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ABSTRACT

Title of Thesis: Toward an Understanding of Health Care Delay Among Minorities: Examining Health Care Behaviors Among Military Young-Adult Males

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The importance of eliminating health disparities in the United States has become a top priority in public health efforts. Ethnic minorities have historically different experiences and access to health care services that may influence their current attitudes and health behaviors. The military provides a unique opportunity to address these important questions. Military personnel are a racially diverse sample that has universal access to quality health care thereby removing access as one of the major barriers to utilization and controlling for SES. The purpose of this study was to compare delay in treatment seeking behaviors as related to knowledge of disease among African American, Hispanic American, and Caucasian active duty enlisted personnel. Two hundred ninety-five enlisted males personnel (X=22.86 years; SD= 4.14) from a command within the continental U.S. completed the Illness Attitudes Scale (IAS; Kellner, 1986) to measure the participant s overall health-related worries and concerns, the Knowledge of Cancer Warning Signs inventory (KCWSI; Berman & Wandersman, 1991), and a number of questions developed to evaluate diabetes knowledge. Health care rules and behaviors were also examined by a series of health care vignettes that described a pattern of symptoms for acute as well as chronic problems and the respondent indicated their

typical response. Results indicated that there were no differences in knowledge of cancer (F (2, 258)=.29, p = .29) and diabetes (F (2, 272) = .19, p = .83) symptoms among the racial groups. Also, there were no differences in treatment experience in the medical setting among the racial groups (F (3, 283) = .22, p = .88). However, differences in concern about bodily symptoms were found between minorities and Caucasians, with ethnic minorities showing higher concern about bodily symptoms, worry about illnesses, and concern about disease (all p s < .05). For health care seeking, ethnic minorities tended to delay care for many chronic illness warning signs including: experiencing blurry vision; ($_^2(6)=14.03$, $p<.05$) or loss of peripheral vision; ($_^2(6)=13.30$, $p<.05$) more than for acute symptoms of pain (i.e. sharp lower back pain; ($_^2(6)=19.94$, $p<.05$). Interestingly, as pain or symptoms persisted minorities were more likely to delay their care. These findings are particularly interesting because all participants have universal access to care and they indicated that their treatment experience in the military medical setting was no different based on race. These preliminary results suggest a more fine-grain understanding of the social learning history of different cultures as they relate to health care practices and beliefs. By incorporating these strategies an important foundation for empirically developed programs targeted at reducing and eliminating health care disparities can begin.

TOWARD AN UNDERSTANDING OF HEALTH CARE DELAY AMONG MINORITIES: EXAMINING HEALTH CARE BEHAVIORS AMONG MILITARY YOUNG-ADULT MALES

by

Nicole Angela Vaughn

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INTRODUCTION

Currently 43 million Americans, 11 million of which are children, are unable to access the United States health care system as it is currently structured (Shi & Singh, 2000). Many of the concerns of this population include inadequate health insurance coverage with nearly 50% of the poor uninsured (Addy, 1996; Shi & Singh, 2000), inadequate health care facilities, particularly in lower socioeconomic areas (Addy, 1996; Shi & Singh, 2000), poor preventive health care practices such as prenatal care, immunizations, dental and eye exams (Addy, 1996; Shi & Singh, 2000), and an increased use of emergency care services (Addy, 1996).

Research has shown that the uninsured tend to be poor, less educated and working in part-time firms or employed by small companies (Shi & Singh, 2000). In 1998, the U.S. Census Bureau estimated that 35% of Hispanic residents, 22% of African Americans, 21% of Asian Americans, and 12% of Caucasians were uninsured (Shi & Singh, 2000). Based on these numbers, it is clear that ethnic minorities are more likely to lack health care (Ginzberg, 1991; Brown & Kahn, 1998; Ribisl, Winkleby, Fortmann, & Flora, 1998; Shi & Singh, 2000; Suarez & Ramirez, 1999).

Due to the rising costs in health care services, many citizens are unable to bear the burden of accessing the system. The United States government has been increasingly focusing its attention on the cost of care over the past decade. Unfortunately, low-income and ethnic minority groups have been differentially affected by rising health care costs. In 2000 in a speech launching the start of the Healthy People 2010 campaign, U.S. Surgeon General, Dr. David Satcher, put the onus on the health care community to begin to focus on eliminating disparity among ethnic groups (Satcher, 2000).

Ethnic minorities suffer disproportionately from many chronic diseases such as cardiovascular disease, cancer, diabetes, and hypertension (Freimuth, 1990; Lewis, Belgrave, & Scott, 1990). African-Americans and Hispanic Americans are also at increased risk for complications and mortality from these diseases due to delayed access to primary care services (Jackson & Sellers, 1996). Due to the lack of a primary care physician, many minorities use the emergency room for medical care and usually the interaction with the provider is poor (Davis, Brown, Allen, Davis, & Waldron, 1995). The Commission on Chronic Illness reported that approximately 40% of chronic disease, unnecessary suffering, and disability can be avoided by decreasing delays in diagnosis and treatment (Battistella, 1971).

Thus, not only is access to health care important but access to quality, timely, cost effective health care is of paramount interest. Ethnic minority groups are presenting later for treatment and as a result are suffering from their delayed access. It is vital that we begin to understand the process of how minorities, in particular, seek care. Innovative approaches that incorporate important cultural components are needed to address the current health care access problems, particularly among African-Americans and Hispanic Americans. In order to further our understanding of the delayed access of these groups, we must begin to understand the barriers they face as they try to access the system. A model of health care access is depicted in Figure 1. As outlined in the model of health care access (See Fig. 1), financial barriers and personal barriers are the two major categories of barriers to accessing appropriate and timely treatment. These barriers are reviewed in the subsequent sections.

Socioeconomic Status & Financial Barriers to Accessing Health Care

Financial barriers have been cited as the primary explanation for delayed care seeking (Freimuth, 1990; Lewin-Epstein, 1991) and the important relationship between health outcomes

and socioeconomic status has been established (Adler, Boyce, Chesney, Folkman, & Syme, 1993; Adler & Ostrove, 1999; Lantz, House, Lepkowski, Williams, Mero & Chen, 1998; Williams, 1998). Between 1985 and 1995, much of the research in the area of health care access has focused on socioeconomic status (SES) as the main explanatory variable in the disparity of health utilization (Adler & Ostrove, 1999). It has been demonstrated that race and SES are highly correlated. Since measures of social class include education and income, and many minorities in the United States have lower socioeconomic status than Caucasians with regard to many measures of status, ethnic minorities are many times represented at the lower levels of the SES ladder (Anderson & Armstead, 1995). In particular, African Americans have lower income levels, educational attainment, occupational status, and wealth (Williams, 1998). Hispanic Americans are overrepresentated in the inner cities of metropolitan areas and there is a large educational and income gap between Hispanics and Caucasians (Ginzberg, 1991; Suarez & Ramirez, 1999).

Socioeconomic status has been linked to many health behaviors and outcomes (Drury, Garcia, & Adesanya, 1999; Gold & Franks, 1990; Kahn, Kawachi, & Wise, 1999; Kraus, Borhani, & Franti, 1980; Taylor, 1999; Tyroler, 1989). There is a graded relationship between SES and health (Adler & Ostrove, 1999; Ginzberg, 1991; Kraus et al., 1980; Tyroler, 1989; Young, 1999). Those lower on the SES ladder, experience poorer health and more complications than those individuals higher in SES (Anderson & Armstead, 1995). SES has been a strong predictor of morbidity and premature mortality (Adler et al., 1993).

Solution: Universal Access to Care?

In order to alleviate the problems with inverse relationship between SES and health, many researchers and legislators have suggested providing universal access to care (i.e.,

universal health insurance) (Anderson & Armstead, 1995). In theory universal health insurance sounds like a panacea to the problem, however, research has indicated that health care utilization among racial minorities is lower even when social class is controlled (Williams & Collins, 1995). Zuvekas and Weinick (1999) suggest that increasing health insurance coverage would probably improve access to care for Hispanics. However, the increase in insurance coverage would not be enough to eliminate the current disparities (Adler et al., 1993; Bashshur, Homan, & Smith, 1994). It has been documented (in the 1988 Department of Veterans Affairs Annual Report) that Hispanic military veterans (who have complete access to care) often underutilize the Veteran s Administration services (as cited in Furino & Munoz, 1991). Thus, having access to care does not lead to proper and appropriate use of that care if it is not apart of the individual s typical response to a health problem.

Increasing insurance coverage to increase access is obviously a complex issue. This solution would not completely solve the access and utilization problems because there are other factors that prevent individuals, particularly ethnic minorities, from accessing care. Clearly providing insurance coverage to the 43 million uninsured would improve health care access. However, there is an important distinction between access to care and utilization of that care. The idea that improved access will automatically increase utilization may be oversimplified. This idea assumes that individuals with access will utilize their health care and utilize it appropriately. Appropriate utilization includes when to obtain preventive check ups, when to call a health care professional for advice, and seeking medical help at the appropriate time. This latter point is integral, when is the appropriate time for care? This question leads to other questions that health care professionals must ask themselves in order to understand delayed treatment seeking. These questions include: How do individuals learn this important health care

behavior? Can we expect individuals who are provided access to know when to seek help? Thus, understanding personal barriers to health care utilization is a crucial piece to maximizing appropriate health care behavior.

Personal Barriers to Care

Although a plethora of research has focused on SES and the financial deterrents of accessing care, the patient, regardless of race, also faces many personal barriers to accessing appropriate care. Some of the personal barriers that the patient encounters include physician availability, perceived availability of quality care, perception/severity of pain, and perception/ knowledge of the illness and its signs and symptoms. A cognitive decision making model for seeking medical care was developed as an extension of model 1 (See Fig. 1) to depict the cognitive stages that may be present as individuals decide to seek care. This model is depicted in Figure 2. (See Fig. 2). There are three basic stages for the Cognitive Stages of Accessing Health Care Model, which are characterized by a series of important self-questioning statements. The stages are symptom recognition and assessment, barrier recognition and assessment, and cost-benefit analysis.

In Stage 1, symptom recognition and assessment, the individual asks a series of questions, which include: what are my symptoms, are these symptoms important, can I deal with these symptoms, do I need to seek help for these symptoms, and who should I seek help from? Stage 2, barrier recognition and assessment, is characterized by the following questions: what are the obstacles that I must deal with before receiving care, are these obstacles significant, what can I do to get past these barriers, are the barriers under my control, where will I receive the best care, is this facility in my area, and what is my perception of the care I will receive in my area? Finally, stage 3, the cost-benefit analysis stage, is characterized by: what are the costs (health,

financial, emotional and physical costs), what are the benefits of receiving care, what are the possible ramifications of delaying care for awhile, and what are the costs of receiving care at my neighborhood health centers?

Many researchers have described different processes that individuals go through before they seek care. Much of the research in this area has focused on testing the Health Belief Model (Rosenstock, 1974). This model has been applied in numerous studies and meta-analyses have been inconclusive as to whether the model is predictive of health behaviors (Harrison, Mullen, & Green, 1992). Despite the mixed evidence on this model, it is still widely recognized and used in research. Importantly, the Health Belief model has served as the impetus for research on health attitudes and behaviors.

Some research has examined general health care seeking from a delay perspective. Safer, Tharps, Jackson, and Leventhal (1979) developed the Three Stages of Delay model to elucidate the myriad of factors that compose of total delay time to seeking medical care. This model categorizes the total delay from symptom recognition to medical care treatment into three distinct stages: appraisal delay, illness delay and utilization delay. According to these researchers, appraisal delay is the time the patient takes to appraise a symptom as a sign of illness. Illness delay is defined as the time taken from deciding that one is ill until deciding to seek professional medical care and utilization delay is the time from the decision to seek care until the care is sought. This index comprises the total delay time, which is the total time that is elapsed from symptom onset to visit to a health care professional. Safer et al. (1979) believed that active (i.e., self-examining symptoms, trying home remedies, and observing the symptom) and passive (i.e., thinking about the symptom its causes and treatment) monitoring and information seeking characterized the three delay stages.

Based on the Three Stages of Delay Model, Safer et al. (1979) conducted personal interviews in a New York City clinic that assessed the stages of delay to test the model. They also examined the factors that predicted delay. Results indicated that individuals without financial concerns as well as those in severe pain sought care immediately. However, individuals that researched their symptoms, were over the age of 45, and had other significant life stressors delayed care.

