Assessment of predictors of health behaviors of elders in frontier Nevada

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ASSESSMENT OF PREDICTORS OF HEALTH BEHAVIORS
OF ELDERS IN FRONTIER NEVADA

by

Pauline Bradshaw

Bachelor of Science
University of Nevada, Reno
1998

A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Science Degree
Department of Nursing
College of Health Sciences

Graduate College
University of Nevada, Las Vegas
May 2001
The Thesis prepared by

Pauline Bradshaw

Entitled

Assessment of Predictors of Health Behaviors of Elders in Frontier Nevada.

is approved in partial fulfillment of the requirements for the degree of

Masters of Science in Nursing

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ABSTRACT

Assessment of Predictors of Health Behaviors of Elders in Frontier Nevada

by

Pauline Bradshaw

Dr. Margaret Louis, Examination Committee Chair
Professor of Nursing
University of Nevada, Las Vegas

The purpose of this descriptive correlational study was to investigate health-promoting lifestyle practices and correlate these to self identified factors that may limit health promotion activity of frontier rural elders living in Nevada. Pender’s Health Promotion Model provided the theoretical framework for this study. The sample included 114 participants that were aged 65 and older from locations in Nevada counties that qualify as frontier (population less than 6/square mile). Participants completed a two part self-administered questionnaire, the Health-Promotion Lifestyle Profile II (HPLP II) and the revised Elderly Health Care Needs Questionnaire (EHCNQ). Findings support the research hypothesis that cognitive-perceptual and modifying factors, as perceived by frontier Nevada elders, predict their engagement in health promotion activity. Results of this study indicate support is needed that will help these elders reach the Healthy People 2010 goals of prolonging healthy life and eliminating disparity of services to all populations.
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ACKNOWLEDGMENTS

I would like to recognize some of the individuals who were invaluable in the completion of this study. Foremost, I am forever grateful to my family who gave me encouragement at every turn. My husband, Les gave me the much needed financial support and means to travel 2,000 miles and work many hours to complete my goal. My four children Curtis, Renny, Meredith, and Adam were an invaluable source of strength.

I would also like to thank my Thesis Committee Chairperson, Dr. Margaret Louis whose tireless efforts and counsel continued to inspire me. I wish to also thank Dr. Louis for sharing her vast gerontology and qualitative research experience through which she was able to thoughtfully edit and comment on this research project. I am also grateful to Dr. Susan Kawolski who first introduced me to Nola Pender’s theory of Health Promotion and was responsible for stimulating my interest in health promotion activity. Additionally I wish to thank the members of my Thesis Committee, Dr Susan Bowles and Dr. Ann McDunough for their invaluable input.

Finally, I would like to thank all of the Senior Center Directors involved in the Frontier settings where data collection took place, especially Mary Anderson from White Pine County whose energy and love of the community of elders with which she works still keeps me in awe.
CHAPTER 1

INTRODUCTION

This chapter clarifies the research topic identifying the problem that elders living in a frontier setting (population less than 6/square mile) face in meeting their health promotion needs. Background is given on the delivery of health care to rural elders and the efficacy of these delivery systems based on poorly defined designations of population distribution.

Identification of the Problem

To set the rural elders’ lack of health care dilemma in proper demographic context, it is important to identify what conditions have the potential to affect the quality of life of older adults living in frontier settings. McLaughlin and Jensen (1998) emphasize the importance of keeping special populations in perspective: “The heterogeneity in size of place within broad categories of residence would be irrelevant if there were no meaningful variation in the characteristics of persons living in these places, or the places themselves and that these variations did not affect the well-being of persons living in those places” (p. 15). Availability of health care resources in the frontier setting is typically limited thus presenting a serious problem for older adults who are the major consumers of health services (Clark & Dellasega, 1998). Basic health care through
screening and health promotion activity is often not available to frontier elders to meet even minor health care needs. When health problems are undetected and untreated, they can grow to reach life threatening proportions vastly increasing cost to treat the problem and decreasing the chance for a positive outcome of any treatment that is given. Research that recognizes the complexity of living in remote rural areas such as frontier is needed to capture the diversity of this population.

In the U.S. Department of Health and Human Services Public Service (USDHHSPS) publication Healthy People 2000, elimination of disparity of services among specific population groups is listed as a goal (1996). An important addition made to the original publication of Healthy People 2000, in 1996 was to increase to greater than 60% the number of providers of primary care for older adults who routinely evaluate people aged 65 and older for impairments and functional status (USDHHSPS, 1996). Baseline statistics in 1992 revealed there may be a very low number of primary care providers who routinely provide primary care to all elders (as few as 3%) (1996). As we begin the 21st century, the Healthy People 2000 goal for elimination of disparity of services has now been extended to 2010 (Healthy People 2010, 20001). Nurses are now finding themselves caring for an increasing number of patients older than 65. In the past 2 decades the elderly segment of the population has grown twice as fast as the balance of the country's population, rising to nearly 13 % (Beidler & Bourbonniere, 1999).

The National Center for Health Statistics (1993) reports that 25% of older Americans live in non-metropolitan areas. Depending on geographic location, current statistics available through Rural Policy Research Institute (2000) show this number has declined to 18-20% in some regions of the U. S. while other rural area elder populations are increasing to
greater than 20%. The West North Central region and West South Central region have experienced a decline in the non-metropolitan elderly population between 1990 and 1996 while the Great Plains sub-region has experienced an increase, largely due to individuals aging in place (2000). The non-metropolitan elderly population compared to the urban of the same age group have a proportionately higher number of residents (18% compared to 15%) (2000). McLaughlin and Jensen confirm smaller rural communities have experienced increasing concentrations of elders over the past two decades due to the out migration of youth as well as the aging-in-place of elders (1998). Because of the increase in health care services used by the elder population, it is essential to have a better understanding of the health promotion needs and potential barriers the frontier rural elders face in attempting to achieve and maintain their health. Nurses working in the rural setting need this information to provide adequate service and facilitate change in the rural health care delivery system that will accommodate these needs.

**Background of the Problem**

Policy that affects delivery of health care to rural elders is often based on research that analyzes and compares delivery and utilization of services of rural elders to their urban counterparts (McConnel & Zetzman, 1993). Decisions about how to distinguish frontier and rural from urban residents are somewhat arbitrary. A major issue in enabling rural and frontier communities to improve healthcare planning is to define "rurality". The most common definition of rural is reflected through population density. However, rural definitions do not always take into consideration distance as well as time traveled to obtain health care. Making assumptions that all rural settings are similar ignores the fact that rural in one situation may mean a few miles distance and short time to access
services while other 'rural' areas may require a day's travel, even with modern transportation.

Inconsistencies in defining rural can have dramatic policy implications for federal funding allocation of health care dollars. The quality of data that compares rural to urban areas may not reflect a true need of elderly residents that live remotely from major metropolitan centers. This may negatively impact strategies needed to address the health problems of rural elders (Beidler & Bourbonniere, 1999). Additionally, funding for Medically Underserved Areas (MUAs) utilizes a ratio of population per primary care physician for designation of federally funded programs for these areas (MUAs). This formula directly impacts the funding for training, recruitment and retention of appropriate primary health care providers such as physicians and nurse practitioners. Appropriate allocation of support to all populations is of critical concern to health care policy makers.

Knowledge of different approaches needed for health care planning by the U.S. Department of Health and Human Services for the very rural has led to the emergence of an additional category of rural known as 'frontier' (Lee, 1991). A more realistic strategy was developed for identification and development of service delivery standards to deal with the unique conditions found in more sparsely populated states (Ellison, 1986). Figure 1 illustrates the major differences between urban, rural, and frontier environments. The Frontier Task Force of the National Rural Health Association (NRHA) has encouraged all federal agencies to adopt a designation of frontier area in addition to rural (Miller, 1990). The unique health care needs of the frontier rural elder is shaped by the society where the elder resides. Significant error can occur when application of models and approaches from urban areas are made without recognition of the differences in
another population's definition of health, it's refinement and specifications (Weinert & Long, 1991). Health care delivery systems have often failed to recognize and address the beliefs, preferences, and life-styles of rural and frontier dwellers (Doty, 1996).

**Significance of the Problem to Nursing**

When comparing rural and urban elders, there is a need for indicators that will monitor any rural-urban differences (Humphreys, 1999). Humphreys found that health status of rural elders in remote communities was a major indicator for identification of potential unmet health care needs. Identification of what may impact health status can suggest the degree of need for more aggressive delivery of health services that should include health promotion activity. Little research has been done on what may impact the health status and health promotion activity of frontier communities of the western United States.

Geographical boundaries for health care delivery to these communities may far exceed those in more densely populated areas that may also be defined as rural (Vrabec, 1995). Statistical data on health status of rural elders who may live only a few miles from delivery of health care services abounds. Systematic investigation of health status in relation to geography can validate health care needs of elders that can potentially be delivered by nurse practitioners who are widely accepted as delivering quality care at a reduced cost (Keppenbrock, Stacy, Tester, and Richey, 2000); (Pinkerton and Bush, 2000). Nurses working with elders in the rural setting, especially frontier, understand that their clients may differ from the general population that has easy access to health care services.
Research Purpose

The purpose of this study is to identify the relationship of behavior specific cognitions and situational influences on health promotion activity rural elders living in remote frontier settings experience. This study seeks to assess unmet health promotion needs of this population. The following research hypothesis is pertinent to study these needs: Cognitive-perceptual and modifying factors, as perceived by frontier Nevada elders, predict their engagement in health promotion activity.
CHAPTER 2

LITERATURE REVIEW

Introduction

There is a scarce, albeit growing, body of empirically based literature on the characteristics of unmet health care needs of rural elders who live in very remote areas. The need for determination of rural elder's unmet health care needs is reinforced by findings that show the disparity of health care delivery systems available to rural elders compared to their urban counterparts. The literature review of the variables that have been identified as affecting unmet health promotion needs of frontier elders will be handled in the following order: (a) the rural elder's concept of health, (b) health status of rural elders, (c) health care mandates by Healthy People 2000/2010 related to elders, (d) barriers to reaching the Healthy People 2000/2010 goals for rural and especially frontier, and (e) summary with nursing implications.

Rural Elder's Concept of Health

Understanding the rural elder's concept of health is critical to understanding what motivates this client for health promotion, health maintenance and illness treatment. As a result of their environment, rural elders have, out of necessity, become more independent and self-reliant (Long, 1993). Attitudes toward health and what rural elders consider as
important health care needs are characterized in a variety of ways (Fallcreek, Muchow and Mockenhaupt, 1994). Health may be embedded in maintenance and existence of an extended family. Rural elder’s health concepts have been found to be conservative and resistant to change. This population’s definition of health is affected by skepticism of outsiders, accustomed to making do, and is supported by their churches’ dogmas (Fallcreek, et al., 1994). Independence, work ethic, maintaining dignity, and hardiness are major concepts identified in the literature that contribute to the rural elder’s concept of health.

Independence

To “stay in the world” or be connected reveals the value that rural elders place on remaining independent (Weinert and Burman, 1994, p. 69). Independence has been shown to be a multifaceted concept. Several studies demonstrate the value that elders place on independence. To be sick or injured somehow implies a weakness and loss of social acceptability and independence (Schmidt & Strong, 1997). Consistently, rural elderly residents have defined health functionally, such as being well enough to complete farm chores for the day (1997). Self-reliance and self-help are significant strategies rural elders use to cope with illness and maintain health (1994).

Work Ethic

Because the work ethic is very strong in the rural communities, simplicity and frugality often characterize the lifestyles of these elders. Schmidt and Strong (1997) have noted disruption in the individual’s ability to work and perform traditional roles serves as a major threat to health and well-being.
Maintaining Dignity

Roberto, Richter, Bottenberg, & MacCormack (1992) found that rural elders often tried to maintain dignity in the face of debilitating physical conditions. This was a poignant issue related to their health care needs. The need to maintain dignity has a close association with the need to maintain independence (Roberto, et al., 1992). These researchers found that rural elders often accept what services they have available, even though they may be inadequate, because of pride or they may feel funny about letting strangers into their homes.

Hardiness

The concept of hardiness implies independence, self reliance, and self-care that seems to fit well with the rural elder (Bigbee, 1991). A hardy personality resists illness when under stress which reflects a positive, health-protective buffer (1991). Two main elements that contribute to hardiness are commitment and control. These elements work as moderators in the stress-illness relationship. Bigbee indicates this concept is relevant to rural nursing’s health-promotive perspective in that clients with low levels of hardiness may need more intensive nursing intervention in times of stress (1991).

Health Status of Rural Elders

Health status has been recognized as a major indicator to measure unmet health care needs of rural elders (Humphreys, 1999). The characteristics and special problems associated with the health status and health care needs of rural elders are topics of considerable significance in health policy (Rabiner, Konrad, DeFriese, Kincade, Bernard, Woomert, Arcury, & Ory, 1997). Rabiner, et al. (1997) explored how patterns of self-
care differ between rural and urban elderly. By observing the frequency of differentials in formal health care use, barriers and need for supply of rural health care service were projected. Their findings suggested a moderate but consistent favorable effect on the likelihood of performing functional tasks and self-care activities in the presence or absence of disability. They also found rural elders have a tendency to report fewer health problems which they proposed may indicate a strong sense of independence and value of self-reliance. Self-reliance has been shown to be a particularly important influence on the rural elder's interpretation of what health is.

Clark and Dellasega (1998) found no significant difference in the health status of rural elders despite driving significantly further for physician and health services than their urban counterparts. It should be noted that the average distance traveled to see a doctor by the rural senior interviewed was only 11.03 miles in this study. The health status for these elders might be significantly different if they had to travel a minimum of 50 miles, which is common in frontier areas. When distance to health care service increases, a less timely intervention may result in a small medical problem becoming a more serious one. They found distance delayed intervention when transportation to service was not readily available.

McConnel and Zetman's findings (1993) support the position of delayed intervention through traveling long distance increasing complications of medical problems. This longitudinal study gives a much broader picture over a 20-year period verses the previously cited studies, which were cross sectional in nature. They found elders living in rural areas are generally in poorer health and have a higher prevalence of chronic disease, directly related to lower incomes, and poor access to
available health services due to limited transportation. Severe erosion of hospital-based
and emergency medical services in nearby towns was listed as a contributing factor
indicates additional support for variables that influence health status of rural elders in a
negative fashion. Her findings suggest that older participants \( r = -0.84, p < .001 \) and
those who were widowed \( r = 0.81, p < .01 \) had poorer health. She found that 58% of the
sample studied reported poor to very poor health ratings with 67% reporting moderate-to-
high levels of stress and 47.5% reporting a low level of social support. Loss of the ability
to drive was found to be an important contributing event, leading to the loss of
independence, social isolation and poor health.

Healthy People 2000/2010 Mandates for Rural Elders

According to Healthy People 2000, by the year 2000 there would be 4 million
more Americans over the age of 65 than there were in 1990 (U.S. Department of Health
and Human Services Public Health Service, 1995). New projections from the
Administration on Aging based on the middle series of Bureau of Census population
projections released in 1996 show that a moderate increase in the elderly population will
occur until about 2010 (Greenberg, 2000).

Growth in the number of the oldest old (aged 85 and over) is of the greater public
concern. During 1995 to 2010, this population is expected to grow by 56 percent
compared with 13 percent for the population aged 65 to 84 (2000). According to
Greenberg, the age structure of future populations will affect the social and economic
condition of the nation due to economically dependent classes. The Rural Policy
Research Institute (2000) has projected that among the rural communities fastest growing economies will be retirement communities (25%) compared to farming (3%).

In the national agenda first proposed in Healthy People 2000 (1990) there were 80 objectives directly related to health promotion with older Americans over the age of 65 (1995, p. 3). The frail elder who is limited in his/her ability to perform basic activities of daily living (ADLs) is included in the severely disabled and was projected to increase by the year 2000 reflecting the trend in aging population growth (1995). An updated objective in Healthy People 2000 (1995) was to reduce to no more than 90 per 1,000 the proportion of people 65 and older who have difficulty in performing two or more personal care activities (bathing, dressing, using the toilet). Baseline data in 1984-1985 was listed at 111 per 1000 (1995). The goal is to preserve independence through self-reliance and self-care.

