



Pain and quality of life in older osteoarthritic women living in different environments  
by Phyllis Charlene Christiaens

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Nursing  
Montana State University

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Abstract:

This descriptive study was conducted to determine the relationship that exists between the perception of pain and the quality of life among older women with osteoarthritis. A secondary purpose was to determine the influence of living in urban, rural, and frontier environments on these perceptions. Data reported in this study were obtained from a larger data set of a longitudinal study conducted by Dr. Helen J. Lee, Assistant Professor, Montana State University.

Forty-five older women between the ages of 65-75 who have osteoarthritis and presently live in their own home composed the purposive sample. Fifteen of the women resided in each of the three environmental settings as defined by Lee (1989). The sample was obtained through community health nurses. Using a multiple case study design, data were collected through a combination of mailed questionnaires and face-to-face interview/assessment. The variable of pain was measured using the pain subscale of the Geriatric Arthritis Functional Status Index (FSI) (Deniston & Jette, 1980) and quality of life was measured using the Index of Well-Being (IWB) (Campbell, Converse, & Rodgers, 1976).

Results, using a Spearman rho correlation coefficient, indicated that a significant inverse relationship exists between pain and quality of life ( $p=.031$ ) in older women with osteoarthritis. The frontier group reported the lowest level of perceived pain and the highest quality of life. Inversely, the urban group reported the highest level of perceived pain and the lowest quality of life. The rural group reported the medium score for both perceived pain and quality of life. Further research is needed to examine the magnitude and nature of differences that exist between persons living in urban, rural, and frontier environments.

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IN OLDER OSTEOARTHRITIC WOMEN  
LIVING IN DIFFERENT ENVIRONMENTS**

**by**

**Phyllis Charlene Christiaens**

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of the requirements for the degree**

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APPROVAL

of a thesis submitted by  
Phyllis Charlene Christiaens

This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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Date July 23, 1991

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## TABLE OF CONTENTS

	Page
1. INTRODUCTION .....	1
Statement of Purpose .....	2
Significance to the Nursing Profession .....	3
Definition of Terms .....	3
Assumptions .....	4
Conceptual Framework .....	4
2. REVIEW OF RELATED LITERATURE .....	9
Older Women .....	9
Chronic Disease .....	11
Chronic Pain .....	13
Quality of Life .....	15
Environmental Influence .....	18
3. METHODS .....	21
Design .....	21
Sample .....	22
Instruments .....	23
Procedure .....	24
Protection of Human Rights .....	25
Data Analysis .....	26
4. PRESENTATION AND ANALYSIS OF DATA .....	28
Sample .....	28
Mental Status Questionnaire .....	31
Descriptive Analysis of Pain and Quality of Life .....	31
FSI Pain Subscale .....	31
Index of Well-Being .....	32
Correlational Analysis of Pain and Quality of Life .....	32
Environmental Influence .....	33
5. DISCUSSION, IMPLICATIONS, RECOMMENDATIONS .....	37
Discussion .....	37
Pain and Quality of Life .....	38
FSI Pain Subscale .....	38
Index of Well-Being .....	38
Relationship Between Pain and Quality of Life .....	39
Environmental Influence .....	39
Limitations .....	42
Implications for Nursing .....	43
Recommendations .....	44
6. REFERENCES CITED .....	46

TABLE OF CONTENTS--cont.

	Page
7. APPENDICES .....	50
Appendix A Consent Form .....	51
Appendix B Mental Status Questionnaire .....	55
Appendix C Geriatric Arthritis Functional Status Pain Subscale .....	57
Appendix D Index of Well-Being .....	61
Appendix E Demographic Questions .....	63

## LIST OF TABLES

Table	Page
1. Income Levels for Older Women by Environmental Setting . . . . .	29
2. Area Where Participants Lived from Birth to Age Seventeen ( <u>N</u> =45) . . . . .	30
3. Mean Scores for Pain (FSI Pain Subscale) and Quality of Life (IWB) ( <u>N</u> =45) . . . . .	32
4. Relationship of Pain (FSI Pain Subscale) and Quality of Life (IWB) ( <u>N</u> =45) . . . . .	33
5. FSI Pain Subscale Mean Scores by Environmental Setting ( <u>N</u> =45) . . . . .	34
6. Index of Well-Being Mean Scores and Standard Deviation ( <u>N</u> =45) . . . . .	35
7. Profile of Mean Scores for (FSI Pain Subscale) and Quality of Life (IWB) by Environmental Setting ( <u>N</u> =45) . . . . .	36

LIST OF FIGURES

Figure	Page
1. Christiaen's Adaptation of the Neuman Systems Model (1991) . . . . .	6

## ABSTRACT

This descriptive study was conducted to determine the relationship that exists between the perception of pain and the quality of life among older women with osteoarthritis. A secondary purpose was to determine the influence of living in urban, rural, and frontier environments on these perceptions. Data reported in this study were obtained from a larger data set of a longitudinal study conducted by Dr. Helen J. Lee, Assistant Professor, Montana State University.

Forty-five older women between the ages of 65-75 who have osteoarthritis and presently live in their own home composed the purposive sample. Fifteen of the women resided in each of the three environmental settings as defined by Lee (1989). The sample was obtained through community health nurses. Using a multiple case study design, data were collected through a combination of mailed questionnaires and face-to-face interview/assessment. The variable of pain was measured using the pain subscale of the *Geriatric Arthritis Functional Status Index (FSI)* (Deniston & Jette, 1980) and quality of life was measured using the *Index of Well-Being (IWB)* (Campbell, Converse, & Rodgers, 1976).

Results, using a Spearman rho correlation coefficient, indicated that a significant inverse relationship exists between pain and quality of life ( $p=.031$ ) in older women with osteoarthritis. The frontier group reported the lowest level of perceived pain and the highest quality of life. Inversely, the urban group reported the highest level of perceived pain and the lowest quality of life. The rural group reported the medium score for both perceived pain and quality of life. Further research is needed to examine the magnitude and nature of differences that exist between persons living in urban, rural, and frontier environments.

## CHAPTER 1

### INTRODUCTION

Older women in the United States represent the fastest growing segment of the population. In 1985, of the 26.3 million people over 65 years of age, 15.8 million or 60 percent were women. In addition, census figures indicate that by 2035 the number of women over 65 will increase to 33.4 million (Lewis, 1985). This increase has definite consequences in terms of the number of older women the United States can expect to have in the future. As a result of the prolonged length of life for older women in the United States, chronic disease has become a major problem for these older women and the health care profession. One such chronic disease is osteoarthritis which affects four of every nine individuals over 65 (Laborde & Powers, 1985). Thus, how older women feel on a daily basis, how prevalent chronic disease is among them, and how much their social and physical activities are hampered by health problems are now key concerns of health researchers and health planners (Haug, Ford, & Sheafor, 1983).

Pain is a major symptom of osteoarthritis in older women. Although the functional status of this population with osteoarthritis has been addressed, the variable of pain as it relates to quality of life has not been addressed in health research. Older women with chronic osteoarthritic pain find that their lives are constricted by their pain. They find difficulty with personal relationships, and problems with concentrating, sleeping, working and eating (Meinhart & McCafferty, 1983).