Related to age, Battistella (1971) examined factors associated with delay in treatment seeking among older persons. They hypothesized those older individuals (i.e., older than 45 years) who were lower in socioeconomic status, higher in negative attitudes toward the medical system, and lower in social support would be more likely to delay seeking care. Three age groups were examined (45-59 years, 60-69 years, & 70 years and over) for differences in treatment seeking. Respondents were asked whether they had experienced a symptom in the past year, and when they had experienced a symptom did they initiate contact with a physician immediately. Results indicated that as age increases, delay might increase. However, there was a trend among all individuals toward not seeking medical care as soon as the symptom appeared. Contrary to other research, individuals lower in socioeconomic status and those without health insurance were actually, least likely to delay than higher socioeconomic status individuals. The author concluded that this finding might be related to lower socioeconomic persons being less capable and less self-confident to cope and deal with symptoms, therefore, they seek care immediately to decrease the anxiety that unknown symptoms may cause. Finally, socially isolated individuals were more likely to delay than those with social support and those persons with a negative view of the health care system were also more likely to delay.

Most of the research on delay in health care seeking has changed little since Battistella (1971) described it as disease or problem focused. This means that most of the research has only focused on examining delayed health care for a particular illness or ailment (i.e. delayed health care in relation to breast cancer symptoms). For example, Keinan, Carmil, and Rieck (1992) determined the factors predicting women s delay in seeking medical care after discovery of a breast lump. Keinan et al. (1992) collected self-report data from 62 Israeli women who sought medical care upon noticing a breast cancer symptom. The average age of the women was 45 years and most of the women were married and had a mean education level of 12 years. The women were given a series of questionnaires to assess health locus of control (HLC; Wallston, Wallston, Kaplan, & Maides, 1976 as cited in Keinan et al., 1992), hopefulness (Beck & Weisman, 1974 as cited in Keinan et al., 1992), repression-sensitization (Byrne, 1961 as cited in Keinan et al., 1992), trait anxiety (STAI; Spielberger, Gorsuch, and Lushene, 1970 as cited in Keinan et al., 1992), and body awareness (Keinan et al., 1992). The results indicated that those women that were less aware of their bodies increased their delay time. However, no significant correlations were found between the personality characteristics (hopefulness, anxiety, and health locus of control) and delay time.

Mor, Masterson-Allen, Goldberg, Guadagnoli, and Wool (1990) also examined symptom recognition and help seeking behavior among cancer patients. Six hundred twenty-five cancer (specifically lung, breast, and colon cancer) patients were interviewed in-person about the factors contributing to seeking medical care. All of the questions were asked in an open-ended format and the interviews were recorded and examined later by content analysis. The researchers found that 25% of the patients delayed seeking care more than three months after symptom recognition.

Also, breast cancer patients were more likely to attribute their symptom to cancer whereas lung and colon cancer patients were more likely to attribute the symptom to a less serious cause.

Leenaars, Rombouts, and Kok (1993) examined the care seeking behaviors of 585 Dutch individuals with sexually transmitted diseases (STD). The study sample was 64% male, had a mean age of 29 years, was from a low to middle class background, and reported a heterosexual preference (90%). The researchers wanted to explore the reasons for delay for different groups of individuals. Delay behavior was defined by how long the individual had waited to seek care (i.e., 1-, 2-, 3-, and 4-weeks or more). The results indicated that women were more likely than men to delay when they had experienced a STD related-symptom. The researchers postulated that this finding may be related to the STD symptoms in women being more atypical and mild which leads women to misattribute the importance of the symptom as a warning signal. Heterosexual adults were also more likely to delay 2 to 4 weeks before seeking care and residents of villages were more likely to wait more than four weeks than those individuals living in small or medium sized cities. All individuals indicated that they had noticed the symptoms, and assessed their sexual risk before seeking care. Thus, previous research suggests symptom recognition and body awareness is a vital first step to seeking care.

The Impact of Culture on Health Care Utilization

What is Culture?

Extensive research across fields including anthropology, psychology, and sociology has documented that culture influences all human behavior (Clark, Anderson, Clark, & Williams, 1999; Helman, 1990; Kessing, 1965). This includes the behavior of individuals, groups, and populations as well as the culture of institutions, both the formal and informal practices of organizations. Culture can be defined as a narrow set of guidelines (both explicit and implicit)

that individuals inherit as members of a particular society, and tells them how to view the world, how to experience it emotionally, and how to behave in it in relation to other people, to supernatural forces or gods, and to the natural environment (Helman, 1990; p.10).

Wilson (1999) states it simply, to act according to one s culture is to follow one s inclinations as they have been developed by learning or influence from other members of the community to which one belongs or with which one identifies (p. xiv). Culture must play an important role in one s health. Culture then inevitably defines appropriate health care utilization. Thus, if an individual has not been raised in a culture that regularly accesses or utilizes preventive health care, how can they be expected to utilize it appropriately?

It is easy to understand how an individual from another country would not fit in to the current health care system. They may never have been to a physician and have little understanding of preventive health care. In some ways, some ethnic minority groups in the United States share this experience. Older African Americans, depending on where they were reared, may have little or no experience with regular preventive medical care. It may have not been available, they may have experienced an unpleasant situation, or they may have their own beliefs and/or misconception about the medical system. These types of experiences would not only impact the generation that lived it, but also the subsequent cohorts whose health care behaviors are guided by parents of the past generation. Thus, applying this same conceptualization to understand health care utilization among ethnic minorities, in the United States, is especially important.

These notions of culture and understanding one s cultural perspective have received increasing attention in the area of health care where there has been recognition that accepted health care practices do not work with all groups of individuals and that practitioners need to

tailor information and treatment to meet the needs of diverse groups of individuals (Anderson, 1995; Kumanyika & Morssink, 1997; p.82; Langer, 1999; Suarez & Ramirez, 1999).

Researchers and health care policy makers have increasingly begun to recognize the relationship between race and health. There has been a growing understanding that SES and race are not synonyms. Similarly, it is important to note that all individuals within an ethnic group are not alike simply because they share a taxonomy. For example, the term Hispanic or Latino, that is generally used as an ethnic category does not differentiate or emphasize the importance of differences in culture, practices, beliefs, and values among various peoples of Hispanic origin (i.e., Mexican Americans are not the same as Puerto Rican Americans). Although, Hispanic groups share a common language and cultural characteristics, they each have an extremely different settlement history and customs which affect health status (Suarez & Ramirez, 1999). Furino and Munoz (1991) state, efforts to improve Hispanic health must consider the heterogeneity of the population (p. 255).

These same points hold true for African Americans from different parts of the country as well as different backgrounds (i.e. African Americans of Caribbean descent, African Americans from the rural South vs. those from Metropolitan cities in the Northeast). Also, black Americans of African, Indian, or European ancestry are relatively heterogeneous with respect to customs (Lillie-Blanton, Martinez, Taylor, & Robinson, 1993). Williams (1998) makes a cogent point of elucidating and differentiating the concepts of SES, race/ethnicity and their relationship to health care utilization. Many times race and ethnicity are included as indicators of SES since they are regularly associated with SES. Also, since many African Americans are disproportionately represented at the lower SES levels, it comes as no surprise that many African Americans suffer from poorer health outcomes. Although race (in the United States) is strongly related to SES, the

two concepts are not equivalent (Williams, 1998). There may be important cultural beliefs, behaviors, or attitudes related to health care.

Since there is an inverse relationship between SES and health (i.e. increased wealth, should increase health status; Anderson & Armstead, 1995), one would expect that all of those individuals higher in SES would experience better health regardless of race. However, African Americans at every level of the SES ladder are in poorer health than their Caucasian counterparts (Williams & Collins, 1995). Thus, it is clear that there must be other culturally specific variables influencing health outcomes. Williams (1995, 1998) and colleagues suggest that race/ethnicity is the missing link.

Why is Examining Delay among Ethnic Minorities Important?

It is critical that delay in health care seeking be examined among ethnic minorities, some delay in these groups may be related to data showing that African Americans and Hispanics are disproportionately at higher risk for developing several diseases (Brown & Kahn, 1998; Suarez & Ramirez, 1999). Both African Americans and Hispanics are increased risk for developing certain cancers and diabetes. The American Diabetes Association (ADA) reports that approximately 2.3 million or 10.8% of all African Americans have diabetes. Approximately 24% of Mexican Americans, 26% of Puerto Ricans, and 16% of Cuban Americans between the ages of 45-74 have diabetes. However, one-third of them do not know it (ADA, 1999). Also, African Americans and Hispanics are approximately 2 times more likely to have diabetes, than Non-Hispanic Whites. African Americans and Hispanics are also more likely to experience major complications from diabetes than other ethnic and racial groups. In fact, Mexican Americans are 4.5 to 6.6 times more likely to suffer from end stage renal disease than any other group (ADA, 1999). A review of the literature shows a lack of empirical research concerning the

knowledge of the symptoms related to Type 1 and Type 2 diabetes in the general non-diabetic population. Most of the research only focuses on diabetes disease knowledge among individuals with either Type 1 or Type 2 diabetes for intervention purposes.

It has been well documented that ethnic minorities seek care later than their Caucasian counterparts (Bailey, 1987; Ell, Haywood, Sobel, deGuzman, Blumfield, & Ning, 1994; Lauver, 1994). Many minority groups typically lack a primary care provider and usually utilize hospital emergency room departments for their health complaints (Davis et al., 1995; Weaver & Gary, 1996). Hispanic Americans are substantially more likely than any other racial/ethnic groups to lack a usual source of health care (Zuvekas & Weinick, 1999). In order to begin to understand the cultural and experimental reasons why these disparities exist, we must begin to focus on the social and cognitive reasons why individuals, in particular minorities, decide to seek care.

Many of the previously described models of health care seeking have left culture out of their formulation. However, explaining the health care disparity may require that we step back and also attempt to understand the concept of culture and the potential impact of culture on health care utilization. Angel and Thoits (1987) proposed that in order to better understand symptom recognition, one must understand culture. The authors proffer that the subjective experience of illness is a culture bound phenomenon. Therefore culture is vital in explaining how individuals recognize and seek care for symptoms. Angel and Thoits (1987) developed their own cultural model of care seeking. There are five main processes that an individual goes through in their model: objective physiological or affective change, attend to or ignore change, interpretation, & evaluation of the change, acting on symptoms, and relabeling & reevaluation. At each stage culture plays an integral role in the decision making process.

In the attend to or ignore the symptom phase, the individual categorizes the symptom as either normal or abnormal. Angel and Thoits (1987) propose that the person uses a cultural reference group to assess their symptoms and prior socialization frames how an individual categorizes their internal states. In the interpretation and evaluation of the change, the individual determines if the physiological change is a symptom or not, physical or psychological, serious or not, and the symptom s chronicity, cause, responsibility and prognosis. The cultural components that impinge on this stage include the prevalence of symptoms in the individual s cultural group, the social desirability of having that symptom, their beliefs and knowledge of disease and the advice from significant others who are in their cultural reference group. In the acting on symptoms phase, the individual makes decision to seek out care and recognizes and deals with the cultural and structural barriers to treatment seeking. Finally, in the relabeling and reevaluation stage the individual is given a diagnosis (if they sought professional care) and then they reassess their condition and if they are able to cope with their symptoms. Angel and Thoits (1987) believe that in this stage the labeling that is made by the physician is then communicated by the patient to other individuals in their community.

Ethnic Minorities, Culture, and Health Care Seeking

Ethnic minorities have historically different experiences and access to health care services that may influence their current attitudes and health behaviors. Researchers have begun to acknowledge these differences in beliefs and are examining the impact of these variables on health care seeking practices of ethnic minorities (e.g. several studies have examined specific health beliefs of African Americans).

Bailey (1987) examined the sociocultural factors in health care seeking behavior among African Americans. In a series of in-person interviews with 203 African American attendees of a

local urban health care clinic, Bailey found that there was a specific pattern associated with delayed access among African Americans. He summarized this cultural pattern in six characteristics: illness appears, individual waits for a certain period, individual allows body to heal itself (through prayer and meditation), individual evaluates daily activities, individual seeks advice from a family member or friend, individual accesses the medical care professional. Bailey also noticed that African Americans relied on the use of self-care for many symptoms.

Ell et al. (1994) examined factors associated with acute chest pain in African Americans and delayed emergency care. The researchers conducted 448 structured interviews with African Americans from public and private hospitals to obtain information about cardiac symptoms. They found that the factors that increased delay time were structural access to care, persistence of symptoms, degree of incapacitation, consultation with a layperson, mode of transportation, and consultation with a medical professional. Many of the factors that they found among African Americans decisions to seek care were similar to Bailey s (1987) cultural patterns.

Raczynski, Taylor, Cutter, Hardin, Rappaport, and Oberman (1994) explored the diagnoses, symptoms, and attributions of symptoms among African Americans and Caucasian patients with coronary heart disease. Two thousand four hundred and sixteen inpatients with diagnoses of coronary artery disease, ischemic heart disease, or myocardial infarction, were administered a structured interview to obtain information regarding their health care beliefs (particularly symptom recognition and attribution). Raczynski et al. (1994) found that African Americans were more likely to attribute CHD symptoms to noncardiac events (i.e., heartburn, indigestion) than their Caucasian counterparts. Also, African American patients reported fewer painful symptoms than the Caucasian patients did. This finding suggests that African Americans may not be as aware of the warning signs and symptoms of heart attacks.