A release from Health and Human Services (Shalala, 1999) indicates that life expectancy rates are up. She indicated the population over 70 will proportionately have more difficulty performing ordinary ADLs such as meal preparation (1999). She pointed out that the lessons learned by the Council on Health Promotion and Disease Prevention that seek to achieve objectives for Healthy People 2000, will guide the objectives set for the next decade, through 2010. Healthy People 2000 strategists released a new document in January 2000 that continues the two overarching goals through the year 2010: “Increase years of healthy life”, and “Eliminate health disparities” (Shalala, 2000).

To continue work to achieve the over reaching goal of increasing basic activities of daily living, physical functioning and mobility must be maintained. According to Manious and Kohrs (1995) physical functioning and mobility are clear indicators of
health because they pertain to limitations most likely caused by physical health problems. Programs that manage functional limitations may eliminate the need for institutional care of the elderly and are of potential importance Rabiner et al. (1997). This research found a significant negative relationship between non metropolitan residence and the proportion of the population that had no or only some basic activity of daily living limitations despite having severe disability. Their findings indicated that rural elders used equipment to adapt and made behavioral changes to accommodate functional limitations.

Barriers to Reaching Healthy People 2000/2010 Goals for Rural Elders

The literature covers several barriers to provision of service to reach the Healthy People 2000 goals. These barriers are multidimensional and include health professional shortage, poor public policy, environmental, and socioeconomic barriers.

Health Professional Shortage

A Healthy People 2000 goal (1995) was to increase by 60 percent the proportion of providers of primary care for older adults who routinely evaluate people aged 65 and older. Recruitment and retention of health professionals, particularly nurses, is a national concern, but in frontier areas there are added dimensions. Rural recruitment and retention of primary health care providers correlate with available medical services (Turner and Gunn, 1991). Lack of physicians and advanced practice nurses (APNs) who provide direct support service has led to deficiencies in access to care in much of rural and frontier America (Goldsmith and Ricketts, 1999). Statistics for the State of Nevada from the Bureau of Primary Health Care (BPHC) (1998) show a ratio of primary care physicians to-population ratio of 1: 2,219.
designated 14 of 17 Nevada counties as non-metropolitan (1998). Thirteen of these were noted as Health Professional Shortage areas. Eleven of these counties fit the definition presented by Ellison to qualify as frontier with a population base of less than 6 per square mile (1986). According to U.S. Census figures (Yax, 1999) Nevada ranked among the lowest in the United States for physician per resident ratio. Nationally there were 239 physicians per 100,000 residents while Nevada had 163 physicians per 100,000 residents (Yax, 1999).

These figures indicate there is a shortage of health professionals who are needed to attain the Healthy People 2000/2010 goals in the State of Nevada. Further supporting this is the fact that in one frontier rural county of Nevada there is currently no physician available for a population base that exceeds 1,300 residents and a second that has had only part time physician coverage for a population of 2,100 residents (Santi, 1999). In these two frontier counties, 1998 statistics list the population over the age of 65 as 140 and 194 respectively (Yax, 1999).

Public Policy Barriers

Current governmental policy that dictates federal funding of clinics and subsidized primary care providers for the medically underserved populations and health professional shortage area designation is a significant barrier to delivery of adequate health care to the rural elder. A poor and inadequate definition of what comprises rural now exists. A definition that includes distance and time factors to receive care as well as population size would offer a better determination of rural and identification of underserved areas.
There are two major designation systems to qualify institutions, and populations for a broad set of federal assistance programs. The federal Department of Health and Human Services (DHHS) 1998 designations are intended to alleviate the problems of low access to health care services. (Goldsmith and Ricketts, 1999). Medically underserved areas/population (MUA/P) designation came into existence in an attempt to increase health care services for these areas of the United States when Congress passed the Health Maintenance Organization Act in 1973 (Kohrs, and Maninous, 1996). Health professional shortage areas (HPSAs) were identified shortly after with the Health Professions Educational Assistance Act of 1976 to address the maldistribution of primary care physicians (Kohrs, and Maninous, 1996).

On September 1, 1998, the Bureau of Primary Health Care (BPHC) proposed a rule to modify and combine the MUA/P and the HPSA designations (Goldsmith and Ricketts, 1999). Overall, research predicts that 58 % of rural whole county HPSAs with National Health Service Corps providers would lose their designation (Goldsmith and Ricketts, 1999). The proposed rule for MUA/Ps and HPSAs depends on a newly created Index of Primary Care Shortage (IPCS). The IPCS combines seven measures that describe either health status or barriers to accessing health care. Different weights are given to the measures depending on their influence in determining current HPSA and MUA/P designations. The population-to-primary care provider ratio and the percentage in poverty of applicant area are worth a maximum of 35 points on the IPCS score. With this threshold of 35 points, a service area that scores equal to or above this can qualify as an HPSA with provider to patient ratio. Areas that do not score at or above the IPCS threshold are not eligible for federal funds and programs (Goldsmith & Ricketts, 1999).
In frontier areas that do not have a statistically large number of people, a small population to provider ratio will limit accumulation of points on the IPCS scale, eliminating the possibility to qualify as a HPSA and MUA/P.

The designation of an area as MUA/P involves scoring of data from a service area using four variables: (a) the percentage of the population that is 65 years of age or older; (b) the percentage of the population below the poverty line; (c) the primary care physician-to-population ratio; and (d) the infant mortality rate (Kohrs and Mainous, 1999).

The importance of health workforce shortage area designation and primary care health workforce policy is particularly apparent in relation to health status according to Kohrs and Mainous (1996). In their study they found significantly lower ratings (p=.03) for health perception and age (elderly) with social functioning (p=.008) in MUA/Ps. The literature reviewed has implications for policy development for rural health care where designators that are highly associated with health status of residents can be used (Ricketts, 1999).

Understanding the newly proposed BPHCs rules to combine rural designations of MUA/P and HPSA should increase awareness of potential dangers of loosing funding for primary health care providers who may wish to locate to a rural or frontier setting. Ricketts believes that small rural hospitals are most likely to disappear when times get tough, especially with inadequate federal funding (1999). When service delivery through rural hospitals and clinics decline, the health status and potential long term effects on the rural elder’s functional status will be negatively impacted. This will make it much more
difficult to reach Healthy People 2000/2010 goals of eliminating disparity of care and prolonging healthy life years.

Mainous and Kohrs (1995) found that the maldistribution of physicians and health care resources in the United States decreases availability of health care service and access to care in rural areas, reduces health status, and increases cost and mortality. Addressing the closure of a rural medical facility in Tonopah, Nevada, Kuz quoted Bill Welch, president of Nevada Rural Hospital Project, “Should the facility close—thereby severely reducing ambulance service to the area—motorists better have their will written up before climbing behind the wheel” (1999). Every day 8,000 to 15,000 vehicles pass through Tonopah, home of the sole hospital between Hawthorne and Las Vegas, a lonesome stretch of more than 300 miles of frontier Nevada highway (Kuz, 1999).

Tonopah is not alone in its struggle to survive. Two hours to the north on the only major paved highway through western Nevada is Hawthorne's facility, Mt. Grant Hospital. Both facilities are not qualified as a trauma center, requiring transfer of any serious illness or major injury to receive additional care. Any patient in need of immediate specialized care in the Tonopah area would have to leave by fixed wing transport to a major medical center, requiring at least 1 ½ to 2 hrs for the transport. When quick and early intervention is delayed, complications can negatively impact patient outcome.

Validation of quick and competent intervention was demonstrated when a bus tour accident involving 40 British senior tourists occurred in September 2000 just outside of Tonopah, Nevada. Dr. Vincent Scoccia was quoted as saying the tiny hospital “looked like war” (Oliver, 2000). With the crash site about one half hour from Tonopah and at least 200 miles from the nearest medical trauma center in either Reno or Las Vegas, the
flood of victims stretched the capabilities of Tonopah’s four-bed emergency room. A total of 41 victims were treated before many were airlifted to Reno and Las Vegas. Two victims lost limbs. Oliver quotes Kate Griswold, spokeswoman from one of the receiving trauma centers, “Everybody was so impressed with the work they did in Tonopah”. The potential for mortality and increased morbidity would have been evident without the life saving service this small rural hospital provided.

**Environmental Barriers**

The literature supports the position that environmental factors prevent elders from obtaining adequate medical care because of geographic location and lack of transportation. Environmental factors that may influence health behaviors include transportation (Seigley, 1998) (Foster, Susman, Mueller, Bowman & Lunt, 1994). Foster et al. (1994) found 20% of the elderly population surveyed in their Nebraska study identified transportation as a major barrier to utilizing services. Findings consistently link social support and availability of transportation to access health care to healthy outcomes (Seigley, 1998). Roberto, et al. (1992) noted providers felt frustrated by the perceived barrier of geographic remoteness in Northeastern Colorado. When there is a lack of population base to support multiple gradation of health care, access to specialized and sometimes basic care requires the rural elderly to drive themselves or find someone to transport them (Lee, 1993).

In a qualitative study comparing provider and client views of health care needs for rural elders, providers found transportation was a key barrier to access for services (Roberto, et al., 1992). The same study found the following theme from providers: “In rural areas, many seniors may not do anything for themselves until they are in a crisis...
situation, then someone else has to step in” (1992). This is a function of remoteness and lack of access to easily available transportation (1992). In this same study, the elder's perspective showed great fear of dependency associated with the loss of the ability to drive (Roberto, et al., 1992). Lee (1993) also listed extremes in weather, such as snow or ice that may make roads of pavement, gravel or dirt impassable and act as barriers to access to health care.

To reach a clinic where a primary health care provider can help them, elders who live in these remote areas must often travel more than 50 miles. With roads in these rural and frontier locations often gravel and unpaved, some residents will take more than an hour to drive to the nearest clinic that may offer only limited services, even when the roads are clear and there is fair weather. This increases time to access care and may compound complications significantly.

**Socioeconomic Barriers**

Attainment of the Healthy People 2000/2010 goals is influenced by an inadequate social and economic structure that could help the elder overcome the environmental deterrents to care. Davis and Droes (1993) found that two factors that held consequences for community health nursing practice in large, sparsely populated areas were isolation and scarcity of resources. Wallace (1998) found a significant relationship between social ties and mortality in rural elders 65-102 years, independent of other variables that would influence mortality such as onset of major illness. In addition, with the aging of America and a record number of people living beyond age 85, the mental health system will be challenged to minimize the effects of social isolation with risks to independence and health (USDHHSPHS, 1995).
Two of the four criteria that determine an area as medically underserved are percentage of population older than age 65 and percentage below the poverty level of income (Kohrs and Mainous, 1996). In the Roberto, et al. (1992) study, it was found that financial reimbursement was regressive. For example, elders lacked the appropriate eligibility for home health coverage that could have maintained them in their homes thus forcing patients to relinquish their property to the state so that they would be eligible for nursing home care under Medicaid (1992). Respondents that were interviewed complained it was better to be a pauper than a middle class citizen because middle class elders were helping finance the low-income (1992). U.S. Census Bureau statistics rank the state of Nevada as 47th in the nation for poverty with 8.1% of the population living below the poverty line (Yax, 1999). When looking at age of the population, Nevada ranks 37th for percentage of elders 65 or older, (Yax, 1999). Calder (1999) reports that 23%. Nevada seniors live in rural counties. The Calder (1999) study included seniors 55 and older which may have increased numbers in the study. Calder did find that as age increased to 75+, the need for public assistance (Medicaid and food stamps) increased from 5% in the youngest group (55-65 years) to 18% for the older one (75+ years) (1999).

Summary

The literature reveals uniqueness in the rural elders’ interpretation of what health is, and what directly affects their health care needs (Fallcreek et al., 1994). Consistently rural elders identified in the literature were described as self-reliant with self-help strategies a high priority to meeting their health care needs (Weinert & Burman, 1994),
(Schmidt & Strong, 1997). However, the need to remain independent with dignity in the face of severe disability may lead to prolonging assessment and evaluation of health care needs, increasing cost and recovery time (Schmidt and Strong, 1997) (Roberto et al., 1992). An important nursing implication is to have a clear understanding of the rural elder’s concept of health, so that effective assessment, planning, intervention and evaluation of unmet health promotion needs can take place (Long, 1993).

Over all, the literature indicates that rural elder’s health status is poorer with a higher prevalence of chronic disease related to poverty, lack of services and social isolation (McConnel and Zetman, 1993) (Johnson, 1998). When evaluating the health status of rural elders, patterns of illness may develop and should lead to development of services needed to promote and improve health (Rabiner, et al., 1997).

The Healthy People 2000/2010 mandates for this unique population are appropriate and in line with the elder’s perception of health. To remain independent and self-reliant, elders who may be severely disabled will need to increase or at least maintain the numbers of activities of daily living that they can perform independently. There is a disparity seen in reaching this goal with the lack of health professionals. Public policy of MUA and HPSA designation recently proposed by the Department of Health and Human Services reinforces this disparity (Goldsmith and Ricketts, 1999) (Ricketts, 1999). With the misdistribution of appropriate health care professionals and health care resources resulting in decreased availability of health care, it can be anticipated that there will be a resultant increased cost and potential morbidity associated with complications (Kohrs and Mainous, 1996) (Mainous and Kohrs, 1995). When prompt attention is not given to minor medical problems, they can grow into major ones.
Environmental barriers to health care include social isolation, transportation and geographic isolation (Seigley, 1998) (Foster, et al., 1994) (Roberto, et al.1992) (Lee, 1991). Nursing implications for improvement in meeting rural elder's health promotion needs in frontier settings include awareness that an elder may have environmental deterrents to getting to health care and may need assistance with obtaining transportation for such care.
CHAPTER 3

FRAMEWORK

In this chapter Pender's Health Promotion model is presented as the base to provide structure to studying, interpreting and developing potential interventions for the rural elder's unmet health promotion needs. An overview of Pender's model with examples of application to assessing these needs is presented. A schematic diagram of the original Health Promotion Model (Figure 2) and the Applied Health Promotion Model (Figure 3) represent the model of interest. The theoretical basis for the Applied Health Promotion Model with implications for assessment of the variables that affect rural elder's health promotion needs follows. Conceptual and operational definitions pertinent to the proposed study are identified. A summary follows with explanation of how this paradigm can play a vital role in nursing research and practice.

Background

Pender's original Health Promotion Model (Pender, 1996), used as a framework for this research, is aimed at what may predict health-promoting lifestyles as well as specific behaviors (see Figure 2). Pender believes achieving a healthy lifestyle should be the goal of individuals of all ages (1996). Her model is designed to identify determinants of a healthy lifestyle that demonstrates health promotion activity. A revised model is
available, but due to the design and nature of this study, the original Health Promotion Model (HPM) clarifies the relationship of the variables under study much better.

Major Concepts of the Health Promotion Model

Cognitive-Perceptual Factors

In Pender's original model under Cognitive-Perceptual Factors (see Figure 2) variables are listed that may be considered of major motivational significance (Pender, 1996). Because they are subject to modification through nursing actions, Pender considers them a critical "core" (1996). Relevant personal factors are predictive of a given behavior and shaped by the nature of the target. In this model, the targeted desired behavior is health promotion activity. Relevant personal factors are represented as variables that include importance of health, perceived control of health, perceived self-efficacy, definition of health, perceived health status, perceived benefits of health-promoting behaviors, and perceived barriers to health-promoting behaviors. Healthy aging is highly dependent upon the frequency of health-promoting lifestyles affected by these personal factors (1996).

Modifying Factors

Modifying factors are included in the model to demonstrate the affect of variables as demand characteristics and aesthetic features of the environment in which a given behavior is proposed to take place (1996). These include demographic and biologic characteristics, interpersonal influences, situational, and behavioral factors. Situational influences have been given little attention in prior studies of the HPM and are worthy of further exploration as potentially important determinants of health behavior (1996).
Delaying treatment due to a focus on maintaining productivity or lack of service due to environmental barriers (potential modifying factors) can be problematic in making early detection and intervention of illness possible (Schmidt & Strong, 1997). Modifying factors such as demographic characteristics, interpersonal influences and situational factors will influence participation in health promotion activities (Woods, 1989). Client concepts of health are affected by place of residence and are further colored by specific community and individual level variations (Long, 1993). These factors hold an important key in developing new and more effective strategies for facilitating the acquisition and maintenance of health behaviors (Pender, 1996).