Acceptance of pain usually reflects cultural beliefs (Fogel & Woods, 1981). The ability of older women to accept pain is the result of the different social characteristics within their environment. These environmental characteristics create different attitudes, beliefs, coping mechanisms, and support systems. A rural environment seems to present different problems from those in an urban setting, and the solutions that emerge are also different (Rosenblatt & Moscovice, 1982). Differences that exist between rural environments have led to the emergence of a new category called "frontier" (Elison, 1986). Identified by Popper, a demographer at Rutgers University, this new category has distinguishing characteristics different from urban and rural. Thus, three basic environmental settings must be addressed.

#### Statement of Purpose

The purpose of this descriptive study was to determine the relationship that exists between the perception of pain and the quality of life among older women with osteoarthritis. A secondary purpose was to determine the influence of living in urban, rural, and frontier environments on these perceptions. Research questions addressed include the following:

1. What relationship existed between the perception of pain and the quality of life in older women with osteoarthritis?
2. What differences existed in the amount of perceived pain and the quality of life of older osteoarthritic women living in different environments?

### Significance to the Nursing Profession

Because the number of older women in America is rapidly increasing, one of the greatest problems for health care professionals will be the prevention and management of chronic disease conditions. Before specific guidelines pertaining to health interventions and health maintenance can be developed, assessment and systematic measurement of differences between older women living with varying disease conditions in different community environments need to be established. Such information will assist the nursing profession in developing interventions that specifically address the health maintenance and health care needs of older women in urban, rural, and frontier environments.

### Definition of Terms

1. Chronic Pain is pain that lasts six months or longer (Meinhart & McCafferty, 1983). The variable of chronic pain was operationalized using the pain subscale of the *Geriatric Functional Status Index (FSI)* (Deniston & Jette, 1980).

2. Frontier Environment is a rural area or town under 2,500 population with homes located more than 60 minutes from a hospital of more than 100 beds (Lee, 1989).

3. Older Women are defined in this study as persons between 65 and 75 years of age.

4. Osteoarthritis (OA) is a noninflammatory degenerative joint disease which is a normal response to aging. It is characterized by marked degeneration of the articular cartilage, hypertrophy of bone at the margins, and changes in the synovial

membrane. This disease process is accompanied by varying degrees of chronic pain and stiffness (Matteson & McConnell, 1988).

5. Pain is "whatever the experiencing person says it is, existing whenever he or she says it does, including both verbal and nonverbal behaviors" (Meinhart & McCafferty, 1983, p. 11).

6. Quality of Life includes both conditions of life and the experience of life (Campbell, Converse, & Rodgers, 1976). Quality of life was operationalized using Campbell, Converse, and Rodgers (1976) *Index of Well-Being (IWB)*.

7. Rural Environment is a city or town under 49,999 population with homes located more than 31 minutes, but less than 59 minutes from a hospital of more than 100 beds (Lee, 1989).

8. Urban Environment is a city of 50,000 or more population with homes located less than 30 minutes from a hospital of more than 100 beds (Lee, 1989).

#### Assumptions

1. The assumption was made that the older women honestly and accurately completed the pain subscale of the *FSI* (Deniston & Jette, 1980) during the interview.

2. The assumption was made that the women honestly and accurately completed the *IWB* (Campbell, Converse, & Rodgers, 1976) in the mailed questionnaire.

#### Conceptual Framework

This study was based on the conceptual model for nursing designed by Betty Neuman (1970). *The Neuman Systems Model*, "the total system approach," is a holistic,

systems-based conceptual framework for nursing. The aim of the Neuman model is to provide a unifying focus for approaching varied nursing problems and for understanding the basic phenomenon of the constant interaction between man and his environment (Marriner, 1986). The Neuman model considers the relationship of stress to an individual's reactions to stressors occurring in one's internal and external environment (Neuman, 1982). Thus, the Neuman model explains how stability is achieved in relation to the stressors imposed upon it.

The "total person" or holistic approach adopted by Neuman was consistent with the goal of this study. However, Neuman's conceptualization of environment refers to the internal and external factors surrounding man. For this study, environment was limited to the external factors of the different sociocultural settings of urban, rural, and frontier. Older women were viewed as the basic structure or system which is diagrammatically represented by the basic core as shown in Figure 1. The basic core structure is surrounded by the flexible lines of resistance representing the internal factors which help to defend older women against the stressors that attempt to invade the core. These flexible lines of resistance are exemplified by the activation of white blood cells or the immune response mechanism. The normal line of defense is the next ring which is developed over time through learned coping mechanisms, cultural influences, and past experiences. The outer broken ring represents the flexible line of defense. This flexible line of defense provides a protective buffer for internal needs which attempt to prevent stressors from breaking through the normal line of defense. Thus, the flexible line of defense, the normal line of defense, and the flexible lines of resistance assist older women in coping with the existing stressors.

