

AN ASSESSMENT OF HEALTH LITERACY ABOUT COMPLEMENTARY AND
ALTERNATIVE MEDICINE IN ADULT RESIDENTS OF A FRONTIER
COUNTY IN NORTHWESTERN MONTANA

by

Ashley Erin Porter

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Jean Shreffler-Grant, PhD, RN

Approved for the College of Nursing

Helen Melland, PhD, RN

Approved for the Division of Graduate Education

Dr. Carl A. Fox

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ABSTRACT

The purpose of this study was to examine CAM health literacy among residents of a frontier county. Health literacy levels in the United States have historically been low. CAM use in the United States continues to grow each year. The combination of the two issues creates the potential for poor health outcomes. Previous research indicates that rural and frontier residents have high rates of CAM use and lower health literacy when compared to urban populations.

Quantitative research methods and Pender's Health Promotion Model provided the underlying framework for this study. A systematic sampling of 100 residents of a frontier county in Northwestern Montana participated in the study. The data were collected by use of a mail survey that included a ten-item CAM health literacy quiz and was analyzed using the SPSS 18 version statistical software program.

The results indicated that more than half of the participants used some form of CAM, either through visits to a CAM provider or a self-directed CAM. Participants reported they most often obtained information about CAM through self-study and about health issues from a health care provider. Greater than half of the participants were rated as Average for their CAM health literacy score. When exploring selected sociodemographics, a significant relationship was found between gender and CAM health literacy. Females had higher CAM health literacy rates. Health literacy about CAM scores were similar between frontier residents in this study and a previous study of CAM health literacy in rural residents. The majority of both populations had Average CAM health literacy.

The implications of the study for nursing research include a) further research regarding CAM health literacy, b) establishing a valid and reliable CAM health literacy measurement tool and c) further research to identify and trend resources utilized to obtain information about health problems and CAM.

The implications of the study for nursing practice include a) self evaluation of CAM knowledge and feeling about CAM use by health care providers b) directing patients to reputable resources about CAM and c) assessing patient CAM use.

CHAPTER 1

INTRODUCTION

Over the past several decades, complementary and alternative medicine (CAM) has grown in popularity among American consumers. “Complimentary and alternative medicine is a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine” (National Center for Complementary and Alternative Medicine [NCCAM], 2008). The use of CAM therapies is widespread, with some 62% of the American population reporting CAM use during the previous year (Barnes, Powell-Griner, McFann, & Nahin, 2004).

Complementary and alternative medicine use may be more prevalent than that of allopathic health care. Based on a study published in 1990, investigators found that the number of visits to CAM providers exceeded those to primary-care providers (Eisenberg et al., 1998).

Goldrosen and Straus (2004) discussed why CAM is so appealing. “CAM practitioners aim not only to treat the physical and biochemical manifestations of illness but also to consider the nutritional, emotional, social and spiritual context in which the illness arises” (Goldrosen & Straus, 2004, p 913). Consumers have a wide variety of reasons for using CAM including the desire to be actively involved in health care decisions, easy access to CAM therapies, pursuit of wellness, and exhaustion of conventional medicine therapies in treating terminal and chronic illness (Institute of Medicine [IOM], 2005).

Research indicates that dissatisfaction with conventional medicine is not a primary reason for using CAM. In fact, approximately 70 percent of individuals using CAM were simultaneously using conventional medicine (Eisenberg et al., 2001). In 1990 and 1997, however, less than 40 percent of patients revealed their CAM use to their physician (Eisenberg et al, 1998). This lack of communication is of great concern. Interactions between CAM therapies and conventional medicine can be beneficial, or can have devastating consequences. One clear example of the benefit of using CAM therapy is demonstrated by the use of massage therapy post-operatively. Massage therapy following surgery has been proven to reduce pain and anxiety and help in the recovery process (Wang & Keck, 2004). Conventional medicine has both benefits and risks and the same is true for CAM therapies. For example, green tea is popular herbal supplement used by many people for its reported antioxidant effects. Use of green tea is contraindicated in high doses while taking the blood thinner coumadin because it contains vitamin K, which reverses the effects of coumadin (University of Maryland Medical Center, 2007). Patients who take blood thinners do so to prevent blood clots, which could lead to strokes and other potentially lethal complications. Disclosing CAM use to conventional providers can reduce the risk of serious interactions (Barnes et al., 2004).

Interactions with conventional medicine are not the only concern when utilizing CAM. Although CAM therapies are thought to be “natural” and “safe”, the quality and quantity of herbs and other dietary supplements are not regulated. Little is known about the mechanism of action, safety, and efficacy of many CAM therapies. Pharmaceutical drugs are regulated by the Food and Drug Administration (FDA) and must go through

rigorous testing, including studies and trials conducted over long periods in order to determine efficacy, safety, and side effects, before they are approved for use among the public. Herbal supplements are marketed as nutritional supplements or dietary supplements. This means that they are regulated as food, not drugs. Manufacturers of dietary supplements are not allowed to make drug claims, in other words statements that claim to diagnose, mitigate, treat, cure, or prevent a specific disease or class of diseases. They may make claims of nutritional support, however, and must include a boldface type disclaimer stating, “This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease” (Bass & Young, 1996, pg 4).

The need for further research regarding CAM therapies was acknowledged by the federal government and the National Institute for Health when the Office of Alternative Medicine was established. The Office of Alternative Medicine is known today as The National Center for Complementary and Alternative Medicine. The NCCAM was established in 1998 to investigate popular CAM modalities. Due to the wide array of CAM therapies and limited funding, however, many CAM modalities have yet to be researched (NCCAM, 2008).

The amount of information available regarding conventional medicine can be overwhelming. Large volumes of information exist, which may make certain health decisions complicated and not all information available is published by reliable or reputable sources. Conflicting viewpoints on each treatment, in addition to large volume of information available, may compound difficulties with making health care decisions.

Even though information is readily available to health care consumers, deficiencies exist among consumers in the ability to process health information. Those deficiencies have been identified as a barrier to health care and have resulted in health literacy becoming a public health issue. Healthy People 2010 defines health literacy as, “The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions” (U.S. Department of Health and Human Services [USDHHS], 2000). Inability to understand health information is of concern because it can lead to increased health care costs, misinterpretations of medical therapies, and inappropriate use of services (Weiss, Hart, & Pust, 1991). In conventional medicine, consumers usually have a provider who can help guide their decisions. Because many CAM therapies are self-directed or self-prescribed, consumers often do not benefit from interaction with a provider before choosing to use it. Therefore, it is important to be health literate about CAM.

“Nearly half of all American adults have difficulty understanding and acting upon health information” (Nielsen-Bohlman, Panzer, & Danzig, 2004, p.1). A person’s general literacy may be quite higher than their health literacy. This problem, in part, stems from the use of medical vocabulary and concepts, both in verbal communication with medical professionals and in written materials such as medication labels and consent forms (Powell, Hill, & Clancy, 2007). Many written health information materials exceed the reading ability of the average high school graduate. Health literacy is affected by education level, health systems, and sociocultural influences.

Only one study was found in the literature on health literacy about CAM (O'Neill, 2007). That study found that two thirds of participants had either Average or Below Average health literacy about CAM. Average health literacy has been identified as being barely adequate in processing complicated health information (Rudd, 2005). Only seven out of the 92 participants in O' Neill's study (2007) could identify that CAM therapies can have potentially harmful side effects, with only one of those seven participants being able to identify specific side effects. Some of the participants stated that no side effects were associated with CAM use. These results indicate that health literacy about CAM is an important issue that warrants further research. It is important to assess how people obtain and process information about CAM therapies and products because of the potential for adverse effects that can be associated with using CAM.

Rural populations are characterized by low education levels, high rates of unemployment, lower salaries, lack of health insurance, and lack of access to care, all of which can contribute to health illiteracy (Gamm, Hutchison, Dabney, & Dorsey, 2003). Rural residents are especially at risk of having limited health literacy. Studies of health literacy among rural residents have varied results, with anywhere from 15-49% of the participants being identified as experiencing health literacy deficits (Montalto & Spiegler, 2001; Wood, 2005). The rural resident may be at greater risk for CAM health illiteracy. Prevalence of CAM use among rural residents has been approximate to that of urban residents, especially the self-administered type of CAM (Shreffler-Grant, Weinert, Nichols, & Ide, 2005). Complementary and alternative medicine health literacy of rural populations has had limited study.

Purpose of Study

The purpose of this study was to examine CAM health literacy among residents of a frontier county in Montana and compare the results with those of a prior study involving residents in a rural county in Montana (O'Neill, 2006). The research questions in this study were: 1) What resources do frontier residents use to obtain information about CAM? 2) What is the level of CAM health literacy among frontier residents? 3) Is there a relationship between the level of health literacy about CAM and selected factors such as age, gender, marital status, and use of CAM among frontier residents? and 4) How do the results of this study compare to the previous study conducted with rural counterparts (O'Neill, 2006)?

Results from this study will contribute to the body of knowledge about rural and frontier residents' health seeking behaviors, attitudes, and CAM health literacy. The comparison between the two populations was of particular interest because of the potential for differing health beliefs among rural and frontier residents. The study was also of interest because it provides for comparison of CAM health literacy between the two populations.

Theoretical Framework

The Health Promotion Model (HPM) was the chosen conceptual framework for this research study. The HPM is a "holistic predictive model of health-promoting behavior for use in research and practice" (Pender, 2003). The HPM is based on both nursing and social cognitive theory. The model defines health promotion as "activities

directed toward developing resources that maintain or enhance a person's well-being" (Polit & Beck, 2008, p 148.)

In the HPM, an individual's characteristics and experiences, including biologic, psychological, and sociocultural factors, influence health promotion behaviors. Individuals will commit to health promotion behaviors based on their perceived benefits of the action, barriers to action, and competence or self-efficacy in performance of the health promoting behavior. Perceived benefits can be defined as "beliefs about the positive or reinforcing consequences of a health promoting behavior". Barriers to action are "Beliefs about the unavailability, inconvenience, expense, difficulty, or time-consuming nature of a health promoting behavior". Competence or self-efficacy is "a person's judgment of his or her own abilities to accomplish a health-promoting behavior" (Patharson & Bradow, 2004, pg 288).