**Likelihood of Engagement in Health Promotion Behaviors**

The end result or action output of the HPM is the health promoting behavior (1996). Health promoting behaviors, particularly when integrated into a healthy lifestyle will result in a positive health experience throughout the life span. In Pender’s original Health Promotion Model (HPM) (1996) the likelihood of engaging in health-promotion behaviors are portrayed as a behavioral outcome in the model.

Analysis of situational and personal variables have been set in the model to predict potential participation in health promotion behaviors. The Health-Promoting Lifestyle Profile II (HPLP-II) was designed by Dr. Susan Noble Walker to measure discretionary activities that would significantly impact a healthy lifestyle (1996). Items in the profile are worded as positive actions or perceptions directed toward enhancing health and well-being (1996). The 52-item instrument was developed to measure health-promoting behaviors, conceptualized as a multidimensional pattern of self-initiated actions and perceptions to enhance the level of wellness (1996) (see APPENDIX D).
Cues to Action

Under the likelihood of engaging in health promoting behavior in Pender’s HPM, cues to action is listed as an important element that propels the individual into and through a behavior (Pender, 1996). Unless there is a competing preference that the individual does not resist, the health promotion behavior can take place. Competing influences come in several forms for the rural elder. When there is inadequate availability of services it is costly for the rural elder to travel out of the area. If funding for such travel is inadequate, the rural elder may choose to delay treatment or wait to obtain primary care that would promote health and improve health status. This becomes very problematic when an illness that could have been eliminated through health promotion activity then becomes a chronic illness that could lead to severe disability, increased cost of care and loss of quality of life. This study did not evaluate cues to action as a separate variable.

Nola Pender’s Health Promotion Theory

The Health Promotion Model (HPM) demonstrates the source of health behavior motivation to be unique to the individual. Pender’s model integrates a number of constructs within a nursing perspective of holistic human functioning from predominantly health promotion or approach oriented motives with potential applicability across the life span. Two major constructs this model integrates are expectancy-value theory and social cognitive theory (Pender, 1996).

According to expectancy-value theory, a person will engage in a given action and will persist in it to the extent that (a) the outcome of taking action is of positive personal
value, and (b) based on available information, taking this course of action is likely to bring about a desired outcome (1996).

Social cognitive theory presents an interaction model of causation in which environmental events, personal factors, and behaviors act as reciprocal determinants of each other (Pender, 1996). Behavior is neither solely driven by inner forces nor automatically shaped by external stimuli. Instead, cognitions and other personal factors, behavior, and environmental events are interactive. Behavior can modify cognitions and other personal factors as well as change the environment while environment and conditions can augment or constrain behavior. According to Pender, this dynamic interaction causality provides a rich array of human possibilities (1996).

**Assumptions of the Health Promotion Model**

The HPM is based on the following assumptions. These reflect both nursing and behavioral science perspectives (Pender, 1996, p. 54-55):

1. Persons seek to create conditions of living through which they can express their unique human potential.
2. Persons have the capacity for reflective self-awareness, including assessment of their own competencies.
3. Persons value growth in directions viewed as positive and attempt to achieve a personally acceptable balance between change and stability.
4. Individuals seek to actively regulate their own behavior.
5. Individuals in all their biopsychosocial complexity interact with the environment, progressively transforming the environment and being transformed over time.
6. Health professionals constitute a part of the interpersonal environment, which exerts influence on persons throughout their life span.

7. Self-initiated reconfiguration of person-environment interactive patterns is essential to behavior change.

The preceding assumptions act as building blocks to better understand how the rural elder's concept of health is unique. These assumptions can reveal what motivates this special population for health promotion, health maintenance and illness treatment. The following examples reinforce how these assumptions apply to the rural elder.

In a rural West Virginia community, Casarett (1991) found that the rural elders possessed methods to skillfully address health problems which included self-monitoring, self medication and most significant, the use of contacts from a social network. The net effects of utilization of these health promotion methods were to allow the elder to live more independently, with self-esteem intact. This example supports assumptions 1-4. 

Self-efficacy is an independent variable that is included in this study. This study evaluates self-efficacy demonstrated through self-care.

Johnson (1998) found that the most frequently reported stressful life events and often a chronic strain of the frontier elderly participants were losses from the social support network, decreased social activity and loneliness. These are of particular concern when elders may be experiencing poor health and may need to depend on others. This example supports assumption number five. Johnson's recommendations include exploration of ways to increase or strengthen existing social support networks for the frontier-dwelling elders such as encouraging telephone contacts with friends and family.
to check on rural elders (1998). These recommendations support assumption seven. Social support networks were investigated in this study.

Older adults can derive great benefits from health promotion activities, including delay of the chronic diseases that impair functioning and quality of life. Healthy People 2010 estimates the years of healthy life will show a decline despite increases overall in life expectancy (Shalala, D. 2000). The potential for improvement is great and nurses have a key role through research that analyzes what variables affect health promotion behaviors of the rural population. When nurses promote the health of older adults instead of waiting until they are sick, they affect the highest quality of life possible (Wallace & Fulmer, 1998, p. 635).

The Applied Health Promotion Model in This Study

The Applied Health Promotion Model (AHPM) (see Figure 3) demonstrates the relationship of the variables under study. Variables fit into the model as either modifying factors or cognitive-perceptual factors, depending on context. An example of this can be seen in distance to health care provider, which may fit into the model under demographic characteristic rather than perceived barrier to health-promoting behaviors. Additionally, lack of insurance or financial means to obtain needed services may fit into socio-economic factors as well as perceived barriers to health promoting behaviors. Regardless of whether these factors may be real or perceived, both have direct impact in Pender’s applied model on the actual engagement in health promotion activity.

The HPM has been used as a framework for research aimed at predicting overall health-promoting lifestyles as well as specific behaviors. Some studies have selected a
small set of variables from the model to test as predictors of a given behavior (Pender, 1996). This study selected the majority of the variables to predict the likelihood of health promotion activity by the selected sample. While more people are living to the oldest ages, they may also live those increased years with multiple illnesses and disabilities. The nurse’s role in health promotion activity with a diverse population such as the frontier elder is critical to achieving a cumulative affect of improved personal health and quality of life. By designing, evaluation and coordination of health promotion activity, and evaluation of potential variables that can be manipulated to promote health, the nurse can explicate the health promotion beliefs and practices of diverse communities of rural elders, even in remote locations such as frontier.

Research Hypotheses

The following research hypothesis based on the AHPM was tested: Cognitive-perceptual and modifying factors, as perceived by frontier Nevada elders, predicts their engagement in health promotion activity. Research Tool

Pender’s Lifestyle Profile II and the Health Care Needs Assessment Questionnaire (EHCNAQ) (See APPENDIX D) were used to measure the variables under study. The EHCNAQ contains 55 questions and is a biographical questionnaire developed by the researcher based on a tool used in a previous study comparing unmet health care needs of rural elders with their urban counterparts (Clark and Dellasega, 1998). The EHCNAQ is used to assess both cognitive-perceptual and modifying factors that would influence participation in health promotion activity. The Lifestyle Profile II contains 54 questions.
giving a comprehensive assessment of the level of participation in health promotion activity.

Conceptual and Operational Definitions

To show how and where the concepts in the AHPM will be measured, the following conceptual and operational definitions are clarified. There are two major groupings of variables in this study: Cognitive-perceptual factors and modifying factors. The concept of frontier has been noted. Further clarification follows.

Frontier

The concept of rural has been discussed previously as having been ill defined with multiple definitions. The conceptual definition used in this study to identify “frontier” first appeared in the literature in a newsletter of the National Rural Health Care Association (Ellison, 1986). These distinguishing characteristics of the frontier setting were later reprinted by Lee (1991). Ellison used a population density of less than 6/square mile (see Figure 1). The sample for this study was obtained in areas that fit this conceptual definition.

Cognitive-Perceptual Factors

1. The importance of health to the frontier elder is a cognitive-perceptual variable that serves an internal model. Pender states that “through symbolization processing and transforming transient experiences into internal models can serve as guides for future action” (Pender, 1996, pg. 54). This concept is measured through question 23 in the EHCNAQ asking how many times the respondent has seen the doctor.
n the past 6 months. Question 24 further evaluates importance of health through inquiring for what reasons the visits were made.

2. Perceived control of health is visualized by Pender as “situational perceptions and cognitions of any situation or context that can facilitate or impede behavior” (Pender, 1996, pg. 71). A perceived need for improvement of health services by the rural elder can potentially impede health promotion behavior. Question 21 in the EHCNAQ examines the need for improvement of health care service by asking if respondents felt health care could be improved (yes/no response). To further investigate what may have increased health promotion activity question 54 of the Lifestyle Profile II investigates what health promotion activity is desired that was not available to the respondents.

3. The conceptual definition of self-efficacy for the purpose of this study is the “personal power or capacity to produce a desired effect” (Pender, 1996, pg. 69). Pender recognizes that “feeling efficacious and skilled in one’s own performance is likely to encourage one to engage in the target behavior more frequently” (1996). This variable is operationalized through questions 17 in the EHCNAQ through inquiry if respondents have a family doctor (yes/no response). To further support self-efficacy, elders are asked average weekly attendance at their local senior center and non-prescription medication use.

4. Under concern for health, Pender notes that “subjective feeling states occur prior to, during and following a behavior” (1996, pg. 70). “Commitment to a plan of action for health promotion activity will depend on positive or negative responses to previous and future projections of illness or health states” (1996). Concern for health is
operationalized in question 45 in the EHCNAQ asking what the greatest concern for health in the future might be. To further support concern for health, greatest concern about health now is asked to see if a balance of concern for health or a continued decline occurred.

5. Perceived health status is interpreted by Pender as "a personal factor that can either directly or indirectly affect health behavior when current health status is relevant to performance of a given health action" (1996, pg. 66). Question 15 in the EHCNAQ asks the elder to evaluate his/her health on a four-point scale from excellent to poor.

6. Perceived benefits of health promoting behaviors is defined by Pender as "positive outcome expectations" and "have generally been shown to be a necessary although not sufficient condition for engagement in a specific health behavior" (1996, pg. 68). Pender notes that "situational influences such as options available and features of the environment in which a given behavior is proposed will affect the likelihood of engagement in the health promotion activity" (1996, pg.71). Options are evaluated in the Life Style Profile II, questions 53 and 54. No questions in the instrument identified whether elders actually perceived a benefit of health promoting behavior and for this reason was not included in final data analysis.

7. "Perceived barriers to health-promoting behaviors can be imagined or real and can include unavailability, inconvenience, expense, difficulty or time-consuming nature of a particular action" (1996, pg. 69). Question 19 in the EHCNAQ asks how easy is it to get to the doctor by rating difficulty on a five-point scale from very easy to very difficult.
Modifying Factors

1. “Relevant personal factors may be predictive of a given behavior” and are characterized by Pender as “biologic, psychological and socio-cultural” (1996, pg. 68). The demographic characteristics are measured in questions 1 of the EHCNAQ asking age. Gender of the selected sample is also evaluated to show support of demographic characteristics.

2. “Health status is relevant to performance of a given health action” according to Pender (1996, pg. 66). Health status is evaluated in the EHCNAQ through 12 questions related to symptoms of chronic and acute illness where elders indicated a yes/no response. To further support health status, the number of chronic diseases, number of prescription medications taken and how debilitating the elder’s illness was through evaluation of activities of daily living (preparation of meals and bathing) was included.

3. Pender evaluates race, ethnicity, and acculturation as personal socio-cultural factors (1996). Pender states “interpersonal influences include social support that may tap the sustaining support offered by others” (1996, pg. 71). Under facts about you in the EHCNAQ, questions 3, 4 and 5 ask about race, marital status and with whom the elder lives.

4. Socio-economic status is considered by Pender as a “personal socio-cultural factor influencing personal competence” (1996, pg. 68). Pender lists education as one of the important personal factors influencing a behavioral outcome (1996). The level of highest education received is evaluated in question 10 with a selection of grade school through post-graduate on a four-point scale. Question 9 in the EHCNAQ covers...
yearly income with a selection of four available levels ranging from less than $5,000 to greater than $50,000.

5. Pender states "there may be immediate competing demands or preferences of alternative behavior that may intrude on or impede an intended course of action toward health-promoting behavior" (1996, pg. 71). Modifying factors that include lifestyle and certain risk factors are variables that can impede health promotion activity. Questions 53, 54, and 55 under health habits in the EHCNAQ ask about frequency of alcohol intake, smoking habits and seat belt use. Question 53 asks how much alcohol do you drink, with a four-point response scale from none to more than 3 drinks a week. Question 54 asks frequency of smoking habits based on the 4-point response scale from none to more than 1 pack/day. Question 55 asks simply if seat belts are worn through a yes/no response.

**Actual Engagement in Health Promoting Behaviors**

In this study the Health Promotion Lifestyle Profile II (HPLP II) is used to measure the likelihood of engaging in health-promoting behaviors. The summated behavior rating scale employs a 4-point response format to measure the frequency of self reported health-promoting behaviors. Summated ratings are used to obtain total scale scores. The modified four-point response scale was used to determine frequency of behaviors. Response format is never = 0, sometimes = 1, often = 2, and routinely = 3.

**Summary**

In this chapter the importance of health promotion through Pender’s substantive theory and model has been described in detail with examples from the literature that support the implications of the assumptions. A schematic diagram of Pender’s original
Model (Figure 2) and the Applied Health Promotion Model (Figure 3) incorporate the variables of this study. Constructs in the model are conceptualized and operationalized through specific questions in the research instrument. The rural elder has been described as unique and diversified with inherent motivation to remain independent. Potential patterns configured through this study identify what cognitive-perceptual and modifying factors may limit health promotion actions. By utilizing the Health Promotion Model, explaining, predicting and altering health-promoting policies and modifying factors that affect the rural and frontier elder's health may be possible.
CHAPTER 4

METHODS AND PROCEDURES

In this chapter the design to examine and measure the variables under study is discussed. Explanation of proposed methodology for measurement of the variables for reliability and validity is given. The sampling procedure from the accessible population is described. A critique of the research instrument with its appropriateness and ability to measure the given variables is given. In the procedures portion of this chapter, a detailed description of the exact steps that were taken to contact participants, obtain their cooperation and administer the instrument is provided. A summary is then given of the statistical analyses used to test the hypothesis.

Design

The design selected for this study was descriptive correlational. The primary purpose of the study was to identify variables that represent the constructs in Pender’s Applied Health Promotion Model (AHPM) (see Figure 3) that affect the target population’s participation in health promotion activity. This study attempted to evaluate most of the variables in the model. Examination of the relationship of the variables on the elders’ health promotion activity allows better understanding of the uniqueness of the sample and factors that affect health promotion participation. In the AHPM variables that

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act as modifying factors such as demographic characteristics, health status, socio-cultural, socio-economic, lifestyle, and risk factors were examined. Under cognitive-perceptual factors, the importance of health, perceived control of health, perceived self-efficacy, concern for health, perceived health status, perceived benefits and barriers to health promoting behaviors of the sample were evaluated. The design incorporated an approach of potential multi-causality, recognizing there may be a number of interrelated variables involved that contribute to the frontier elder’s health promotion activity.

Population and Sampling Procedure

Population

The target population was persons age 65 and older who live in frontier rural areas. The accessible population was persons living in three frontier rural counties in Nevada.

A goal of 100 participants was set to achieve a statistically significant number of participants. Selection of the sample was non-random and based on the accessible population in the frontier setting of Nevada. For the purpose of selecting the appropriate population, an operational definition for elder was an individual that is 65 years of age or older. No gender exclusion was used, with both men and women included. To obtain the site for data collection for this population, areas where elders congregate that qualify as frontier were chosen. The conceptual definition of frontier has been clarified in chapter 3. Since eleven of the total seventeen counties in the State of Nevada fit the criteria for frontier (State Data Center Report, 1998), sampling in three of these counties (White Pine, Elko, and Nye) was carried out until a total of 114 participants were obtained.
Sampling Procedure

To insure a large enough sample, data collection occurred in designated communities at local senior centers, at one clinic and by snowball effect where individuals at the senior centers recommended additional contacts for potential participation. By utilizing convenience sampling under criteria identified as frontier rural locations, two additional participants were interviewed in the convenience of their home. The largest number of participants contacted was at the senior center locations. Excluded from the sample were any elders who were visiting the senior center for lunch but did not live locally for at least four months of the year. Exclusion criteria ensured the sample was representative of the frontier conceptual definition.