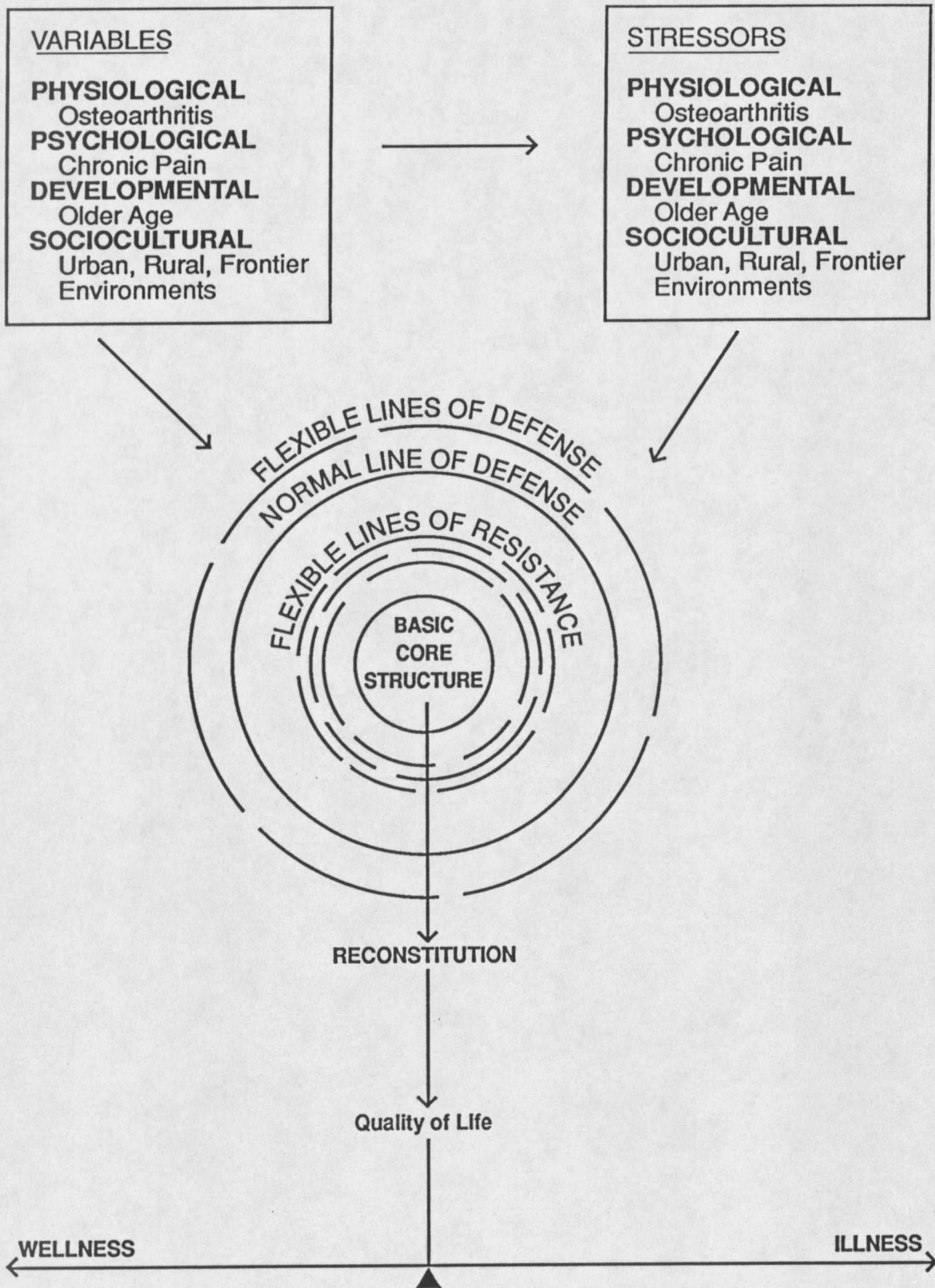


Figure 1. Christiaens' adaptation of the Neuman Systems Model (1991)

For this study the internal and external variables affecting older women included the physiological variable of osteoarthritis, the psychological variable of chronic pain, the developmental variable of older age, and the sociocultural variable of environment. The variable of osteoarthritis is a chronic degenerative disease which is a continuing process. The usual symptoms of stiffness, pain, and limitation of mobility increase or decrease depending on disease activity, physical activity, and individual coping mechanisms. The developmental variable of age is a continuing process which affects the ability of older women to cope with pain. The variable of sociocultural environment indicates the demands, the cultural beliefs, and the support systems of the communities in which these older women live.

Changes in these variables may cause them to become internal and external stressors. The progression of osteoarthritis causes stiffness and limited mobility which may affect the ability of older women to participate in activities they want to do. As pain increases, some older women may experience significant changes in their ability to think, concentrate, sleep, work, and eat. These changes can also affect their personal relationships, and their ability to achieve an acceptable level or quality of life. The process of aging affects each body system differently and each system's ability to respond to stressors is altered. Different environments also provide different types of stressors such as distance to medical care, different support systems, coping mechanisms, and resources. Thus, these stressors interact with lines of defense and lines of resistance. This interaction affects the ability of older women to maintain a balance or steady state of wellness-illness which in turn will affect their quality of life.

Some older women may experience stress or tension caused by this interaction with the internal and external variables while others do not. The internal variables

take place within the internal basic structure of older women. The external variable takes place outside the basic structure and within the different sociocultural environments. In interacting with these variables as they become stressors, older women receive information which influences their coping mechanisms and their functioning. Therefore, older women tend toward a steady state of equilibrium or balance between forces within the internal basic structure and the external environment. Older women resist disturbances, and they attempt to restore balance which results in a new equilibrium based on status quo or on change. The flexible lines of defense, the normal line of defense, and the flexible lines of resistance assist older women in coping with the stressors of disease, pain, age, and environment in order to reconstitute at a level of wellness. The outcome of the achieved level of wellness is the quality of life of older women as measured by the *Index of Well Being* (Campbell, Converse, & Rodgers, 1976).

## CHAPTER 2

### REVIEW OF RELATED LITERATURE

Five specific areas of literature were identified for review for this study. The first area selected was older women. Review of chronic disease, specifically osteoarthritis, represented the second area. The third area reviewed was chronic pain. The fourth area reviewed was quality of life. The fifth area reviewed was the influence of different environments upon the older population. These areas were selected to provide background information about osteoarthritic women and their satisfaction with their quality of life.

#### Older Women

The fastest growing population segment of the United States is women aged 65 and over. In 1978, 112 million people or 51% of the population in the United States were women; of these, 13.5 million were women aged 65 and over. Women represented 58% of the over age 65 population (Kjervick & Martinson, 1986).

In 1981, the average life expectancy was 77.9 years for women and 70.3 years for men (Kjervick and Martinson, 1986). The U.S. Census Bureau projects that the difference in life expectancy between men and women may increase until the year 2050 when rates will level off. At this point, life expectancy is projected to be 81 years for women and 71.8 years for men, a 9.2 year difference (Lewis, 1985). This increase in life expectancy indicates the potential number of older women the United States can have in the future.

While women aged 65 and over are the fastest growing segment of the American population, this female longevity is all too often a handicap. The Census Bureau reports that women aged 65 and over continue to be the poorest group in the country, economically dependent on income or pensions from the past work of their husbands. One-third of these women are currently below the poverty level; more than half are widowed, and two-thirds live alone (Kahn, 1984; Lewis, 1985) .

Although the majority of elderly people experience better physical health than is generally believed, their need for good health care services is still one of the most pressing health care problems (Kahn, 1984). Older people are ill more often than the young and take twice as long to recover. Over 70% of the older population experience one or more chronic conditions. Older women specifically report more acute and chronic conditions than do older men and make more outpatient doctor visits. Older women characterize their health care experiences with reports of neglect, undertreatment, and disrespect; they report that they cannot count on the medical profession and their caregivers. The high costs of health care and the lack of information and research about the chronic conditions faced by women in the second half of life create two more problems for older women (Kahn, 1984).

Even though older women have long outnumbered older men and use health care services more frequently, there are few resources, basic research, or health care services that consider or provide for the special needs of older women (Fogel & Woods, 1981; Kahn, 1984). A significant lack of research exists about chronic illnesses and preventive health care in females. The lack of services, combined with the negative values associated with aging, creates a double challenge for older women and health care providers.

### Chronic Disease

The illness and disability patterns of women in the U.S. follow logically from their greater longevity. Using data from ongoing national health surveys and vital statistics, Verbrugge (1984) compared women aged 65 and older to men aged 65 and older. Variables reported included mortality, physical health, prevalence of acute and chronic conditions, and disability. Data comparing the mortality and physical health of older men and women indicated that older women often report a lower health status than older men, yet older women live longer. In this report, older women identified four general health problems: general discomforts not associated with any specific disease, circulatory disease symptoms, digestive symptoms, and musculoskeletal symptoms. These older women also indicated that arthritis was the most common chronic disease. Fifty-three percent said that they had diagnosed arthritis; thirteen percent of that group indicated arthritis-related limitation on their activities. Overall, comparing women and men between the ages of 65-74, women were more likely to have severe arthritis, high blood pressure, and elevated cholesterol.

Osteoarthritis (OA) is the most prevalent chronic disease affecting adults in the United States and is a major cause of functional impairment, morbidity, and utilization of health care resources. The symptoms of OA increase with advancing years. Osteoarthritis is characterized as a disease of the joints that involves breakdown of the articular cartilage and other tissues which make movable joints operate properly. The damage from OA is confined to the joints and surrounding tissues. There is little or no inflammation, but pain and limitation on normal motion can occur.

