  
Public Relations  
Communications  
Planning/Marketing  
Day Care  
Human Resources  
Employee Health  
Staff Development  
Medical Library  
Management Eng.  
E.A.P.  
Suburban Unit  
Internal Audit  
Legal Services  
Quality Assurance  
Medical Records  
Secretarial Pool  
Abstracting

## APPENDIX B

Participant Number

### KHP SURVEY

The following questions are designed to determine how different people view certain health practices. Please answer every item according to directions. Please DO NOT omit any items.  
\*These questions relate to health.

1. In a 24-hour period, how many hours of sleep do you think a person should get? (Put a number next to 1. OR circle 2.)
  1.        Hours
  2. Don't know
- 2.<sup>+</sup> How many days a week do you think a person should exercise to strengthen the heart and lungs? (Put a number next to 1. OR circle 2.)
  1.        Days
  2. Don't know
- 3.<sup>+</sup> For how many minutes do you think a person should exercise on each occasion so that the heart and lungs are strengthened? (Put a number next to 1. OR circle 2.)
  1.        Minutes
  2. Don't know
- 4.<sup>+</sup> During those minutes, how fast do you think a person's heart rate and breathing should be to strengthen the heart and lungs? (Circle ONE number.)
  1. No faster than usual
  2. A little faster than usual
  3. A lot faster but talking is possible
  4. So fast that talking is not possible
  5. Don't know
- 5.<sup>+</sup> In your opinion, which of the following are the TWO best ways to lose weight? (Circle TWO numbers.)
  1. Don't eat at bedtime
  2. Eat fewer calories
  3. Take diet pills
  4. Increase physical activity
  5. Eat NO fat
  6. Eat grapefruit with each meal
6. How much alcohol do you think a person should drink? (Circle ONE number.)  
(1 drink of alcohol = 1 glass of wine = 1 beer)
  1. Occasional social drink
  2. 1 or 2 drinks a day, most days
  3. More than 2 drinks a day as long as you don't get drunk
  4. No alcoholic drinks
  5. Don't know

+ = question from NHIS

Participant Number

7. In your opinion, how many cigarettes a day can a person safely smoke? (Circle ONE number.)
1. 1/2 pack a day or less
  2. 1 pack a day
  3. 1 1/2 packs a day or more
  4. None
  5. Don't know
8. How much do you think a person should weigh? (Circle ALL CORRECT numbers.)
1. A lot under weight
  2. A little under weight
  3. ONLY at ideal weight
  4. A little over weight
  5. A lot over weight
  6. Don't know
9. Which of the following is safe? (Circle ALL CORRECT numbers.)
- |                    |               |
|--------------------|---------------|
| 1. Pipe smoking    | 4. Snuff      |
| 2. Cigar smoking   | 5. None       |
| 3. Chewing tobacco | 6. Don't know |
- 10.<sup>+</sup> Below is a list of things which may or may not affect a person's chances of getting HEART DISEASE. After each one, circle I if you think it definitely increases, N/E if you think it has no effect on a person's chances of getting heart disease, and D/K if you don't know. (Circle correct response.)

I = INCREASES    N/E = NO EFFECT    D/K = DON'T KNOW

|                                  |     |     |     |
|----------------------------------|-----|-----|-----|
| Cigarette smoking                | I   | N/E | D/K |
| Worry or anxiety                 | D/K | I   | N/E |
| High blood pressure              | N/E | D/K | I   |
| Diabetes                         | I   | D/K | N/E |
| Being VERY overweight            | N/E | I   | D/K |
| Overwork                         | D/K | N/E | I   |
| Drinking coffee with caffeine    | N/E | D/K | I   |
| Eating a diet high in animal fat | I   | N/E | D/K |
| Family history of heart disease  | N/E | I   | D/K |
| High cholesterol                 | D/K | I   | N/E |