Differences between ethnic groups on health care seeking behaviors are not always found. For example, Lauver (1994) explored the care-seeking behavior among African American and Caucasian women with breast cancer symptoms. She interviewed 135 women between 19-76 years in a breast surgery clinic in a metropolitan teaching hospital. The care-seeking behavior of the women was measured via a series of questions concerning habits, practices, and beliefs. After controlling for socioeconomic status, Lauver (1992) found that there were no significant differences between African American and Caucasian women seeking care for breast cancer symptoms.

In summary, African Americans seem to be more likely than their Caucasian counterparts to delay seeking health care services for their symptoms. Many researchers have recognized delayed care seeking behavior among this group as a problem in disease progression as well as prevention. However, few researchers to date have empirically examined the factors accounting for delayed care seeking among many African Americans. Bailey (1987) began to elucidate many of the factors that African Americans indicate as reasons for delay. Williams (1997) has proposed a biopsychosocial framework for studying the role of race and health and their association with SES. Williams (1997) asserts that race/ethnicity has an independent effect on health care seeking regardless of SES. It is important to note that sample selection and sample characteristics are critical to assessing health care access as all African Americans may not behave the same (Sbrocco et al., 1999).

Differential Minority Care Seeking Related to Disease Knowledge?

One of the possible explanations for differential care seeking may be due to differences in disease knowledge. Specifically, it has been hypothesized that certain ethnic minority groups may not know the symptoms of many of the diseases that affect their groups. Most of the

research has focused on examining the disease knowledge of those individuals with a particular ailment. Only a couple of researchers have examined the knowledge of disease symptomatology among non-diseased individuals.

Weller, Baer, Pachter, Trotter, Glazer, Garcia de Alba Garcia, and Klein (1999) measured non-diabetic Latino individuals knowledge of diabetes and its care. One-hundred sixty-one individuals from 4 different sites (e.g. Texas, Connecticut, Mexico, and Guatemala) were interviewed about their biomedical and cultural knowledge of diabetes. Each participant was administered an in-person, 130-item questionnaire on the causes, symptoms, signs, illnesses, and treatment of diabetes. Weller and colleagues (1999) found that the higher the individual s education and acculturation level, the more they knew about diabetes. They also found that many Latinos in rural areas (i.e. Guatemala) knew about diabetes and its care. The researchers concluded that incorporating and educating the entire family in the treatment of the diabetic individual may be a useful strategy for Latino families

Michielutte and Diseker (1982) examined the racial differences in the knowledge of cancer. They interviewed black and white working class residents in Winston-Salem, North Carolina on their knowledge of the symptoms of cancer. The participants were approached at their homes and administered a standardized interview by trained interviewers. All of the participants were asked to freely recall the symptoms of cancer. A score was computed for all of the correct answers given. The results indicate that black respondents had lower cancer knowledge scores than their white counterparts. According to the authors, this finding is consistent with the data from the American Cancer Society that indicates that blacks are less knowledgeable about cancer (Michielutte & Diseker, 1982).

Berman & Wandersman (1991) measured knowledge of cancer among rural residents in South Carolina. Two-hundred sixty-eight adults were administered the Knowledge of Cancer Warning Signs Inventory (KCWSI), an instrument created by the experimenters to quantify the symptom knowledge of individuals. Each participant was asked to determine from a list of 25-symptoms, which were actual warning signs of cancer. Free recall was not used and the individuals did not have to experience the symptoms in order to participate in the study. The researchers found that African Americans scored significantly lower on the basic recognition of cancer warning signs subscale of the KCWSI than their white counterparts. They also found that blacks were more likely to inaccurately classify nonwarning signs as warning signs. Again, this finding suggests that there might be a knowledge differential in terms of symptom recognition among the races.

Racial Differences in Health Care Behaviors Among Military Personnel

The United States military provides a unique opportunity to assess health behaviors among diverse groups. Active duty individuals in the military have access to quality health care at no cost and their immediate families have the same access to health care at little cost. Thus, examining the utilization patterns of the active duty group is paramount. A few studies have been conducted with military personnel and their families and differences have been found between minority participants and their Caucasian counterparts.

Nedegaard, Sbrocco, Posten, and Lewis (1995) conducted a study to determine the health care utilization and risk behaviors among African Americans and White military personnel. Seven hundred thirteen African American and Caucasian male and female active duty Air Force personnel were administered a health risk behavior survey. Nedegaard et al. (1995) found that overall African Americans reported greater tobacco use and higher dietary fat intake. However,

they engaged in more preventive health behaviors such as exercise and breast self-exam for women. White American males exhibited more health risk behaviors such as greater alcohol intake, seat belt use and speeding.

In conclusion, there have been numerous studies focusing on the relationship of SES, race/ethnicity, and health outcomes (i.e. cardiovascular disease, cancer). Race/ethnicity has been demonstrated to be an important moderator in the SES and health pathway. Traditional indices of SES incorporate educational attainment, occupational status, and income. Consequently, SES encompasses a number of factors that may independently impact health care. In order to further understand and effectively address the influence and impact of race/ethnicity on health care access, an environment where universal access to quality health care services would be ideal. The United States military provides such an environment.

The specific aim of this project was to address self-reported health care utilization and delay in health care seeking among United States active duty personnel. Military participants were chosen because they have universal access to quality health care thereby removing healthcare access as a major barrier to utilization. In addition, using military rank and family size, SES can be quantified and examined among this population. With these factors removed, it was expected that cultural differences in health care utilization would remain. Specifically, it was expected that, despite equal access to health care, African American and Hispanic enlisted personnel would exhibit a longer delay in seeking health care than their Caucasian counterparts. This finding in and of itself would be important as it would suggest that there are other important differences that impact care seeking and that delay is not solely due to financial differences or availability of quality care.

Two potential explanatory variables were also examined: health care knowledge and worry/concern about health related symptoms. These factors are hypothesized to play a key role in the first stage of the Cognitive Stages of Accessing Health Care Model (See Figure 2). An individual must have a certain level of understanding and knowledge of their bodily symptoms, warning signs and symptoms of illness and the health care system. Knowledge of illness was operationalized as knowledge of cancer warning signs and knowledge of Type 1 and Type 2 diabetes warning signs. It was expected that there would also be differences in the knowledge of symptoms for both cancer and diabetes between African Americans, Hispanics and Caucasian participants with African Americans and Hispanics accurately recognizing fewer of the warning signs for both diseases. In addition, it was expected that African Americans and Hispanics would worry less about health-related symptoms since research has shown that they present later for many symptoms (e.g. cardiac symptoms). These results have implications for better understanding of cultural differences in health care utilization and may provide a foundation for future studies to improve health care seeking and health promotion both within the U.S. military and the civilian sector.

RESEARCH DESIGN AND METHODS

Participants answered a series of questions related to their knowledge of disease and health behaviors. Differences in symptom recognition and treatment seeking were compared across ethnicity while controlling for age, rank, education, health care knowledge, and worry about illnesses.

Study Sample

One thousand four hundred and thirty-three enlisted personnel from a Marine command in Southern California were asked to participate. Women and men were encouraged to

participate as well as all ranks of enlisted personnel. Active duty U.S. military officers were excluded from the study in order to make the sample relatively homogenous with regard to SES. Of the 1,433 individuals asked to participate, 325 (23%) individuals completed the survey. Participants were solicited from tenant commands on the base. A tenant command is a smaller unit on the military base that has a certain assigned task in a military operation. For example, the civilian equivalent would be a smaller department that handles billable accounts within a larger company.

Upon completion on the survey, each participant received a Certificate of Appreciation (See Appendix H), which represents the Letter of Commendation (See Appendix I). The Letter of Commendation (LOC) was provided as incentive to participate in the study. The LOC is a memorandum documenting volunteer efforts on the behalf of the service member given by the highest-ranking officer on the base. Receipt of the LOC is put on the individual s evaluation report, which goes into their permanent military record and can aid in promotions.

Measures

Each participant received a packet of 5 questionnaires. These measures were chosen to examine disease specific knowledge as well as delay in health care utilization.

1. Demographic information. Each participant was asked to report age, gender, ethnicity/race, and rank. Participants were also asked to describe their current use of the medical system. The current use of the medical system involved questions regarding frequency of physician visits in the last year, the frequency of times a physician visit was needed but not initiated, and the influence of their occupation in preventing them from seeking medical care. A copy of the demographic information solicited can be found in appendix A (See Appendix A). Race/ethnicity data were collected using categories comparable to the United States Census data

collection system. Individuals were given the option of marking more than one ethnicity if they were of mixed heritage. Military rank is a system instituted by the United States military that is determined by occupational level and years in military service. Rank along with marital status, years in service and number of dependents also determine income. It is important to recognize that annual income does not include benefits received by military personnel such as health insurance, housing, and dependent allowances. The main categories of rank are enlisted (E1-9) and officer (O1-10). Only enlisted individuals were used in this study. The enlisted rank scale ranges from E1 to E9. The higher the individuals rank, the more responsibility and duty the individual is given. Midway through the ranks, individuals may be placed in supervisory roles.

2. Health care vignettes and rules. In order to measure delay in accessing appropriate care for a specific illness or ailment, participants were asked to complete a survey indicating what types of action they would take in response to medical symptoms. The survey is provided in appendix B (See Appendix B). The survey was developed for this study. The development of this questionnaire included forming a general hypothesis about specific barriers to health care relevant to the general population as well as barriers to care that might be specific to ethnic minorities. Initially, 35 vignettes were developed to examine care seeking and delay behavior. Each vignette consists of a specific warning sign or common ailment. The respondent indicated their typical behavioral response to the sign or symptom as well as the amount of time (in days or months) that they would typically take to initiate action (i.e., contact the health care professional). The items were categorized into eight major medical topic areas: Common Cold, Minor Injury & Illness, Warning Signs for Cancer, Diabetes, Cardiac Symptoms, Back Pain, Mental Health and Decisions to Seek Care. Sample items for each category are listed in Table 1(See Table 1). There are no reliability and validity data for this survey.

Three faculty members and 10 graduate fellows in the Departments of Medical and Clinical Psychology and Family Medicine reviewed all of the questions. Thirty versions were created during the questionnaire design phase to insure content and face validity, readability and clarity. Modifications were made based on the group s recommendations. The final survey contained 24 vignettes with questions related to eight subtopic areas: common cold (e.g. you begin to have symptoms of a cold and the symptoms last for three days), minor injury & illness (e.g. during your normal exercise routine, you feel a sharp pain and it feels like you have pulled something), warning signs for cancer (e.g. you have a persistent cough with blood in your mucous that lasts over two weeks), diabetes (e.g. when coming home from the grocery store you notice that traffic signs are blurry), cardiac symptoms (e.g. Every time you work around the house all day, you notice that you begin to feel a tight pain in your chest and you start breathing faster. Also, your throat becomes scratchy), back pain (e.g. if you hurt your back and woke up the next morning in pain, would you go to the physician immediately), mental health (e.g. you are under a lot of pressure and stress at work and you are having financial and relationship problems; you feel down most of the day, have lost interest in fun activities, are unable to concentrate and sleep for 2-3 weeks), and decisions to seek care (e.g. do you feel that you need to see a physician for MOST injuries or pains in order to prevent unnecessary or further damage ; See Table 1).

The health care rules and vignettes do not yield a quantifiable delay or health care utilization score. However, a pattern of delayed health care seeking can be examined from the types of responses the participant selects (i.e. the wait it out response). The health care rules and vignettes are qualitative measures. Currently, there are no reliability and validity data available for this questionnaire.

3. Worry Questionnaire. The Illness Attitudes Scale (IAS; Kellner, 1986) was used to measure overall health-related worry and concern. The IAS is a 29-item survey that assesses general fears, beliefs, and attitudes associated with hypochodriasis (Kellner, 1986). The scale is provided in appendix C (See Appendix C). Battistella (1971) found that persons who worry about their health are more likely to initiate care seeking. Therefore, it is conceivable that worry or health concern may be an explanatory factor in health care utilization.