To obtain the convenience sample, written permission from the administrators at the various sites was obtained in advance (see APPENDIX C). White Pine county site selections were Ely, McGill and Baker senior centers. Elko county site selection was the senior center in Elko and the Nye county site selection included Tonopah and Pahrump senior centers.

Data collection began in May of 2000, proceeded throughout the summer and finished in August 2000. Prior to the survey days all senior center directors were contacted and permission to make announcements about the upcoming survey was obtained. Announcements by the directors or their designee were made each day at lunch for at least one week ahead of survey time to remind seniors who wished to volunteer. With advertisement in rural local newspapers (one month in advance) and announcements at the rural senior centers (one to two weeks in advance), the senior population was alerted ahead of time and this encouraged more participation in completing the written
surveys. Health promotion classes were given by the researcher at the Ely and McGill survey sites to establish recognition and trust.

To achieve a power level of .8 while setting the level of significance of alpha at .05 and a medium effect size, analysis determined a sample of 64 persons was needed. Actual participation was 114. Senior center directors indicated a daily attendance based on the highest daily attendance of the week so that percentage of population participation could be estimated. The target for participation at the senior centers was 50%. All sites but one reached this goal with several exceeding this. Reasons for not participating in the study given by seniors included disinterest due to time involved. In Elko county elders had just completed an extensive survey for the Nevada School of Medicine that also covered unmet health care needs of seniors that had taken 2 hours to complete. Most senior center attendees were eager to be included in the study and anxious to share opinions of health care services in their area. Surveys took 15-30 minutes to complete. The researcher was available to assist with any participants who had visual impairments or questions regarding content.

In White Pine county the Ely senior center attendance averaged 25 per day; 20 participants filled out surveys giving an 80% return at the center. Two seniors requested interviews in the convenience of their homes and one at a local clinic. The McGill senior center averaged 8-10 attendance; 6 participants returned surveys giving a 60-75% rate of participation. The Baker senior center averaged 10-12 attendance; 8 seniors participated and gave a rate of 66-80% participation.

The Elko county senior center attendance averaged 65 participants per day with approximately 15 of those being seasonal residents visiting for the summer. These later
persons were excluded giving an average of 50 local residents. Twenty-four surveys were returned for an approximate rate of 48% participation.

The Nye county senior center in Tonopah averaged 30-35 daily participants. No seasonal residents attended the day of survey. Twenty-seven surveys were returned giving an average of 77-90% of attendees participating. In southern Nye county, Pahrump valley senior center attendees averaged 60. Adjusting for the 20% of seasonal residents who were excluded, 26 surveys were returned at this site giving an average participation of 54% of attendees.

As data collection proceeded, surveys were bundled in batches of ten and placed in large envelopes until data entry began. Identification of the county where data collection took place was written on the outside of the envelope to keep track of location.

Human Subjects Rights

In order to protect human subjects’ rights a Human Subjects’ Rights Protocol Form was submitted and approved by the Department of Nursing Human Subjects Rights Committee and the UNLV Institutional Review Board (IRB) subcommittee charged with review and approval of protocols for research involving human subjects. Following the final approval from the appropriate committees, initiation of the study began. The Protocol Form for Research Involving Human Subjects is found in APPENDIX C. Consent to Participate (see APPENDIX C) was attached to each survey insuring participants of confidentiality and provision of information on who to contact at the university for questions. Participants were reassured they could withdraw at any time without penalty.
Measurement Strategies

Data collection used the Health Promotion Lifestyle Profile II and the Elderly Health Care Needs Assessment Questionnaire (EHCNAQ). Because the Lifestyle Profile fits Pender's Health Promotion Model and measures health promotion activity under study, it was determined that this tool along with the EHCNAQ which measures demographic data were appropriate. The instrument was prepared in large 14 point bold font to accommodate visual impairment. Two geriatric nurse specialists reviewed the instrument for adequacy to measure the concepts under study. The instrument was pilot tested by using 5 seniors selected from the local community, known to the investigator. A re-test occurred with the same seniors who completed testing the instrument with a two-week interval between writings. Instrument review was completed in May 2000 in advance of sample selection. Results of the instrument review for reliability and validity follow.

Health Promotion Profile II

The 52 question survey was developed to measure health-promoting behaviors, conceptualized as a multidimensional pattern of self-initiated actions and perceptions that serve to maintain or enhance the level of wellness, self-actualization and fulfillment of the individual (Walker, 1999). The 52 item summated behavior rating scale employs a 4-point response format to measure the frequency of self-reported health-promoting behaviors. Summated ratings were used for obtaining total scale scores. The modified four-point response format is never = 0, sometimes = 1, often = 2, and routinely = 3. A yes/no response in question 53 was added at the end of this section of the instrument to ask participants if responses that corresponded with never were because health promotion...
activity was not available in their area. Question 54 followed to ascertain what health promotion services the elder would use if they were available. These questions were not analyzed as part of the HPLP II but were evaluated separately. Permission to use the instrument was obtained from the author (see APPENDIX C).

**Health Promotion Lifestyle Profile II Reliability**

The original Health-Promoting Lifestyle Profile II became available in 1987 and was modified to more accurately reflect current literature and practice and achieve balance among the subscales. It has since been used extensively in many health promotion studies, few of which included elders. A manuscript describing the reliability and validity of the Health-Promoting Lifestyle Profile is in preparation. S. Walker (1999), the instrument’s author, has assessed reliability through Cronbach’s alpha as follows: Health Responsibility (.861), Physical Activity (.850), Nutrition (.800), Spiritual Growth (.864), Interpersonal Relations (.872), Stress Management (.793), Total HPLPII (.943).

Instrument reliability for the sample in this study was determined through questions 1-52 in the HPLP II through test and retest. This was accomplished with a two-week interval between testings. Correlation for test and retest of the instrument’s reliability are as follows: Health Responsibility (.789), Physical Activity (.840), Nutrition (.774), Spiritual Growth (.829), Interpersonal Relations (.752), Stress Management (.738), total HPLP II (.937). The overall total scores for the HPLP II on test and retest of .937 were comparable to Walker’s total scores of .943. This exceeds the standard of 0.7 that has been established (Polit, 1996).
Summed scores were also evaluated with Pearson’s r for questions 1-52 in the HPLP II and on retest were found to be correlated with $r = .925$, $p = .024$.

**Health Promotion Lifestyle Profile II Validity**

Correlation of the independent variables for criterion-related and construct validity has been demonstrated in several prior studies utilizing the HPLP II. Pender, Walker, Sechrist, and Frank-Stromborg (1990) investigated several constructs of the HPM associated with health-promoting lifestyle behaviors among blue-collar workers. Using the HPLP II, consistent findings were discovered concerning relationships among model variables adding strength to the importance of designing health-promotion programs based on knowledge of factors that influence the adoption of a healthy lifestyle by employees (1990). Lucas, Orshan and Cook (2000) utilized the HPLP II to investigate determinants of health-promoting behavior among women ages 65 and above living in the community. Their study suggests that barriers may be a more important determinant of older women’s health-promoting lifestyle behaviors than previously described in the model.

**Elderly Health Care Needs Assessment Questionnaire**

To analyze what factors may influence health promotion activity, a 55-item biographical questionnaire has been developed based on the Elderly Health Care Needs Assessment Questionnaire (EHCNAQ) (Clark and Dellasega, 1998) (see APPENDIX D). The biographical questionnaire measured variables set forth in the Pender’s Applied Health Promotion Model (AHPM) (see Figure 3). Modifying factors in the AHPM include demographic characteristics, health status, socio-cultural influences, socio-economic factors and lifestyle and risk factors. Cognitive-perceptual factors include
importance of health to the rural elderly, perceived control of health, perceived self-
fficacy, concerns of health, perceived health status, perceived benefits, and perceived
barriers to health promotion activity.

**EHCNAQ Reliability**

The study for which the tool was originally developed addressed three hypotheses
directed toward use of health care services, health status and unmet health care needs of
rural elderly compared to urban counterparts. All items except one were found to be
reliable through test and retest in the Clark and Dellasega’s pilot of the instrument’s use
of the EHCNAQ ($r = .67$ to $1.00$) (1998).

To test for reliability for the purpose of this study, test and retest measures were
analyzed by Pearson's $r$ on a portion of the EHCNAQ. Questions 24 through 35 were
used to determine health status through symptoms of acute or chronic illness.
Respondents were given twelve symptoms and asked to indicate if they had experienced
any of them with a yes/no response. Responses were summed for test and retest and
found to be highly correlated ($r = .99$, $p = .001$) for summed retest scores.

**EHCNAQ Validity**

The original EHCNAQ was developed and used initially by Clark and Dellasega
(1998). The instrument was generated from a literature review on rural aging with
excerpts from The Medicine, Health, and Aging Project (Smyer, Lago, Ahern, &
Associates, 1986) and from Aday and Anderson’s Development of Indices of Access to
Medical Care (1975). The author of the EHCNAQ brought together 14 seniors who were
interviewed for the purpose of developing the qualitative questions in the tool. The intent
was to ascertain health concerns of the group, kinds of services older people might want
from a nurse and individual health maintenance practices group members felt could be improved (1998). The questionnaire was structured to indicate areas of potential resource development. Since development of the tool is so new, only limited studies have been developed to use it.

Statistical Analysis

The Statistical Package for Social Sciences (SPSS) was used for data analysis (1998). The following research hypothesis based on the AHPM was tested: Cognitive-perceptual and modifying factors, as perceived by frontier Nevada elders, predicts their engagement in health promotion activity. Variables that fit into the model with conceptual definitions have been described in detail in Chapter 3.

Frequencies were utilized to describe the data from the EHCNAQ analyzing the major groups of variables that fit the model under Cognitive-Perceptual Factors and Modifying Factors. Total categories of the HPLP II were summed and provided separately from an overall score that was then used as the dependent variable to correlate with the independent variables from the EHCNAQ. Linear regression was used to evaluate eleven predictor variables from the model as independent variables with the summed scale scores of HPLP II questions 1-52. Correlation with a Pearson’s $r$ was utilized to evaluate degree of correlation at $p < .05$ level of significance.

Limitations

Using multi-category indicators describing frontier Nevada elders health promotion activity and correlation of these with cognitive-perceptual and modifying factors allows
limited conclusions to be drawn about how characteristics of elders may vary within
community context.

An additional methodological limitation was the size of the sample. In order to
detect a true relationship of the dependent and independent variables, small sample size
may affect statistical analysis of the predictor variables.

With the non-random selection of sites for data collection, bias and skewed data
could have been a potential problem. Selection of sample participants that were limited
mostly to the senior center sites limits application of results to a smaller population of
frontier elders. By not interviewing elders in their home, data could be skewed when
evaluating mobility for example. Since site selection was well away from the
researcher’s place of residence, the researcher did not know participants. In an attempt to
establish homogeneity of selected county sites, all sites except one were at least 250
driving miles from a major metropolitan setting as the distance to drive for specialized
health care service (Pahrump was 70 miles).
CHAPTER 5

RESEARCH FINDINGS

In this chapter a presentation of the research findings and data analysis are given. The sample is described with reference to frequency distributions for demographic data. Evidence that supports reliability and validity of the research instrument to examine the variables under study is provided. Evidence from the model and the data analysis follows. A brief summary concludes this chapter.

Description of the Sample

The convenience sample of 114 was obtained from the accessible population of elders 65 years of age and older living in remote rural areas of Nevada designated as 'frontier'. This designation was consistent with a population per county of less than 6 per square mile. Data collection took place at six senior centers in three frontier counties, one clinic and in the privacy of two elders’ homes from June through August 2000. A 72% return rate of surveys was achieved. Observation and protection of participant rights was observed as outlined in chapter 4.

Frequency distributions are provided for age, gender, marital status and social support networks and are in Tables 1 through 3. The range of age of the sample was 65 to 88 years old with a M of 74, and SD 6.55. Gender was 61.4% female and 38.6% male.
Ethnic background is not addressed since over 90% were Caucasian. A total of 45.6% were married and lived with their spouse. A fairly large group was widowed (35%). A total of 43% of the sample lived alone. The mean distance families lived from these elders was 286 miles with 25.4% living 1 mile or less from them. Approximately 38% lived more than 100 miles from their family.

Most elders were still driving themselves to health care service (71.1%) with only 3.5% indicating they had no transportation. The mean distance to the nearest town to get health care service was 130 miles. Transportation and distance to health care are summarized in Table 4.

Education, financial and insurance status are summarized in Tables 5 and 6. National statistics for income of this age group compared to the sample is found in Figure 4.

Evidence From the Instrument

The instrument used was a two-part questionnaire. Scores from the instrument were analyzed for reliability with the pilot study group through a test and retest procedure with a two-week interval between testing (n = 5).

Health Promotion Lifestyle Profile II (HPLP II)

The HPLP II was used to measure the actual health promotion participation activity of the sample. The 52-item instrument employed a four-point response scale for 52 questions asking the frequency of each behavior group. The items consist of five major categories: Health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations and stress management. The correlation for reliability for HPLP II
summed scores for questions 1-52 for test and retest was $r = .925$, $p = .024$, $n = 5$.

Evaluation of the HPLP II is found to be statistically significant at $p < .05$ and is therefore reliable. Internal consistency was measured through Chronbachs alpha coefficients and ranged from .73 to .83 with an overall coefficient of .94. This is comparable to the author's alphas of .79 to .87 with her overall coefficient of .94 (Walker, 1999). These findings offer support for reliability of the HPLP II. Support for validity through additional research using this instrument is found in chapters 4 and 6.

**Elderly Health Care Needs Assessment Questionnaire (EHCNAQ)**

To test for reliability of the second portion of the instrument, the Elderly Health Care Needs Assessment Questionnaire (EHCNAQ), a Pearson's $r$ was used to correlate for any score changes that may have occurred between test and retest procedure with a two-week interval between testings. Items from the EHCNAQ that identified a number of acute or chronic symptoms were used for correlation. Respondents answered with a yes/no response. Responses were summed for both the test and the retest scores and were found to be correlated ($r = .99$, $p = .001$, $n = 5$). Scores were rechecked since the retest answers were so highly correlated and were found to be correct. These results support the stability of measurement over time. The EHCNAQ has had little reported assessment through research to evaluate validity from other studies.

**Pender's Health Promotion Model**

Pender's Health Promotion Model (Figure 2) was used as the framework to develop the purpose of this study, which was to investigate what behavior specific cognitions (Cognitive-Perceptual) and situational influences (Modifying Factors) have on
health promotion activity rural elders experience in a frontier setting. The Applied Health Promotion Model (AHPM) (Figure 3) used in this study was based on Pender’s original model. The AHPM was used to identify variables pertinent to investigating the hypothesis.

**Cognitive-Perceptual Factors**

Importance of health. The importance of health was listed as the first component of the AHPM under the cognitive-perceptual factors affecting engagement in health promoting behavior. This variable was identified in questions 23 and 24 of the EHCNAQ. Question 23 asked respondents the number of times they had been to the doctor in the last six months for physical health. Asking reasons for the visit (question 24) validates elders were using visits for other than illness such as routine check-ups, and possibly for health promotion and maintenance. Responses were recoded into groups that corresponded with major reasons for seeing the health care provider. Major categories included visits for health maintenance and prevention through check-ups, chronic illness or condition, and acute illness or condition. Frequency distributions can be seen in Table 7 and 8.