An individual's perception of health promoting behaviors is influenced by interpersonal and situational factors. Interpersonal factors include family, peer, and health care provider support and attitudes toward the behavior based on values, beliefs, and norms (Polit & Beck, 2008). Situational influences in the external environment can increase or decrease commitment to or participation in health-promoting behavior. Situational influences include competing demands and more appealing or preferred actions (Pender, Murdaugh, & Parson, 2002). Competing demands are any obligations that might distract a person from completing a health promoting behavior, one example being lack of childcare. Preferred actions are any distracting ideas about other activities

that might be more appealing than a health promoting behavior, such as watching a movie.

This particular conceptual framework was chosen for this study because use of CAM is often seen as a health promoting behavior. The fundamental constructs of this model, including perceptions of health, motivators for health promotion, and barriers to promoting health, explain human behavior that closely mirrors what is known about rural residents' attitudes and beliefs. Some of the traits of rural residents include the desire to be self-reliant and independent. This attitude directly relates to the concept of self-efficacy in Pender's model, in that a person's perception of his own ability to enhance health promotes specific health-promotion behaviors. Among rural people, health is defined as "being able to do what they want to do; it is a way of life and state of mind; there is a goal of maintaining balance in all aspects of their lives"(Lee & Winters, 2006, p 314).

Health literacy can be viewed as a characteristic that enhances the person's resources in promoting their own personal health. Absence of health literacy can be a barrier to action, as described by Pender. Health literacy is a product of both social and individual factors, influenced by education, culture, and language. All of these factors influence health outcomes (Nielsen-Bohlman et al., 2004). This concept of health literacy closely reflects some of the concepts in Pender's health promotion model including the influence of individual and situational factors on perceived health benefits. Individuals who are seeking to use CAM to promote health must also possess adequate health literacy. Inadequate health literacy when using CAM could instead cause the action to be

a barrier to achieving health, such as in the previous example that illustrated the effects of green tea while on Coumadin.

Definitions

Complimentary and Alternative Medicine (CAM). “ CAM is a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine” (NCCAM, 2008).

Conventional Medicine. “Conventional medicine is medicine as practiced by holders of M.D. (medical doctor) or D.O. (doctor of osteopathy) degrees and by their allied health professionals, such as physical therapists, psychologists, and registered nurses” (NCCAM, 2008).

Health Literacy. Healthy People 2010 defines health literacy as, “The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions” (USDHHS, 2000).

Rural. The United States Department of Health and Human Services developed a definition of rural in 1986 based upon population density per square mile, travel distance required to access specialty health care, and services available in the community. Rural areas consist of population density of more than six persons per square mile, but fewer than 100 persons per square mile. Within that area, there may be a hospital with 25-100 beds. Driving time to access health care services is approximately 30 minutes (Gesler & Ricketts, 1992; Bushy, 1991).

Frontier. The USDHHS uses population density, travel time, and services to designate frontier populations as well. Frontier areas are those with a population density of less than six people per square mile. If there is a hospital within the community, it consists of 25 beds or less. Travel time to access larger hospitals that provide care that is more specialized is at least 60 minutes (Gesler & Ricketts, 1992; Bushy, 1991).

Assumptions

It was assumed that participants in the study would provide accurate information. Another assumption was that the rural residents who agreed to participate in this study had some variations in health literacy. It was assumed that the results of this study would provide insight into differing health needs and health literacy about CAM among frontier people when compared to rural counterparts.

CHAPTER 2

LITERATURE REVIEW

In this chapter, a summary of the literature relating to health literacy is presented. The literature is also reviewed concerning CAM, including prevalence, users, modalities, and safety. In addition, literature regarding rural and frontier populations is summarized. Finally, literature on health literacy about CAM and rural and frontier populations as relates to Pender's Health Promotion Model is discussed.

Health Literacy

Many studies have been conducted to explore barriers related to access to health care. Health literacy, a relatively new concept, has been identified as a barrier to access to care in that someone with limited health literacy may have difficulty navigating the system and functioning successfully in a health care consumer role (Nielsen-Bohlman et al., 2004). Researchers have come to understand the importance of possessing adequate health literacy. The impact of inadequate health literacy results is evident in the individual's impaired ability to comprehend health and self-care information. Health literacy has also been identified as a predictor of health outcomes (Speros, 2005). Improving the health literacy skills of individuals in the United States (US) is an objective for the nation in Healthy People 2010 (USDHHS, 2000).

In 1993, the National Adult Literacy Survey reported that 40–44 million Americans, or approximately one quarter of the population of the US at that time, were

functionally illiterate, with another 50 million having marginal literacy skills (Kirsch, Jungeblut, Jenkins & Kolstad, 1993). A person may be literate within a context of familiar terms and content, but functionally illiterate when required to comprehend unfamiliar vocabulary and concepts such as those encountered in health care settings. A person's ability to read and comprehend prescription bottle labels, appointment slips, and health instructions may be significantly worse than their general literacy (Schillinger et al., 2002; Speros, 2005). "Even though most adults read at an eighth-grade level, and 20 percent of the population reads at or below a fifth-grade level, most health care materials are written at a 10th grade level" (Safeer & Keenan, 2005). For optimal comprehension by health care consumers, it is recommended that patient education material be written at or below a sixth grade level. Better understanding is achieved when medical information is presented that utilizes clear and concise language and is free from medical jargon. Presenting small amounts of information at each education session also leads to increased comprehension (Safeer & Keenan, 2005).

Research suggests that health literacy is a stronger predictor of health status than socioeconomic status, age, or ethnic background (Lindau, et al., 2002; Parker, Ratzen, & Lurie, 2003; Schillinger et al., 2002; Williams, Baker, Parker, & Nurss, 1998).

Inadequate health literacy exists among all segments of society and it is prevalent in patients with low educational attainment, racial and ethnic minorities, elderly persons, and patients with chronic conditions, particularly in public sector settings (Schillinger et al., 2002). Inadequate literacy is especially prevalent among those over 65 years of age, with almost one half or 44% scoring in the lowest reading level (Kirsch et al., 1993). This

suggests that those with the greatest need for health care have the least ability to understand and process health care information. This creates a barrier to accessing health care among these populations.

Poor health literacy is independently associated with poor self-rated health and higher use of services. Furthermore, inadequate health literacy has been associated with poorer physical health, psychological health, and higher health care costs. Patients who are health illiterate are more likely to be hospitalized, perhaps because they are less likely to participate in health promotion and disease prevention activities (Safeer & Keenan, 2005). The Schillinger et al., study (2002) found that health literacy was independently associated with glycemic control among type 2 diabetic patients. That study also found that inadequate health literacy led to poor glycemic control, high prevalence of retinopathy, and other self-reported complications associate with the disease. The IOM (2004) calculated that inadequate health literacy led to an additional \$69 billion in health care costs annually.

Several instruments have been developed to measure health literacy. They include the Medical Terminology Achievement Reading Test (MART), Rapid Estimate of Adult literacy in Medicine (REALM), and the Test of Functional Health Literacy in Adults (TOFHLA). These word recognition tests are useful predictors of general reading ability, and though not all ask medical questions, may be useful in determining health literacy as well. They do not measure reading comprehension or interpretation, but assess the ability to recognize or read and pronounce individual words. If patients have difficulty with

word recognition, which is a beginning-level reading skill, they also are likely to have difficulty comprehending written information (Andrus, & Roth, 2002).

The Medical Terminology Achievement Reading Test (MART) was designed to specifically measure health literacy. A label that contains medical terminology written in small font is placed on a prescription bottle. The bottle is covered with a glossy finish that produces a glare typical of an actual prescription bottle. This design and use of medical terminology is thought to be less threatening to patients than other literacy tests. (Andrus, & Roth, 2002).

The Rapid Estimate of Adult Literacy in Medicine (REALM) is “medical-word recognition and pronunciation test for screening adult reading ability in medical settings” (Nielsen-Bohlman et al., 2004, p 47). The test is relatively short and can be both administered and scored within three minutes. Its ease of use and administration make it especially useful in clinic settings. The test consists of 66 medical terms that correlate with specific reading levels. Medical terms are read aloud and the score is based on the total number of words pronounced correctly. Its validity has been established by correlating results with those of standard literacy tests.

The TOFHLA is a “functional literacy assessment tool designed to evaluate adult literacy in the health care setting” (Parker et al., 1995, pg 3). The instrument assumes that literacy level must be greater than that of the classroom reading level to navigate the health care system. It specifically looks at numeracy and reading comprehension skills. These skills are important in determining a patient’s ability to interpret prescription bottles, appointment slips, and instructions for diagnostic tests. Two versions exist, the

longer being a better measure of health literacy and the shorter (S-TOFHLA) being easier to administer. The TOFHLA and S-TOFHLA are timed reading comprehension tests in which every 5th to 7th word in a passage is omitted and replaced with a blank space. The patient must select a word to fit into the blank spaces from the four multiple-choice options provided for each space. The TOFHLA consists of a 50 item reading comprehension and 17 item numerical ability test, taking up to 22 minutes to administer. The S-TOFHLA, consisting of 36 questions, requires only seven minutes to administer. The TOFHLA is scored on a scale of 0 to 100, whereas the S-TOFHLA is scored on a scale of 0 to 36. Patients are categorized as having adequate health literacy if the TOFHLA score is 75–100, marginal health literacy if it is 60–74, and inadequate health literacy if the score is 0–59. Patients are categorized as having adequate health literacy if the S-TOFHLA score is 23–36, marginal health literacy if it is 17–22, and inadequate health literacy if the score is 0–16. The TOFHLA provides a more thorough picture of the patient's ability to comprehend health material, but it is more time consuming and less practical than some of the other tests (Safeer & Keenan, 2005). Validity and reliability were established for the TOFHLA by comparing the results with the Wide Range Achievement Test—Revised (WRAT-R) and the Rapid Estimate of Adult literacy in Medicine (REALM) (Parker et al., 1995).

Complimentary and Alternative Medicine

Prevalence

Complimentary and Alternative Medicine use increased substantially in the 1990s (Eisenberg et al, 1993; Eisenberg et al, 1998; Nahin, Barnes, Stussman, & Bloom, 2009). Consumers in the US continue to use CAM extensively. The most current data from 2007 places overall prevalence of use at 38.3% of adults (83 million persons) and 11.8% of children (8.5 million children under age 18 years) (Nahin et al., 2009).