Degeneration of the articular cartilage begins at the age of 20 to 30 and is thought to be a normal response to aging. Although more than 90% of the population is affected by age 40, few people experience symptoms of chronic pain and limited mobility until after age 60 (Matteson & McConnell, 1988). The prevalence of OA increases with advancing age; by age 65 there is involvement of at least one joint group in at least 50% of the population (Kerwan & Silman, 1987).

An estimate obtained from the *National Health and Nutritional Survey (NHANES I)* 1971-75 ( $N=20,749$ ) and based on medical histories and medical examinations conducted without radiographs revealed that an approximately 15.8 million adults (12.1%) of the U.S. population have signs and symptoms of OA. Of these affected individuals, 11.7 million are reported to be women (Lawrence et al., 1989). Females are generally affected more than males in the older age group. The above estimate appears relatively small when compared with the estimate from data using radiographs which show changes in specific joints regardless of symptoms obtained from a subsample of individuals ( $N=6,913$ ) from *NHANES I* 1971-75 and *National Health Interview Survey (NHIS)* 1960-62. These results demonstrated that the potential overall prevalence of OA in adults aged 25-74 was 76.4 million. According to this estimate, 42.4 million individuals have OA of the hands, 29.0 million individuals have OA of the feet, and 5.0 million individuals have OA of the knees. The differences in these estimates indicate that many individuals with radiologic evidence of OA have no symptoms of disability.

National data regarding the increasing number of the older population, the impact of OA on the health care system, the number of Social Security Insurance benefits as a result of OA, and the increasing prevalence of OA with advancing years

led Weinberger, Tierney, and Booher (1989) to examine the prevalence of some of the more common problems experienced by older women (N=315) aged 51-75 with OA. Their self report instrument assessed demographic characteristics, functional status, and compliance with medications. Seventy-one percent of the sample reported limitation in their activities caused by joint pain. Thirty-four percent reported noncompliance in taking their medications for at least one day during the preceding week, and 24% reported noncompliance for two or more days. Gastrointestinal complaints were reported by 36% of the sample with 5% requiring immediate intervention. Seventy-seven percent reported co-existing chronic diseases. Problems in accessing care were reported by 33% of the women. Additional problems identified by the sample included noncompliance caused by patients taking more than one nonsteroidal antiinflammatory agents (NSAID) at the same time or taking too much of a medication. Another problem was a knowledge deficit related to taking two medications that could potentially interact. Thus, many of the problems identified were considered treatable or correctable. Health care professionals have the potential to consider specific patient oriented interventions that may eliminate some of these problems.

### Chronic Pain

Older women with chronic pain experience a complex phenomenon which simultaneously involves many aspects of life: sleep, concentration, eating, emotions (such as anxiety and depression), relationships with others, and physical activities at home and work (Meinhart & McCafferty, 1983). Research to date concerning chronic pain and OA has focused on the functional disability caused by OA and the overall

impact that osteoarthritis has on the individual (Riley, Ahern & Pollick, 1988).

Functional ability is likely to vary with subjective pain only to the extent that these two constructs are perceived as linked by an individual with chronic pain. Therefore, disability may be reduced most among those individuals who are able to view their functional ability as related to factors other than their level of pain.

Thomas & Roy (1988) conducted a study of individuals ( $N=205$ ) comparing pain and demographic characteristics of younger elderly, aged 60-69, with older elderly, aged 80-89. Instruments included the *Beck Depression scale* and the *Illness Behavior Questionnaire*. Data were also collected on the report of pain, duration of pain, and the use of medications. Results indicated that as a group, older elderly did not show significantly more pain or illness than the younger elderly. Actually, only 64% of the 80's group reported pain as compared to 81% of the 60's group. The mean duration of chronic pain in the female 60's group was 12.5 years. The women in the 80's group reported chronic pain with a mean duration of 16.3 years. Forty-nine percent of both groups reported being on medication for pain. Of the men reporting chronic pain, those in the 60's group indicated a mean duration of 15.8 years; 40% reported being on medication. The men in the 80's group reported chronic pain with a mean duration of 15.2 years, and 50% of this group reported currently taking medication. The overall incidence of chronic pain in subjects over 65 years of age was 73%. The view that the process of ongoing aging is associated with increasing pain was not supported.

Thomas and Roy (1986) conducted an earlier study that investigated the prevalence of chronic pain in two groups of elderly people ( $N=97$ ) between the ages 65 and 80. Members of the first group were residents of a nursing home and the

second group were individuals attending a day treatment program for six hours a week at the same nursing home. Data were collected using a self-report questionnaire and Huskisson's *Visual Analogue scale* to measure pain. Results showed that 83% of the participants reported having current pain-related problems. Eighty-eight percent of the participants with pain reported various kinds of back, joint and muscle pain. Eighty-four percent were being treated with analgesics and 80% of those treated reported that the medication was effective. Seventy-four percent reported that pain interfered with daily living and varied in degrees from very little to making life impossible. The authors recommended that pain problems in the elderly need to be more closely monitored.

Pain, disability, and other physical symptoms from OA may fluctuate over time in response to disease activity and medical and personal interventions (Verbrugge & Balaban, 1989). Although the treatment of OA has improved, many elderly still suffer from chronic pain that often accompanies this disease. As a result of living with chronic pain, quality of life may decrease.

#### Quality of Life

Quality of life has many dimensions including physical activity, work, social and leisure activity, economic status, cognition, emotional adaptation, self esteem, interpersonal relationships, and overall satisfaction with life (Bergner, 1989). Quality of life as it is used in clinical research is a vague term lacking conceptual clarity. From a literature survey of approximately 100 scientific publications in which the concept of quality of life was used, Bergner (1989) found that rarely was a definition of the term

given. Quality of life, health status, functional status, and life satisfaction were terms used interchangeably.

Literature indicates that, over time, OA is believed to have a negative effect on the stability, satisfaction and happiness of the lives of elderly women, particularly on these more subjective aspects of life which are not easily quantified (Burckhardt, 1988). Burckhardt used the *Flanagan Quality of Life scale (1978)* to compare the responses of a convenience sample of women aged 18-98 with arthritis ( $N=225$ ) with the results of a randomly selected national population of women without arthritis in the original *Flanagan Study* ( $N=3000$ ). Results indicated women with arthritis tend to be more satisfied with their material comforts and more satisfied with relationships with relatives and close friends than women without osteoarthritis. Women with arthritis also indicated more satisfaction with helping and encouraging others, and passive recreation than women in the *Flanagan Study*. However, women with arthritis were significantly less satisfied with their health, work, and active recreation than the participants of the original *Flanagan Study*. Burckhardt concluded that overall, women with arthritis were more similar than different from women of their comparable age group within the general population.

Palmore and Luikart (1972) conducted a study of persons aged 45-69 ( $N=502$ ) using data collected in 1968 from the *Duke Adaptation Study*. Variables affecting life satisfaction were examined; they included self-rated health, activity, social-psychological status, and socioeconomic status. *The Cantril Ladder* was used to measure life satisfaction and a similar ladder was used to rate health. The number of religious and organizational meetings attended and the number of hours spent in social activities were summed for the variable of activity. The social-psychological

variable was measured using Jessor's *Internal-External Control of Reinforcement scale*.