# APPENDIX C

## Health Risk Appraisal

PARTICIPANT NUMBER \_\_\_\_\_

| PLEASE ENTER YOUR ANSWERS IN THE EMPTY BOXES (use numbers only)                                                                                                                             |                                                                                                                                                                                                                                                                                                            |                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 1. SEX                                                                                                                                                                                      | <input type="checkbox"/> 1 Male <input type="checkbox"/> 2 Female                                                                                                                                                                                                                                          | <input type="checkbox"/> 7     |
| 2. RACE/ ORIGIN                                                                                                                                                                             | <input type="checkbox"/> 1 White (non-Hispanic origin) <input type="checkbox"/> 2 Black (non-Hispanic origin) <input type="checkbox"/> 3 Hispanic<br><input type="checkbox"/> 4 Asian or Pacific Islander <input type="checkbox"/> 5 American Indian or Alaskan Native <input type="checkbox"/> 6 Not sure | <input type="checkbox"/> 8     |
| 3. AGE (At Last Birthday)                                                                                                                                                                   | Years Old                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/> 9-10  |
| 4. HEIGHT (Without Shoes)                                                                                                                                                                   | Example: 5 foot, 7 1/2 inches = <input type="checkbox"/> 5' <input type="checkbox"/> 0 <input type="checkbox"/> 8" (No Fractions)                                                                                                                                                                          | <input type="checkbox"/> 11-13 |
| 5. WEIGHT (Without Shoes)                                                                                                                                                                   | Pounds                                                                                                                                                                                                                                                                                                     | <input type="checkbox"/> 14-16 |
| 6. TOBACCO                                                                                                                                                                                  | <input type="checkbox"/> 1 Smoker <input type="checkbox"/> 2 Ex-Smoker <input type="checkbox"/> 3 Never Smoked                                                                                                                                                                                             | <input type="checkbox"/> 17    |
| (Smokers and Ex-smokers) Enter average number smoked per day in the last five years (ex-smokers should use the last five years before quitting):                                            |                                                                                                                                                                                                                                                                                                            | <input type="checkbox"/> 18-19 |
| (Ex-smokers only) Enter Number of Years Stopped Smoking (Note: Enter 1 for less than one year)                                                                                              |                                                                                                                                                                                                                                                                                                            | <input type="checkbox"/> 20-23 |
| 7. ALCOHOL                                                                                                                                                                                  | <input type="checkbox"/> 1 Drinker <input type="checkbox"/> 2 Ex-Drinker (Stopped) <input type="checkbox"/> 3 Non-Drinker (or drinks less than one drink per week)                                                                                                                                         | <input type="checkbox"/> 22-23 |
| If you drink alcohol, enter the average number of drinks per week:                                                                                                                          |                                                                                                                                                                                                                                                                                                            | <input type="checkbox"/> 24-25 |
| Bottles of beer per week<br>Glasses of wine per week<br>Mixed drinks or shots of liquor per week                                                                                            |                                                                                                                                                                                                                                                                                                            | <input type="checkbox"/> 26    |
| 8. DRUGS/MEDICATION                                                                                                                                                                         | How often do you use drugs or medication which affect your mood or help you to relax?<br><input type="checkbox"/> 1 Almost every day <input type="checkbox"/> 2 Sometimes <input type="checkbox"/> 3 Rarely or Never                                                                                       | <input type="checkbox"/> 27-28 |
| 9. MILES                                                                                                                                                                                    | Per Year as a driver of a motor vehicle and/or passenger of an automobile (10,000 = average) Thousands of miles                                                                                                                                                                                            | <input type="checkbox"/> 29-30 |
| 10. SEAT BELT USE                                                                                                                                                                           | (percent of time used) Example: about half the time = <input type="checkbox"/> 5 <input type="checkbox"/> 0                                                                                                                                                                                                | <input type="checkbox"/> 31-32 |
| 11. PHYSICAL ACTIVITY LEVEL                                                                                                                                                                 | <input type="checkbox"/> 1 Level 1 - little or no physical activity<br><input type="checkbox"/> 2 Level 2 - occasional physical activity<br><input type="checkbox"/> 3 Level 3 - regular physical activity at least 3 times per week                                                                       | <input type="checkbox"/> 33    |
| NOTE: Physical activity includes work and leisure activities that require <u>sustained</u> physical exertion such as walking briskly, running, lifting and carrying. <b>NOT STOP, START</b> |                                                                                                                                                                                                                                                                                                            | <input type="checkbox"/> 34-36 |
| 12. Did either of your parents die of a heart attack before age 60?                                                                                                                         | <input type="checkbox"/> 1 Yes, One of them <input type="checkbox"/> 2 Yes, Both of them <input type="checkbox"/> 3 No <input type="checkbox"/> 4 Not sure                                                                                                                                                 | <input type="checkbox"/> 37-41 |
| 13. Did your mother, father, sister or brother have diabetes?                                                                                                                               | <input type="checkbox"/> 1 Yes <input type="checkbox"/> 2 No <input type="checkbox"/> 3 Not sure                                                                                                                                                                                                           | <input type="checkbox"/> 42    |
| 14. Do YOU have diabetes?                                                                                                                                                                   | <input type="checkbox"/> 1 Yes, not controlled <input type="checkbox"/> 2 Yes, controlled <input type="checkbox"/> 3 No <input type="checkbox"/> 4 Not sure                                                                                                                                                | <input type="checkbox"/> 43    |
| 15. Rectal problems (other than piles or hemorrhoids).                                                                                                                                      | Have you had: Rectal Growth? <input type="checkbox"/> 1 Yes <input type="checkbox"/> 2 No <input type="checkbox"/> 3 Not sure                                                                                                                                                                              | <input type="checkbox"/> 44    |
|                                                                                                                                                                                             | Rectal Bleeding? <input type="checkbox"/> 1 Yes <input type="checkbox"/> 2 No <input type="checkbox"/> 3 Not sure                                                                                                                                                                                          | <input type="checkbox"/> 45    |
|                                                                                                                                                                                             | Annual Rectal Exam? <input type="checkbox"/> 1 Yes <input type="checkbox"/> 2 No <input type="checkbox"/> 3 Not sure                                                                                                                                                                                       | <input type="checkbox"/> 46    |