The IAS has nine subscales, which include assessment on the following constructs: worry about illness (e.g. concern over general health and of an imminent serious illness), concerns about pain (e.g. concern over previous pain experienced and the indication that pain signifies a serious illness), health habits (e.g. do you avoid smoking & harmful foods and do you examine your body for symptoms), hypochondriacal beliefs (e.g. belief that the physician has missed the symptoms of a serious diagnosis and that a new illness will develop), thanatophobia (e.g. fear of death), disease phobia (e.g. fear of cancer, heart disease or another serious illness), bodily preoccupations (e.g. hearing about an illness causes you to experience those same symptoms, you are experiencing difficulty concentrating due to bodily symptoms, and constant worry over these bodily symptoms), treatment experiences (e.g. how frequent you have seen a health care professional, the variety of health care professional seen and the number of times treated), and the effects of symptoms (e.g. the influence your bodily symptoms have over your daily activities, concentration, and enjoyment). Each subscale has three questions and responses are made on a 5-point Likert scale anchored by 0, no worry, and 4, extreme or constant worry. High scores on all of the subscales indicate that the person experiences excess worry over many general and normal health concerns. The IAS has been used with medical patients and has been validated on patients with hypochondriasis, matched family practice patients and a non-clinical population

(Ferguson & Daniel, 1995; Kellner, 1986). The IAS appears to be sensitive in detecting hypochondriacal patients (Kellner, 1986; Speckens, Van Hemert, Spinhoven, & Bolk, 1996). Confirmatory factor analysis has also been conducted with the IAS on a non-clinical sample (Hadjistavropoulos, Frombach, & Asmundson, 1999). In the general population the IAS has a Cronbach s alpha of .87 and .80 for the health anxiety and illness behavior subscales, respectively (Speckens, Spinhoven, Sloekers, Bolk, & Van Hemert, 1996). The IAS has not been previously used with a military population.

4. Knowledge of Cancer Warning Signs Inventory. The Knowledge of Cancer Warning Signs inventory (KCWSI; Berman & Wandersman, 1991) was given to assess the participant s knowledge of the symptoms of cancer. The KCWSI is a 25-symptom questionnaire (See Appendix D) with a 4-point Likert scale format (0 = not a warning sign, 1 = possibly a warning sign, 2 = probably a warning sign, and 3 = surely a warning sign). There are seven correct warning signs as adapted from the American Cancer Society s screening instruments (Berman & Wandersman, 1991). Three scores for each participant can be derived from the KCWSI: basic recognition of cancer warning signs (BRCWS), nonwarning signs perceived as warning signs (NSPWS), and accurate knowledge of cancer (AKC). The BRCWS score is derived from probability judgments based on the Likert scale format. This score indicates the participant s ability to identify some of the actual cancer warning signs, but does not take into account the accuracy of their responses. The NSPWS score indicates the participant s recognition of the wrong symptoms as warning signs for cancer. The AKC score indicates the participant s ability to actually distinguish the accurate symptoms of cancer, from the wrong answers. The false positive answers are subtracted from the participant s raw score. This score

indicates the participant s actual recognition of the correct symptoms as warning signs for cancer. No reliability and validity data were given for the KCWSI.

5. *Diabetes Warning Signs Questionnaire (DWS).* The diabetes warning signs questionnaire (DWS) was developed for this study to evaluate the participant s knowledge of the symptoms of diabetes and can be found in Appendix E (See Appendix E). It was modeled after the KCWSI. The 25 items on the DWS were developed based on the warning signs disseminated by the American Diabetes Association. The 25-symptom list includes fourteen accurate warning signs for both Type 1 and Type 2 diabetes. The participant must indicate on a 4-point Likert scale the probability that the symptom is a warning sign of diabetes. There are no subscales within the DWS. Each participant receives a score for the accurate recognition of diabetes warning signs. The accurate knowledge of diabetes score (AKD) is calculated by summing the number of correct warning signs the individual marked. Scores range from 0 to 42, with higher scores indicating more warning signs detected. There is no reliability and validity data for this questionnaire.

Procedure

Approval from the university s Institutional Review Board (IRB) was obtained. Electronic mail and phone contact were made to the point of contact command officer at the Marine base. A copy of the electronic mail can be found in the appendix (See Appendix F). A letter of support was provided to the principal investigator from the site before the research was undertaken.

After the command agreed to participate, a meeting date was scheduled with the point of contact, and the researchers went to the military base to administer the survey. A research team of 2 traveled to the command to collect data over a 5-day period. The research team consisted of

the principal investigator, a civilian graduate student, and a military officer, a United States Navy Lieutenant.

The point of contact person publicized the study and recruited participants on the days the survey was administered. The survey was administered to a group of active duty enlisted personnel in a classroom setting in the presence of the researchers. In order to insure participants did not feel coerced to participate, no command personnel were present during the administration of the survey.

The researchers introduced themselves and then explained the purpose of the survey. The participants were told that the purpose of the study was to examine knowledge of disease and health care access behaviors of military personnel. One of the researchers gave the instructions on how to complete the survey. A letter was given to each service member to read prior to beginning the survey. The letter is provided in Appendix G (Appendix G). The letter described the purpose of the study. Questions were solicited and answered before the survey was administered. All participants were instructed that participation was voluntary and that they may refuse to participate or withdraw without penalty or loss of military benefits at any time. The participants were reminded not to record their name on the survey. All of the surveys were anonymous, thus written and signed consent forms were not needed.

Upon completion of the survey, each questionnaire packet was quickly scanned to insure that it was filled out correctly and that it remained anonymous. The survey was placed in a drop box before recording the participant s name and social security number on a separate listing. For his or her participation, each respondent received a Certificate of Appreciation. The name and social security number were needed for the presentation of a Certificate of Appreciation, which represents the Letter of Commendation.

As each participant completed the survey, they were given a pamphlet adapted from the American Cancer Society and the American Diabetes Association with the actual warning signs for cancer (Section 1: Signs and Symptoms of Cancer brochure, American Cancer Society, 1998; See Appendix J) and diabetes (First Things First: What is Type 1 Diabetes brochure and First Things First: What is Type 2 Diabetes brochure, American Diabetes Association, 1999; See Appendices K and L, respectively). In the pamphlet, the participant was encouraged to see their health care provider if they were experiencing any of the warning signs or symptoms.

Results

Study sample

Of the 1,433 individuals asked to participate by the tenet command physician, 1108 (77%) declined to participate. Three hundred twenty-five (23%) individuals completed the survey. Two hundred ninety-seven males (91.4%) and twenty-eight females (8.6%) completed the survey. Data from the female personnel were collected however these data were not analyzed as part of the current study. Information from 295 males on age and marital status by ethnicity are presented in Table 2 (See Table 2). Information on military rank, years of military service and income by ethnicity are presented in Table 3 (See Table 3). Data were examined from ethnic groups that included more than 20 participants. Thus, data from Hispanic/Latino Americans, African Americans, and Caucasians were analyzed for this study. Of the 295 male participants, approximately 290 (96%) individuals were included in these analyses (e.g. computer software excludes individuals with missing data, thus number of individuals in each analysis varies).

For purposes of these analyses, participants who were of mixed heritage and marked two Hispanic/Latino categories (e.g. Puerto Rican and Mexican), were considered Hispanic/Latino.

Participants that marked their heritage as African American and Hispanic or African American and Caucasian were not included in analysis comparing those two groups (e.g., group comparisons of African American vs. Hispanic). When comparisons of minority vs. non-minority (i.e., majority) were made, African American and Hispanic/Latino were collapsed into one category and compared with Caucasians (i.e. non-minority/majority category). Individuals in the other category of Tables 2 and 3 included participants of all other ethnic categories (e.g. Filipino, Japanese, Chinese, etc.; See page 2 of Appendix A for complete list of U.S. Census racial/ethnicity categories).

The mean age for the overall sample was 22.86 years (SD= 4.14, range 18 years to 43 years). Sixty-four percent (n=183) of the sample was Caucasian, 25.5% (n=73) was Hispanic/Latino American, and 10.5% (n= 30) was African American. Sixty-two percent (n=176) of the sample were single and 32.2% (n=92) were married. (See Table 2).

The range of ranks was E1 to E9. Sixty-five percent of the sample had a rank of E3 or E4. The mean number of years in the armed services was 3.61 years (SD=3.60, range 1 to 25 years). See Table 3. There were no differences between the racial groups in terms of years of services, (F (2, 278) = .50, p = .61) or between minorities and non-minorities (t (240)=-1.51, p=.13). It is important to note that, as expected, in the military rank and years in services are positively correlated. The mean yearly income of the sample was $16, 761 (SD= $3997, range $11,163 to $44,107). The median income was $15, 584. It is important to recognize that annual income does not include benefits received by military personnel such as health insurance, housing, and dependent allowances. There were no differences by ethnicity in terms of yearly income (F (2, 279) = .42, p = .66). Years in service and income are also positively correlated.

Thus, the typical participant was in their early twenties, single with no dependents, and had served 3-4 years in the armed services.

Current Use of the Medical System

Participants were asked a series of questions concerning their current use of the medical system and if their were barriers to using the system. Four outliers were excluded. These were individuals marking greater than 50 times a doctor was needed but not consulted.

Over the past 12 months, participants had visited their physician approximately 4 times (M=3.73, SD=4.51). Twenty-one percent of the subjects also indicated that, approximately 1-2 times over the past 12 months, they had needed to visit their physician but did not visit (M=3.32 times doctor visit needed but not consulted, SD=7.68). Seventy-five percent (n=213) of respondents indicated that the nature of their work did not prevent them from using health care services they would otherwise use. There were no differences found by ethnicity.

Knowledge of Disease

Mean scores on the knowledge of cancer warning signs and diabetes warning signs by racial/ethnic groups were compared using a one-way analysis of variance. Mean scores for the cancer and diabetes knowledge measures are presented by ethnicity in Table 4 (See Table 4). There were no differences by ethnicity on knowledge of cancer (F (2, 258)=.29, p = .29) or knowledge of diabetes (F (2, 272) = .19, p = .83) warning signs. All participants had little knowledge of the key disease symptoms for cancer and for diabetes.

Attitudes towards Illness

Means for the nine subscales of the IAS are presented by ethnicity/race in Table 5 (See Table 5). There were differences by ethnicity on the worry about illness subscale (F (3, 289) = 3.90, p < .05). An HSD test was performed and it was determined that the mean worry about

illness score for African Americans (6.10) was significantly higher than the mean worry score for Caucasians (4.44). Thus, African Americans worried more about illnesses than their Caucasian counterparts.

A trend was found between Hispanics and African Americans as compared to Caucasians on both the concern about pain (F (3, 286) = 2.40, p =.07) and the effects of symptoms subscales (F (3, 290) = 2.34, p =.07). Africans Americans and Hispanics scored higher than Caucasians on both of these subscales. All groups did not exhibit concern that minor pains are indications of underlying disease. Also, all groups did not believe that their bodily sensations or symptoms would interfere with their daily activities.

Differences were found by ethnicity on the health habits subscale (F (3, 287) = 3.28, p < .05). Higher scores on this subscale indicate engaging in healthy lifestyle activities such as not smoking, avoiding unhealthy foods and paying close attention to abnormal bodily symptoms. Hispanics (t(250)=2.47, p<.05) and those individuals in the other category (t (188)=-2.21, p<.05) scored higher on the health habits subscale than Caucasians. The mean health habits subscale score for African Americans fell in between the scores for Hispanics and Caucasians.

African Americans scored higher than all other groups on the thanatophobia subscale (F (3, 287) = 10.26, p < .05). Higher scores on this subscale indicate a greater fear of death. An HSD test was performed and it was determined that the mean fear of death score for African Americans (4.21) was significantly higher than the mean fear of death score for Caucasians (1.62) and Hispanics (2.22). Thus, African American males in this study had a heightened fear of death.

Again, differences were found between the ethnic groups on the disease phobia (F (3, 284) = 6.59, p < .05) and bodily preoccupations subscales (F (3, 287) = 6.80, p < .05). African

Americans scored higher on both the disease phobia (t (32)=3.01, p<.05) and bodily preoccupations (t (207)=4.84, p<.05) subscales than Caucasians. Hispanics demonstrated a similar pattern on the disease phobia (t (43)=-2.15, p<.05) and bodily preoccupations subscales (t (100)=-2.73, p<.05) when compared to African Americans. African Americans scored almost twice as high as Hispanics on the disease phobia subscale, which indicates that they were more fearful they may have a specific disease that is undiagnosed. On the bodily preoccupations subscale, a higher score indicates an increased sensitivity to bodily sensations and media information about diseases. Thus, African Americans were more concerned about bodily symptoms and media information than their Caucasian counterparts.

Interestingly, there were no differences in treatment experiences in the medical setting between ethnic groups (F (3, 283) = .22, p = .88). The treatment experience subscale measures frequency of physician visits, number of different health care providers (e.g. specialists, chiropractors, other healers, etc.) and number of medical treatments in the last year (e.g. drugs, surgeries, change of medication). The treatment experience subscale does not measure the quality of physician-patient relationship/experience.