Palmore and Luikart found that self-rated health was by far the strongest variable related to quality of life. The second strongest variable related to quality of life was organizational activity, followed by the variable of internal control orientation.

Laborde and Powers (1985) investigated the impact of degree of pain, extent of disease involvement, duration of illness, perception of health, and health locus of control on life satisfaction in 160 individuals with OA aged 40-93. The convenience sample was obtained from four different settings (urban senior center, urban outpatient clinic, and two rural community centers in two towns with populations less than 3,500). The participants were asked to complete the *Cantril Self-anchoring Striving scale*, and the Wallston, Wallston, Kaplan, & Maides' *Multidimensional Health Locus of Control scale*. Perceived level of life satisfaction was measured by using the Cantril ten step ladder technique. Duration of illness, extent of disease involvement, and pain associated with arthritis were extracted from health histories. The participants' perception of their present quality of life was found to be significantly associated with better health perception, internal health locus of control, and less joint pain. Despite the fact that osteoarthritics rated their pain as distressing, their degree of pain did not seem to impinge upon their overall satisfaction with life. However, some participants viewed their past life as more satisfying than their present life.

In an earlier study using the *Cantril Self-anchoring Life Satisfaction scale*, Laborde and Powers (1980) compared data from 20 patients receiving treatment for osteoarthritis, aged 40-60, with 20 patients receiving dialysis, aged 40-60. While they found no differences in past and future life satisfaction for both groups, present life satisfaction for the osteoarthritics was lower than for the hemodialysis patients. Even

though the dialysis treatment is life threatening, the social interaction surrounding the treatment may increase the life satisfaction for dialysis patients. Osteoarthritis patients, for the most part, do not have the same opportunity for group interaction or the apparent support systems of dialysis patients. Essentially, osteoarthritis patients are alone in their illness. Therefore, the chronic pain and decreased mobility that accompanies osteoarthritis can have an even greater negative impact on the sense of well-being than does a life-threatening disease that is not marked by pain.

### Environmental Influence

Several studies examining national or regional health statistics have reported higher incidence of health problems among the rural elderly population than for the urban elderly population (Krout, 1989). Using national data collected in the early 1960's, Ellenbogen (1967) concluded that the health status of rural elderly people compared unfavorably to that of elderly urban people. The indicators used in this study included incidence of acute conditions, selected chronic conditions and impairments, and incidence of injuries or disabilities. Palmore (1983) used more recent data from the National Center on Health Statistics, and concluded that rural elders have been affected more by disease than their urban counterparts.

Burckhardt (1977) examined vital and health statistics data pertaining to transportation and nutritional services for the elderly collected in 1975. Her analysis revealed that the rural elderly population experienced more restricted mobility than the urban population in all regions of the country.

Allen and Miller (1986) surveyed individuals (N=94) aged 55 and older to determine the actual conditions, opportunities, activities, and attitudes of older citizens

living in rural areas and to assess their specific psychological, social, and medical needs. The survey results indicated that the rural elderly have lower incomes, poorer health, inferior housing, and less adequate transportation systems compared to the general population.

Krout (1989) indicated that the level of determinants of health status among elderly people has received considerable attention in gerontological literature. Research has focused on variations of health status for the elderly population based on factors such as sex, income, race, and marital status. However, factors that have been given substantially less attention in health research have been those related to community type--rural versus urban differences.

Scheldt and Windley (1982) studied 989 individuals aged 65 and older to determine differences in well-being among elderly in small rural towns that vary in size and in rural context. Categories were developed using a community based index of rurality which contained three components: the population of the county; the number of persons not employed in agriculture, forestry, or fisheries; and the population proximity ratio. A three by three matrix comprised of three county index categories (more rural, moderately rural, and more urban) cross classified with three town size categories (100-500, 501-1,500, 1,501-2,000) was developed. Eighteen towns from 39 counties in Kansas (two from each matrix) were selected for study. Data were collected on variables of well being; they included mental health, housing, neighborhood satisfaction, contact with friends and relatives, mobility, functional health, availability of confidants, feelings of security, and activity participation.

Mental health, activity participation, and contact with friends and relatives were indices for which a case for similarity among groups was made. With the exception of

one group showing significantly higher levels of activity from all others, the remaining groups did not differ significantly in this dimension (Scheidt & Windley, 1982). The older residents of the smallest towns in the counties reported higher contact with relatives than all other town groups, but inversely low scores on activity and security. Activity scores were higher for older residents of the largest towns in moderately rural counties, relating positively with security. Contact with friends was generally high across groups. Residents of the large towns in low and moderately rural counties reported a higher sense of security than residents in medium sized towns in highly rural counties and the smallest towns in the most urban counties. Generally, those residents of most rural counties, regardless of town size consistently reported lower security scores. Older residents of the smallest towns in the most urban counties reported the highest scores for contact with relatives; these scores differed significantly from all other categories. The lowest reported frequency for contact with relatives was reported by older residents of the largest towns in moderately rural counties. Overall, individuals living in largest towns, regardless of degree of rurality, reported lower contact with relatives than those residing in medium-sized and smallest towns. The results of the study illustrated the importance of differentiating within and between rural and small town contexts when assessing profiles of well-being of older residents.

Bigbee (1984) indicated that while rural-oriented health research has been fairly active, it has also been limited in scope. Most prior research has focused on the maldistribution of health care providers. Very little research has actually focused on the characteristics, determinants, and consequences on the health and illness of rural women.

## CHAPTER 3

## METHODS

Data reported in this descriptive study were obtained from a larger data set of a longitudinal study conducted by Helen J. Lee, Assistant Professor, Montana State University, College of Nursing. The design, methods, and sample for this study were consistent with Dr. Lee's research project. This researcher served as an assistant for the first round of data collection in the larger study. The initial project was funded in part on a grant from *Montanans on a New Trac for Science (MONTTS)*.

Design

A multiple case study research design was used for this descriptive study (Yin, 1984). The purpose of a multiple case study design is to describe and to explore the relationships between two or more phenomena (Woods & Catanzaro, 1988). The term case study does not denote a single or specific technique but rather a general strategy for research which allows for multiple data gathering methods. Face-to-face interview/assessment and mailed questionnaires were the two methods used to gather data from the purposive sample recruited for the study. The flexibility of the design provided the best method of gathering in-depth, real-life subject matter.

### Sample

The gradual increase in proportion of elderly population is already a reality in the state of Montana. The national average of 11% of the population which is aged 60 and above is true for only five of 55 Montana counties; the other 50 counties have an even greater percentage of aged. Thirty-three of the counties report that 12% to 19% of their population are aged 60 and above while 17 counties indicate that 20% or more of their population are aged 60 and above (Lee, 1989).

The three environments included in the study were urban, rural, and frontier areas of northcentral Montana. Low population density and diversity have been identified as characteristics of the rural environment (Lee, 1989). The wide diversity of the rural environment has become much more evident as specific definitions of the components and degree of rurality have occurred. Rural is a relative term; dichotomous divisions that separate populations into urban and rural categories for comparisons ignore the fact that there is a continuum from most rural to most urban (Rosenblatt & Moscovice, 1982). The 1987 U. S. Census defines persons living in incorporated or census designated places of 2,500 or more inhabitants as urban. Populations not classified as urban are considered rural (Lee, 1989). Using this definition, 75.6% of Montana's population is rural. Although the state is recognized as a rural state, the emergence of a "frontier" category holds promise for identifying unique conditions found in more sparsely populated areas. In Montana, this frontier category, with parameters of six or fewer persons per square mile, encompasses 41% or 23 of the 56 counties (Elison, 1986).