Findings for question 23 show a range for number of visits from 0 to 15 with 25 indicating no visits were made while as many as 15 visits were made by 2 respondents. A large percentage of visits (25.4%) fell into 2 visits for the last six month (see Table 7). Reasons for physician visits included acute or chronic illness with 41% of visits made for health maintenance and prevention (see Table 8).
Perceived Control of Health

Perceived control of health was identified through perceived need for improvement of health services in question 21 of the EHCNAQ with a yes/no response. Table 9 summarizes the responses which indicate over half (52.6%) responded service could be improved. Question 20 asked for level of satisfaction with health care availability. The majority of responses surprisingly fit into very satisfied, somewhat satisfied, and satisfied (total 71.1%). Perceived control of health was further supported by questions 53 and 54 in the HPLP II. Elders were asked if they did not participate in the health promotion activity because it was not available with a yes/no response. This question was followed with an opportunity to indicate what health promotion activity they would have liked that was not available. A total of 38.6% indicated they did not participate because it was not available but only 30.6% indicated what service or activity they would have liked provided. Table 10 summarizes frequency distributions for these data.

Self-efficacy

Self-efficacy was identified with questions 13, 16, 17, and 42 of the EHCNAQ. Frequency distributions are listed in Tables 11 through 13. Seniors that can mobilize either on their own or through other means of transportation to attend the center demonstrate self-efficacy. At the senior center they can socialize, have their blood pressure periodically checked, and obtain a well balanced diet. Question 13 asks how many days per week the elder attends the senior center to evaluate their ability to obtain these services. Results showed elders attend a M of 3.64 days per week. One center in Ely was offering a 6-day a week program where elders could go and eat a healthy
breakfast on Saturday morning. Nine were participating this often. Questions 16 and 17 evaluated who the elder went to first for help with health concerns and if he/she had a family doctor. Although 77% indicated they had a family doctor, 29.6 % still consulted a relative first for health. Interestingly, 22.80% indicated they had no family doctor.

Question 42 of the EHCNAQ looked at the execution of self-care to support self-efficacy through self-medication with non-prescription medication. Non-prescription medications were re-coded and grouped into broader categories according to frequency of responses. Four major categories emerged and included pain medication, antacids, vitamins, and laxatives. The frequency distribution summary is provided in Table 12. Pain medication was listed most frequently with 76.3 % (n = 114) taking this. Antacids and vitamins were next in order of frequency with 42.1% and 39.5% respectively (n = 114). Laxatives were used by only 4.4% of the elders. Total percentages were greater than 100 due to the multiple responses.

Concerns of Health

Concern of health was identified in questions 49 and 50 of the EHCNAQ asking what was the greatest concern for health now and in the future. Multiple responses were recoded into 5 major categories to reflect greatest concerns. The same categories identified greatest concerns now and greatest concerns for the future. Chronic diseases, loss of independence, lack of available services, lack of financial resources, and maintenance of good health were the five major categories identified. Table 14 summarizes frequency distributions for this variable.
Perceived Health Status

Perceived health status was identified through question 15 in the EHCNAQ by asking respondents to rate their health on a four-point scale and is summarized in Table 15. The greatest percentage of elders rated their health as good (43%) with only 3.5% considering their health as poor. Fair to poor totaled 37.7%.

Perceived Benefits of Health

Perceived benefits of health promoting behaviors were not clearly identified through an appropriate question in the research tool. Questions 53 and 54 of the HPLP II evaluated potential lack of availability of health promotion service that may have benefited elders. It was noted that 38.6% of respondents did not participate in the health promotion activity because of lack of availability. Frequency distribution of what elders would like available is listed in Table 10 under requested services.

Perceived Barriers

A perceived barrier to health promotion behavior was identified through question 19 with a five-point scale by asking how easy it was to get to the doctor. The vast majority of respondents indicate it is easy to very easy to get to the doctor. To further evaluate and support distance as a barrier, amount of time taken to get to the doctor was evaluated. The amount of time taken to get to the family doctor revealed a $M$ of 56.93 minutes, $SD$ 89.34. Time was heavily skewed to less than 50 minutes. This may explain why respondents did not indicate in high numbers that it was difficult to get to the doctor. Accuracy of responses were questioned when distance in miles to nearest town to get health care was compared to these findings ($M$ 129.5 miles, $SD$ 110.35). Frequency distribution is provided for distance as a barrier in Table 16.
Modifying Factors

Demographic Characteristics

Relevant personal factors through demographics are described under description of the sample.

Health Status

Health status was identified through questions 25 through 36 in the EHCNAQ. Participants were asked if in the last 6 months the elder had any of the symptoms listed. A total of twelve symptoms were listed with several elders selecting multiple responses. Frequency distribution for this variable is summarized in Table 17. To further assess health status as a potential modifying factor, the number of days spent in bed was asked in question 37 of the EHCNAQ. The responses showed greater than 86% were not affected. Questions 38 and 39 of the EHCNAQ asked how many times they were admitted to the hospital for health problems and for what reasons. Again, a large percentage of elders were not affected (79.8%). To further investigate health status, number of prescription medications taken was evaluated in question 40. The number of medications ranged from 15 to 1 with 34.3% taking 4 or more per day (see Table 12). Chronic diseases were evaluated to assess impact on health status through questions 46a through 46o in the EHCNAQ. Hypertension and arthritis were the highest percentages noted at 39.5% and 44.7% respectively. Frequency distributions are presented in Table 18 with Epilepsy and Parkinson's removed due to a single response for each of these categories.
Socio-cultural Influences

Socio-cultural influences as modifying factors were described under description of the sample. Social support networks are described in Tables 1 through 3. Socio-economic influences are also found under the description of the sample. (see Tables 5 and 6).

Lifestyle and Risk Factors

Lifestyle and risk factors were identified in questions 53, 54 and 55 of the EHCNAQ. Risk factors included alcohol consumption, cigarette smoking and seat belt use. A total of 72% did not drink alcohol at all, 16% drank only on special occasions, 7% drank 1 to 3 drinks per week and 4.4% drank more than 3 drinks per week. Elders indicated very little evidence of smoking cigarettes with 92% reporting no smoking. A total of 89.5% of elders surveyed indicated they wore seat belts.

Participation in Health Promotion Activity

To assess health promotion activity responses from the Health Promotion Profile II portion of the survey, responses were summed for a total scale score. Analysis resulted in a $M = 133.98$, $SD = 28.17$ with scores ranging from 48 to 196.

Testing the Research Hypothesis

This study was conducted to test the research hypothesis: Cognitive-perceptual and modifying factors, as perceived by frontier Nevada elders, predicts their engagement in health promotion activity. Regression analysis was utilized the hypothesis. Before calculating the overall regression, correlation of all 11 predictor variables were made against the one dependent variable. The HPM variables of income, self rating of health,
total concerns for the future and acute and chronic illness symptoms were correlated with
dependent variable at .05 or less. Correlation for predictor variables for the AHPM with
summary is found in Table 19.

Linear regression results were $R = .544$ with $R^2$ of .296 and adjusted $R^2$ was .205,
$p = .001$. The overall summary is shown in Table 20 with $F$ statistic 3.253 and $p = .001$.
These findings allow support of the research hypothesis. Based on the data analysis, the
hypothesis of cognitive-perceptual and modifying factors, as perceived by frontier
Nevada elders predicts their engagement in health promotion activity, was accepted.

This chapter has presented the findings of the study. A description of the sample
through frequency distribution is shown. The evidence that supports reliability and
validity of measurement instrument has been discussed. The findings from the data
analysis that relates to the research hypothesis through regression analysis is presented.
Chapter 6 discusses these findings, presents conclusions and makes recommendations for
future study and application of findings.
CHAPTER 6

INTERPRETATION OF RESULTS

Outcomes of data analysis are discussed in this chapter. Included is discussion of significant and non-significant predicted results. These results are correlated to the Applied Health Promotion Model (AHPM). Evidence of these research findings in light of previous results is incorporated into the discussion. Limitations with implications and recommendations for further research are given.

Description of the Sample

Since selection of the sample was convenience and non-random, based on the accessible population in the frontier setting of Nevada, concern for reflection of true population characteristics and representation of these elders was of concern. There is reasonable support this study has included a sample that is representative of the population under study who can mobilize to the senior center sites through their own ability to drive or obtain bus transportation to these sites. This study did not include persons who have no or limited transportation or were homebound.

Frequency distributions for demographic data of the sample has shown that the sample of frontier elders had a mean age of 74, were mostly female and were married and lived with their spouse. A large number though were widowed and lived alone, far from
the social support of their family. Many of them still drive, providing a means to obtain health care service. Adequate transportation could be why they did not see a great deal of difficulty getting to the doctor even though the mean distance to the nearest town to get health care is 129.53 miles. Modification of the question regarding distance to include ‘service from your primary health care provider’ rather than ‘health care service’ could have provided additional insight into distance as a barrier to primary care. Living in isolated conditions, it is possible they have identified and utilized other means of social support and transportation to obtain needed services (20% use a relative or friend). Only 3.5% indicate transportation is not available with the same frequency indicating it is very difficult to get to the doctor.

Most of the sample indicated it is easy to very easy to get to the doctor. These responses may show the frontier elder’s unique ability to adapt despite severe geographic and climatic conditions that present seasonally as shown by Ellison (1986). Consistent with this sample Ellison also found that frontier residents remain self-reliant, resisting seeking help in their social organization skills (1986).

The majority of the sample had a high school or college education. Based on a comparison with the average national income of other rural elders, the frontier elders in this study are poorer. A total of 11.4% indicated less than $5,000 for yearly income (see Figure 4) when compared with the national statistics (8%) for the same level of poor income (Greenberg, 2000). National statistics indicate a larger percentage of people aged 65 + are earning more than $50,000 (7%) as compared to this sample (3%). The sample seem to be fairly well educated but with less income to show for it.
When asked if they had delayed getting prescription medication because of insufficient funds, 17.5% answered yes. This may have an impact on health status if health promoting prescription medication is missed due to lack of funding. These findings have implication for availability of programs that support funding for those that may be underinsured for prescription medication. If programs are available and elders are not aware of them, education is needed of programs that currently exist.

The sample rated their health as good or excellent despite a number of participants who indicated symptoms of acute or chronic illness (see Table 17). A total of 37.7% rated their health as fair or poor compared to 27% of older persons assessed nationally who rated their health as fair to poor (Greenberg, 2000). Less than 5% of the elders surveyed indicated they were unable to perform activities of daily living (ADLs) such as preparing meals or taking a shower compared to 21% (6.5 million) nationally reporting difficulty with ADLs (2000).

Despite more participants having rated their health as fair to poor, a much smaller number did not indicate they were affected with functional impairments compared to national data. These findings are consistent with studies that describe rural elders as being muchhardier, demonstrating control and commitment to self-care (Bigbee, 1991). These findings also support the need to assist these elders with health promotion activities that continue to maintain the unique characteristics of hardiness and self-care. Programs that assist elders living in remote rural settings to live independently in their homes should be a high priority to the primary care provider.
Interpretation of Evidence From the Instrument

The dependent variable for this study was actual participation in health promotion activity and was measured by the Health Promotion Lifestyle Profile II (HPLP II). Independent variables were both cognitive-perceptual and modifying factors. The variables related to these factors were measured by the Elderly Health Care Needs Assessment Questionnaire (EHCNAQ). Both reliability and validity of the HPLP II and the EHCNAQ were presented in chapters 4 and 5. Both sections of the instrument were found to be reliable. Chronbach's alpha of .94 supports internal consistency and is consistent with other studies using the HPLP (Lucas, Orshan & Cook, 2000) (Pender, Walker, Sechrist & Strinborg, 1990) (Garcia, Pender, Antonakos & Ronis, 1998). The EHCNAQ initial reliability was found to be adequate with an r = .67 (Clark & Dellasega, 1998). For the purpose of this study, Pearson's r on test and retest summed scores was r = .99, p = .001, n = 5. These results support this tool as being reliable for this population.

This tool was found to be very useful to measure most of the variables under study from the AHPM. Reformattting a few of the questions to better fit the model and clarify variables under study is needed. Due to the size of print (14 point font) and bolded letters, respondents seemed to find it easy to read. Participants had no negative comments about the survey and very few questions were presented to the researcher. The goal of 50% participation was achieved at all sites except one where elders had recently participated in another survey of a similar type that had taken two hours to complete. At this site, 48% participation was achieved.
Interpretation of Evidence From the Model

Summary for regression analysis of Pender's Applied Health Promotion Model is found in Table 20. With $R = .544$ there is an indication of a moderate relationship between the predictor variables of cognitive-perceptual factors and modifying factors and the actual engagement in health promoting behaviors. The proportion of variance in the dependent variable (engagement in health promoting behaviors) accounted for by the predictors, indicated by $R^2$ is .296, providing a modest determination of variance in factors affecting health promotion participation.

Of eleven predictor variables, four had a $p < .05$ and were self-rating of health, total for greatest concerns for health in the future, total number of acute and chronic illness symptoms, and income.

Self-rating of health was statistically significant at $p = .001$. Self-rating of health, evaluating perceived health status, also had a negative relationship to health promotion activity. The higher the rating (self rated as better), the less correlation with health promotion participation is seen. These results prove interesting and may be interpreted to mean that those who viewed their health as better saw very little need to improve their health through such activities. These results have implication for better education to reach a maximum potential for health status and maintain this status as long as possible through healthy activities.

As elders looked to the future for total of health care concerns, a positive relationship that statistically correlated with health promotion participation was noted. Elders surveyed seem to see a potential need for an increase in healthy activities as they are aging.
The number of acute and chronic illness symptoms was statistically correlated with health promotion participation. Because this correlation was negative, there may be an indication as these symptoms increased, health promotion activity declined.

Correlation of increased income and health promotion activity would seem logical with more income an elder has, the more opportunity to invest in health promotion behaviors. In addition, four variables had a positive relationship with participation in health promotion activity. Having a family doctor, total number of visits to the doctor in the past 6 months, need for improvement of health care service, and the elder living with someone, all have positive relationships. These results may indicate that visiting the doctor encourages these elders toward health promotion. Living with someone that encourages this kind of activity may be indicated by the results of these findings.

Five variables had negative relationships with health promotion participation. These were age, ease to get to the doctor, total of lifestyle risk factors, number of acute and chronic illness symptoms, and self-rating of health.

These results may be interpreted to mean that those elders that are younger and have fewer risk factors will participate more in health promotion activity than they will at a later stage of life with more risk factors. As indicated, the sample did not see a problem with transportation to see their doctor as indicated with the majority finding it easy to get there. As transportation decreases with inability to drive, a greater appreciation for health promotion activity may be seen. This should impact the need to maintain contacts with a social network that allows for mobilization to appointments and programs that promotes health as the individual ages.
These findings support concepts from the model as impacting the frontier elder’s health promotion activity in both positive and negative ways.

Discussion of Findings Related to the HPM

Summary of Cognitive–Perceptual Factors

Importance of health. The literature suggests that frontier elders are self-reliant, resisting seeking help (Ellison, 1986) (Rabiner et al., 1997) (Roberto et al., 1992) (Schmidt & Strong, 1997). A large number of frontier elders surveyed indicate they are participating in health maintenance and prevention of illness through regular check-ups (see Table 8). It has been noted that those surveyed were obtaining transportation to health care despite isolation from potential resources, again demonstrating the concept of hardiness (Bigbee, 1991). The number of times seen by the doctor in the last six months for physical health was close to correlating with health promotion activity (p = .06). This could indicate health promotion was topic of discussion at these visits, encouraging participation in health promotion activity as a result. These findings should make providers aware of the importance of stressing these activities, even at visits for illness.

Perceived control of health. Evaluation of perceived control of health indicates a need for improvement in service, even though elders are satisfied to very satisfied with health care availability (see Table 9). A perceived need for improvement of health care service is not correlated with health promotion participation, although there is a positive relationship. This leads to speculation of why the sample would be satisfied but at the same time indicate a moderate need for improvement. Results could indicate that although health care is available, quality of service might need improvement. A
prevailing lack of trust/mistrust in local providers may influence how the elders view
quality of service. Responses did not show elders are not participating in health
promotion because of lack of available service.