Health Care Rules and Vignettes

Results of the health care rules and vignettes survey are presented by eight major medical topic areas: Common Cold, Minor Injury & Illness, Warning Signs for Cancer, Diabetes, Cardiac Symptoms, Back Pain, Mental Health and Decisions to Seek Care (See Table 1). The patterns of responses were examined by ethnic group to determine if there were differences in responses to these common illness situations. Each response item on the health care vignettes and rules questionnaire was considered a category in the chi-square analysis. For example, an item describing a back pain scenario would have four typical behavioral responses (i.e. take a

bath , take a few aspirin , visit the doctor , or wait it out). These four behavioral responses would be considered a distinct category in the chi-square analysis. Thus, comparisons on each of the nominal items (i.e. behavioral responses) on the questionnaires were analyzed. If an item was statistically significant, further chi-square analyses were conducted to determine what accounted for differences. For each item on the health care rules and vignettes questions, a table was created to depict the response rate by ethnicity for the symptom. The tables represent a breakdown of each question on the survey, and the percentage of respondents by ethnicity for each category of responses. The tables are referred to in each section and are included in the appendices.

All other questions on the health care rules and vignettes that had continuous responses (e.g., how long would you wait before seeing the doctor?) were analyzed using independent samples t-test procedure. The results are presented by the eight major medical topic areas: Common Cold, Minor Injury & Illness, Warning Signs for Cancer, Diabetes, Cardiac Symptoms, Back Pain, Mental Health and Decisions to Seek Care.

Common Cold

The responses given to the common cold symptoms are presented in Table 6. (See Table 6). There were no significant differences in the responses of the participants by ethnicity with respect to common cold symptoms (See Table 6). The most frequent response for all groups was taking over-the-counter medications (37.5%) and wait it out (40.7%). Most participants reported that they could handle these symptoms on their own. Table 7 summarizes responses to the prompt experiencing a sore throat. Hispanics, African Americans and Caucasians differed in the timeframe they responded to this symptom. Interestingly, about half of the Caucasian respondents (48%) said they would not seek help compared to 41% of Hispanics and 33% of

African Americans (See Table 7). Table 8 depicts the reasons for seeking care for a sore throat (See Table 8). Of the individuals that would seek care for a sore throat , 38% would seek that care because they were worried about having another more serious illness. The reasons for seeking care for a sore throat differed by ethnicity (See Table 8). Table 9 depicts the timeframe individuals would delay seeking care for a sore throat. There were no differences by ethnicity for delaying care when having a sore throat (See Table 9).

Minor Injury & Illness

There were significant differences among ethnic groups on questions concerning minor injury. The minor injury and illness category included questions concerning bruises, sun sickness, sharp pains after exercise and toothaches. Table 10 depicts the behavioral responses to noticing a bruise from a bump on the head. Results indicated that after noticing a bruise, 50% of Caucasians were more likely to wait, whereas Hispanics (47%) and African Americans (53%) were more likely to use an ice pack (See Table 10). Table 11 describes the responses to experiencing sun sickness symptoms by ethnic category. For sun sickness symptoms, approximately 40% of African Americans and Caucasians would ignore the symptoms. However, only 23% of Hispanics would ignore sun sickness symptoms (See Table 11).

Table 12 depicts the responses to experiencing a sharp pain after exercising. Sharp pain after exercising was most likely followed by discontinuing the exercise for all groups (See Table 12). Further analyses were conducted by comparing each of the ethnic minority categories to each other and to Caucasians. Table 13 depicts the follow-up chi-square test for experiencing sharp pain. Follow-up chi-square test indicated that there was a significant difference between African Americans and Caucasians ($_^2(1)=9.51$, $p<.05$). Sixty-one percent of African Americans and 32% of Caucasians would seek care for experiencing a sharp pain. Approximately 70% of

Caucasians would ignore this sharp pain (See Table 13). Table 14 illustrates the responses to persistent pain after an exercising routine. Sixty-three percent of African Americans would wait less than 4 days to seek care for a sharp pain due to exercise, compared to approximately 40% of Caucasian and Hispanic males wait time over the same ailment (See Table 14).

Finally, table 15 depicts the level of pain needed to experience before seeking care for a toothache. Level of pain was examined by a 7-point Likert scale with 1=mild pain, and 7=severe pain. For a toothache, 33% of African American males indicated that they would have to experience a moderate pain to seek care. Caucasian (31%) and Hispanic (32%) respondents indicated that they would have to experience a pain moderately severe pain before seeking care (See Table 15). Table 16 illustrates the behavioral responses to experiencing a toothache by ethnic group. Two-thirds of the respondents in all groups indicated that they would take measures to heal themselves when experiencing dental pain (See Table 16).

Warning Signs for Cancer

The health care rules and vignettes had two scenarios that demonstrated a warning sign for cancer. Table 17 depicts responses for an unhealed bruise. For an unhealed bruise, approximately 50% of Hispanic and Caucasian males would wait it out compared to only 33% of African American males who would wait. Over 40% of African American males would call their physician if a bruise did not disappear after 5 days (See Table 17). Table 18 depicts another warning sign of cancer, a persistent cough accompanied by blood in the mucous. Approximately fifty percent of African Americans & Caucasians and only 36% of Hispanics would consult their physician immediately for a persistent cough with blood in the mucous (See Table 18).

Warning Signs for Diabetes

The health care rules and vignettes had four scenarios that demonstrated a warning sign for diabetes. Table 19 illustrates responses to experiencing extreme fatigue. After experiencing extreme fatigue, over half of the respondents in each group would get more rest (See Table 19). Table 20 depicts responses to having blurry vision and Table 21 depicts responses to experiencing a loss of peripheral vision. Responses given to experiencing blurry vision and loss of peripheral vision indicate that African American and Hispanic respondents would most likely ignore these symptoms and delay seeking care while less than one-quarter of Caucasians would ignore the same symptoms (See Tables 20 and 21). Table 22 depicts responses to experiencing diabetes-warning symptoms. When presented with the warning signs of diabetes, over 30% of Caucasian respondents would call their physician, compared to less than 20% of Hispanic and African American males (See Table 22).

Cardiac Warning Signs

There were seven cardiac warning symptom vignettes. The cardiac symptoms included persistent headache, arm tenderness, chest pain, indigestion accompanied by dizziness, vomiting, and shortness of breath. Table 23 depicts responses to having a persistent headache. In response to having a severe, persistent headache, there were no differences between the groups in their response to seeking care. Approximately 50% of individuals in each group indicated that they would call their physician (See Table 23). Table 24 depicts responses to experiencing tenderness in the arms. For tenderness in the arms, 40% of African Americans compared to 20% of Caucasians responded that they would massage their arms while 36% of Hispanics indicated that they would ignore the symptoms (See Table 24). Table 25 depicts responses to seeking care for chest pain symptoms. Interestingly, when experiencing actual chest pain symptoms, over one-third of Caucasians stated that they would call their physician, compared to

only 17% of Hispanics and 23% of African Americans who would do the same (See Table 25). Table 26 depicts the follow-up chi-square test for experiencing chest pain symptoms. Follow-up chi-square test indicated that there was a significant difference between Caucasians and Hispanics ($_^2(1)=6.51$, $p<.05$). Compared to Caucasians, Hispanic respondents were more likely to seek timely care (See Table 26). Table 27 depicts responses to experiencing indigestion and Table 28 depicts responses to vomiting after a large meal. There were no differences between groups in response to experiencing indigestion accompanied by dizziness (See Table 27) or vomiting after a large meal (See Table 28). Finally, Table 29 depicts responses to experiencing shortness of breath. In response to the shortness of breath vignette, there were no differences between the groups (See Table 29).

Back Pain

Table 30 depicts responses to sharp back pain symptoms. African Americans were more likely to report taking a bath or waiting it out when experiencing sharp back pain (63.3%). (See Table 30). Hispanic respondents were more likely to rest or wait it out (69.8%) and Caucasians were more likely to rest when experiencing sharp back pain (46.4%) ($p<.01$). Tables 31, 32 and 33 depict follow-up chi-square tests back pain symptoms between ethnic groups. Follow-up chi-square tests indicated significant differences between African American and Caucasian respondents for sharp back pain ($_^2(1)=5.62$, $p<.05$). Sixty-eight percent of African Americans compared to 45% of Caucasians would seek timely care for sharp back pain (See Table 31). Also, when compared to Caucasians, Hispanics (63%) were also more likely to seek timely care for back pain symptoms (See Table 32). However, when Hispanics were compared to African Americans, 60% of Hispanic respondents were more likely to ignore symptoms (See Table 33). Table 34 illustrates the responses to seeking care immediately for acute back

pain. Seventy-eight percent of Caucasian responded that they would not seek care immediately for acute back pain, while only 60% of African Americans and Hispanic indicated that they would not seek care for the same symptom (See Table 34). Table 35 depicts the responses to delaying care for back pain. Approximately one-quarter of Caucasian respondents would wait 7-14 days before seeking care for back pain, whereas African Americans and Hispanic were more likely to wait less time before seeking care (See Table 35). Table 36 depicts responses to experiencing persistent back pain. There were no differences by group in responses to experiencing persistent back pain (See Table 36). Finally, Table 37 depicts responses to a back injury. Approximately 80% of members of all groups were likely to self-medicate when experiencing a back injury (See Table 37).

Mental Health

Minorities and Caucasians responded differently to the question on mental health. Concerning depressive symptomatology, all groups chose rest with the same frequency. Caucasians and Hispanics were more likely to talk with a friend and African Americans were more likely to think nothing of it. Table 38 represents responses to experiencing depressive symptomatology. Interestingly, Hispanic Americans were more likely to talk with a physician while African Americans were more likely to talk with someone from the command (See Table 38). Table 39 depicts responses to seeking care for depressive symptoms. In terms of seeking care for depressive symptomatology, approximately 50% of Hispanics would wait 1-2 months before seeking care and 35% of African Americans would not seek help at all (See Table 39).

Decisions to Seek Care

Finally, there were three questions regarding the decisions to seek care. Table 40 depicts responses to seeking care for a minor ailment. When asked if an individual would seek care for a minor ailment (i.e. sore throat), approximately 90% of respondents from all groups indicated that they would self-medicate (See Table 40). Table 41 depicts responses to level of pain experienced before seeking care. There were no differences between ethnic groups in the level of pain needed in order to seek care (for back pain; See Table 41). Finally, Table 42 represents responses to seeking care to prevent injuries. African Americans compared to Hispanics and Caucasians were split (50%) in their response to seeing a physician for prevention of most injuries (See Table 42).

DISCUSSION

It has been well documented that ethnic minorities, particularly African Americans and Hispanics delay seeking care (Bailey, 1987; Ell et al., 1994; Lauver, 1994). The importance of timely access to care is of paramount interest in reducing the burden of diseases in these groups. Socioeconomic and financial barriers have been cited as the main reasons these groups have not sought immediate care. The current study used a military sample to examine health care utilization because the United States military provides an environment where all individuals have access to quality health care regardless of income.

The major findings of this study were that there were no differences in knowledge of cancer and diabetes symptoms among the racial groups. Also, there were no differences in treatment experience in the medical setting among the racial groups. So, all participants had the same amount of knowledge of disease symptomatology and had the same amount of contact with a health care professional in the last year. However, differences in concern about bodily symptoms were found between minorities and Caucasians, with ethnic minorities showing higher

concern about bodily symptoms, worry about illnesses, and concern about disease. For health care seeking, ethnic minorities tended to delay care for many chronic illness warning signs including: experiencing blurry vision or loss of peripheral vision more than for acute symptoms of pain (i.e. sharp lower back pain. Interestingly, as pain or symptoms persisted minorities were more likely to delay their care. Finally, African Americans, in particular, were more likely to ignore depressive symptoms.

Thus, this investigation demonstrates that financial barriers are not the sole source of delayed care in these groups. There was an overall low knowledge of disease symptomatology by all groups. Despite all participants having a low knowledge of the warning signs of cancer and diabetes warning symptoms, Caucasian respondents sought immediate care for cancer and diabetes symptoms when presented in the health care vignettes. Although, Hispanics and African Americans delayed seeking care for chronic symptoms such as blurry vision, they actively sought immediate care for acute symptoms such as back pain. Both African American and Hispanic individuals suffer from complications associated with many chronic diseases (i.e., cancer, hypertension, diabetes). The fact that many ethnic minorities are presenting later for treatment for many preventable and treatable diseases suggests this study s findings of delayed care seeking for these ailments may be important.

Evidence that many of the ethnic minority individuals in this study reported delaying care, despite equal access, elucidates the importance of understanding the role of culture in health care seeking behavior. Culture is transmitted across generations. Individuals who are raised in a society slowly acquire the cultural lens of that society (Helman, 1990; p.10). Importantly, most individuals do not view their perspective as a cultural perspective but instead

see their behavior and beliefs as universal, normal and correct leaving those of others to be misguided or different, at best (Kumanyika & Morssink, 1997).