+ =used in calculation of Health Practice Score

|                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                            |                                                    |                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------|--------------------------------|
| 16. Has your physician ever said you have Chronic Bronchitis or Emphysema?                                                                                                          | <input type="checkbox"/> 1 Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/> 2 No                              | <input type="checkbox"/> 3 Not sure                | <input type="checkbox"/> 49    |
| 17. Blood Pressure (If known - otherwise leave blank)                                                                                                                               | Systolic (High Number)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                            |                                                    | <input type="checkbox"/> 50-52 |
|                                                                                                                                                                                     | Diastolic (Low Number)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                            |                                                    | <input type="checkbox"/> 53-55 |
| 18. Fasting Cholesterol Level (If known - otherwise leave blank)                                                                                                                    | MG/DL                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                            |                                                    | <input type="checkbox"/> 56-58 |
| 19. Considering your age, how would you describe your overall physical health?                                                                                                      | <input type="checkbox"/> 1 Excellent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <input type="checkbox"/> 2 Good                            | <input type="checkbox"/> 3 Fair                    | <input type="checkbox"/> 59    |
| 20. In general how satisfied are you with your life?                                                                                                                                | <input type="checkbox"/> 1 Mostly Satisfied                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/> 2 Partly Satisfied                | <input type="checkbox"/> 3 Mostly Disappointed     | <input type="checkbox"/> 60    |
| 21. In general how strong are your social ties with your family and friends?                                                                                                        | <input type="checkbox"/> 1 Very strong                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <input type="checkbox"/> 2 About Average                   | <input type="checkbox"/> 3 Weaker than average     | <input type="checkbox"/> 61    |
| 22. How many hours of sleep do you usually get at night?                                                                                                                            | <input type="checkbox"/> 1 6 hours or less                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> 2 7 hours                         | <input type="checkbox"/> 3 8 hours                 | <input type="checkbox"/> 62    |
| 23. Have you suffered a serious personal loss or misfortune in the Past Year? (For example, a job loss, disability, divorce, separation, jail term, or the death of a close person) | <input type="checkbox"/> 1 Yes, one serious loss                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <input type="checkbox"/> 2 Yes, Two or More serious losses | <input type="checkbox"/> 3 No                      | <input type="checkbox"/> 63    |
| 24. How often in the Past Year did you witness or become involved in a violent or potentially violent argument?                                                                     | <input type="checkbox"/> 1 4 or more times                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <input type="checkbox"/> 2 2 or 3 times                    | <input type="checkbox"/> 3 Once or never           | <input type="checkbox"/> 64    |
| 25. How many of the following things do you usually do?                                                                                                                             | <input type="checkbox"/> 1 3 or more <input type="checkbox"/> 2 1 or 2 <input type="checkbox"/> 3 None <input type="checkbox"/> 4 Not sure<br><input type="checkbox"/> Hitch-hike or pick up hitch-hikers <input type="checkbox"/> Criticize or argue with strangers<br><input type="checkbox"/> Carry a gun or knife for protection <input type="checkbox"/> Live or work at night in a high-crime area<br><input type="checkbox"/> Keep a gun at home for protection <input type="checkbox"/> Seek entertainment at night in high-crime areas or bars |                                                            |                                                    | <input type="checkbox"/> 65    |
| 26. Have you had a hysterectomy? (Women only)                                                                                                                                       | <input type="checkbox"/> 1 Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/> 2 No                              | <input type="checkbox"/> 3 Not sure                | <input type="checkbox"/> 66    |
| 27. How often do you have Pap Smear? (Women only)                                                                                                                                   | <input type="checkbox"/> 1 At least once per year                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/> 2 At least once every 3 years     | <input type="checkbox"/> 3 More than 3 years apart | <input type="checkbox"/> 67    |