The purposive sample was obtained through community health nurses in the three environments targeted for study. Women born between January 1, 1913, and December 31, 1923, who had osteoarthritis and lived in their own homes at the time of the first round of data collections were participants in the study. The purposive sample used was cohort and disease specific. Forty-five women, 15 in each of the three environmental settings, composed the sample. Participants' ability to read and write in order to complete the mailed questionnaire was determined by the returned questionnaire. Because the majority of the data collection was based on individual perceptions, the *Mental Status Questionnaire* (Kahn, Goldfarb, Pollack, & Peck, 1960) was administered to the participants at the beginning of the interview/assessment. Participants who made three or more errors, the level associated with organic mental disease, were eliminated from the study.

### Instruments

*Mental Status Questionnaire (MSQ)* (Kahn et al., 1960): Kane and Kane (1981) reported extensive use of the *MSQ* in geriatric research and practice. The instrument contains ten items which quantitatively determine mental status (Appendix B). Kahn et al. reported test-retest reliability better than .80 and alpha reliabilities of .84.

*Geriatric Arthritis Functional Status Index (FSI Pain Subscale)* (Deniston & Jette, 1980): Pain was operationalized using the pain subscale of the *FSI* (Appendix C). The *FSI* is a self report instrument which includes an assessment of degree of help used, pain experienced, and difficulty involved in performing 15 different activities of daily living (ADL). Higher scores on the pain subscale indicated a greater amount of chronic pain being experienced. Reliability, using repeated measurement of same

persons by different interviewers, yielded the same score 85% of the time (Kane & Kane, 1981).

*Index of Well-Being (IWB)* (Campbell, Converse & Rodgers, 1976): The *IWB* was used to measure quality of life (Appendix D). It contains seven items measuring satisfaction with self, standard of living, family life, marriage, friends, work, and non-work activities. Higher scores indicated a higher perceived well-being. Engel (1984) indicated that test-retest reliability for the *IWB* was greater than .70.

*Demographic Questions*: Background data collected for the total sample included area of residence the majority of time from birth until age 17, marital status, number of years of school, number of persons living in the same residence, and financial situation (Appendix E).

### Procedure

Data were collected using a combination of mailed questionnaires and face-to-face interviews/assessments. Potential participants identified by community health nurses as meeting the study criteria were contacted by telephone. If persons agreed to participate following a verbal explanation of the study, a consent form and questionnaire which included the *Index of Well Being (IWB)* were mailed.

Approximately ten days after the consent form and questionnaire were mailed, each participant was recontacted by telephone to determine whether the mailing had been received and to set up an appointment for an interview. Interviews were conducted in each participant's home by the primary investigator or one of the two research assistants.

At the beginning of the interview the consent form was reviewed, signed, and collected. The *Mental Status Questionnaire* was then administered; if the participants obtained scores of eight or better the assessment/interview was conducted. The *FSI* containing the pain subscale was part of the interview schedule.

#### Protection of Human Rights

Following the initial contact with the potential participants, a consent form was mailed to each (see Appendix A). This consent form explained the nature of the study, the potential risks and benefits, the method for participant selection, the sequence and duration of questionnaires, and interviews for the study. In addition, the consent form explained that each participant would have the opportunity to ask questions and that she could refuse to participate or withdraw at any time. Agreement to complete the questionnaire and to set up a scheduled interview were considered to be continued consent. The consent form was reviewed, signed, and collected at the time of the interview.

The participants in the study were informed that while the study did not directly benefit them, the information provided could assist nurses and other health professionals in developing methods of providing services for older people living in different environments. They were informed that participation would not represent a risk. However, it was explained that participation in the study could be an inconvenience because of the time needed to answer questions. The participants were told that approximately 30 to 60 minutes would be necessary to complete the interview. Additionally, it was conveyed to the participants that if they became tired during the interview, a second interview could be scheduled.

Each study participant was informed that she had the right to refuse to answer any question that she felt was an invasion of her privacy. Each participant was also informed that in order for her responses to be kept confidential, she would be assigned a code number. In addition, each participant was asked not to write her name anywhere on the questionnaire. The questionnaire, signed consent forms, and the information obtained from each interview were kept in an area accessible only to the primary researcher and her assistants. Consequently, names were known to only the researcher and/or the interviewers who assisted with the study. Each participant was told the information from the study would be shared with health professionals through publication in medical and nursing journals, at health professional meetings and, if appropriate, with lay public through organizations serving people with arthritis. Thus, each participant was informed that she would not be specifically identified in any reports stemming from the study because data obtained from the group as a whole would be published.

#### Data Analysis

Descriptive statistics were used to describe the sample (range & mean) and the scores obtained on the *Index of Well-Being* (Campbell, Converse, & Rodgers, 1976) and the *Geriatric Arthritis Functional Status Index Pain Subscale* (Deniston & Jette, 1980) (range, mean, & standard deviation). Spearman rho correlational coefficient was used to determine the relationships between pain and quality of life for the total sample. This nonparametric statistical test was selected because of the sample size ( $N=45$ ). A probability ( $p < 0.05$ ) was selected for level of significance. Descriptive statistics, (range mean and standard deviation) were then computed on the instrument scores

for comparison of groups by environmental setting. All statistical tests were computed using the *Statistical Package for the Social Sciences (SPSS)* at Montana State University, Bozeman, Montana.

## CHAPTER 4

## PRESENTATION AND ANALYSIS OF DATA

The data analysis is presented in four areas. The first presentation describes the sample by environmental setting. The second presentation is the descriptive analysis of data obtained from the *FSI Pain Subscale* and the *IWB*. The third presentation is the correlational analysis of the mean pain score to the mean *IWB* and the individual questions on the *IWB*. The final presentation is the descriptive analysis of pain and quality of life by environmental setting.

Sample

The sample included forty-five women, between the ages of 65 to 75 ( $M=70$  years), who have osteoarthritis and live in their own homes. The sample was divided into three groups by environmental setting according to place of residence at the time of the study.

Urban Sample: The age of the fifteen women residing in the urban environment ranged from 65 to 75 years with a mean of 70 years. Seven of the participants were married, one was divorced/separated, and seven were widowed. Educational level of the fifteen urban participants ranged from eight to 17 years. Two of the participants completed grade school, four completed high school, nine participants reported post secondary education, and one reported graduate education. Seven of the older urban women lived alone, seven reported one other person living in the same residence, and one reported two other persons living in the same residence.

Income levels for the urban participants ranged from less than \$4000 to more than \$25,000 (Table 1).