So, despite having access to military health care, each individual enters the military with a specific culture and a specific social learning history related to their health and to taking care of disease. Experiences and expectations are based on family models, which are influenced by a host of factors including culture, tradition, and social learning history. Many of the ethnic minority individuals from 1st generation to 5th or 6th generation have different standard of health care experiences. For example, the son of a recently immigrated Mexican family may grow up with a view that herbal medicine is the first step towards healing. Or, a 6th generation Cuban American family may feel that seeking counsel from the religious community may be the first step in health care and an African American family may equate going to the hospital with death because every family member that finally went to the hospital died shortly after being admitted. Thus, culture and social learning history may be the key in order to understand why ethnic minorities, that have been exposed to the Western medicine philosophy yet they still do not seek care when that care is universally available.

Angel and Thoits (1987) have proposed that individuals inherit structured vocabularies of health and illness from their culture, that is, the presentation of symptoms is learned and passed down to the next generation. This idea has been more recently acknowledged by the field of medicine in the promotion of cultural competency among health care professionals. This refers to the need for health care professionals to recognize that culture can impact health and health care in a variety of ways including symptom presentation, health care seeking, beliefs about healing and acceptance of specific treatment modalities. As clinical medicine struggles to teach and direct cultural competency, health care researchers and policy makers also need to

become culturally competent in the study of health care access and utilization. From this perspective, many of the seemingly illogical findings are potentially explainable. For example, consider this study s finding regarding disease knowledge.

Thus, why would African American and Hispanic respondents, who overall by group have an increased incidence of diabetes and late stage diagnosed cancers, decide to delay care for these symptoms? It is possible that when there is an increased incidence of disease in an individual s reference group, the symptoms may not seem as serious (Angel & Thoits, 1987). This may explain why certain cultural or ethnic subgroups might delay care for chronic symptoms. In essence, an individual s reference group members provide the necessary feedback as to seeking care for a particular set of symptoms. For example, if several family members or neighbors are overweight and have had medical complications (i.e. lost a limb) secondary to Type 2 diabetes, than the occurrence of Type 2 diabetes in this individual might not cause the person to seek immediate care. They see these problems as normal or part of life. Thus, it is important to recognize the influence of the individual s cultural reference group.

Another possible explanation for delayed care seeking for chronic ailments might be the ability to continue to work whereas with an acute pain the ability to work and take care of the family may be compromised. Since African American and Hispanic males in this study had a greater concern about pain, worried more about illnesses, and were more concerned about the effects of those symptoms, it does not seem illogical that they would seek immediate care for acute pain symptoms, so that they would be able to return to work immediately to take care of their family.

Another possible explanation for delayed care seeking may be related to a finding in Bailey s work (1987). Bailey found that African Americans relied on the use of self-care for

many symptoms. Currently, there has been an increased use among the general population of complementary and alternative medicine. Complementary and alternative medicine use in minority populations has been characterized as equal to or possibly greater than their Caucasian counterparts (Pachter, Sumner, Fontan, Sneed, & Bernstein, 1998). The use of alternative medicine use in minority populations has been found to be used for diabetic (Berman, Swyers, & Kaczmarczyk, 1999) and arthritic (Arcury, Bernard, Jordan, & Cook, 1996) symptoms as well as a variety of other symptoms and prevention (Cushman, Wade, Faactor-Litvak, Kronenberg, & Firester, 1999). Thus, it may be possible that delayed health care seeking in minority groups may be related to the increase use of complementary and alternative medicine in alleviating symptoms.

It is interesting to note that African American males in this study had a greater fear of death than Hispanic American and Caucasian respondents despite all individuals being in the military. This finding might be related to the fact that young African American males have the highest homicide rate of all groups (O Donnell, 1995). Data from 1990, found that more young African American males (between 15 and 24 years) died from homicide than from all natural causes combined (Friday, 1995). Thus, the current finding might be related to the very real fear of sudden death young African American males face outside of the military environment. Again, their social learning history comes into play.

Historically, ethnic minorities have not had equal access to quality health care services. Looking back over the past 40 years of American medicine, ethnic minorities usually did not seek care until their condition worsened. Segregated health services and hospitals led many minorities to believe that they received a standard of care differential care. Even today, differential treatment of ethnic minorities by health care professionals has been documented in a

number of recent studies (Chung, Mahler, & Kakuma, 1995; Melfi, Croghan, Hanna, & Robinson, 2000). Thus, the faith many ethnic minorities have in the medical care system has been tainted and many of these beliefs have been passed down to the next generation (i.e. social learning history).

It is no surprise to us that a person who expects physicians to be pleasant and has faith in physicians ability to treat medical problems, for example, would seem more likely to seek medical care than one who expects a less pleasant interaction or who has questions about the competency of medical professionals (Ditto, Moore, Hilton, & Kalish, 1995). However, many ethnic minorities do not have the same feeling of trust in the health care system. They may feel that they are not treated the same or that their problems are not as important to the medical professional. And, unfortunately this fear or mistrust may have some credence. A recent study found that physicians tended to perceive African Americans and members of low and middle SES class patients negatively on a number of dimensions when compared Caucasian counterparts (vyn Ryn & Burke, 2000). Thus, providing health education for ethnic minority patients, as well as cultural competency standards for health care providers may be the next step in improving utilization. It is clear that both researchers and policy makers need to look harder at the role of culture and learning history in order to begin to understand health care disparities.

Study Limitations

Despite the number of important findings in this study, there are a number of limitations. First, this study measured intention to seek care from vignettes and not from actual physician visits. There may be a discrepancy between intention and actual health care visits. This could be addressed by validating the vignettes with data on health care usage. Also, certain ethnic categories had small sample sizes and some subgroups were collapsed. The initial intent of this

study was to categorize the health behaviors of the sub categories of ethnic minorities (i.e., Cuban American vs. Puerto Rican vs. Mexican American). Much of the past research has grouped all individuals of Hispanic descent under one catchall term of Latino or Hispanic. There are a number of distinct differences between these groups and the uncritical labeling may obscure the diversity of social histories and cultural identities of these people (Furino & Munoz, 1991; p. 253). Again, there may be differences as well as competing interests in the health care practices of first versus sixth generation Cuban Americans and Mexican Americans (i.e., the use of herbal medicine vs. community healer vs. Western medicine). However, due to small numbers of individuals in each of the subcategories of Hispanics in this study, all individuals of Hispanic descent were grouped under one category.

A third limitation is that the sample demographics (i.e., young, healthy adult males) limit the generalizability of the study. The fact that all of the individuals used in this analysis were young, Marine males limits the generalizability to women. Many women tend to seek routine preventive care every year for their gynecological exam. In the military, in particular, women are mandated to go in to see a physician for their yearly exam. So, differences may be found in the response to health care symptoms based on the yearly contact women have with the medical care system. There also may be differences between other military branch individuals (e.g., Army, Navy, Air Force) and non-military males.

Also, older individuals may be more or less likely to seek care based on their health status, social learning history, insurance coverage, as well as other potential barriers (i.e., transportation, cost, proximity to health care facility, etc.). Differences may be found between individuals who are ill or less educated. Less educated individuals may not have the health knowledge resources to seek care and differences may be found between these groups. Thus, the

generalizability of these findings to the general population may be extremely limited. Finally, although the military has equal access to care, which eliminates this variable as a confounder, this fact does interfere with the ecological validity of the study.

Relationship of current findings to previous research

The major findings of this study corroborate mush of the previous research on health care utilization and ethnic minorities. Overall these results indicated that there is still a delayed response to many important warning signals among ethnic minorities despite having access to care. This study found that there were no differences in knowledge of cancer and diabetes symptoms among the racial groups. This finding does not corroborate research by Berman & Wandersman (1991) that found that African Americans scored lower on the basic recognition of warning signs subscale. The results may differ based on the methodology used in each study. The current investigation used a paper-pencil instrument to assess knowledge of disease and the Berman and Wandersman study (1991) used an in-person interview.

Also, there were no differences found in the treatment experience in the medical setting among the racial groups. Again, treatment experience in this study was measured by a subscale of the Illness Attitudes Scale (IAS; Kellner, 1986). This subscale measures number visits to a health care professional in the last year and the number of times treatment was administered. This scale does not measure the quality of the physician-patient relationship which previous research has shown that there is a difference in the experience of ethnic minorities with physicians (Chung, Mahler, & Kakuma, 1995; Melfi, Croghan, Hanna, & Robinson, 2000). Future research should continue to explore this aspect of the health care system.

Differences in concern about bodily symptoms were found between minorities and Caucasians, with ethnic minorities showing higher concern about bodily symptoms, worry about

illnesses, and concern about disease. Based on this finding, one would hypothesize that ethnic minorities would immediately seek care. However, for health care seeking, ethnic minorities tended to delay care for many chronic illness warning signs including: experiencing blurry vision; or loss of peripheral vision; more than for acute symptoms of pain (i.e. sharp lower back pain). Interestingly, as pain or symptoms persisted minorities were more likely to delay their care. These findings corroborate research that has been well documented that despite having a severe symptom, many ethnic minorities still delay care (Ell et al.,1994; Raczynski et al., 1994).

Finally, in terms of depressive symptoms, African American males in this study were more likely to ignore these symptoms and think nothing of it whereas Caucasian and Hispanic respondents were more likely to talk with a friend when experiencing the same depressive symptoms. This finding corroborates other studies that have found that African Americans, in general, are more likely to dismiss and not seek care for depressive symptomatology due to believing that depressive symptoms may be a part of life and/or are due to a slowing of the spirit and can be alleviated through prayer (Brown, Ahmed, Gary, & Milburn, 1995; Steffens, Artigues, Ornstein, & Krishnan, 1997).

Future Research

This study was an exploratory study of health care utilization among ethnic minorities with equal access to quality care. Further research into the reasons behind the growing health disparities among ethnic minority groups should continue to be examined. In addition to self-reported intent to visit and the vignettes used in this study, future studies could examine actual health care calls and visits to a military facility as an outcome variable to quantify actual care seeking, compare care seeking for chronic versus acute ailments, and better assess the time interval from symptom onset to health visit.

Also, further examination of the reasons for utilization and the barriers to health care utilization among ethnic minorities in the military is needed. Again, because military personnel have universal access to care, another study in the military environment is a unique and valuable research setting.

Delayed health care seeking for preventable and treatable diseases among ethnic minority individuals impacts both the cost of health care and the disproportionate burden of disease. Further investigation into the health care seeking behaviors among ethnic minorities in the military may be the next step to provide a closer analysis of the impact of numerous variables (i.e. culture, social learning history, etc.) in health care decision-making.

Finally, a study examining familial history of health care utilization might be helpful in determining the important influence of social learning history in health care behaviors. A better understanding of family social role models could aid in understanding the health care practices of the current generation.

Ultimately, considering cultural factors and social learning history may lead to a better understanding of the health care behaviors of ethnic minority populations. With a better formulation, specific programs can be developed to target identified barriers. Such programs might include teaching individuals how to use care and how to overcome many of the barriers and obstacles to care will be a great value. Finally, teaching individuals, particularly ethnic minorities, that their health care is under their control and taking preventive steps to make their health a priority benefits the entire family unit, may be in the next phase to reduce health disparity.

APPENDIX M: TABLES

Table 1

Categories and Sample Items from Health Care Vignettes and Rules Questionnaire

Category	Sample Item's
Common Cold	You begin to have the symptoms of a cold. The symptoms last for three days.
Minor Injury & Illness	During your normal exercise routine, you feel a sharp pain. It feels like you have pulled something in your side.
Warning Signs for Cancer	You always have a cough. Over the last two weeks, you notice a little blood in your mucous.
Warning Signs for Diabetes	When coming home from the grocery store you notice that traffic signs are blurry.
Cardiac Warning Signs	Every time you work around the house all day, you notice that you begin to feel a tight pain in your chest and you start breathing faster. Also, your throat becomes scratchy.
Back Pain	If you hurt your back and woke up the next morning in pain, would you go to the physician immediately?
Mental Health	You are under a lot of pressure and stress at work, and you are also having some financial and relationship problems. You feel down most of the day, have lost interest in most of your fun activities and are unable to concentrate and/or sleep for 2-3 weeks.
Decisions to Seek Care	Do you feel that you need to see a physician for MOST injuries or pains in order to prevent unnecessary or further damage?

Note. See Appendix for complete questionnaire.