|                                                                                                                                                                                     | <input type="checkbox"/> 4 Have never had one                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <input type="checkbox"/> 5 Not sure                        | <input type="checkbox"/> 6 Not applicable          | <input type="checkbox"/> 68    |
| 28. Was your last Pap Smear Normal? (Women only)                                                                                                                                    | <input type="checkbox"/> 1 Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/> 2 No                              | <input type="checkbox"/> 3 Not sure                | <input type="checkbox"/> 69    |
| 29. Did your mother, sister or daughter have breast cancer? (Women only)                                                                                                            | <input type="checkbox"/> 1 Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/> 2 No                              | <input type="checkbox"/> 3 Not sure                | <input type="checkbox"/> 70    |
| 30. How often do you examine your breasts for lumps? (Women only)                                                                                                                   | <input type="checkbox"/> 1 Monthly                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> 2 Once every few months           | <input type="checkbox"/> 3 Rarely or never         | <input type="checkbox"/> 71    |
| 31. Have you ever completed a computerized Health Risk Appraisal Questionnaire like this one?                                                                                       | <input type="checkbox"/> 1 Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <input type="checkbox"/> 2 No                              | <input type="checkbox"/> 3 Not sure                | <input type="checkbox"/> 72    |
| 32. Current Marital Status                                                                                                                                                          | <input type="checkbox"/> 1 Single (Never married)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <input type="checkbox"/> 2 Married                         | <input type="checkbox"/> 3 Separated               | <input type="checkbox"/> 73    |
|                                                                                                                                                                                     | <input type="checkbox"/> 4 Widowed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <input type="checkbox"/> 5 Divorced                        | <input type="checkbox"/> 6 Other                   | <input type="checkbox"/> 74    |
| 33. Schooling completed (One choice only)                                                                                                                                           | <input type="checkbox"/> 1 Did Not graduate from high school                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <input type="checkbox"/> 2 High School                     | <input type="checkbox"/> 3 Some College            | <input type="checkbox"/> 75    |
|                                                                                                                                                                                     | <input type="checkbox"/> 4 College or Professional Degree                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <input type="checkbox"/> 5 Employed                        | <input type="checkbox"/> 6 Unemployed              | <input type="checkbox"/> 76    |
| 34. Employment Status                                                                                                                                                               | <input type="checkbox"/> 7 Homemaker, Volunteer, or Student                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input type="checkbox"/> 8 Retired, Other                  | <input type="checkbox"/> 9                         | <input type="checkbox"/> 77    |
| 35. Type of occupation (SKIP IF NOT APPLICABLE)                                                                                                                                     | <input type="checkbox"/> 1 Professional, Technical <input type="checkbox"/> 6 Service (Including Private household)<br><input type="checkbox"/> 2 Manager, Official, Proprietor <input type="checkbox"/> 7 Laborer<br><input type="checkbox"/> 3 Clerical, Sales <input type="checkbox"/> 8 Farmer<br><input type="checkbox"/> 4 Craftsman, Foreman <input type="checkbox"/> 9 Other<br><input type="checkbox"/> 5 Operator (Machine)                                                                                                                   |                                                            |                                                    | <input type="checkbox"/> 78    |
| 36. County of Current Residence (SKIP IF NOT KNOWN)                                                                                                                                 | <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 Other                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                            |                                                    | <input type="checkbox"/> 79-81 |
| 37. State of Current Residence                                                                                                                                                      | <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 Other                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                            |                                                    | <input type="checkbox"/> 82-84 |