Overall, the interpretation of results that influence control of health seem to show
that the sample is much more interested in quality rather than quantity of health care
service. This is consistent with other studies where rural elders identified a need to
augment and enhance their ability to provide self-care with quality services (Davis et al.,

**Perceived self-efficacy.** Self-efficacy of the sample is demonstrated though
analyzing ability to mobilize to the senior center, who the elder contacts first for help
with health, and execution of self-care through self-medication with non-prescription
preparations. A total of 63.1% attended the senior center three or more days per week
(see Table 13). These results indicated many of the elders could get to a place where they
received an inexpensive, nutritious meal and could socialize with others. This may be
especially important for widows and widowers living alone whose family live at great
distances. For those areas that do not have 6-day programs available for meals at the
senior center, evaluation of nutrition may need to be a priority for health care providers to
assess what elders are eating outside of the senior center setting.

All center directors interviewed stated they have ongoing activities to stimulate
socialization through outings such as picnics and bus trips to major metropolitan centers
where seniors can shop. The Nye County Senior Center in Pahrump employs a part-time
activities director who plans and initiates client centered activities both at the center and
on an individual basis in the community. All centers but one have a health care provider
visiting periodically to check blood pressures. It would seem this would be an excellent opportunity to expand services with additional health promotion activity such as blood glucose and cholesterol screenings. Health promotion education of diabetes, osteoporosis, heart disease and cancer prevention at these senior centers would be of great benefit to these elders.

When asked what person they go to first for help with health, nearly 29.6% of the respondents indicated they go to a relative for help and 64% to the doctor (see Table 11). The number of elders who go to a relative first closely correlates with the number who indicated they have no doctor (22.8%). This is worrisome if relatives instead of professional health care personnel are consulted and inadequate advice is given. The reason for not having a family doctor was contemplated. Is it because of the remote location of some of the seniors and one is not available (71% were satisfied with availability), or could it be the quality of the provider is viewed as poor and the elder has lost confidence in their care as 54.1% indicated a need for improvement? Having a family doctor does not correlate with health promotion participation.

The question again arises about encouragement from the primary care provider toward health promotion activity. It would seem reasonable to speculate that if there were more elders with a family doctor or primary care provider who recommended health-promoting strategies to this population, the health promotion activity would increase. Correlation of family doctor or health care provider and health promotion activity is an area that needs further study.

**Concerns for health.** Concerns for health is evaluated through inquiry about greatest concerns for health now and in the future (see Table 14). Concerns for the future
was significantly correlated to health promotion participation. The highest concern for health now and in the future is chronic disease with maintenance of good health second. When the sample looked to the future for their greatest health concern both of these numbers increase. Very little interest is given to loss of independence and need for available service. Financial resources are also of little concern for now and future (2.6% each). This seems to indicate that as the sample ages, elders worry more about maintaining good health, somewhat about remaining independent but are not significantly concerned about availability or how to pay for health care.

These findings about greatest concerns for health are consistent with previous responses about satisfaction and need for improvement. They may feel they will still be able to obtain health care despite other concerns that impede health. They may be simply satisfied with what they have, feeling there is nothing more that can be done or that it would not be appropriate to ask for more or better. This would be consistent with previous qualitative studies where rural elders did not ask for additional help or service in order to maintain dignity and pride (Roberto et al., 1992) (Schmidt & Strong, 1997) (Davis, et al., 1991).

**Perceived health status.** Perceived health status is evaluated through self-rating of health. The majority of elders do not perceive their health as very poor with 62.3% rating their health as either good or excellent (see Table 15), despite a fairly significant number of acute or chronic illness symptoms. A total of 37.7% of the sample surveyed rate their health from fair to poor compared to the national average of seniors age 65 + who rate their health as fair to poor at 27.0 % (Greenberg, 2000). The literature supports these findings and suggests that rural elders report health as fair to poor more often than urban

The percentage of participants with fair to poor health rating does not seem to significantly impact participation in independently performing ADLs. Activities such as bathing or preparing meals are not highly impacted (5% of the sample compared to 21% nationally) (Greenberg, 2000). These findings are supported in the literature as being typical of rural residents who interpret health in terms of functionality rather than being ill (Rabiner et al., 1997). There is no indication in the sample studied or the national statistics if those who needed additional support have a spouse or caregiver to depend on which would make an elder more likely to rely on this help rather than do the best they can on their own.

**Perceived benefits in health promoting behaviors.** The last question on the HPLP II was to evaluate perceived benefits of health promoting behaviors. The intention was to identify perceived benefits of health promoting behaviors by asking what health promotion service elders may benefit from that was not available. Although the question did identify needed services, it did not identify a true perceived benefit of health promoting behavior. The question merely identified a needed service. Statistical analysis through regression did not include questions 53 and 54 for this reason.

Requested health promotion services the sample indicated that are needed are summarized in Table 10. Availability of exercise programs is the most frequently requested service with 17.5% of responses requesting this. Little interest was demonstrated in availability of health promotion education and availability of health care service. These findings are consistent with previous studies where elders often do not see availability as a problem because they accept whatever service is available, even though it
may not be the best or even adequate (Roberto et al., 1992) (Lee, 1991) (Clark & Dellasega, 1998).

Perceived barriers to health promoting behaviors. Difficulty in getting to the doctor, a perceived barrier had a negative relationship with health promotion activity. A large percentage of the sample indicated it is easy to very easy to get to the doctor (79.8%). Due to selection of the sample at the senior center sites, generalization of findings that demonstrate transportation of this group of elders as a non-barrier to the general population of frontier elders is quite limited.

This finding is contrary to findings from a previous study on frontier elders surveyed in the rural southwest (Johnson, 1998). Johnson’s research in the frontier Southwest found lack of transportation as a most frequently reported stressful event with 89% (n = 73) having none. The literature supports the assumption that when transportation is not available through individual or social support networks, this can negatively impact health status (Johnson, 1998) (Seigley, 1998). Johnson had interviewed many of her study’s elders in the home setting. If this survey had been done outside of the senior center, a different result may have demonstrated transportation as a barrier.

Summary of Modifying Factors

Demographic characteristics. Relevant demographic features including age and gender of the sample is described under description of the sample. Age did not significantly correlate and had a negative relationship with health promotion activity.

Health status. Health status was evaluated through number of acute and chronic illness symptoms. The total number of symptoms of illness was found to be statistically significant (see Table 19). Of the 12 symptoms surveyed, pains and swelling in the joints
during the day were the most frequent response. This would be consistent with the frequency reported of non-prescription pain medication use. Previous studies have indicated that rural elders in general have poorer health status (Humphreys, 1999) (Rabiner, et al., 1997) (McConnel & Zetman, 1993). These findings have implication for primary care providers who should recommend physical activity as part of their health promotion programs to maximize strength and mobility.

Additional support for elder’s health status, is evaluated through number of prescription medications taken. Respondents indicated 17.5% delay getting medication due to lack of money which is worrisome in light of complications such as stroke that could occur when anti-hypertensive medication is missed. Chronic disease also supports evaluation of health status with hypertension and arthritis ranking highest (see Table 18). This again would be consistent with the high number of non-prescription medications listed for pain control (see Table 12).

The evaluation of number of days spent in bed in the last month and admission to the hospital have been used as major indicators of health status in other studies (Mainous & Kohrs, 1995) (Rabiner et. al, 1997) (Clark & Dellasega, 1998). These variables were not found to be statistically significant with less than 20% of the sample affected.

Socio-cultural/socio-economic factors. Socio-cultural and socio-economic are influences listed as modifying factors and are evaluated by social support networks, and evaluation of income and education. The socio-cultural factor of who the elder lives with was recoded and evaluated as lives alone or with someone. This variable was not significantly correlated with health promotion participation although the relationship was positive. Yearly income does have a significant correlation with health promotion.
activity. Other studies have not evaluated income independently on its effect of health promotion participation, but it seems reasonable to expect an elder with higher income may invest more time and other available resources in this direction.

**Lifestyle and risk factors.** Lifestyle and risk factors are found to be very low as indicated by frequency distribution of alcohol, cigarette and seat belt use, showing little impact on health promotion. This independent variable has a negative relationship with health promotion activity. These findings may be related to a small sample size. A larger sample size may have revealed different statistics with regard to these types of risk factors.

**Conclusions From HPM**

This research has shown the application of Pender’s Health Promotion Model is appropriate to assess the unmet health care needs of elders who live in remote rural areas, far from urban centers where an abundance of services may be found. Recognition of concepts that are relevant to health promotion activity will help nurses utilize current nursing theory to enhance performance of health-promoting behaviors of this population. This study has shown that expansion of Pender’s model in rural settings such as frontier is needed to meet elder’s health promotion needs. Nurses can expand the use of this model by identifying what variables are impacting elders residing within their area of practice and focus on health promotion activities that will enhance their quality of life.

**Limitations**

Generalizing the findings to other rural and frontier populations may be inappropriate based on the sampling techniques. Additional research to confirm unmet health promotion needs in other remote rural areas is needed.
Items that allowed elders to fill in blanks left several answers open to interpretation as to intent. Fewer number of this format would eliminate interpretation and potential bias by the researcher.

Clearly, incorporating all the variables from the model into the design was a challenge. When data analysis began, no clear support through questions in the instrument could be identified for the variable of rural elder's perceived benefits of health promoting behaviors. Therefore, this variable was not included in the final data analysis. A rather weak link was identified for another variable, perceived control of health, under the same major heading in the model (Cognitive-Perceptual Factors). A question to measure how they perceived control of their health would have been appropriate.

Under modifying factors in the model, question 9 in the EHCNAQ requested information about the sample's income. There was failure in development of this question to clearly separate two categories of income.

Implications

Health Policy

In large geographic areas such as the frontier southwest, provision of appropriate care by the health care practitioner to promote health to this unique and diversified elderly population presents a challenge. Provision of this service becomes problematic when recruitment and retention of appropriate providers of care is very difficult. Several studies have suggested mid-level providers such as advanced practice nurses (APNs) may ease the burden of delivery of health care service to this population (Ellison, 1986) (Keppenbrock, Stacy, Tester & Richey, 2000) (Baldwin, Sisk, Watts, McCubbin,
Brockschmidt & Marion, 1998). These studies indicate that APNs have provided a partial solution to the shortage of primary care services in medically underserved rural areas and are widely accepted.

Insight into acceptance of the mid-level provider, such as the APN, is related to geographic proximity and availability as key factors. With close to 20% of the elderly residing in rural areas and approximately 20% receiving less service than urban counterparts, recruitment and retention of nurse practitioners would serve to partially solve lack of service to this population (Alexy, & Belcher, 1997).

Interface with informal social support services such as senior centers target clients’ continuum of care and provide a safety net for the geographic catchment area. Nurses have a great responsibility to advocate for continuance of such social support networks and expansion of health promotion services at senior centers that are in danger of closing in some frontier areas. “Elders who depend on the senior center in Ely, Nevada and surrounding settings such as McGill do not realize that we are very close to loosing our funding”, according to White Pine senior center director Mary Anderson. Participation and encouragement in advocacy at the local, state, and national level to promote continued funding is necessary to keep these senior centers open which provide the much needed health promotion and social support.

Provision of health care service to remote rural areas such as frontier has been a problem in many areas due to lack of recognition of appropriate population needs. If the population is medically underserved, research regarding specific population needs could target what exactly is needed. Healthy People 2010 is now recommending continuance of previous goals to eliminate disparity of provision of care to all populations (Healthy
People 2010, 2001). Nurses must educate legislators and advocate for change in definitions that are ambiguous for medically underserved populations. By advocating for additional provision of care for remote rural areas that are often medically underserved, disparity can be eliminated.

This study has shown that the frontier sample considered their health as poorer than the national average but less of them were physically impaired by limited activities of daily living. Monitoring what affects health status and use of health care services has long been recognized as essential for indicating need and allocation of funding (Humpherys, 1999) (Clark & Dellasega, 1998). Ironically, health promotion has not always been a high priority for allocation of the health care dollar. According to Haber (1999) most of the 3% of the nation’s health care costs that are spent on health promotion and disease prevention go to the physician’s office or other clinical settings for illness prevention. Considerably less than 1% of health care dollars are spent on changing unhealthy behaviors (Haber, 1999). Brody (1996) concludes that how vigorous and healthy we are in old age is mostly a matter of how we live. Funding for education that stresses the importance of fostering health promotion collaboration with older adults is needed.

This study has shown that the frontier sample was poorer with some not filling prescription medications due to cost. These findings have implication for both health care policy and nursing. If needed prescription medication is delayed, complication of acute and chronic disease may occur, requiring greater nursing care to restore health to individuals affected. The literature suggests that as the United States population ages, there will be fewer health care resources and an increased need of these same resources.
by the rural elder, especially the 75+ age group (Wallace, 1998) (Kohrs and Mainous, 1996) (Roberto, et. al, 1992) (Calder, 1999) (Yax, 1999). With shrinking resources and an aging population, the implication for nurses should be to advocate for change in policies that eliminate or limit funding for medications and other health promotion programs. Within the first part of the new millennium, a new census will reveal demographic trends that may assist in realigning health care resources to benefit the rural elder. If past policies are any indication of future trends this may be improbable.

Nursing

This research adds to nursing knowledge through the application of Pender’s Health Promotion Model and increases recognition of key indicators that may affect health of older adults in frontier settings.

A key indicator of health found in the literature is social support network. Although this study did not find an impact on who the elder lived with and a high level of health promotion activity, social support networks have been shown to have an influence on health in general. Several studies have indicated the importance of maintaining social networks to allow elders who do not drive to get needed service (Johnson, 1998) (Roberto et al., 1992) (Schmidt & Strong, 1997) (Berkman, 1983). As the frontier population ages, the ability to drive diminishes and need for assistance will increase.

An additional goal of Healthy People 2000 that is now extended to 2010 is one of extending the quality of life in years (Healthy People 2010). If quality of delivery of health care is poor, extension of the quality of life in years will be impacted. This study has shown that quality of care may be an issue that will prevent elders from seeking care when needed. APN willingness to collaborate with the elderly client can significantly
improve compliance with seeking help early and following a treatment plan. If a client is taking multiple medicines, they may desire a less challenging medication schedule to comply with a faulty memory or busy schedule. Involving the elder in the decision making process will foster a willingness for the elder to take an active part in health promotion (Haber, 1999). Satisfaction and quality of APN service in the rural setting is well documented in the literature (Kippenbrock et. al, 2000) (Pinkerton and Bush, 2000) (Martin, 2000). Patient satisfaction in these studies was directly linked with interpersonal aspects of service and how clients were treated by the nurse practitioner who demonstrated interest and respect.

Improvement of provider's knowledge of care through additional continuing education is an additional answer to provision of quality care. Many remote rural locations do have access to computers where distant learning can take place even when providers cannot travel to seminars. If specialty care is not available, many rural clinics have access to consultation on-line with specialists who can even transmit and receive images over the internet as well as fiber optic communication lines. Health promotion and illness prevention can also be encouraged through individual use of computers either at the senior centers or in the privacy of the elder's home through clinical reminders sent by email.

Recommendations

Based on the findings of this study, the following recommendations are made:

1. This study should be replicated in other rural settings with changes to the instrument that have been identified. Research that recognizes the complexity of living
in remote rural areas such as frontier is needed to capture the diversity of this population. A study that compares remote rural elders who live greater than 100 miles from urban centers with their rural counterparts who live closer to these cities would clarify if a relationship does exist between these two groups and the impact of distance and time traveled on the health of these rural elders.

2. Frontier rural areas have been characterized as those with low income, geographical distance barriers, inadequate transportation, and residents who have complex and chronic health problems (Gariola, 1997). Pender’s health promotion model should be used to predict the health promotion activities that will most benefit elders interacting with their environment as they pursue health. The constructs under study demonstrate the importance of identifying what affects the frontier elder’s health in their unique domain. Theoretical practice considerations by nurses that operationalize better health promotion and disease prevention through Pender’s model in remote rural communities is needed.

In conclusion, this study has shown remote rural settings such as frontier present unique and challenging factors that are both cognitive-perceptual and demographic in nature and these factors affect the health promotion activity of elders residing there. When nurses can enhance these potentials and provide for acquisition of health promotion activities, the Healthy People 2000/2010 goals will come closer to being met.
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Walker, S. (1999). Health Promotion Profile II. College of Nursing, University of Nebraska Medical Center: Omaha, Nebraska.