**Table 1. Income Levels for Older Women by Environmental Setting**

Income range	Environmental group		
	Urban (n=14)	Rural (n=15)	Frontier (n=14)
\$ < 4,000	1		
\$4,001-7,999	2	2	1
\$8,000-11,999	1	5	1
\$12,000-14,999	2	3	4
\$15,000-24,999	5	3	6
> \$25,000	3	2	2

**Rural Sample:** The age of the participants in the rural group ranged from 65 to 75 years with the mean being 70 years. Seven of the participants in the rural group were married, two were divorced/separated, five were widowed, and one never married. Educational level of the fifteen rural participants ranged from 8 to 17 years. Two of the participants completed grade school, four completed high school, three reported post secondary education, and two reported graduate education. Seven of the older rural women lived alone and eight reported one other person living in the same residence. Income levels for the rural participants ranged from \$4,001 to more than \$25,000 (Table 1).

**Frontier Sample:** The age of the participants in the frontier group ranged from 65 to 75 years with a mean of 71 years. Ten of the participants in the frontier group were married and five were widowed. Educational level of the fifteen frontier participants ranged from 8 to 17 years. Three of the participants completed grade

school, six completed high school, five reported post secondary education, and one reported graduate education. Four of the older frontier women lived alone, eight reported one other person living in the same residence and three reported two persons living in the same residence. Income levels for the frontier participants ranged from \$4,001 to more than \$25,000 (Table 1).

Cross-tabulations were calculated to show where participants in each of the three environmental settings lived from birth to age seventeen (Table 2). Of the fifteen participants currently in the frontier setting; twelve originally lived on a farm/ranch; one was from a rural area not a farm/ranch; and two were from a small town (<500 population). Ten of the fifteen rural participants originally lived on a farm/ranch; two were from a small town (501-2,500 population); and two were from a large town (2,501-5,000 population). The urban participants originally lived in varied locations representing seven of the eight environmental settings. Four of the urban participants originally lived on a rural farm/ranch, one was from a rural area, not a farm/ranch; two were from a small town (<500 population); two were from a small city (15,001-49,999); and three were from a big city of (50,000 or more population).

Table 2. Area Where Participants Lived from Birth to Age Seventeen (N=45)

Area lived	Environmental group		
	Urban	Rural	Frontier
Rural farm/ranch	4	10	12
Rural-not a farm/ranch	1		1
Small town <500 population	2		2
Small town 501 to 2,500	2	3	
Big town 2,501 to 5,000	1	2	
Small city 5,001 to 15,000			
Small city 15,001 to 50,000	2		
Big city over 50,000	3		

### Mental Status Questionnaire

The *MSQ* was administered to participants to establish self-perceptual ability at the start of the interview (Appendix B). Participants' scores on the ten-item *Mental Status Questionnaire* ranged from 9 to 10 in a possible range of 0 to 10. None of the participants were eliminated from the study.

### Descriptive Analysis of Pain and Quality of Life

#### *FSI Pain Subscale*

The *FSI Pain Subscale* included 15 different items addressing the level of pain experienced by older women when doing activities of daily living (Appendix C). The range of the *FSI* was 0 to 76; the mean was 20.44; and the standard deviation was 19.96. Individual items of the *FSI Pain Subscale* address pain involved in doing a variety of functional tasks. Participants in this study were affected by OA in a variety of joints, including the hands, shoulders, back, and knees. Therefore, a mean pain score was calculated (mean divided by number of items) in order to provide a meaningful number for comparison with the *IWB* and its individual items. For the total sample the mean pain score was 1.36 on a scale of 0 to 7 and the standard deviation was 1.33. This finding indicated that the older women in the sample reported a low level of pain at this point in their disease progression.

#### *Index of Well-Being*

The *IWB* includes seven items addressing quality of life (Appendix D). The range of the *IWB* was 19 to 35; the mean for the total sample was 28.20; and the

standard deviation was 4.28. A mean quality of life satisfaction score was calculated by dividing the *IWB* mean by the number of items; the score was 4.03 on a scale of 1 to 5. The mean scores for the individual items of the *IWB* were then calculated; they ranged from 3.73 to 4.36. Satisfaction with work was the lowest of the individual items (3.73). The areas of highest satisfaction were friendships (4.36) and place where you live (4.22).

Table 3. Mean Scores for Pain (*FSI Pain Subscale*) and Quality of Life (*IWB*) (N=45)

Instruments	Mean	Standard deviation
<i>FSI Pain subscale</i>	1.34	1.33
<i>IWB</i>	4.03	.61
Marital relationship	3.84	1.24
Work that you do	3.73	.96
Financial situation	3.82	.94
Place where you live	4.22	.93
Non-work activity	4.11	1.00
Family life	4.11	.98
Friendships	4.36	.65

#### Correlational Analysis of Pain and Quality of Life

The Spearman rho correlation coefficient was utilized to determine the relationship between the variables of pain (*FSI Pain Subscale*) and quality of life (*IWB*).

The results indicated a strong significant inverse relationship ( $p=.03$ ) between pain and quality of life (Table 4). This finding suggested that the greater amount of perceived pain in the older women in the sample, the lower their quality of life. The mean score of the *FSI Pain Subscale* was correlated with the individual items of the *IWB*. The only individual item of the *IWB* indicating a significant relationship to pain was financial situation ( $p=.01$ ). Two other *IWB* items approached significance: marital status ( $p=.09$ ) and work that you do ( $p=.08$ ).

Table 4. Relationship of Pain (*FSI Pain Subscale*) and Quality of Life (*IWB*) ( $N=45$ )\*

	r	$p < .05$
Index of Well Being	-.13	$p = .03$
Marital relationship	-.21	$p = .08$
Work that you do	-.21	$p = .09$
Present financial situation	-.38	$p = .01$
Place where you live	-.14	$p = .17$
Non-work activities	-.13	$p = .46$
Family life	-.03	$p = .43$
Friendships	-.28	$p = .31$

\* Spearman rho correlation coefficient, one-tailed test

#### Environmental Influence

*FSI Pain Subscale*: Descriptive statistics for the *FSI Pain Subscale* were calculated by environmental setting (Table 5). The lowest mean score for pain was reported by the frontier group at .60. The rural group's mean score for pain was 1.51 and the mean score of the urban group was 1.98.

Table 5. *FSI Pain Subscale* Mean Scores by Environmental Setting (N=45)

	Environmental group		
	Urban	Rural	Frontier
Mean	1.9822	1.5067	.6000
Standard deviation	1.5739	1.1981	.7721

*Index of Well Being:* While quality of life was reported to be high for the total sample (M=4.03), calculating means by environmental setting revealed interesting results (Table 6). The frontier group obtained the highest mean score of 4.12. The rural group reported a medium score of 4.10 and the urban group reported the lowest score of 3.87. The mean scores for the individual items of the *IWB* were then calculated. The frontier group reported the highest level of satisfaction with marital status, work that you do, present financial situation, and non-work activities. The rural group reported the highest level of satisfaction with place where you live, family life and friendships. The urban group reported medium to low mean scores for all of the *IWB* items. Table 7 provides a profile for pain (*FSI Pain Subscale*) and quality of life (*IWB*) by environmental setting.