## APPENDIX D

Participant Number

The following questions are designed to give me more information about persons taking the survey.

Please answer ALL questions. Thank you.

Circle the correct response. Fill in blanks with information requested.

1. What type of work do you do?
  1. Nursing
    1. RN
    2. LPN
    3. Nursing Assistant
  2. Other health professional  
Specialty \_\_\_\_\_
  3. Support staff  
Type of work \_\_\_\_\_
  4. Administration
2. Do you have management responsibilities, with other employees reporting to you?
  1. Yes
  2. No
3. Does your work involve direct contact with patients, either giving care or talking to them about their health?
  1. Not at all or rarely
  2. \_\_\_\_\_ Hours a week
4. What is your educational level?
  1. Less than high school
  2. High school graduate or GED
  3. Technical/professional school  
certificate or diploma
  4. AD degree
  5. BS/BA degree
  6. MS/MA degree
  7. EdD/PhD/MD/JD degree
5. How would you rate your overall health?
  1. Excellent
  2. Good
  3. Fair
  4. Poor

Please tell why you chose your rating. (Use the back of the paper if you wish.)

## APPENDIX E

Participant Number \_\_\_\_\_

### PARTICIPANT CONSENT FORM

I understand that the purpose of this study is to learn more about health practices of hospital employees, and that my participation involves completion of a packet of questionnaires.

I understand that all responses will be held in confidence by the researcher, with code numbers instead of names identifying the completed questionnaires.

I understand that feedback on my personal questionnaire results will be available from the researcher if desired.

I understand that I may withdraw from participation in this project at any time and/or refuse to answer specific questions, without incurring any penalty.

I understand that I may contact the researcher at any time if I have further questions about the project or about my participation in it.

Signature \_\_\_\_\_

Date \_\_\_\_\_

Madge M. Donnellan  
770 Amster Green Drive  
Dunwoody GA 30350  
(404) 396-5603

## VITA

Madge McCaffrey Donnellan grew up in Manhasset, N.Y., and received her early education at St. Mary's Elementary and High Schools. She is a graduate of St. Francis Hospital School of Nursing in Poughkeepsie, N.Y. and received the Bachelor's and Master's degrees in Nursing from the State University of New York at Buffalo.

Madge held staff nursing positions, and established a nurse practitioner practice in a family medicine practice in N.Y. She was appointed to the faculty at the University of Tennessee, Knoxville, College of Nursing in 1979, and was director of the nurse practitioner program. Madge also held a part-time clinical position in the Employee Health Office at St. Mary's Medical Center, Knoxville.

Madge is certified as an Adult Nurse Practitioner by the American Nurses Association. In addition, she is a member of Sigma Theta Tau, the international nursing honor society.

Madge is a member of the American Nurses Association and the Georgia Nurses Association, the National League for Nursing, and the American Public Health Association. She has served as President of the Gamma Chi Chapter, Sigma Theta Tau and has held elected offices in several other professional organizations.