Table 2

Demographic Characteristics of Study Sample (Men Only) (N=295)

	Age X (SD)	Marital Status % Married	% Single	% Divorced/ Separated	Dependents X (SD)
Hispanic/Latino (n=73)	22.79 (3.30)	36	58	7	0.86 (1.13)
African American (n=30)	22.86 (3.38)	33	57	10	1.04 (1.50)
Caucasian (n=183)	22.89 (3.77)	31	64	6	0.62 (1.10)
Other (n=9)	20.63 (2.00)	11	89	0	0.25 (0.71)
All	22.80 (3.56)	32	62	6	0.71 (1.15)

Table 3

Military Demographic Characteristics of Study Sample (Enlisted Men Only) (N=290)

	Hispanic/Latino (n=70)	African American (n=29)	Caucasian (n=183)	Other (n=8)	All
Military Rank[a] (%)					
E1-E2	12	10	14	22	14
E3-E4	62	70	65	67	65
E5-E6	19	13	18	0	17
E7-E8	3	3	3	0	3
E9	0	0	1	0	0
Years in Military Service X (SD)	3.30 (3.34)	3.38 (2.77)	3.77 (3.81)	2.00(1.20)	3.56 (3.56)
Annual Income[b] ($) X (SD)	16,435 (3,701)	16,541 (3,340)	16,920 (4,205)	15,282 (1,711)	16,720 (3,958)

Note. [a]Military rank is a system instituted by the United States military that is determined by occupational level and years in military service.

[b]Annual income does not include benefits received by military personnel such as health insurance, housing, and dependent allowances.

Table 4

Means and Standard Deviations for Knowledge of Cancer and Diabetes Warning Sign Scores by Race/Ethnicity

	Hispanic/Latino X (SD)	African American X (SD)	Caucasian X (SD)
Cancer			
Warning Signs (BRCWS)	8.61 (5.26)	7.66 (4.51)	8.61 (4.44)
Nonwarning Signs (NSPWS)	14.06 (11.55)	13.62 (9.46)	14.83 (9.06)
Accuracy (AKC)	3.58 (3.56)	3.14 (3.65)	3.66 (2.97)
Diabetes			
Accuracy (AKD)	15.29 (9.44)	14.81 (8.50)	14.56 (7.98)

Note. BRCWS-basic recognition of cancer warning signs; NSPWS-nonwarning signs perceived as warning signs; AKC-accurate knowledge of cancer index; AKD-accurate knowledge of diabetes warning signs. Higher scores reflect

Table 5

Means and Standard Deviations for Illness Attitude Subscale Scores by Race/Ethnicity

	Hispanic/Latino	African American	Caucasian	Other
	X(SD)	X(SD)	X(SD)	X(SD)
Worry about Illness	5.29 (3.42)[a]	6.10 (3.34)[b]	4.44 (3.16)[a,b,c]	6.78 (3.56)[c]
Concern about Pain	4.06 (2.82)	4.40 (2.93)	3.35 (2.39)	4.11 (2.26)
Effects of Symptoms	2.44 (2.70)	2.77 (3.18)	1.79 (2.19)	2.67 (2.29)
Health Habits	6.04 (3.19)[a]	5.17 (3.34)	4.94 (3.19)[a,b]	7.33 (2.78)[b]
Thanatophobia	2.22 (2.81)[b]	4.21 (3.23)[a,b]	1.62 (2.27)[a,b]	4.13 (3.94)[b]
Disease Phobia	1.70 (2.75)[b]	3.30 (3.72)[a,b]	1.21 (1.93)[a]	2.44 (4.13)
Bodily Preoccupations	2.19 (2.54)	3.72 (2.62)[a]	1.77 (1.91)[a]	2.22 (2.68)
Hypochondriacal Beliefs	2.20 (2.88)	2.33 (2.89)	1.54 (2.05)	1.56 (3.34)
Treatment Experience	3.51 (2.47)	3.86 (2.86)	3.49 (2.18)	3.44 (1.94)

Note. Matched superscripts across a row reflect significant differences between the groups at the .05 level.

Table 6

Responses Given to Common Cold Symptoms by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=182)	
	#	%	#	%	#	%
Visit the doctor	10	14	10	33	26	14
Eat soup & relax	2	3	3	10	11	6
Take OTC	29	40	10	33	68	37
Wait it out	32	44	7	23	77	42

$X^2(6)=11.07$, n.s.

Note. OTC-over-the-counter medications.

Table 7

Responses Given to Delaying Care when Experiencing a Sore Throat by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
1-2 days	9	12	5	17	13	7
3-4 days	14	19	7	23	25	14
5-6 days	8	11	5	17	22	12
7 or more days	12	16	3	10	36	20
Would not go at all	30	41	10	33	87	48

$X^2(8)=8.90$, n.s.

Table 8

Reasons Given to Seeking Care for a Sore Throat by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
Feel better immediately	25	34	11	37	61	33
Return to Work	4	6	4	13	14	8
Getting someone else ill	8	12	4	13	23	13
Worried about illness	29	40	8	27	72	39
Other	4	6	3	10	7	4

$X^2(8)=5.01$, n.s.

Table 9

Responses Given to Delaying Care when Experiencing a Sore Throat by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
1-2 days	15	21	5	17	27	15
3-4 days	17	23	6	20	39	21
5-6 days	7	10	3	10	18	10
7-14 days	5	7	6	20	37	20
3-4 weeks	8	11	2	7	17	9
2-3 months	1	1	0	0	6	3
4-5 months	0	0	0	0	0	0
6 or more months	3	4	0	0	4	2
Go immediately	3	4	1	3	5	3
Would not go at all	14	19	7	23	30	16

$X^2(16)=11.72$, n.s.

Table 10

Responses to Noticing a Bruise by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
Call doctor	3	4	3	10	8	4
Use an ice pack	34	47	16	53	52	29
Take aspirin	9	13	2	7	31	17
Wait	26	36	9	30	91	50

$X^2(6)=15.60$, $p<.05$

Table 11

Responses to Sun Sickness Symptoms by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=181)	
	#	%	#	%	#	%
Ignore Symptoms	17	23	12	40	69	38
Take OTC	18	25	9	30	25	14
Rest	24	33	6	20	63	35
Call doctor	13	18	2	7	13	7
Go to ER	1	1	1	3	11	6

$X^2(8)=20.12$, $p<.05$

Note. OTC-over-the-counter medications; ER-emergency room.

Table 12

Responses Given to Experiencing Sharp Pain after Exercising by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=182)	
	#	%	#	%	#	%
Stop exercising	24	33	15	50	82	45
Call doctor	12	16	6	20	11	6
Apply Heat	16	22	2	7	41	23
Soak in Tub	10	14	4	13	23	13
Buy OTC	10	14	3	10	23	13

$X^2(8)=14.41$, n.s.

Note. OTC-over-the-counter medications.

Table 13

Responses Given to Experiencing a Sharp Pain by African American, and Caucasian Males

Response	African American (n=31)		Caucasian (n=182)	
	#	%	#	%
Seek Care	19	61	59	32
Ignore Symptoms	12	39	123	68

$X^2(1)=9.51$, $p<.05$

Table 14

Responses Given to Delaying Care After Experiencing Persistent Pain after an Exercising Routine by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
1-2 days	15	21	6	20	24	13
3-4 days	15	21	13	43	35	19
5-7 days	20	28	6	20	34	19
7-10 days	10	14	2	7	45	25
Other	4	6	1	3	20	11
Would not go at all	8	11	2	7	24	13

$X^2(10)=20.99$, $p<.05$

Table 15

Level of pain needed in order to seek care for a toothache by Race/Ethnicity

Pain Level	Hispanic/Latino (n=72)		African American (n=29)		Caucasian (n=178)	
	#	%	#	%	#	%
1	3	4	2	7	4	2
2	6	8	2	7	7	4
3	7	10	3	10	16	9
4	11	15	10	33	39	22
5	23	32	4	13	55	31
6	11	15	5	17	37	21
7	11	15	4	13	22	12

$X^2(12)=11.35$, n.s.

Note. Pain Level, 1= Mild Pain, 4= Moderate Pain, and 7= Severe Pain.

Table 16

Responses Given to Taking measures to heal yourself from a toothache by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=181)	
	#	%	#	%	#	%
Yes	56	77	22	73	127	70
No	17	23	8	27	54	30

$X^2(2)=1.13$, n.s.

Table 17

Responses to an Unhealed Bruise by Race/Ethnicity

Response	Hispanic/Latino (n=72)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
Call the doctor	17	24	13	43	55	30
Use an ice pack	16	22	4	13	14	8
Take aspirin	3	4	3	10	17	9
Wait it out	36	50	10	33	97	53

$X^2(6)=15.85$, $p<.05$

Table 18

Responses Given to Experiencing a Persistent Cough with Blood in Mucous by Race/Ethnicity

Response	Hispanic/Latino (n=72)		African American (n=30)		Caucasian (n=179)	
	#	%	#	%	#	%
Ignore	11	15	8	27	25	14
Drink fluids	18	25	3	10	29	16
Call doctor	26	36	15	50	85	48
Wait to call doctor	17	24	4	13	40	22

$X^2(6)=8.84$, n.s.

Table 19

Responses Given to Experiencing Extreme Fatigue by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
Ignore	16	22	9	30	44	24
Take vitamins	10	14	5	17	9	5
Get more rest	45	62	15	50	119	65
Wait	2	3	1	3	11	6

$X^2(6)=10.36$, n.s.

Table 20

Responses to Blurry Vision Symptoms by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=182)	
	#	%	#	%	#	%
Wait it out	35	48	10	33	101	55
Ignore the symptoms	20	27	6	20	22	12
Call doctor	8	11	5	17	20	11
Wait 6 months to call doctor	10	14	9	30	40	22

$X^2(6)=14.03$, $p<.05$

Table 21

Responses to Peripheral Vision Loss by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
Wait it out	33	45	6	20	73	40
Ignore Symptoms	17	23	10	33	34	19
Call doctor	19	26	8	27	41	22
Wait 6 months to call doctor	4	5	6	20	35	19

$X^2(6)=13.30$, $p<.05$

Table 22

Responses Given to Experiencing Diabetes Warning Symptoms by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=182)	
	#	%	#	%	#	%
Ignore Symptoms	9	12	9	30	26	14
Drink more water	22	30	5	17	37	20
Enjoy that I am losing weight	9	12	1	3	16	9
Believe that drinking water caused increased urination	14	19	5	17	30	16
Call doctor	11	15	5	17	58	32
Wait it out	4	5	2	7	11	6

$X^2(10)=16.80$, n.s.

Table 23

Responses Given to Having a Severe Headache for 2 weeks by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
Take Aspirin	26	36	10	33	66	36
Call doctor	39	53	15	50	89	49
Wait 3 weeks to visit doctor	4	6	1	3	12	7
Rest	4	6	4	13	16	9

$X^2(6)=2.42$, n.s.

Table 24

Responses Given to Experiencing Tenderness in Arms by Race/Ethnicity

Response	Hispanic/Latino (n=72)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
Ignore symptoms	26	36	7	23	89	49
Take hot bath	3	4	5	17	19	10
Massage arms	21	29	12	40	37	20
Visit doctor	4	6	1	3	10	6
Wait	18	25	5	17	28	15

$X^2(8)=16.72$, $p<.05$

Table 25

Responses to Chest Pain Symptoms by Race/Ethnicity

Response	Hispanic/Latino (n=72)		African American (n=30)		Caucasian (n=177)	
	#	%	#	%	#	%
Drink Tea	16	22	8	27	22	12
Take a bath & relax	5	7	2	7	20	11
Call the doctor	12	17	7	23	57	32
Visit the doctor	19	26	7	23	25	14
Wait it out	20	28	6	20	53	30

$X^2(8)=16.72$, $p<.05$

Table 26

Responses Given to Experiencing Chest Pain by Hispanic and Caucasian Males

Response	Hispanic (n=58)		Caucasian (n=124)	
	#	%	#	%
Seek Timely Care	22	38	25	20
Ignore Symptoms	36	62	99	80

$X^2(1)=6.51$, $p<.05$

Table 27

Responses Given to Experiencing Indigestion accompanied by Dizziness by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
Rest	10	14	4	13	21	12
Drink Tea	3	4	2	7	2	1
Avoid certain foods	22	30	13	43	61	33
Call doctor	27	37	6	20	66	36
Wait 6 months to call doctor	11	15	5	17	33	18

$X^2(8)=8.09$, n.s.

Table 28

Responses Given to Vomiting After a Large Meal Accompanied by Color Changes in Fingers by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
Rest	28	38	13	43	76	42
Take OTC medications	17	23	4	13	29	16
Drink soda	4	6	3	10	21	12
Call doctor	19	26	8	27	35	19
Go to ER	5	7	2	7	22	12

$X^2(8)=7.38$, n.s.

Note. OTC-over-the-counter medications; ER-emergency room.