Table 1

Frequency Distributions for Frontier Elders by Age and Gender (n=114)

<table>
<thead>
<tr>
<th>Age in Years</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>65-69</td>
<td>30</td>
<td>34.30</td>
</tr>
<tr>
<td>70-74</td>
<td>20</td>
<td>17.50</td>
</tr>
<tr>
<td>75-79</td>
<td>24</td>
<td>21.00</td>
</tr>
<tr>
<td>80-84</td>
<td>26</td>
<td>22.80</td>
</tr>
<tr>
<td>85-88</td>
<td>5</td>
<td>4.40</td>
</tr>
</tbody>
</table>

Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>70</td>
<td>61.40</td>
</tr>
<tr>
<td>Male</td>
<td>44</td>
<td>38.60</td>
</tr>
</tbody>
</table>
Table 2

Frequency Distributions for Marital Status (n=114)

<table>
<thead>
<tr>
<th>Martial Status</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>52</td>
<td>45.60</td>
</tr>
<tr>
<td>Divorced</td>
<td>17</td>
<td>14.90</td>
</tr>
<tr>
<td>Separated</td>
<td>2</td>
<td>1.80</td>
</tr>
<tr>
<td>Widowed</td>
<td>40</td>
<td>35.10</td>
</tr>
<tr>
<td>Never married</td>
<td>3</td>
<td>2.60</td>
</tr>
</tbody>
</table>
Table 3

Frequency Distributions for Social Support Networks by Living Situations and Distance From Family Members

<table>
<thead>
<tr>
<th>Who do you live with? (n=114)</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spouse</td>
<td>52</td>
<td>45.60</td>
</tr>
<tr>
<td>Son or daughter</td>
<td>5</td>
<td>4.40</td>
</tr>
<tr>
<td>Other relative</td>
<td>2</td>
<td>1.80</td>
</tr>
<tr>
<td>Friend</td>
<td>5</td>
<td>4.40</td>
</tr>
<tr>
<td>Live alone</td>
<td>49</td>
<td>43.00</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>0.90</td>
</tr>
</tbody>
</table>

Distance From Family (n=112)

<table>
<thead>
<tr>
<th>How far away does your family live in miles?</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mile or less</td>
<td>29</td>
<td>25.40</td>
</tr>
<tr>
<td>More than a mile</td>
<td>18</td>
<td>15.80</td>
</tr>
<tr>
<td>More than 15 miles</td>
<td>15</td>
<td>13.20</td>
</tr>
<tr>
<td>More than 100 miles</td>
<td>43</td>
<td>37.70</td>
</tr>
<tr>
<td>More than 1000 miles</td>
<td>7</td>
<td>6.10</td>
</tr>
</tbody>
</table>
Table 4

Frequency Distributions for Distance and Transportation to Health Care (n=112)

<table>
<thead>
<tr>
<th>Distance to Health Care</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-20</td>
<td>32</td>
<td>28.40</td>
</tr>
<tr>
<td>26-100</td>
<td>27</td>
<td>13.60</td>
</tr>
<tr>
<td>111-200</td>
<td>14</td>
<td>12.30</td>
</tr>
<tr>
<td>225+</td>
<td>39</td>
<td>35.30</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>How Participants Get to Health Care</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation not available</td>
<td>4</td>
<td>3.50</td>
</tr>
<tr>
<td>Drive myself</td>
<td>81</td>
<td>71.10</td>
</tr>
<tr>
<td>Friend or relative drives me</td>
<td>23</td>
<td>20.20</td>
</tr>
<tr>
<td>Bus or taxi</td>
<td>4</td>
<td>3.5</td>
</tr>
</tbody>
</table>

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Table 5

Frequency Distributions for Education and Income

<table>
<thead>
<tr>
<th>Education (n=112)</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest level of education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade school</td>
<td>11</td>
<td>9.60</td>
</tr>
<tr>
<td>High school</td>
<td>63</td>
<td>55.30</td>
</tr>
<tr>
<td>College</td>
<td>33</td>
<td>28.50</td>
</tr>
<tr>
<td>Post graduate</td>
<td>5</td>
<td>4.40</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Income (n=100)</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approximately what is your yearly income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $5,000</td>
<td>13</td>
<td>11.40</td>
</tr>
<tr>
<td>$5,000-$20,000</td>
<td>51</td>
<td>44.70</td>
</tr>
<tr>
<td>$20,000-$50,000</td>
<td>33</td>
<td>28.90</td>
</tr>
<tr>
<td>Greater than $50,000</td>
<td>3</td>
<td>2.60</td>
</tr>
</tbody>
</table>
Table 6
Frequency Distributions for Health Insurance (n=114)

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>5</td>
<td>4.4</td>
</tr>
<tr>
<td>Medicaid</td>
<td>3</td>
<td>2.6</td>
</tr>
<tr>
<td>Medicare</td>
<td>33</td>
<td>28.9</td>
</tr>
<tr>
<td>Private insurance and medicare</td>
<td>64</td>
<td>56.1</td>
</tr>
<tr>
<td>Private insurance</td>
<td>9</td>
<td>7.9</td>
</tr>
</tbody>
</table>
Table 7

Frequency Distributions for Visits to the Doctor in the Last Six Months (n=114)

<table>
<thead>
<tr>
<th>Number of visits</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>25</td>
<td>21.9</td>
</tr>
<tr>
<td>1</td>
<td>20</td>
<td>17.5</td>
</tr>
<tr>
<td>2</td>
<td>29</td>
<td>25.4</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
<td>12.3</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>1.8</td>
</tr>
<tr>
<td>5</td>
<td>13</td>
<td>11.4</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>1.8</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>2.6</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>1.8</td>
</tr>
<tr>
<td>12</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>15</td>
<td>2</td>
<td>1.8</td>
</tr>
</tbody>
</table>
Table 8

Reasons for Visiting the Doctor in the Last Six Months

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Health Maintenance and Prevention</th>
<th>Chronic Illness or Condition</th>
<th>Acute Illness or Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent</td>
<td>0.41</td>
<td>0.35</td>
<td>0.37</td>
</tr>
<tr>
<td>n</td>
<td>81</td>
<td>84</td>
<td>83</td>
</tr>
</tbody>
</table>

Note. Due to multiple responses, total is greater than 100%.
Table 9

Frequency Distributions for Health Care Satisfaction

<table>
<thead>
<tr>
<th>Level of Satisfaction</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very satisfied</td>
<td>31</td>
<td>27.2</td>
</tr>
<tr>
<td>Somewhat satisfied</td>
<td>22</td>
<td>19.3</td>
</tr>
<tr>
<td>Satisfied</td>
<td>28</td>
<td>24.6</td>
</tr>
<tr>
<td>Somewhat unsatisfied</td>
<td>14</td>
<td>12.3</td>
</tr>
<tr>
<td>Very unsatisfied</td>
<td>17</td>
<td>14.9</td>
</tr>
</tbody>
</table>

Satisfaction with the health care services (n=112)

Could health care services be improved? (n=111)

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>60</td>
<td>52.6</td>
</tr>
<tr>
<td>No</td>
<td>51</td>
<td>44.7</td>
</tr>
</tbody>
</table>

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Table 10

Frequency Distributions for Health Promotion Activity and Requested Health Promotion Services

<table>
<thead>
<tr>
<th>Non-participation due to lack of availability (n=112)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response</td>
</tr>
<tr>
<td>Yes 44 38.6</td>
</tr>
<tr>
<td>No 68 59.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Needed services (n=114)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exercise programs 20 17.5</td>
</tr>
<tr>
<td>Health promotion education 7 6.1</td>
</tr>
<tr>
<td>Availability of health care service 8 7.0</td>
</tr>
</tbody>
</table>
Table 11

**Frequency Distribution for Use of Health Care Professionals by Elders**

<table>
<thead>
<tr>
<th>Person contacted first (n=110)</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative</td>
<td>28</td>
<td>29.6</td>
</tr>
<tr>
<td>Friend</td>
<td>2</td>
<td>1.8</td>
</tr>
<tr>
<td>Nurse</td>
<td>5</td>
<td>4.4</td>
</tr>
<tr>
<td>Doctor</td>
<td>73</td>
<td>64.0</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>1.8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elder has a family doctor (n=114)</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>88</td>
<td>77.2</td>
</tr>
<tr>
<td>No</td>
<td>26</td>
<td>22.8</td>
</tr>
</tbody>
</table>
Table 12

**Frequency Distributions For Number of Prescription and Non-Prescription Medications**

*(n=114)*

Non-Prescription Useage

<table>
<thead>
<tr>
<th>Type</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>pain medication</td>
<td>87</td>
<td>76.3</td>
</tr>
<tr>
<td>vitamins</td>
<td>45</td>
<td>39.5</td>
</tr>
<tr>
<td>antacids</td>
<td>48</td>
<td>42.1</td>
</tr>
<tr>
<td>laxatives</td>
<td>5</td>
<td>4.4</td>
</tr>
</tbody>
</table>

Prescription Useage

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>33</td>
</tr>
<tr>
<td>1-3</td>
<td>42</td>
</tr>
<tr>
<td>4-8</td>
<td>35</td>
</tr>
<tr>
<td>8-15</td>
<td>4</td>
</tr>
</tbody>
</table>

**Note.** Due to multiple responses of non-prescription medications, total percent = >100
### Frequency Distributions For Number of Days per Week Elders Attend Senior Center

(n=112)

<table>
<thead>
<tr>
<th>Number of Days</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>9</td>
<td>7.9</td>
</tr>
<tr>
<td>2</td>
<td>31</td>
<td>27.7</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>7.0</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>14.0</td>
</tr>
<tr>
<td>5</td>
<td>39</td>
<td>34.2</td>
</tr>
<tr>
<td>6</td>
<td>9</td>
<td>7.9</td>
</tr>
</tbody>
</table>

**Note.** $M = 3.64$, $SD = 1.57$
Table 14

**Frequency Distributions For Greatest Concern for Health Now and in the Future (n=114)**

<table>
<thead>
<tr>
<th>Concern</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Now</td>
<td>34</td>
<td>29.8</td>
</tr>
<tr>
<td>Future</td>
<td>23</td>
<td>20.2</td>
</tr>
<tr>
<td>Loss of independence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Now</td>
<td>6</td>
<td>5.3</td>
</tr>
<tr>
<td>Future</td>
<td>10</td>
<td>8.8</td>
</tr>
<tr>
<td>Lack of available service</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Now</td>
<td>3</td>
<td>2.6</td>
</tr>
<tr>
<td>Future</td>
<td>6</td>
<td>5.3</td>
</tr>
<tr>
<td>Maintenance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Now</td>
<td>18</td>
<td>15.8</td>
</tr>
<tr>
<td>Future</td>
<td>24</td>
<td>21.1</td>
</tr>
<tr>
<td>Lack of financial resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Now</td>
<td>3</td>
<td>2.6</td>
</tr>
<tr>
<td>Future</td>
<td>8</td>
<td>7.0</td>
</tr>
</tbody>
</table>
Table 15

Frequency Distribution for Perceived Health Status (n=114)

<table>
<thead>
<tr>
<th>Self Rating of Health</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>22</td>
<td>19.3</td>
</tr>
<tr>
<td>Good</td>
<td>49</td>
<td>43.0</td>
</tr>
<tr>
<td>Fair</td>
<td>39</td>
<td>34.2</td>
</tr>
<tr>
<td>Poor</td>
<td>4</td>
<td>3.5</td>
</tr>
</tbody>
</table>
Table 16

Frequency Distribution For Distance as a Barrier to Health Care By Rating Ease and Minutes Traveled

<table>
<thead>
<tr>
<th>Rated Difficulty</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very easy</td>
<td>40</td>
<td>35.1</td>
</tr>
<tr>
<td>Somewhat easy</td>
<td>26</td>
<td>22.8</td>
</tr>
<tr>
<td>Easy</td>
<td>25</td>
<td>21.9</td>
</tr>
<tr>
<td>Somewhat difficult</td>
<td>16</td>
<td>14.0</td>
</tr>
<tr>
<td>Very difficult</td>
<td>4</td>
<td>6.2</td>
</tr>
</tbody>
</table>

Ease to reach doctor (n=111)
Table 17

Frequency Distribution of Symptoms of Acute or Chronic Illness in the Last Six Months
(n=114)

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joint pain or swelling</td>
<td>47</td>
<td>41.2</td>
</tr>
<tr>
<td>Shortness of breath</td>
<td>40</td>
<td>35.1</td>
</tr>
<tr>
<td>Eye/ear infections or irritation</td>
<td>34</td>
<td>29.8</td>
</tr>
<tr>
<td>Sudden weakness</td>
<td>33</td>
<td>28.9</td>
</tr>
<tr>
<td>Upset stomach</td>
<td>24</td>
<td>21.1</td>
</tr>
<tr>
<td>Unexpected minor injuries</td>
<td>23</td>
<td>20.2</td>
</tr>
<tr>
<td>Cough</td>
<td>22</td>
<td>19.3</td>
</tr>
<tr>
<td>Pain in belly or gut</td>
<td>15</td>
<td>13.2</td>
</tr>
<tr>
<td>Pain in or near the heart</td>
<td>14</td>
<td>12.3</td>
</tr>
<tr>
<td>Unexpected bleeding</td>
<td>3</td>
<td>2.6</td>
</tr>
<tr>
<td>Unexplained wt. loss of more than 10</td>
<td>3</td>
<td>2.6</td>
</tr>
<tr>
<td>pounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repeated vomiting</td>
<td>1</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Note. Multiple responses explain total of more than 100%
Table 18

Frequency Distribution of Chronic Disease (n=113)

<table>
<thead>
<tr>
<th>Disease</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arthritis</td>
<td>51</td>
<td>44.7</td>
</tr>
<tr>
<td>High blood pressure</td>
<td>45</td>
<td>39.5</td>
</tr>
<tr>
<td>Eye problems</td>
<td>35</td>
<td>30.7</td>
</tr>
<tr>
<td>Diabetes</td>
<td>22</td>
<td>19.3</td>
</tr>
<tr>
<td>Heart trouble</td>
<td>19</td>
<td>16.7</td>
</tr>
<tr>
<td>Circulation problems</td>
<td>16</td>
<td>14.0</td>
</tr>
<tr>
<td>Ear problems</td>
<td>15</td>
<td>13.2</td>
</tr>
<tr>
<td>Bone fractures/osteoporosis</td>
<td>13</td>
<td>11.4</td>
</tr>
<tr>
<td>Pulmonary disease</td>
<td>12</td>
<td>10.5</td>
</tr>
<tr>
<td>Thyroid disorders</td>
<td>10</td>
<td>8.8</td>
</tr>
<tr>
<td>Cancer</td>
<td>7</td>
<td>6.1</td>
</tr>
<tr>
<td>Stroke</td>
<td>7</td>
<td>6.1</td>
</tr>
</tbody>
</table>
Table 19

Summary of Correlation of Independent Variables With Total of Health Promotion Categories

<table>
<thead>
<tr>
<th>Predictor Variable</th>
<th>r</th>
<th>Beta</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cognitive-Perceptual Factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has a family doctor?</td>
<td>0.076</td>
<td>0.037</td>
<td>0.38</td>
</tr>
<tr>
<td>How easy is it to get to your doctor</td>
<td>-0.114</td>
<td>-0.103</td>
<td>-1.03</td>
</tr>
<tr>
<td>Number of times seen by a doctor in the past 6 months for your physical health</td>
<td>0.066</td>
<td>0.098</td>
<td>0.98</td>
</tr>
<tr>
<td>Need for improvement of health care services yes/no</td>
<td>0.124</td>
<td>0.214</td>
<td>2.10*</td>
</tr>
<tr>
<td>Total for greatest concerns for health in the future</td>
<td>0.196*</td>
<td>0.172</td>
<td>1.66</td>
</tr>
<tr>
<td>Self rating of health</td>
<td>-0.321**</td>
<td>-0.265</td>
<td>-2.49*</td>
</tr>
<tr>
<td><strong>Modifying Factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.079</td>
<td>-0.032</td>
<td>-0.29</td>
</tr>
<tr>
<td>Elder lives with someone</td>
<td>0.029</td>
<td>0.039</td>
<td>0.37</td>
</tr>
<tr>
<td>Acute and chronic illness symptoms</td>
<td>-0.197*</td>
<td>-0.250</td>
<td>-2.24*</td>
</tr>
<tr>
<td>Total of lifestyle risk factors</td>
<td>-0.177</td>
<td>-0.144</td>
<td>-1.46</td>
</tr>
<tr>
<td>Yearly income</td>
<td>0.222*</td>
<td>0.164</td>
<td>1.74</td>
</tr>
</tbody>
</table>

*Note.  *p<.05, **p<.01

Dependent Variable: Total of health promotion categories
Table 20

**Regression Analysis of Applied Health Promotion Model.**

<table>
<thead>
<tr>
<th>R</th>
<th>R²</th>
<th>Adjusted R²</th>
<th>df</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.544</td>
<td>.296</td>
<td>.205</td>
<td>11</td>
<td>3.253</td>
<td>.001**</td>
</tr>
</tbody>
</table>

**Note.** Analysis includes Cognitive-Perceptual and modifying factors as independent variables and Health Promotion Activity as the dependent variable.
Appendix B

Figures
Figure 1. Differences in Parameter: Urban, Rural and Frontier.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Urban</th>
<th>Rural</th>
<th>Frontier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>More than 100/square mile</td>
<td>More than 6, but fewer than 100/square mile</td>
<td>Less than 6/square mile</td>
</tr>
<tr>
<td>Hospital</td>
<td>Large, usually 100 or more</td>
<td>Small 25-100, may have swing beds</td>
<td>25 beds or less or no hospital</td>
</tr>
<tr>
<td>Driving time</td>
<td>less than 30 minutes</td>
<td>30 minutes</td>
<td>60 minutes or severe geographic &amp; climatic conditions, especially seasonal</td>
</tr>
</tbody>
</table>

Figure 2  Pender’s Original Health Promotion Model.
Figure 3. Pender's Applied Health Promotion Model.