Results of the Eisenberg (1998) telephone survey estimated that out-of-pocket expenditure for CAM therapy during 1997 was \$27.0 billion per year, \$12.2 billion of the total was spent on visits to CAM providers. “In 2007, adults in the United States spent \$33.9 billion out of pocket on visits to CAM practitioners and purchases of CAM products, classes, and materials” (Nahin et al., 2009, p. 1). Self-care therapies accounted for 11.2% of out-of-pocket health-care expenditures in 2007 (Nahin et al., 2009). The cost of out of pocket expenditures on CAM in 2007 were comparable to out of pocket costs for conventional physician services and prescription drug use (Nahin et al, 2009).

The IOM (2005) reported trends in CAM use from 1990-1997. The total number of visits to CAM providers increased by 47% from 427 million in 1990 to 629 million in 1997. That survey also reported consumers spent about one-third of the reported out-of-pocket expenditure for CAM on visits to CAM providers. Still more recently, a reported 38.1 million adults made an estimated 354.2 million visits to CAM practitioners (Nahin et al, 2009).

Results from the IOM report (2005) revealed the prevalence of herbal remedy use increased by 380%, and the prevalence of high-dose vitamin use increased by 130% from 1990 to 1997. The 2007 estimates revealed that consumers spent \$22.0 billion on self-care CAM therapies. Self-care CAM therapies accounted for 1.5% of total health-care expenditures in the United States in 2007 (Nahin et al, 2009).

Users

Studies have shown that CAM is most frequently used by people who are middle-aged, 45 to 65 years old, white, female, educated, and have middle incomes (\$20,000-49,999) (Al-Windi, 2004; Eisenberg et al., 1993 and 1998; Astin, 1998; Cauffield, 2000; Bausell, Lee, & Berman, 2001; Upchurch, & Chyu, 2005; Grzywacz, Lang, Suerken, Bell & Arcury, 2005). Although rates of CAM use were highest among white populations, Asians, Hispanics and black adults also reported CAM use (Barnes et al, 2003).

Complementary and alternative medicine use is also reported by urban, suburban, and rural populations, with the highest reported use in suburban populations (Vallerand, Fouladbakhsh, & Templin, 2003). People who suffered from chronic health problems were more likely to use CAM (Astin, 1998). Complementary and alternative medicine use was higher in poor populations when megavitamin therapy and prayer were considered (Barnes et al., 2004).

Reasons for CAM use included chronic pain such as back pain, cancer pain, and arthritic pain (Bausell et al., 2001). Another reason for CAM use was that conventional medicine costs have been increasing. Costs of health insurance have also been increasing and more and more people are uninsured, which has been found to significantly impact

the rate of CAM use, due to the relatively lower cost of over-the-counter CAM products (Pagan & Pauly, 2005)

Modalities

Thousands of CAM therapies are in existence (Kreitzer & Snyder, 2002). The NCCAM has divided these therapies into four major categories including biologically based practices, energy medicine, manipulative and body-based practices, and mind-body medicine (NCCAM, 2008). These categories sometimes overlap. Barnes et al. (2004) found the ten most common CAM therapies were prayer, prayer by others for one's health, natural products, deep breathing exercises, participation in prayer group for one's own health, meditation, chiropractic care, yoga, massage, and diet-based therapies. Prayer accounted for over half of the CAM use reported in that study. Most visits to CAM providers were for manipulative and body-based therapies, such as massage or chiropractic services. Herbal supplements were also a popular form of CAM use and accounted for the majority of out-of-pocket dollars spent on CAM self-care purchases (Nahin et al., 2009). People of all ethnicities have reported CAM use, but different modalities are prevalent in different populations. For example, Barnes et al. (2004) found that white adults were found to use more manipulative and body-based therapies than Asian adults or black adults. These therapies are also more popular among those with higher incomes, while megavitamin and prayer are more popular among those with limited income (Barnes et al., 2004).

Safety

Randomized clinical trials are routinely performed to evaluate efficacy and safety of conventional medicine. Complementary and alternative medicine therapies are associated with risks and benefits like conventional pharmaceuticals (Freeman, 2003). The NCCAM is currently funding studies to evaluate efficacy and safety of multiple CAM therapies (NCCAM, 2003). Complementary and alternative medicine therapies are also being tested with more rigor and frequency than in the past, with higher standards being instituted regarding safety (Parascandola, 2000).

Some of the most popular CAM therapies have already been tested in randomized clinical trials funded by NCCAM. A few examples of tested therapies include acupuncture, dietary supplement use, herbs, yoga, Tai Chi, and massage. Not only are therapies being tested for safety of use, but also their efficacy in treating various ailments. One example is the use of acupuncture for the treatment of depression (NCCAM, 2009). In that study, a total of 22 out of 53 participants reported that they had a 50% or more decrease in their depression symptoms. None of the participants experienced a serious adverse effect, although other adverse effects were experienced. Some examples of adverse effects reported included diarrhea, nausea, palpitations, tremors, and dizziness just to name a few. Another study funded by NCCAM tested the effects of Tai Chi on osteoarthritis pain (Wang, Collet, & Lau, 2004). Tai Chi appeared to have physiological and psychosocial benefits as well as promoting balance control, flexibility, and cardiovascular fitness. No safety issues were identified in that study.

Continued research will be pivotal in regulating and recommending CAM for future use. While some therapies have been studied and found to be safe, many have yet to be tested. Until those therapies are tested and valid, reliable evidence regarding safety and efficacy can be established, the consumer may be at risk for adverse outcomes.

CAM Health Literacy

Complementary and alternative medicine health literacy is a topic that has not been studied extensively. Review of the literature indicates that the O'Neill study (2007) is the only study to date that has explored this topic. The purpose of O'Neill's study was to explore the health literacy about CAM among adult residents of Flathead County, Montana. She included a random sample of 92 adults over the age of 18 residing a rural county in northwestern Montana. The majority of the participants of this study were female (63.7%), aged 40-59 (54.9%), white (97.8%), held a bachelors degree (35.6%), and had an income of \$40,000 or more (55.3%). Participants completed surveys that contained questions about their use and knowledge of CAM. The survey also included a set of questions that served as a measure of CAM health literacy. Approximately half (48%) of the participants reported using CAM. CAM health literacy scores were high with more than half (53.3%, n=49) of the participants classified as Average and 37% (n=34) were classified as Above Average. Although CAM health literacy scores were high, only one participant was able to identify any adverse effects associated with CAM therapy (O'Neill, 2007).

Rural Residents

The United States Department of Agriculture (1993) reported that 21% of all Americans live in rural areas. Rural residents have more chronic disease and disability than urban dwellers, perhaps because the average age of rural adults is higher than that of their urban counterparts. They also experience higher unemployment rates, less education, and less health insurance (Hornberger & Cobb, 1998; Shreffler, 1996; Southwest Rural Health Research Center, 2004). Poverty rates are high in this population, occurring in one out of six rural families (Weiner, 1995). Rural residents also experience less access to care. “Rural counties are three times more likely to be classified as ‘medically underserved’ than are urban areas” (Garkovich and Harris, 1994, p. 10). In addition, rural residents are less likely to have social and health care programs to meet their needs. Available resources, including physicians and other practitioners or hospitals, are often limited, inadequate, or inappropriate (Leipert, 2006). According to the Bureau of Primary Health Care, 43 million people in the U. S. live in underserved areas (as cited in Politzer et al, 2001). A 19% increase in the number of primary care providers in rural areas would be required to effectively treat chronic health conditions and to be comparable to the national average of available providers per person in less rural areas (Sorofman & Politzer as cited in Slifkin, 2002). Despite incentives, scholarships, loans, grants, and additional, training for providers to practice in rural settings, this deficit remains (Mueller, 2001).

Another factor in access to care for rural residents is distance from care. Rural residents often have to travel great distances to access basic health care needs due to lack

of resources within their communities, an issue compounded by poor roads, geography and climate. Average travel in one study to access emergency services was 23 miles and over 50 miles for routine services (Long & Weinert, 1989). Specialized care requires even further travel, sometimes over six hours (Huttlinger, Ayers, & Lawson, 2004).

Some rural dwellers have been known to be suspicious of “outsiders” (Lee, 1998). Rural residents define health in terms of their ability to work (Lee & McDonough, 2006; Long & Weinert, 1989). Health needs are usually secondary to work needs. These beliefs may result in accessing care only to return to work, not for illness prevention or health maintenance. Some rural residents have been found to routinely treat their illnesses at home. Reasons for accessing formal health care systems include serious illness or injury or when health care was needed for a child (Winters et al., 2006).

A review of the literature indicates that few studies have been conducted to measure rural health literacy rates as compared to the national average. Montalto and Spiegler (2001) found that only 15% of the rural population studied experienced health literacy deficits. In contrast, more recent research indicates that health illiteracy rates are much higher among rural people (Wood, 2005; Zahnd, Scaife, & Francis, 2009). In the rural population studied by Wood, health literacy difficulties were identified in 49% of participants. Zahnd et al. found that rural residents had low overall functional literacy, but especially low health literacy compared to urban residents. When they controlled for age, gender, race/ethnicity, education, and income knowing that those variables have a significant effect on literacy, they found no significant difference in health literacy rates based on rurality or urbanicity.

Complementary and alternative medicine use among rural people has been studied by a number of investigators. One study found that rural, older adults residing in the Southeastern US used CAM therapies including vitamin therapy, home remedies, faith, or herbs (Arcury, Quandt, Bell & Vitolins, 2002). Another study found that 29.5% of rural dwelling adults used at least one form of CAM (Dello Buono, Urciuoli, Marietta, Padoani, & De Leo, 2001). Yet another study found that 17.5% of rural residents had visited a CAM provider, and 35.7% had used self-prescribed CAM therapies in the previous year (Shreffler-Grant et al., 2005). Health disparities, limited access to care, limited resources and income, and geographic isolation may also be contributing factors in decisions to use CAM in rural areas (Cuellar, Aycock, Cahill, & Ford, 2003). Rural residents who have chronic illnesses were found to be more likely to use CAM (Shreffler-Grant, Hill, Weinert, Nichols, & Ide, 2007). In Beebe's study (2004), CAM modalities utilized by rural people included reflexology, hypnosis, massage therapy, chiropractic care, herbs, vitamin therapy, diet, and nutrition, and some subjects expressed interest in trying other forms of CAM.