Table 29

Responses Given to Delaying Care after Experiencing Shortness of Breath by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
1-2 weeks	27	38	12	40	56	31
3-4 weeks	22	31	6	20	41	22
2-3 months	5	7	5	17	22	12
3-4 months	1	1	3	10	13	7
Other	2	3	0	0	1	1
Would not consult doctor	15	21	4	13	50	27

$X^2(10)=13.99$, n.s.

Table 30

Responses to Back Pain Symptoms by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
Take a hot bath	7	10	9	30	28	15
Take aspirin & rest	20	27	7	23	85	46
Visit doctor	15	21	4	13	21	11
Wait it out	31	42	10	33	49	27

$X^2(6)=19.94$, $p<.05$

Table 31

Responses Given to Delaying Care for Experiencing Back Pain by African American and Caucasian Males

Response	African American (n=31)		Caucasian (n=179)	
	#	%	#	%
Seek Timely Care	21	68	80	45
Ignore Symptoms	10	32	99	55

$X^2(1)=5.62$, $p<.05$

Table 32

Responses Given to Delaying Care after Experiencing Back Pain by Hispanic and Caucasian Males

Response	Hispanic (n=78)		Caucasian (n=179)	
	#	%	#	%
Seek Timely Care	49	63	80	45
Ignore Symptoms	29	37	99	55

$X^2(1)=7.14$, $p<.05$

Table 33

Responses Given to Delaying Care after Experiencing Back Pain by Hispanic and African American Males

Response	Hispanic (n=79)		African American (n=30)	
	#	%	#	%
Seek Timely Care	32	40	19	63
Ignore Symptoms	47	60	11	37

$X^2(1)=4.55$, $p<.05$

Table 34

Responses Given to seeking care immediately for acute back pain by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
Yes	26	36	12	40	41	22
No	47	64	18	60	142	78

$X^2(2)=7.13$, $p<.05$

Table 35

Responses Given to delaying care for back pain by Race/Ethnicity

Response	Hispanic/Latino (n=72)		African American (n=30)		Caucasian (n=179)	
	#	%	#	%	#	%
1-2 days	17	24	8	27	25	14
3-4 days	18	25	8	27	28	16
5-6 days	9	13	5	17	27	15
7-14 days	8	11	1	3	42	24
3-4 weeks	5	7	3	10	27	15
2-3 months	4	6	0	0	7	4
4-5 months	0	0	1	3	0	0
6 or more months	1	1	0	0	2	1
Would not go at all	10	14	4	13	21	12

$X^2(16)=29.73$, $p<.05$

Table 36

Responses Given to Experiencing Persistent Back Pain by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
Take Aspirin	14	19	5	17	16	9
Visit doctor	46	63	21	70	142	79
Continue to wait	13	18	4	13	22	12

$X^2(4)=7.97$, n.s.

Table 37

Responses Given to Taking measures to heal yourself after back injury by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
Yes	59	86	22	79	140	79
No	10	14	6	21	38	21

$X^2(2)=1.54$, n.s.

Table 38

Responses Given to Experiencing Depressive Symptoms by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=182)	
	#	%	#	%	#	%
Try to rest	19	26	8	27	48	26
Ignore Symptoms	9	12	6	20	25	14
Talk to family/friend	28	38	11	37	82	45
Talk to clergy	3	4	2	7	12	7
Talk to doctor	8	11	0	0	2	1
Talk Mental Health Professional	3	4	0	0	5	3
Talk to coworker	2	3	3	10	9	5

$X^2(12)=21.64$, $p<.05$

Table 39

Responses Given to Delaying Care After Experiencing Depressive Symptoms by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=183)	
	#	%	#	%	#	%
1-2 months	36	49	9	31	69	38
3-4 months	16	22	7	24	31	17
5-6 months	8	11	2	7	20	11
1 year or more	3	4	1	3	17	9
Other	1	1	0	0	2	1
Would not talk to anyone at all	9	12	10	35	42	23

$X^2(10)=12.16$, n.s.

Table 40

Responses Given to Healing yourself by Race/Ethnicity

Response	Hispanic/Latino (n=72)		African American (n=29)		Caucasian (n=182)	
	#	%	#	%	#	%
Yes	64	89	28	97	169	93
No	8	11	1	3	13	7

$X^2(2)=1.98$, n.s.

Table 41

Level of pain needed in order to seek care by Race/Ethnicity

Pain Level	Hispanic/Latino (n=72)		African American (n=29)		Caucasian (n=178)	
	#	%	#	%	#	%
1	3	4	1	3	2	1
2	0	0	0	0	1	1
3	3	4	1	3	3	2
4	12	17	8	28	24	14
5	17	24	8	28	60	34
6	23	32	8	28	53	30
7	14	19	3	10	35	20

$X^2(12)=10.74$, n.s.

Note. Pain Level, 1= Mild Pain, 4= Moderate Pain, and 7= Severe Pain.

Table 42

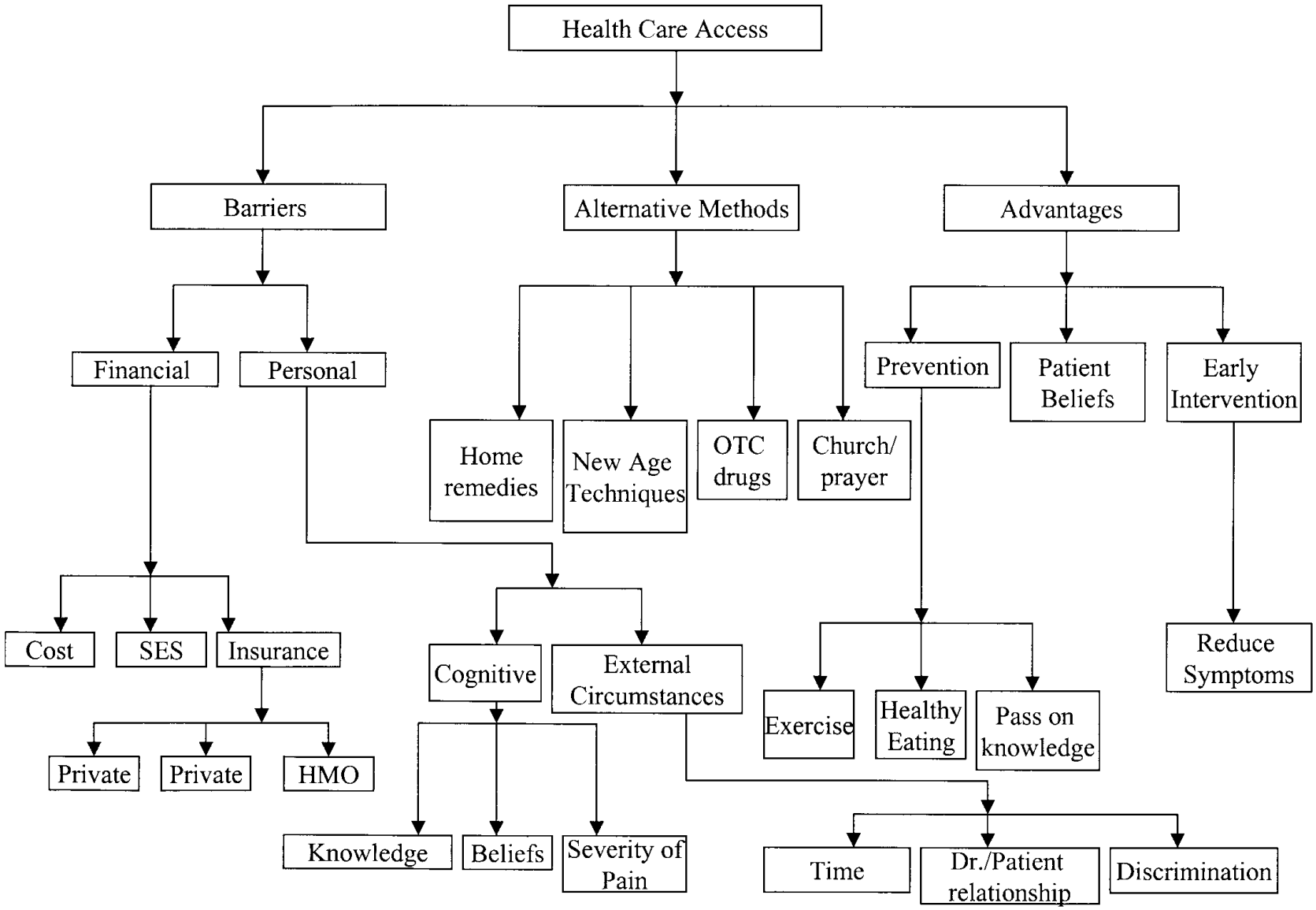
Responses Given to Seeing a physician for prevention of most injuries by Race/Ethnicity

Response	Hispanic/Latino (n=73)		African American (n=30)		Caucasian (n=182)	
	#	%	#	%	#	%
Yes	22	30	15	50	34	19
No	51	70	14	47	148	81

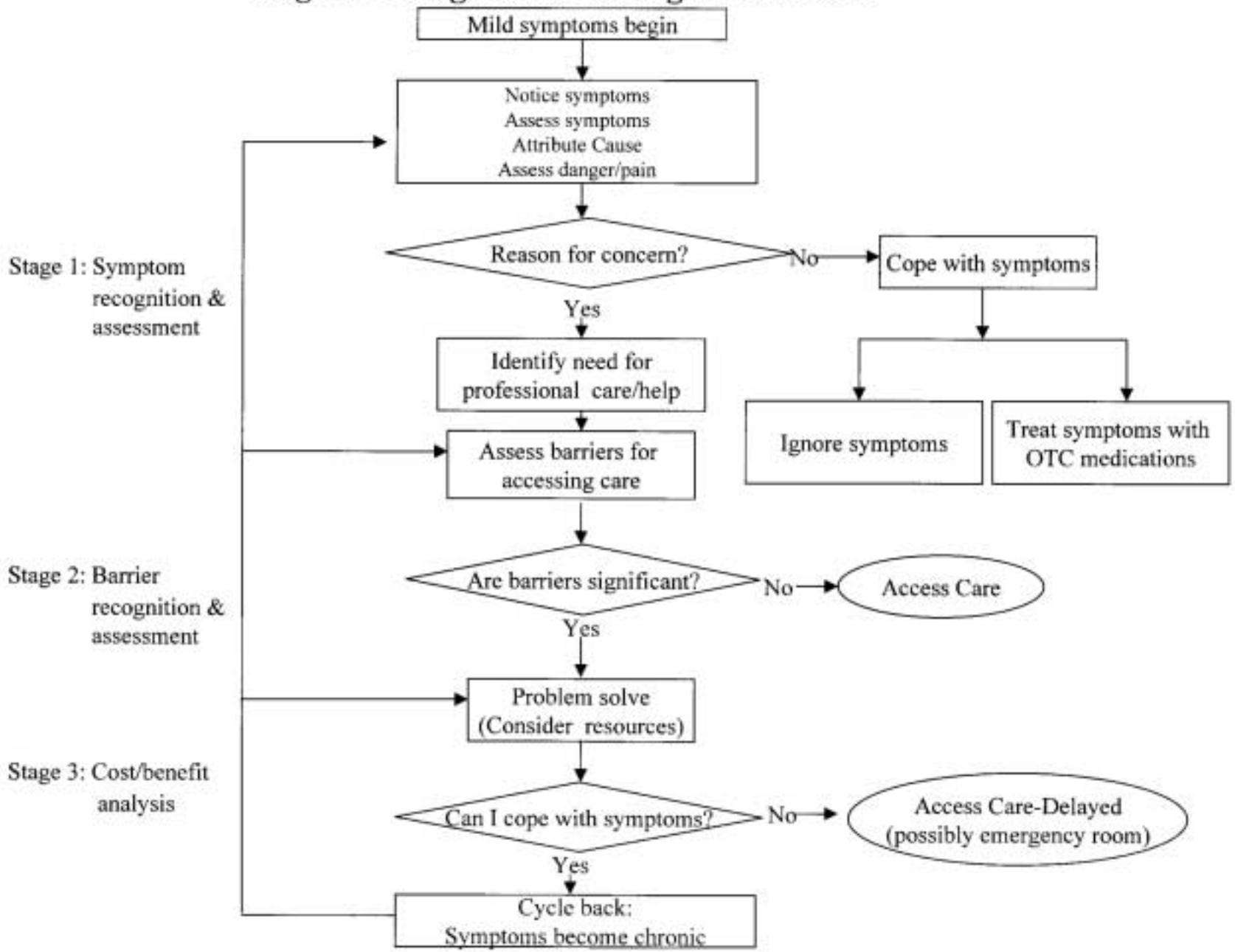
$X^2(2)=15.95$, $p<.05$

APPENDIX N: FIGURES

Health Care Access Model



Cognitive Stages of Accessing Health Care



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