Cognitive-Perceptual Factors

- Importance Of Health To Rural Elderly
- Rural Elder's Perceived Control Of Health
- Rural Elder's Perceived Self-Efficacy
- Rural Elder's Concern Of Health
- Rural Elder's Perceived Health Status
- Rural Elder's Perceived Benefits Of Health-Promoting Behaviors
- Rural Elder's Perceived Barriers To Health-Promoting Behaviors

Modifying Factors

- Demographic Characteristics
- Health Status
- Socio-cultural Influences
- Socio-economic Factors
- Lifestyle And Risk Factors

Participation in Health-Promoting Behavior

- Likelihood Of Engaging In Health-promoting Behaviors
Figure 4. Comparison of Income of persons 65 and over Nationally and Frontier Nevada Sample.

Source: Greenburg, 2000 (Administration on Aging Projections).
Appendix C

Authorizations and Consents
DATE: May 1, 2000

TO: Pauline Bradshaw
Nursing
M/S 3018

FROM: Dr. William E. Schulze, Director
Office of Sponsored Programs (x1357)

RE: Status of Human Subject Protocol Entitled:
"Assessment of Frontier Elders' Unmet Health Care Needs"

OSP # 501s0500-030

This memorandum is official notification that the protocol for the project referenced above has been approved by the Office of Sponsored Programs. The approval is for a period of one year from the date of this notification and work on the project may proceed.

Should the use of human subjects described in this protocol continue beyond a year from the date of this notification, it will be necessary to request an extension.

If you have any questions or require assistance, please contact the Office of Sponsored Programs at 895-1357.

cc: OSP File
Permission for Use of Health Promotion Lifestyle Profile II

PERMISSION FORM

I plan to use the Health-Promoting Lifestyle Profile II in a research or evaluation project entitled:

[Assessment of Unmet Health Care Needs of Rural Students]

I am enclosing a check for ten dollars ($10.00) payable to the University of Nebraska Medical Center College of Nursing.

[Signature]

[Print Name]

[Position]

[Area Code] [Telephone #]

[Mail Address]

Permission is granted to the above investigator to copy and use the Health-Promoting Lifestyle Profile II for non-commercial data collection purposes such as research or evaluation projects provided that content is not altered in any way and the copyright/permission statement at the end is retained. The instrument may be reproduced in the appendix of a thesis, dissertation or research grant proposal without further permission. Reproduction for any other purpose, including the publication of study results, is prohibited without specific permission.

[Signature]

[Susan Noble Walker]

[Date]

Please send two signed copies of this page to:

Susan Noble Walker, Ed.D., R.N., F.A.A.N.
College of Nursing
University of Nebraska Medical Center
985330 Nebraska Medical Center
Omaha, Nebraska 68198-5330

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
White Pine County Senior Center Director Authorization

Permission for Research

I give Pauline Bradshaw and designated assistants permission to conduct research for Unmet Health Care Needs of Frontier Nevada Elders at my facility.

Name: Mary Anderson Date: 6-7-00
Facility: White Pine Nutrition Program

Sly Baker
McGill Centers
Elko County Senior Center Director Authorization

Permission for Research

I give Pauline Bradshaw and designated assistants permission to conduct research for Unmet Health Care Needs of Frontier Nevada Elders at my facility.

Name: [Signature] Date: [Date]

ELKO SENIOR CENTER
P. O. Box 1648
Elko, Nevada 89803
(702) 738-5911
Fax 738-4308
Nye County Senior Center Director Authorization

Permission for Research

I give Pauline Bradshaw and designated assistants permission to conduct research for Unmet Health Care Needs of Frontier Nevada Elders at my facility.

Name: Paula K. King Date: 5/9/2000

Toquop
Pahrump. Senior Centers
Consent to Participate

You are invited to participate in the following research project by Pauline Bradshaw, nurse practitioner student at the University of Nevada, Las Vegas: Assessment of Frontier Elder's Unmet Health Care Needs.

By filling out the attached questionnaire you will assist this researcher in investigation of what health promotion activities you are doing now and what may help you or prevent you from obtaining health promotion care. The purpose of this study is to see if additional services are needed to promote health for senior citizens who live in frontier rural areas of Nevada. Benefits of this study include identification of health promotion programs that may need funding and organization for seniors in frontier locations of Nevada.

The survey will take approximately 10-15 minutes to complete. Assistance will be provided if you have any questions regarding the survey. You will place your survey in the envelope provided and seal it. Sealed envelopes will then be collected by the researcher (Pauline Bradshaw) or designated assistant after completion. No risks to you have been identified. Confidentiality is assured to you through no identifying markers to track your survey. You may withdraw at any time during participation in this research project without penalty by simply handing back the survey to Pauline Bradshaw. You are indicating your consent to participate in this research by completing and returning the questionnaire.

If you have any questions regarding your rights as a participant you may contact the Office of Sponsored Programs at UNLV at 895-1357, 4505 Maryland Parkway, Las Vegas, Nevada, 89154-1017. Additional questions about this study may be directed to
Pauline Bradshaw 000-000-0000, or Dr. Margaret Louis, RN, PhD, graduate student advisor, Department of Nursing, 702-895-3360

Sincerely,

Pauline Bradshaw
Appendix D

Research Tool
LIFESTYLE PROFILE II

DIRECTIONS: This questionnaire contains statements regarding your present way of life or personal habits. Please respond to each item as accurately as possible, and try not to skip any item. Indicate the regularity with which you engage in each behavior by circling:

- **N** = for never,
- **S** = for sometimes,
- **O** = for often, or
- **R** = for routinely.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Sometime</th>
<th>Often</th>
<th>Routinely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Discuss my problems and concerns with people close to me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Choose a diet low in fat, and cholesterol.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Report any unusual signs or symptoms to a physician or other health professional.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Follow a planned exercise program.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Get enough sleep</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Feel I am growing and changing in positive ways.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Praise other people easily for their achievements.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Limit use of sugars and food containing sugar (sweets).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Read or watch TV programs about improving health.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Exercise vigorously 20 or more minutes at least three times a week (such as brisk walking, bicycling, aerobic dancing, using a stair climber).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11.</td>
<td>Take some time for relaxation each day.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Believe that my life has purpose.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Maintain meaningful and fulfilling relationships.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Eat 6-11 serving of bread, cereal, rice and pasta each day.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Question health professionals in order to understand in order to understand their instructions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Take part in light to moderate physical activity (such as sustained walking 30-40 minutes 5 or more times a week).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Accept those things in my life I can not change.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Look forward to the future.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>Spend time with close friends.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>Eat 2-4 servings of fruit each day.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>Get a second opinion when I question my health care provider’s advice.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Take part in leisure-time (recreational) physical activities (such as swimming, dancing, bicycling).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>Concentrate on pleasant thoughts at bedtime.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>Feel content and at peace with my self.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>Find it easy to show concern, love and warmth to others.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>Eat 3-5 servings of vegetables each day.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Never</td>
<td>Sometime</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>-------</td>
<td>----------</td>
</tr>
<tr>
<td>27. Discuss my health concerns with health professionals.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. Do stretching exercises at least 3 times per week.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. Use specific methods to control my stress.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. Work toward long-term goals in my life.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31. Touch and am touched by people I care about.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32. Inspect my body at least monthly for physical changes/danger signs.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. Attend educational programs on improving the environment in which we live.</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>34. Get exercise during usual daily activities (such as walking during lunch, using stairs instead of elevators, parking a car away from destination and walking).</td>
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<td>35. Balance time between work and play.</td>
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<td>36. Find each day interesting and challenging.</td>
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<td>37. Find ways to meet my needs for intimacy.</td>
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<tr>
<td>38. Eat only 2-3 servings from the meat, poultry, fish, dried beans, eggs, and nuts group each day.</td>
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<td>39. Ask for information from health professionals about how to take good care of myself.</td>
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<tr>
<td>40. Check my pulse rate when exercising.</td>
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<tr>
<td>41. Practice relaxation and meditation for 15-20 minutes daily.</td>
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<tr>
<td>42. Am aware of what is important in life.</td>
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<tr>
<td>43. Get support from a network of caring people.</td>
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<td>44. Read labels to identify nutrients, fats, and sodium content in packaged food.</td>
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<td>45. Attend educational programs on personal health care.</td>
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<tr>
<td>46. Reach my target heart rate when exercise.</td>
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<td>47. Pace myself to prevent tiredness.</td>
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<td>48. Feel connected with a greater force than myself.</td>
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<tr>
<td>49. Settle conflicts with others through discussion and compromise</td>
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<tr>
<td>50. Eat breakfast.</td>
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<tr>
<td>51. Seek guidance or counseling when necessary.</td>
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<tr>
<td>52. Expose myself to new experiences and challenges.</td>
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</tbody>
</table>

53. Were health promotion activities you answered N because they were not available? (circle one if it applies)

YES  NO

54. What health promotion activity would you like to have that is not currently available?
FACTS ABOUT YOU

1. Age__________

2. Gender:  a. Female  b. Male

3. Race
   a. White  b. Black  c. Asian  d. Hispanic  e. Other

4. Marital Status
   a. Married and live with spouse
   b. Separated
   c. Married but live apart
   d. Widowed
   e. Divorced
   f. Never married

5. Who do you live with?
   a. Spouse
   b. Son or daughter
   c. Paid Caretaker
   d. Other relative
   e. Live alone
   f. Friend

6. How far away does your family live?____________________________miles.

7. How many miles do you live from the nearest large town where you can get health care services?_________________________miles
8. How do you get to the health care service?
   a. Drive myself
   b. Bus
   c. Friend or relative drives me
   d. Taxi

9. Approximately what is your yearly income? $___________(In dollars)

10. How many years did you attend school? (circle highest level)
    a. Grade school   b. High school   c. College   d. Post Graduate

11. Do you attend your local senior center?
    Yes    No

12. How many years have you attended your local senior center? _____(yrs)

13. How many days a week do you attend the center?_______(days/wk)

14. What type of health insurance do you have?
    a. None
    b. Private insurance
    c. Medicare
    d. Private insurance and Medicare

Utilization of Health Services

15. How would you rate your health?
    a. Excellent   b. Good   c. Fair   d. Poor
16. Who do you go to first for help with your health?
   a. Relative
   b. Friend
   c. Neighbor
   d. Nurse
   e. Doctor
   f. Other

17. Do you have a family doctor:
   Yes  No

18. How far away (in miles) is your family doctor? __________ miles

19. How easy is it to get to your doctor?
   a. Very easy
   b. Somewhat easy
   c. Easy
   d. Somewhat difficult
   e. Very difficult

20. How satisfied are you with the health care services available?
   a. Very satisfied
   b. Somewhat satisfied
   c. Somewhat unsatisfied
   d. Satisfied
   e. Very unsatisfied
21. Do you think health care services could be improved for you?
   Yes  No

22. How?___________________________________________________________

23. How many times have you seen a doctor in the past six months for your physical
    health?_____________________(number of times)

24. For what reasons?_________________________________________________

Have you experienced any of these symptoms in the past six months?

25. Cough at any time during the day or night lasting for 3 weeks or more
   Yes  No

26. Sudden feelings of weakness or faintness
   Yes  No

27. Any infections, irritations, or pain in the eyes/ears
   Yes  No

28. Shortness of breath after doing even light work
   Yes  No

29. Repeated indigestion or upset stomach
   Yes  No

30. Unexplained weight loss or more than 10 pounds
   Yes  No

31. Repeated pains in or near the heart
   Yes  No

32. Repeated vomiting for 1 day or more
   Yes  No
33. Pains or swelling in any joint during the day
Yes  No

34. Pains in the belly or gut for two days or more
Yes  No

35. Unexpected bleeding from any part of the body not caused by an accident or injury.
Yes  No

36. Minor injuries, such as scrapes, bruises, or stumbles for no apparent reason
Yes  No

37. During the past month how many days has your health kept you in bed for all or most of the day? _________________ (number of days)

38. During the past month how many days has your health kept you in bed for all or most of the day? _________________ (number of times)

39. For what reasons? _________________________________________________

40. How many prescription medications do you take? _______ (number)

41. What nonprescription drugs do you frequently take? ____________________

42. List non prescription medications __________________________________
   (example - Tylenol, laxative, etc.)

43. Do you use non traditional medicine (acupuncture, folk healing)?
Yes  No

44. If so, what kind? _________________________________________________

45. List any herbals you take. __________________________________________
   None—_______
46. What diseases or conditions do you have? (circle all that apply)

a. Chronic pulmonary disease
b. Stroke
c. Diabetes
d. Epilepsy
e. Arthritis
f. Cancer
g. Parkinson’s
h. Heart Trouble
i. Thyroid disorder
j. Circulation problems
k. Eye conditions
l. Ear conditions
m. Bone fractures or osteoporosis
n. High Blood Pressure
o. Other_____________________________________

47. Can you prepare your own meals:

a. Without help
b. With some help
c. Completely unable to prepare
48. Can you take a bath or shower:
   a. Without help
   b. With some help (help includes assistive devices such as bath railings, or another person).
   c. Completely unable to bathe alone

49. What is your greatest concern about your health now?

50. What is your greatest concern about your health in the future?

51. What has been the main reason for not seeking help when you have a health problem?
   a. Lack of money
   b. Lack of transportation
   c. I think my problem is a result of normal aging and medical assistance is not required
   d. No readily available source of health care
   e. I have had no health problems
   f. Does not apply because I do seek help
   g. Other_______________________________________________________
52. How often does your physical health stand in the way of doing things you want to do (example - shopping, cooking, etc.?)
   a. Never
   b. Seldom
   c. Sometimes
   d. Often
   e. Very often

HEALTH HABITS

53. How much alcohol do you drink?
   a. None
   b. Occasionally (special occasions)
   c. 1-3 drinks a week
   d. More than 3 drinks a week

54. Smoking Habits:
   a. None
   b. 1-5 cigarettes/day
   c. 1/4 - 1 pack/day
   d. More than 1 pack/day

55. Do you wear seat belts?
   Yes       No
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Honors:

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Nevada Nurses Association (NNA), District, current member.
NNA Legislative Committee, current member.
ANA PAC, current member.
American Academy of Nurse Practitioners, current member.
American Telemedicine Association, current member.
American Telemedicine Association, development and promotion committee, current member.

Thesis Title: Assessment of Predictors of Health Behaviors of Elders in Frontier Nevada
Thesis Examination Committee:
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Dr. Susan Kowalski, R.N., PhD.
Dr. Ann McDunough, PhD.