Frontier Residents

Access to health care is an issue that has been well studied in rural populations. Health beliefs and health behaviors among rural populations have been studied to a limited extent. Few studies have been conducted to explore these issues among the frontier population. The difficulties accessing care in rural areas are magnified among residents in frontier communities (Fitzgerald, Pearson, & McCutcheon, 2001; Buehler, &

Lee, 1992; Racher, & Vollman, 2002). Distance has been identified as a barrier to accessing care and frontier residents must travel longer distances to access care.

Geographic location influences, or may even determine, health seeking behaviors among rural and frontier populations (Johnson, Ratner, & Bottorff, 1995). Experiencing difficulties with accessing care leads to attitudes of independence and self-reliance and health seeking behaviors that focus on self-treatment and self-care (Brown, Young, & Byles, 1999).

One study specifically examined health beliefs and health behaviors in a frontier community. In this study, eleven interviews were conducted with residents from a frontier town in southwestern Montana (Smith, 2008). The aim of the study was to explore perceived health status, health care access resources and health care needs of the community, utilization of health care services, reasons for seeking care, and satisfaction with health care access options. “Reasons for seeking health care resources were many. Most cited they would get health care if an acute injury occurred, if home remedies had failed, if their illness was persistent, or for preventative services” (Smith, 2008, pg 45). Adults identified that they did delay care if they felt the illness would go away. Participants in the study stated that they received their health care from clinics, doctors offices, chiropractors, urgent care centers, and emergency departments in micropolitan/metropolitan areas at least an hours drive from the frontier town. Many used home care remedies and two sought care from a naturopath. Barriers to care in the community included cost, distance to care, especially for minor ailments or preventive care, weather, road conditions, cost of gas, travel time, and taking time off work.

Residents identified that having a provider in the community might not be financially feasible due to volume, but would be a valuable and desirable asset to the community. Care for the elderly and children's services were felt to be the greatest need. One participant felt there was a need for homeopathic medicine and one felt that increased emergency services would be appreciated.

Articles related to CAM use among frontier populations only were not found in searching the literature. However, many articles were found that studied rural residents CAM use. Some of those studies have included participants who could be classified as frontier residents according to the definition used in this study (Shreffler-Grant et al, 2005; Nichols, Sullivan, Ide, Shreffler-Grant, & Weinert, 2005)

Health Literacy, CAM Utilization,
and Rural and Frontier Health Beliefs
Applied to Pender's Health Promotion Model

The primary concept of Pender's Model, health promotion, seeks to describe how people develop resources that maintain or enhance health (Polit & Beck, 2008).

According to the World Health Organization (WHO), 'health depends on our ability to understand and manage the interaction between human activities and the physical and biological environment' (1992, p. 409). Health literacy, one aspect of health education, is an integral aspect of health promotion. "Health education is a fundamental tool in the promotion of health and the prevention of disease" (Naidu, 2008). Studies have shown that individuals with low health-literacy levels do not understand information well, get less preventive healthcare (such as screening for cancer and vaccinations) and use

expensive health services, such as emergency department care, more frequently (IOM, 2004). Individuals with poor health-literacy find issues challenging that others consider routine, like filling a prescription, understanding information on medication bottles, comprehending appointment slips, reading a health promotion brochure at the supermarket and understanding the doctor (Hixon, 2004). Through these skills, people gain understanding and the capacity to act upon this information which leads to improvement in their health status. Health literacy, therefore, is critical to empowerment (Nutbeam, 2000). McMurray (2007) states that excellent health status is an outcome of increased health literacy levels.

Concepts common to CAM include wellness, mind, body, spirit, holism, individualism, self-healing, and vitalism (Goldstein, 2000). Complementary and alternative medicine users often utilize CAM for health promotion purposes, even if used during chronic illness (Eschiti, 2008). Eisenberg (1998) reported that, while CAM was used most frequently for back problems, anxiety, depression, and headaches, one third of respondents did not use them for a primary medical problem. In 1997, 58% of respondents stated they used alternative therapies partly to “prevent future illness from occurring or to maintain health and vitality” (Eisenberg, 1998). Users reported that CAM use is congruent with personal beliefs and values regarding life and health (Astin, 1998). Pagan and Pauly (2005) noted that CAM popularity is influenced by the desire for individual empowerment.

Many rural residents seek healthcare through alternative means or informal systems, which may include community members, family, and friends (Winters et al.,

2006). Rural residents have been shown to be more independent and engage in more self-care than urban counterparts (Shreffler, 2005; Lee & McDonagh, 2006; Bales, Winter, & Lee, 2006; Brown et al, 2004). Rural residents have reported using CAM to enhance self-control and improve odds of staying healthy (Beebe, 2005). In another study, rural residents reported that they use CAM because they desired to be independent and self-reliant (Johnson et al, 1995). Self-efficacy is essential for individuals to take accountability and seek out additional health information (Dutta-Bergman, 2003).

Summary

The popularity of CAM in the US is steadily increasing. Complementary and alternative medicine modalities are being utilized both in combination with conventional therapies and as primary treatment. Review of the literature reveals the benefits of health literacy, as an important tool in navigating the health care system safely. Health literacy regarding CAM is essential for safe and proper use of CAM. Despite increases in popularity of CAM, little attention has been given to health literacy regarding CAM. This issue is of great concern in frontier populations because they are consumers of CAM and research suggests that they seek self-care therapies more often than urban counterparts. They are also at risk for lower health literacy based on their sociodemographics.

CHAPTER 3

METHODOLOGY

This chapter describes the methods that were used to evaluate health literacy about CAM among a frontier population in Northwestern Montana. Description of the design, sample, instrument, data collection, data analysis, and human subject's protection method is included.

Study Design

A cross-sectional descriptive design using a mail survey as the data collection method was utilized. The mail survey was used to examine participant's use of CAM, health literacy regarding CAM, and how they obtained information about CAM. The survey also asked questions regarding demographic and sociodemographic information about the participants so that the sample could be described and so that associations between health literacy about CAM and selected variables could be examined. Qualitative analysis was used to compare results obtained in a cross-sectional study conducted among a rural population in Northwestern Montana (O'Neill, 2007). Utilizing this design and methods allowed for investigation of health literacy about CAM in a frontier population and comparison of results to those from a prior study with a rural counterpart.

Population and Sample

The county chosen for this study was a frontier county in Northwestern Montana with a population of 18,971 and approximately 5 persons per square mile. Current census information reports that 74.7% of the population consisted of adults 18 years and older (US Census Bureau, 2009). Potential participants were selected by random sampling from a phone book containing listings for the frontier county. The phone book consisted of 69 white pages and included both residential and business listings. A volunteer assisted with the random sampling process. The volunteer picked each potential participant by randomly pointing to a listing on the page without looking at the page. Six participants were chosen from each page using this method. If a nonresidential listing was selected, another address was chosen from the same page. A total of 400 potential participants were selected using this method. The desired number of actual participants in the study was 100 persons. A 25% response rate was anticipated and was chosen due to budget and time constraints. The O'Neill study had a 23 % response rate using the same data collection procedures.

Instrument and Data Collection Procedures

A survey that included 52 questions was mailed to each potential participant. This survey included questions about demographics (14 questions); general health (3 questions); health care (8 questions); CAM (11 questions); and health literacy about CAM (16 questions). This survey was developed by O'Neill through modification of an instrument used in the Health Care Choices Project (Shreffler-Grant et al., 2005) and

from a professional project by Laurie Glover (2003) titled, “Complementary and Alternative Medicine Use in Children with Chronic Health Conditions”. O’Neill formulated the measure of health literacy about CAM from questions in an online CAM quiz (www.healthforums.com).

Minor modifications were made to the O’Neill survey. The original survey consisted of 58 questions. The modified survey consisted of 52 questions with 1 demographic, 2 CAM, and 3 knowledge about CAM being omitted or condensed. The demographic question regarded what town the participant lived in and was omitted because it was not felt to be relevant to the research questions. The remaining modifications were to condense some questions so that the same information could be gained in one question instead of two. This was done by changing some of the questions to multiple choice instead of short answer questions. It was also felt that these changes would allow for easier data entry.

The survey consisted of multiple choice, short answer, true/false, and yes/no questions. The format of each question was designed to yield the most useful information for addressing the research questions. Questions were included pertaining to resources used to obtain health information, evaluate health literacy of the participant, and sociodemographic information that were later correlated with the participant’s health literacy. The surveys were mailed in March of 2010 and participants were asked to respond within one to two weeks although the investigator waited for three weeks before closing the data collection period.

Human Subjects Protection

When humans participate in studies, rights of human subjects must be considered and protected. This project proposal was submitted to the Institutional Review Board of Montana State University-Bozeman to ensure protection of human subjects and was approved on February 19, 2010.

Each potential participant in this study was provided with a cover letter describing the goals of the study, type of data being collected, method of selection of potential participants, sponsorship of the study, and potential risks and benefits. A confidentiality pledge was included in this letter. Contact information for the researcher and the committee chair was provided for further questions or concerns about the study. The cover letter also explained that by completing and returning the questionnaire, consent was assumed.

Potential benefits of participating in this study included contributing to knowledge about health literacy, CAM, and health literacy about CAM. Participation in the study allowed for information to be gathered about health literacy regarding CAM among frontier populations, a topic that has been rarely studied. By studying this population, better awareness of health needs can be established and utilized by health care providers to provide better services.

Risks of participating in this study included loss of personal time. One risk associated with many research studies is the loss of the participant's privacy. Participants in this study were asked to refrain from putting any identifying information of the survey or return envelope, such as name and address. The researcher did not know the identity of

the participants and data could not be traced to the participants since follow up procedures to encourage response were not planned. This allowed the responses to be anonymous and ensure that participants' privacy was not invaded.

Data Analysis

The process of data entry included cleaning data, checking, coding, and entering data into SPSS 18 statistical software program as surveys were received. Descriptive statistics, frequencies, and cross tab tables were produced to identify possible data entry errors. When errors were identified, surveys were reviewed and data corrected. First, descriptive statistics were produced to summarize all of the results.

Data obtained in questions number #23-28 provided information about research question #1 regarding what resources frontier residents use to obtain information about CAM. Research questions #2, the level of CAM health literacy among frontier residents, was assessed in questions # 29-38. The number of correct answers was summed and scores were categorized into Below Average (0-3 correct answers), Average (4-7 correct answers), or Above Average (8-10 correct answers). Chi square statistics were used to determine if there were significant relationships between age, gender, marital status, CAM use and the level of health literacy about CAM. Research question #4 involved a comparison of the results from this study to the results of the O'Neill study in an effort to identify similarities and differences between participants in a rural and a frontier community. A statistical comparison was not conducted due to the small sample sizes in

both studies. Instead, the results were compared qualitatively with results from the O'Neill study.

CHAPTER 4

RESULTS

This study examined CAM health literacy among residents of a frontier county in Northwestern Montana and compared the results with those of a prior study involving residents in a rural county in Montana (O'Neill, 2007). Participants were randomly selected to participate in the study and were contacted by mail. The survey used to elicit data questioned participants on their allopathic medicine use, CAM use, resources used to obtain health information, sociodemographic information, as well as assessing health literacy levels about CAM using ten item quiz. SPSS 18 was utilized to analyze data obtained in the surveys. Data were analyzed to identify resources used to obtain information about CAM, level of CAM health literacy, and the effects of age, gender, marital status, and CAM use on CAM health literacy. The results of the study are summarized here and are presented according to a description of the sample and the results that address the research questions.

Sample

A total of 100 persons completed and returned a survey. The total number of surveys mailed to potential respondents equaled 400. There were 45 surveys returned due to incorrect addresses or no forwarding address being available. In addition, five surveys were returned due to the recipient being deceased. When the undeliverable surveys and deceased respondents were accounted for, the response rate equaled 28.6%. This

percentage was calculated by dividing the total number of responses (100) by the total number of surveys that were apparently received by potential respondents (350). Surveys were sent to persons with telephone listings within a frontier county of Northwestern Montana but were not asked to identify which town in which they resided. The average length of residence in Montana for participants was 32 years. The minimum amount of time that any participant had resided in Montana equaled two years and the maximum time was 82 years.

The sample consisted of 57 (57%) females and 43 (43%) males. Average age of the participant was 59 years, the youngest being 23 and the oldest 90. Participants were further categorized into groups according to their age. Converting continuous age data to categories was necessary for the Chi Square procedures planned to address research question #3, or to examine the relationship of age to CAM health literacy. Age groups were selected in an attempt to evenly distribute participants among the groups. Categories consisted of age groups 18-40, 41-64, 65-74, and 75-90 years of age. The most prevalent age group in the study was that of the 41-60 year olds (n=44) at 44%, followed closely by the 65-75 year olds (n=33) at 33%, then the 76-100 year olds (n=12) at 12%, and finally the 18-40 year olds (n=11) at 11%. Respondents were predominantly Caucasian (n=98) at 98%. Two respondents (n=2), or 2 % of the sample, were Native American. The majority of participants were married (74%, n=74), while the rest were divorced (8%, n=8), widowed (7%, n=7), single (5%, n=5), living together (2%, n=2), or common law (1%, n=1).

Participants were asked to report the highest level of education they had completed. The largest group of participants held a high school diploma (37%, n=37). The remainder had a bachelor's degree (19%, n=19), a certificate or apprenticeship (17%, n=17), or an associates degree or graduate degree (10%, n=10 respectively). Only a few participants reported not graduating from high school (3%, n=3) and some declined to answer (4%, n=4). The largest group of respondents reported that their total family income before taxes was greater than \$40,000 (38%, n=38). The remaining participants reported incomes in the less than \$8,000 (2%, n=2), \$8,000-19,000 (7%, n=7), \$20,000-29,000 (15%, n=15), or \$30,000-39,000 (12%, n=12). Several respondents choose not to answer this question (6%, n=6). More participants were unemployed (56%, n=56) than were employed (41%, n=41) and three participants did not respond to this question. It should be noted that the survey question did not differentiate between "No, not employed" and retirement. Approximately half of those who worked had a full-time job (24%, n=24) and half had a part-time job (23%, n=23).

Participants were asked to identify how most of the bill would be paid if they visited a health care provider or a CAM provider. They could choose from one of six options including self-pay, Medicare, Medicaid, other government agencies, or private insurance, or other. Only one other source of payment was identified and that was worker's compensation. Payments to a health care provider were made primarily through private insurance (40%, n=40). In contrast, payments to CAM providers were primarily self-pay (59%, n=59) (See Table 2).

Most of the participants reported that they had a primary care provider (81%, n=81). Of those who had a primary provider, most reported that their primary provider was a physician (70%, n=70). Other types of primary providers included physician's assistant (11%, n=11), nurse practitioner (6%, n=6), clinic staff (3%, n=3), or a CAM provider (2%, n=2).

Approximately half of the participants reported they had some form of health problem that they considered to be significant (48%, n=48). The most commonly reported health conditions were cardiovascular (27%, n=27), musculoskeletal (23%, n=23), or endocrine (19%, n=19) in nature. Although approximately half of the participants reported significant health problems, the majority responded that their considered their health to be either good (34%, n=34), very good (38%, n=38), or excellent (16%, n=16).

Table 1. Sociodemographics.

	N = number of people	Percentage %
<u>Gender</u>		
Female	57	57%
Male	43	43%
<u>Age</u>		
18-40	11	11%
41-60	44	44%
60-74	33	33%
75-90	12	12%
<u>Race</u>		
Caucasian	98	98%
Native American	2	2%
<u>Education</u>		
Less than High School	3	3%
Diploma/GED	37	37%
Certificate/Apprentice	17	17%
Associate Degree	10	10%
Bachelor's Degree	19	19%
Graduate Degree	10	10%

Table 1. Sociodemographics – continued.

	N = number of people	Percentage %
<u>Income</u>		
Less than \$8,000	2	2%
\$8,000-19,000	7	7%
\$20,000-29,000	15	15%
\$30,000-39,000	12	12%
\$40,000 or more	38	38%
Declined to answer	20	20%

Note: not all questions were answered by participants

Table 2. Health Care.

	N=number of people	Percentage %
<u>Pay for Health Care Provider *</u>		
Self-pay	33	33%
Medicare	35	35%
Medicaid	3	3%
Other Government	4	4%
Private Insurance	40	40%
Workers Compensation	2	2%
<u>Pay for CAM Provider *</u>		
Self-pay	59	59%
Medicare	12	12%
Medicaid	1	1%
Other Government	2	2%
Private Insurance	18	18%
Workers Compensation	1	1%
<u>Significant Health Problems *</u>		
Cardiovascular	27	27%
Musculoskeletal	23	23%
Endocrine	19	19%
Cancer	11	11%
Respiratory	10	10%
Neurologic	4	4%
Psychological	4	4%
Digestive	3	3%
Reproductive	2	2%
<u>General Health Status</u>		
Poor	3	3%
Fair	9	9%
Good	38	38%
Very Good	34	34%
Excellent	16	16%

Table 2. Health Care - continued

	N=number of people	Percentage %
<u>Health Care Provider seen the most</u>	70	70%
Physician	6	6%
Nurse Practitioner	11	11%
Physician's Assistant	4	4%
Clinic Staff	1	1%
Chiropractor	1	1%
Naturopath		

Note: not all questions were answered by participants; * participants were allowed to give more than one answer

CAM Utilization

Over half of the participants (67%, n=67) reported using some form of CAM, either through a CAM provider or a self-directed practice. Self-directed practices are methods used to enhance health that are not provided through a health care system or provider, a few examples includes meditation, vitamin therapy, copper wrist bands, or prayer for health. Participants were asked to identify self-directed CAM use (62%, n=62) and CAM provider use (44%, n=44). For those who saw a CAM provider, CAM providers were seen for a health problem (41%, n=12), health maintenance (23%, n=9), or both (44%, n=17). In contrast, those who used self-directed CAM therapies used them for health problems (2%, n=1), health maintenance (33%, n=14), or both (64%, n=27). Most visits to CAM providers were to a chiropractor (25%, n=25), massage therapist (22%, n=22), or to an acupuncturist (11%, n=11). CAM providers were seen as often as daily (1%) and as infrequently as once a year (2%, n=2) (see Table 3). Musculoskeletal complaints were the primary reason for seeing a CAM provider (33%, n=33) and 22 people reported that they saw a CAM provider specifically for back pain. Vitamins,

herbs, and yoga were the most popular self-directed CAMs. The three most common reasons for utilizing self-directed CAM therapies were “wellness”, “heart”, and musculoskeletal (See Table 3). Health problems that were musculoskeletal in nature, for example, joint and back problems, were grouped together in reporting of the results.

Table 3. Kinds of CAM Providers Used, Frequency of Use, and Health Problems for which They Were Used.

	N= number of people	Percentage %
<u>Kinds of CAM *</u>		
Chiropractor	25	25%
Massage	22	22%
Acupuncturist	11	11%
Herbalist	5	5%
Naturopath	4	4%
Hypnotist	1	1%
Reike	1	1%
Healer	1	1%
Biofeedback	1	1%
<u>Frequency of CAM use **</u>		
Daily	1	1%
Twice a week	3	3%
Once a week	1	1%
Twice a month	5	5%
Once a month	7	7%
10x/yr	1	1%
4x/yr	5	5%
3x/yr	3	3%
2x/yr	7	7%
Once a year	2	2%
As needed	6	6%
<u>Health Problems ***</u>		
Musculoskeletal	33***	33%
Migraine	6	6%
Endocrine	5	5%
Pain	6	6%
Cardiovascular	2	2%
Digestion	5	5%
Illness (not specified)	2	2%

Note: * respondents could provide more than one answer, **for frequency of CAM use respondents were allowed several answers, what is reported here is the highest single frequency that was listed, *** 22 of the 33 specifically listed back pain

Table 4. Kinds of Self Directed CAM, Frequency of Use, and Health Problems for Which They Were Used.

	N = number of people	Percentage %
<u>Self Directed CAM</u>		
Vitamin Therapy	40	40%
Herbal Therapy	24	24%
Yoga	14	14%
Home remedies	12	12%
Meditation	11	11%
Prayer	6	6%
Copper wrist bands	2	2%
Chelating	1	1%
Magnets	1	1%
Juicing	1	1%
Colonics	1	1%
<u>Frequency of Self Directed</u>		
Daily	47	47%
Once a week	5	5%
Twice a week	2	2%
As needed	3	3%
<u>Health Problems</u>		
Wellness	12	12%
Migraine	8	8%
Musculoskeletal	8	8%
Acute illness/infections	6	6%
Stress/depression/insomnia	5	5%
Reproductive	4	4%
Heartburn	4	4%
Pain	3	3%
Heart	3	3%

Note: respondents could provide more than one answer; for frequency of self-directed CAM use respondents were allowed several answers, what is reported here is the highest single frequency that was listed.

Many participants (64%, n=64) reported that their regular health care provider had never discussed CAM use with them. However, most participants had informed their health care provider of their CAM use (33%, n=33). Those who did not disclose their CAM use to their health care provider (14%, n=14) reported they did not because they

had no health care provider (6%, n=6), their provider did not ask and they did not think the provider needed to know (4%, n=4), or they did not trust the provider or thought the provider would not approve (2%, n=2). Two people did not explain their reason for withholding information about CAM use from their health care provider.

Resources Used to Get Health Information

Survey questions 23-26 asked participants to identify how they obtained information on CAM and/or a health problem by circling a variety of choices among multiple choice options. Educational opportunities about CAM that participants most frequently utilized were self-study (37%, n=37) or classes (7%, n=7). When a respondent was referred to a CAM therapy by another person, the referral person most often had learned about the CAM therapy through the Internet (14%, n=14), book (24%, n=24), health care provider (12%, n=12), or by word of mouth (14%, n=14). Respondents sought information about their health problems primarily from their health care providers (71%, n=71). The primary source for information specifically about CAM was the Internet (39%, n=39) (see Tables 5-8).

Table 5. Types of CAM Educational Opportunities in the Last 12 Months.

	N= Number of people	Percentage %
<u>CAM Education</u>		
Self-Study	37	37%
Classes	7	7%
Seminars	1	1%
Workshops	1	1%

Note: not all questions answered by participants, respondents could provide more than one answer

Table 6. How CAM was Researched (by the person who referred the participant to its use).

	N= Number of people	Percentage %
<u>CAM Research Tools</u>		
Book	24	24%
Internet	14	14%
Word of Mouth	14	14%
Health Care Provider	12	12%
Seminars	8	8%
Classes	8	8%
Workshops	7	7%
Media	5	5%
Personal Experience	1	1%

Note: not all questions answered by participants, respondents could provide more than one answer

Table 7. Information Sources About Health Problems.

	N= Number of people	Percentage %
<u>Health Problem Resources</u>		
Health Care Provider	71	71%
Book	45	45%
Internet	37	37%
Person	18	18%
Magazine	16	16%
Media	12	12%

Note: not all questions answered by participants, respondents could provide more than one answer

Table 8. Information Sources About CAM.

	N= Number of people	Percentage %
<u>CAM Resources</u>		
Internet	39	39%
Health Care Provider	36	36%
Book	29	29%
Person	21	21%
Magazine	15	15%
Media	14	14%
CAM Provider	3	3%
Workshop	1	1%

Note: not all questions answered by participants, respondents could provide more than one answer

Level of Health Literacy about CAM

Participants in the study were asked to complete a 10 item quiz designed to test evaluate their CAM health literacy. O'Neill (2006) originally created this tool and its validity and reliability have not been established. The quiz was altered for this study in that a response option for "unsure" was added to the true false options. See questions #29-38 in the survey in Appendix A. All of the participants answered every item on the quiz. Scores were calculated by counting the number of correct answers. The total of incorrect answers included any unsure responses. The highest score achieved was a nine out of ten and the lowest a one out of ten. The mean score for the sample was six out of ten. Based on the total number of correct answers, participants were divided into three groups, 0-3 correct answers were categorized as Below Average, 4-7 correct answers were categorized as Average, and 8-10 correct answers were categorized as Above Average. Scores on the quiz were fairly high with the majority being Average (62%, n=62) or Above Average (18%, n=18) (see Table 9).

Table 9. CAM Health Literacy Levels.

	N= number of people	Percentage %
Below Average	20	20%
Average	62	62%
Above Average	18	18%

Note: Below Average=0-3 answers correct. Average=4-7 answers correct. Above Average=8-10 answers correct.

Participants were asked to identify if they knew of any adverse effects related to CAM use. Only 24 of the 100 participants answered this question. Those responses included none (17%, n=17), too much or an overdose (4%, n=4), or that CAM use could

aggravate an existing problem (3%, n=3). None of the participants identified a specific adverse reaction associated with CAM use.

Relationship between CAM Health Literacy and Sociodemographics

The third research question examined associations of selected sociodemographics and CAM health literacy. The specific sociodemographics examined were age, gender, marital status, and CAM use, either through a provider or through a self-directed practice. Chi-square tests were performed to determine if any relationships between CAM health literacy and these variables existed in this population. Only one of the measures of association yielded a p value less than or equal to 0.05, or an association that was statistically significant. The relationship between gender and CAM health literacy was found to be of statistical significance, while the relationships between CAM health literacy and age, marital status, and CAM use were not. As displayed on Table 11, women scored higher in general on CAM health literacy than men. Although there was no statistical significance between CAM health literacy and age (p value .088) and health literacy and CAM use (p value .056), both factors were close to reaching significance, based on p values.

Table 10. Relationship between Health Literacy Level and Selected Sociodemographics.

	Pearson Chi Square	df	p value
Gender	9.3	2	.010
Cam use	5.8	2	.056
Age	11.0	2	.088
Companion Status	2.8	2	.246

Table 11. CAM Health Literacy Levels by Gender.

	Health Literacy Score		
	Below Average	Average	Above Average
Female	6 %	37%	14%
Male	14%	25%	4%

Comparison of CAM Health Literacy
in Rural and Frontier Residents

When compared to O'Neill's study (2006), CAM health literacy rates were similar between the two samples. The highest number of people scored in the Average range in CAM health literacy in both studies (O'Neill 53%; this study 62%). A higher percentage of people scored Above Average (37%) in the O'Neill study as compared to the percentage of people scoring in the Above Average (18%) range in this study. Although results were similar, more participants (20%) in this study scored in the Below Average category than participants in the O'Neill study (9.8%). Participants in both studies were predominantly white, (99% in O'Neill's study and 98% in this study), and female, (63% in the O'Neill study and 57% in this study). Participants in the O'Neill study had higher incomes, with 55% earning over \$40,000 per year, and higher education with 65% having at least an associate's degree. Participants in this study had lower incomes, with 38% earning more than \$40,000 per year, and less education, with 39% holding at least an associate's degree. In addition, a larger percentage of older participants, 75 to 90 years old, responded in this study (12%), whereas O'Neill's sample consisted of a smaller number of persons age 80 and older (5%).

CHAPTER 5

DISCUSSION

The purpose of this study was to examine the CAM health literacy among residents of a frontier county in Montana and compare the results with those of a prior study involving residents in a rural county in Montana (O'Neill, 2007). The research was designed to answer the following research questions: 1) What resources do frontier residents use to obtain information about CAM? 2) What is the level of CAM health literacy among frontier residents? 3) Is there a relationship between the level of health literacy about CAM and selected factors such as age, gender, marital status, and use of CAM among frontier residents? 4) How do the results of this study compare to the previous study (O'Neill, 2006) conducted with a rural population?

The findings of this study indicate that frontier residents obtained their health information from several sources including classes, seminars, workshops, self-study, internet, books, health care providers, media, and more. The most common source for obtaining health information was a health care provider. The data revealed that a majority of the frontier residents (62%) who participated in the study had an Average CAM health literacy score according to the quiz. The results of this study also identified a significant association between gender and CAM health literacy, with females having higher CAM health literacy. No significant associations were found between CAM health literacy and age, marital status, and use of CAM. This chapter includes a summary of results including the differences and similarities of the results compared to the O'Neill (2007)

study, and to previous studies about health literacy and CAM. Limitations of the study, implications of the findings for nursing practice, and implications for nursing research are also discussed.

Pender's Health Promotion Model was the conceptual framework that guided this study. The primary concept of Pender's Model, health promotion, seeks to describe how people develop resources that maintain or enhance health (Polit & Beck, 2008). The Health Promotion Model guided the study by enabling the researcher to recognize patterns in health behaviors that lead people to use CAM, obtain health information, and that effect levels of health literacy.

Evaluation of Results

Demographics and Sociodemographics Measures

Demographics and sociodemographic information gathered from participants included gender, age, race, income, marital status, and education level. Respondents in this study were predominantly (57%) female. The majority were white (98%) and a small percentage (2%) were Native American. The largest number of participants (44%) were ages 41-60 years of age, while the remaining participants were ages 18-40 (11%), 60-74(33%), or 75-90 (12%). In the sample, over three quarters of the respondents (77%) were married. Many of the participants had a bachelor's degree or higher (39%).

The most recent US Census Bureau data (2008) for this frontier county indicated that the population consists of slightly less than 19,000 people, of which 49.6% are female. The majority (96.2%) of the population is white. Adults older than 65 years of

age make up 20% of the population. While 80% have graduated high school in this county, only 13.7% have a bachelor's degree or higher. Average county household income in 2008 was \$33,383. The most recent marital status data were collected in 2000 and at that time, 52% of females older than 15 years of age were married and 56% of males older than 15 were married. Incomes varied with the highest percentage of respondents reporting earning earned \$40,000 or more (38%). Other reported incomes included \$30,000(24%) and \$30,000-39,000 (12%).

When compared to the census bureau data, the sample population in this study had a higher percentage of participants who were over the age of 65. Participants reported household incomes higher than the census data. Participants also reported higher levels of education than those reported in the census data for the county.

Sociodemographics Characteristics of CAM Users

Previous studies have examined relationships between CAM use and age, gender, education, and income. The results of those studies indicate that the highest prevalence of CAM use occurs in persons who are 45-65 years old, white, female, educated beyond high school, and considered middle income (Al-Windi, 2004; Eisenberg et al., 1993 and 1998; Astin, 1998; Cauffman, 2000; Bausell et al., 2000, Gryzwacz et al., 2005).

Although these relationships were not examined in this study, in comparison to previous studies, the majority of participants were white (98%) and female (57%), and the largest groups were educated beyond high school (39%), and had income of \$40,000 or more (38%). Over half reported CAM use (67%).

CAM use among a Frontier Population

A review of the literature revealed that pain, specifically back pain, cancer pain, and arthritic pain are common reasons for CAM use (Bausell et al., 2001). O'Neill's (2007) study revealed that musculoskeletal pain was most often the reason for using CAM. In this study, the most predominant reason to visit a CAM provider was back pain (22%). The IOM (2005) reported one reason for CAM use was the pursuit of wellness. In the study reported here, self-directed CAM was used most often by participants for general health or wellness (12%) as was the case in O'Neill's study as well. Also, in this study, most of the participants who used CAM and answered the question regarding whether they had disclosed their use of CAM to their primary health care provider reported that they had (49%). This is slightly higher than previous studies in which only 40% reported their CAM use to regular health care providers (Eisenberg et al., 1998).

Resources Used to Obtain Health Information

In this study, participants were asked to identify how they obtained information about health and CAM. They were also asked to identify what educational sessions they attended on CAM. In addition, they were asked if they knew how the person who referred them to CAM had gained information about the therapy. The participants reported that they preferred (71%) to obtain information about health from a health care provider. Nichols et al. (2005) found that physicians and nurse practitioners were the primary resources patients used to obtain health information. The results of several studies conducted by the Agency for Healthcare Research and Quality on how consumers obtain health information, it was found that information was gained through recommendations

of friends, family, and health professionals (www.ahrq.gov/qual/kffhigh00.htm). The internet was not listed as one of the primary sources to obtain information about health in this study, but 28% said they would go online in the future to get this type of information. Interestingly, in contrast to information about health, respondents chose to obtain information about CAM from the internet (37%) and preferred self-study (37%) to attending classes, seminars, or workshops. In addition, the National Assessment of Adult Literacy (NAAL) (www.nces.ed.gov/NAAL) studied health literacy and preferred information sources. In that study, those with higher levels of health literacy were more likely to obtain information from print sources, such as newspapers, magazines, books, or the internet while those with lower health literacy obtained information from radio or TV. The correlates of health literacy and health information sources were not examined in this study, although when participants learned about CAM from another person, the person who referred them to-CAM had obtained their information most often through a book (24%).

Health Literacy about CAM among Frontier Residents

Based on the results of the CAM quiz, over half (62%) of the participants from this frontier county scored as Average. Only 20% of the sample was identified as having Below Average CAM health literacy scores. The remainder of the participants (18%) scored Above Average. The level of CAM health literacy in this sample suggests that participants had used CAM previously or had previous knowledge about CAM. The levels of CAM literacy in this community also suggest that CAM may be easily accessible and there may be CAM providers in the community.

Relationship between Sociodemographic Factors and Health Literacy Levels

Four sociodemographic variables, age, gender, marital status, and CAM use were examined to determine associations with CAM health literacy levels. Of the four variables, only gender was found to be statistically significant. In this study, women had significantly higher CAM health literacy scores than men. In the O'Neill (2007) study, no significant relationships were found between CAM health literacy and age, gender, marital status, and CAM use. In 2003, the NAAL health literacy reported differences between gender, age, and education regarding health literacy levels, but no statistically significant relationships were identified (www.nces.ed.gov/NAAL). While not statistically significant, relationships found included that participants age 65 and older had the lowest health literacy scores, women scored six points higher on their health literacy score than men, and over half of the individuals who scored Below Basic had a less than high school education. That NAAL report encourages further studies to identify relationships between sociodemographic relationships and health literacy.

CAM Health Literacy in a Rural Population versus a Frontier Population

Only one prior study was located that had previously been conducted that explored CAM health literacy (O'Neill, 2007). In that study, 37% of the rural participants were found to have Above Average health literacy as compared to (18%) in this study. This study, the first to explore CAM health literacy in a frontier population, demonstrated that a frontier counterpart had more participants (20%) that fell into the below average health literacy range. The sample in this study had more participants that were over the

age of 80, reported lower incomes than those reported in O'Neill's study, and had less education.

Limitations

The limitations to this research study included small sample size, relying on self-reporting, and selection bias. The small sample size may have limited the ability to detect significant associations between CAM health literacy and selected demographic variables. Results of the study relied self-reporting by the participants. It is possible that the participants may have over or underreported on some areas of the survey. For example, a participant may not have remembered the exact frequency with which they used CAM in the last year. Finally, selection bias was possible with the selected method. It is possible that the participants who replied to the survey were either more or less interested in CAM than those who chose not to respond.

Implications

The results of this study are that over half of (62%) the participants in this frontier community had Average CAM Health literacy. Over half (67%) of the participants reported they had used CAM in the past year. They gained information about health from a health care provider but information about CAM from the internet. Females had higher CAM health literacy scores than did males in this frontier population. Complimentary and Alternative Medicine health literacy scores in the frontier population were similar to those with a rural counterpart, with the largest number of participants in both studies

scoring in the Average range. In this study, however, more participants scored Below Average and less scored Above Average when compared with their rural counterparts. These results suggest many implications for future practice and research.

Nursing Research Implications

There is a lack of literature regarding health literacy about CAM. The lack of literature indicates that further research is necessary to evaluate CAM health literacy. Health literacy is a relatively new issue and has only been studied in recent years. The use of CAM continues to rise in the United States. Further nursing research is critical to assessing CAM health literacy and preventing poor health outcomes.

The results of this study need to be conducted with larger sample sizes to determine if frontier rates of CAM health literacy in frontier residents. Health literacy about CAM needs to be calculated while controlling for the sociodemographic variables of gender, age, education and marital status while studying a larger sample. It is possible other significant relationships may exist but were not identified here due to the small sample size. Further study also needs to be conducted regarding CAM health literacy among urban populations.

The CAM health literacy assessment tool used in this study needs to be evaluated for reliability and validity before further research is conducted. If it is found not to be valid and reliable, a different tool that is valid and reliable needs to be developed and evaluated for use in further research. Continued research should be conducted to explore current resources that people use not only to gain information about their health, but

about CAM as well. Information resources change over time due to changes in technology and changes in health care seeking behaviors and beliefs.

Nursing Practice Implications

This study indicated that CAM use is prevalent even among the most rural of populations, on the frontier. Although CAM use was prevalent among participants of the study, users could not or did not identify the potential risks and adverse effects associated with CAM use. The largest group of participants had Average CAM health literacy. Past literature indicates that persons possessing Average health literacy may still have difficulty navigating the health care system. In addition, those with Average or Below Average health literacy are still at risk of experiencing poor health outcomes secondary to their health literacy levels.

This research suggests that people look to their health care providers, whether it is a physician, physician's assistant, or nurse practitioner for information about health. It is important for the CAM provider to assess their knowledge and attitudes about CAM so that they can assist their patients with the safe use of CAM. Providers need to be able to direct patients to reputable sources of information about CAM.

Higher CAM health literacy among women indicates that men are at risk for having lower CAM health literacy and may potentially have more risk associated with CAM use. Providers have a responsibility to ask all patients about their CAM use.

Providers should be aware of lower CAM health literacy among men and be especially careful to assess CAM use among males in their practice. Knowledge about CAM must be shared in an unbiased manner that encourages safety and health promotion.

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APPENDICES

APPENDIX A

CAM UTILIZATION AND HEALTH LITERACY
ABOUT CAM MAIL SURVEY

**EXPLORATION OF KNOWLEDGE ABOUT COMPLEMENTARY AND
ALTERNATIVE MEDICINE (CAM)**

**Thank you for participating! Answering the following questions will help me gather
the necessary information to complete this study.**

**THE FOLLOWING QUESTIONS ARE ABOUT YOUR HEALTH AND HEALTH
CARE**

1) Do you have any significant health problems? (circle one)

NO

YES

2) If you answered YES, what are your health problems: (list here)

- a) _____
- b) _____
- c) _____
- d) _____

3) How is your health in general? (choose one)

- ☐ POOR
- ☐ FAIR
- ☐ GOOD
- ☐ VERY GOOD
- ☐ EXCELLENT

**4) Do you have a healthcare provider who takes care of most of your health care needs?
(circle one)**

NO

YES

5) Is the health care provider you see most frequently (choose one)

- ☐ Physician (Doctor)
- ☐ Nurse Practitioner
- ☐ Physician's Assistant
- ☐ Clinic Staff or Provider Group in Same Practice
- ☐ Other: (Specify) _____

6) In the last year, how many times have been to see your regular health care provider? **(list # of visits)**

_____ number of visits

7) How far do you travel one-way to see your health care provider? **(list # of miles)**

_____ Number of miles

8) How easy is it for you to go see your health care provider (this includes getting a ride, distance, road conditions, etc.) **(choose one)**

☐ EXTREMELY DIFFICULT

☐ VERY DIFFICULT

☐ DIFFICULT

☐ FAIRLY EASY

☐ EASY

9) How would you rate your care from your health care provider? **(choose one)**

☐ POOR

☐ FAIR

☐ GOOD

☐ VERY GOOD

☐ EXCELLENT

10) Now in terms of emergencies, such as serious cut or a bad fall, how many miles do you need to go for emergency medical care and how long does it take to travel? **(list # of miles and travel time in minutes/hours)**

_____ NUMBER OF MILES (ONE-WAY)

_____ APPROXIMATE TRAVEL TIME (Standard road conditions; one-way)

11) Where would you go for emergency care? **(choose one)**

☐ Hospital

☐ Provider's office

☐ Clinic

☐ Other: (Specify) _____

**THE FOLLOWING QUESTIONS ARE ABOUT
COMPLEMENTARY AND ALTERNATIVE CARE (CAM)**

There are many health care options available to people. Those options include much more than doctors, nurse practitioners, and physician assistants. For example, some people see complementary providers such as those listed under Question 12.

12) What kinds of complementary providers have you seen in the past year? If you have not seen a complementary provider in the past year, please select "None."

(choose all that apply)

- ☐ Chiropractor
- ☐ Acupuncturist
- ☐ Herbalist
- ☐ Massage
- ☐ Biofeedback provider
- ☐ Naturopathic physician
- ☐ Other (explain) _____
- ☐ None

13) If you listed CAM providers in Q#12, how many times did you or do you see that provider? **(example, for each provider list "once," "once a year," "twice a week" etc...)**

Provider	Frequency
<u>(example) chiropractor</u>	<u>three times a week</u>
a) _____	_____
b) _____	_____
c) _____	_____
d) _____	_____

14) Do you see CAM providers for health maintenance, health problems or both? Identify the provider you use and check the appropriate space for maintenance, problems or both. See example.

Provider	Maintenance	Problem	Both
(Example) <u>chiropractor</u>	<u>X</u>	_____	_____
a) _____	_____	_____	_____
b) _____	_____	_____	_____

15) If you see CAM providers for health problems, **please list the problems and which provider** you see for the problem. For example, “back pain – chiropractor.”

<u>Health Problem</u>	<u>Provider</u>
a) _____	_____
b) _____	_____
c) _____	_____
d) _____	_____

Many people use methods to enhance their health that are not provided through a health care system or a health care provider. Some examples include meditation, vitamin therapy, wearing copper wrist bands, prayer for health, etc. I consider these to be self-directed or self-prescribed since a provider is not involved in your use of them.

16) Do you use any self-directed or self-prescribed CAM practices?

(choose all that apply)

- ☐ meditation
- ☐ copper wrist bands
- ☐ yoga
- ☐ vitamin therapy (please specify) _____
- ☐ herbal therapy (please specify) _____
- ☐ home remedies (please specify) _____
- ☐ other (explain) _____
- ☐ none

17) If you use any self-directed practices (see Q#16), list how often you use that practice (for example, meditation – daily or yoga – once a week, herbal remedy- once)

(list time frequency here)

Self-directed practice	Frequency
(example) yoga _____	Once a week _____
a) _____	_____
b) _____	_____
c) _____	_____
d) _____	_____

18) If you do use self directed practices, do you use them for health maintenance, a health problem(s) or both? Identify the practice you use and check the appropriate space for maintenance, problems or both. See example.

Self-directed practice	Maintenance	Problem	Both
(Example) <u>meditation</u>	<u> </u>	<u> </u>	<u> X </u>
a) <u> </u>	<u> </u>	<u> </u>	<u> </u>
b) <u> </u>	<u> </u>	<u> </u>	<u> </u>
c) <u> </u>	<u> </u>	<u> </u>	<u> </u>
d) <u> </u>	<u> </u>	<u> </u>	<u> </u>

19) If you do use self directed (CAM) practices for health problem(s), **please list the problem(s)** and **which practice** you use for the problem.

<u>Health Problem</u>	<u>Practice</u>
(example) depression	St. John's Wort
a) <u> </u>	<u> </u>
b) <u> </u>	<u> </u>
c) <u> </u>	<u> </u>
d) <u> </u>	<u> </u>
e) <u> </u>	<u> </u>

20) If you use any type of CAM including self-directed practices, is your regular health care provider aware you are doing so? (**circle one**) NO YES

21) If you chose "No," why did you choose not to share this information? (**list reason(s) here**)

22) How did you find out about CAM therapy and self directed practices that you use? (friend, relative, health care provider, magazine, coworker, television, internet, etc.)

<u>CAM or Self-directed practice</u>	<u>Source</u>
(Example) Melatonin (herbal)	Friend
a) <u> </u>	<u> </u>
b) <u> </u>	<u> </u>
c) <u> </u>	<u> </u>
d) <u> </u>	<u> </u>

**THE FOLLOWING QUESTIONS ARE ABOUT YOUR KNOWLEDGE ABOUT
COMPLEMENTARY AND ALTERNATIVE MEDICINE**

23) In the past 12 months, what education events or sessions have you participated in relating to CAM? **(choose all that apply)**

- ☐ classes
- ☐ seminars
- ☐ workshops
- ☐ self-study such as reading a book, searching on the Internet, etc.
- ☐ other (please explain) _____
- ☐ none

24) If a partner/significant other, family member, friend, coworker or neighbor suggested a CAM therapy to you, how did they learn about the therapy? **(choose all that apply)**

- ☐ classes
- ☐ seminars
- ☐ workshops
- ☐ searching the Internet
- ☐ reading a book or pamphlet
- ☐ health care provider
- ☐ television/ radio/newspaper
- ☐ internet
- ☐ other (please explain) _____

25) How do you normally obtain your information about health problems? **(choose all that apply)**

- ☐ health care provider
- ☐ person other than your care provider (Specify who: _____)
- ☐ TV/radio/newspaper
- ☐ magazine
- ☐ internet
- ☐ book or informational pamphlet/professional journal
- ☐ other (please explain) _____

26) How do you obtain information about CAM? **(circle all that apply)**

- ☐ health care provider
- ☐ person other than your care provider (Specify who: _____)
- ☐ TV/radio/newspaper
- ☐ magazine
- ☐ internet
- ☐ book or informational pamphlet/professional journal
- ☐ other (please explain) _____

27) If you use any CAM providers and/or self directed practices, are you aware of any side effects/adverse effects to the treatment method(s) you use?

(please list CAM therapy/self directed practice and adverse effect if any)

CAM or Self-directed practice	Adverse Effect
a) _____	_____
b) _____	_____
c) _____	_____
d) _____	_____
e) _____	_____

28) Has your regular primary care provider ever discussed complementary and alternative medicine with you? **(circle one)**

NO

YES

29) The herbal medicines and supplements sold over the counter are regulated by the Food and Drug Administration (FDA) **(circle one)**

True

False

Unsure

30) Biofeedback trains a person to voluntarily control bodily functions, such as blood pressure, muscle tension or heart rate **(circle one)**

True

False

Unsure

31) After a massage you should drink lots of water to help your system detoxify **(circle one)**

True

False

Unsure

32) A chiropractor manipulates your arms and legs **(circle one)**

True

False

Unsure

33) Herbal medications do not react with prescription medications because they are natural **(circle one)**

True

False

Unsure

34) If you are getting a massage, the massage therapist does not need to know all of your medical problems **(circle one)**

True

False

Unsure

35) Reiki is an ancient Tibetan-Japanese treatment where the practitioner holds his hands either gently on or just above the patient's body in an effort to induce healing **(circle one)**

True

False

Unsure

36) Aromatherapy is the practice of using scents of essential natural oils to make people smell nice. **(circle one)**

True

False

Unsure

37) Acupuncture practitioners place hair-thin needles into meridians in the body to prevent or treat illness. **(circle one)**

True

False

Unsure

38) Chelation therapy removes toxins from the body via the bowels just like colonics therapy. **(circle one)**

True

False

Unsure

AND NOW I NEED TO KNOW A LITTLE ABOUT YOU

39) What was your age on your last birthday? _____

40) What is your gender? **(circle one)**

male

female

41) What is your race? **(choose one)**

- Caucasian/White
- African American
- Native American Indian
- Asian
- Other (Specify) _____

42) Is your ethnicity Hispanic/Latino **(circle one)**

YES

NO

43) How long have you lived in Montana?

_____ mths/years

44) Are you (**choose one**)

- ☐ Single
- ☐ Married
- ☐ Widowed
- ☐ Separated/Divorced
- ☐ Common Law
- ☐ Living Together

45) Are you employed? (**choose one**)

NO

YES

46) If you answered YES to Q#45 do you work part-time or full time? (**circle one**)

part time

full time

47) If employed, what do you do for work? _____

48) What is your highest education level completed? (choose one)

- ☐ Less than High School
- ☐ High School diploma/GED
- ☐ Certificate/Apprentice program
- ☐ Associate Degree
- ☐ Bachelors Degree
- ☐ Graduate Degree or higher

49) Counting all sources of income, including wages, interest, government payments, gifts, etc, what is an estimate of your TOTAL FAMILY income during the last year, before taxes? (**choose one**)

- ☐ Less than 8,000
- ☐ 8,000 - \$19,000
- ☐ \$20,000 - \$29,000
- ☐ \$30,000 - \$39,000
- ☐ 40,000 or More
- ☐ Declined to answer

50) If you went to see your health care provider how would most of the bill be paid?

(choose one)

- ☐ Self-pay
- ☐ Medicare
- ☐ Medicaid
- ☐ Other government (Veterans, Indian Health, etc.)
- ☐ Private insurance
- ☐ Other: _____

51) If you went to see your complementary health care provider how would most of the bill be paid? **(choose one)**

- ☐ Self-pay
- ☐ Medicare
- ☐ Medicaid
- ☐ Other government (Veterans, Indian Health, etc.)
- ☐ Private insurance
- ☐ Other: _____

52) Do you have internet access? **(circle one)**

NO

YES

APPENDIX B

COVER LETTER

Dear Lincoln County Resident,

I am writing you to ask you to consider participating in a research study that I am conducting in Lincoln County. The purpose of the study is to explore knowledge about complementary and alternative medicine (CAM) such as herbs, chiropractic, massage, etc. Your name was randomly selected from the telephone directory for Lincoln County. I am a Nurse Practitioner graduate student at Montana State University and this study is part of the research required for my masters degree. CAM is of interest to me because I am aware that many options are available to individuals in making health care decisions. In this study, I hope to learn more about health care decisions and knowledge regarding CAM. I plan to practice as a Nurse Practitioner in Montana when I graduate and want to use a holistic approach to health care in my practice, which can include safe and informed use of CAM.

Enclosed is an **Exploration of Knowledge about CAM Survey** that should be completed by any individual 18 years or older in your household who can best complete the survey. The survey includes general questions about your health, your health care experiences, and experiences with CAM.

Your participation is entirely voluntary. Your responses will remain **strictly confidential**, the results will be reported in group form, and no one will see your responses except me and my research advisor, Jean Shreffler-Grant, Ph.D., RN. You do not have to participate, you are free to stop at any time, and you are free not to answer any questions you do not wish to answer. The potential benefit to you is knowing that you have helped improve our knowledge about what people know about CAM and what might be done to increase their knowledge level.

I would really like to include your perspectives in my study. If you decide to participate, please complete the survey and return it in the enclosed envelope **within one week**. Please do not include any identifying information, for example your name, on the survey or the envelope if you choose to participate. If you have any questions about this study, you may contact Jean Shreffler-Grant or myself, using the address or telephone number listed below. If you decide not to participate, please discard the survey and you will not be contacted again. Thank you very much for your time and help with this project.

Kind Regards,

Ashley Porter
P.O. Box 10632
Kalispell, MT 59904
(406) 261-5209

Jean Shreffler-Grant, Ph.D., RN
Montana State University
College of Nursing, Missoula Campus
Missoula, MT 59812
(406) 243-2540