Table 6. *Index of Well-Being* Mean Scores and Standard Deviation (N=45)

	Mean	Standard deviation
Index of Well-Being		
Urban	3.87	.59
Rural	4.10	.54
Frontier	4.12	.70
Marital relationship		
Urban	3.47	1.51
Rural	4.00	1.13
Frontier	4.07	1.03
Work that you do		
Urban	3.53	.74
Rural	3.73	1.10
Frontier	3.93	1.03
Present financial situation		
Urban	3.80	.94
Rural	3.73	1.03
Frontier	3.93	.88
Place where you live		
Urban	4.07	.80
Rural	4.33	.82
Frontier	4.27	1.16
Non-work activities		
Urban	4.07	.88
Rural	4.01	1.16
Frontier	4.20	1.01
Family life		
Urban	3.80	1.21
Rural	4.33	.72
Frontier	4.20	.94
Friendships		
Urban	4.33	.49
Rural	4.47	.64
Frontier	4.27	.80

Table 7. Profile of Mean Scores for Pain (*FSI Pain Subscale*) and Quality of Life (*IWB*) by Environmental Setting (*N*=45)

	Urban	Rural	Frontier
Pain	high	medium	low
Quality of life	low	medium	high
Marital relationship	low	medium	high
Work that you do	low	medium	high
Present financial situation	medium	low	high
Place where you live	medium	high	medium
Non-work activities	medium	medium	high
Family life	low	high	medium
Friendships	medium	high	low

## CHAPTER 5

## DISCUSSION, IMPLICATIONS, RECOMMENDATIONS

This investigation was conducted to assess the relationship between pain and quality of life of older women with osteoarthritis and to determine different environmental influences on the perception of pain and quality of life of older women with osteoarthritis. The theoretical framework for this study was based on the major concepts of the Neuman Systems Model. The multiple case study design was used in an attempt to gather real-life subject matter. Face-to-face interview/assessment and mailed questionnaires provided data for the analysis of the relationship between chronic pain and quality of life. The purposive sample included 45 older women between the ages of 65 and 75 who were diagnosed with osteoarthritis, a chronic disease that progresses with aging which is marked by symptoms of pain and disability. Study participants were grouped categorically as urban, rural, or frontier. The grouping by environmental settings allowed for the analysis and comparison of perceived pain and quality of life of older women living in different environments.

Discussion

The discussion provides an interpretation of findings for the sample studied and a comparison of the findings by environmental setting. Findings from this investigation are related to previous relevant studies.

### Pain and Quality of Life

The degenerative process of osteoarthritis begins at age 20-30; however, chronic pain and disability are not usually experienced until after age 60 (Matteson & McConnell, 1988). Although few studies of pain and quality of life have been conducted, chronic pain is known to be a complex phenomenon which involves many aspects of an individual's life, and as a result, may decrease the quality of life (Meinhart & McCafferty, 1983; Verbrugge & Balaban, 1989).

#### FSI Pain Subscale

The older women in this study reported a low mean score for overall pain across the three environments. The low perception of pain could be related to the degree of disease progression at the time of the investigation. Thomas & Roy (1988) reported that women in their sixties had an average duration of 12.5 years of pain. As the chronic disease progresses with age, older women may possibly learn to live with the pain and accept it as a normal part of the aging process. In addition, chronic pain is often associated with functional disability. If older women are able to carry out their normal activities of daily living, the pain may not stop them from doing the things they want to do. As a result of being able to do the things they want to do, the perception of pain is altered (Riley, Ahern & Pollick, 1988).

#### Index of Well-Being

At the time of the interview these older women ( $N=45$ ) with osteoarthritis rated their quality of life as satisfying. Laborde & Powers (1985) also found that osteoarthritics rated their overall satisfaction with life as good. In addition, present life

satisfaction was related to better health perception, internal health locus of control, and less arthritic pain. Burckhardt (1988) indicated that women with arthritis responded similarly to women in the general population when asked to rate the importance of American life. In comparison, Laborde & Powers (1980) found that present life satisfaction was lower for arthritics than for hemodialysis patients. The variable of health was the strongest of all variables that related to life satisfaction and the variable of pain fostered lower life satisfaction.

#### Relationship Between Pain and Quality of Life

Results of this study indicated a strong inverse relationship between pain and quality of life. A significant inverse relationship was found between pain and financial situation for the women in this study. Burckhardt (1988) was also able to show an inverse relationship between pain and quality of life. Although the findings by Burckhardt were not conclusive, the results showed some significant differences which may have been arthritis related. Laborde & Powers (1985) found that perception of present quality of life was significantly associated with less joint pain. Laborde & Powers noted that although osteoarthritics rated their pain as distressing, their degree of pain did not seem to impinge on their overall quality of life.

#### Environmental Influence

Although the mean score for pain was low and the mean score for quality of life was high, differences in the perception of pain and quality of life existed among the different environmental groups. The frontier group had the lowest score for perceived pain and the highest score for quality of life. The rural group reported medium scores

for both perceived pain and quality of life. The urban group reported the highest score for pain and the lowest score for quality of life. There are several possible explanations in the literature for these differences. Bigbee (1984) identified the strengths of rural women as pride in rural heritage and culture, tradition of self-care, strong family attachment, community involvement, and support. Findings by Krout (1989) were congruent with those described by Bigbee. In contrast, Scheidt and Windley (1983) found that a higher rural context, by imposing greater distances and fewer proximate social supports, negatively influenced the reports of well-being offered by older residents. Palmore (1983) reported that rural non-farm and farm elders have more acute chronic disease, chronic activity limitation, more days of restricted activity, and more work-loss days and bed days due to injury. However, rural elders spend fewer days in bed despite their greater incidence of acute and chronic illness. Palmore surmised that this tendency may result from a stronger belief among rural elders that one should get out of bed and carry out normal activities as much as possible.

The highest score for satisfaction with marital relationship was reported by the frontier group, the rural group reported a moderate score, and the urban group reported the lowest score. Other researchers (Palmore & Luikart, 1972; Krout, 1989) found that marital relationship showed little or no relationship to quality of life.

The more rural the group, the more satisfied they were with the work that they did. The frontier group reported the highest level of satisfaction with the work that they did, the rural group reported the moderate level, and the urban group indicated lowest level of satisfaction. Although Burckhardt (1988) does not relate work

satisfaction to environment, she noted that women in the 70 year old age group were not satisfied with their work.

Across the three environmental groups, both the mean and standard deviation showed minimal variation for satisfaction with financial situation. The frontier group reported the highest level of satisfaction with financial situation; the urban group reported a moderate score; and the rural group reported the lowest score. The results of this study imply that older women with more money reported a lower perceived level of pain and a higher quality of life. Krout (1989) reported similar findings in relationship to financial situation.

Participants in the rural environment reported the highest level of satisfaction with the place where one lives. The frontier group reported a moderate level of satisfaction and the urban group reported the lowest level of satisfaction. Rural and frontier groups resided in the environment in which they lived the majority of time from birth until age 17. Findings from this study imply that older women living in the less populated environments are more satisfied with their place of residence. No professional literature could be found that examined satisfaction with place of residence as a variable of quality of life.

Satisfaction with non-work activities, such as hobbies, was highest for the participants living in the frontier. Participants in the rural and urban environments reported the same level of satisfaction with non-work activities. In contrast, Scheidt and Windley (1982) found that non-work activity scores were significantly higher for residents of the largest towns in moderately rural counties than for residents in all other groups by town size and degree of rurality.

Older women living in the rural environment reported the highest level of satisfaction with family life. The older women in the frontier environment indicated a moderate level of satisfaction with family life and the older women in the urban environment reported the lowest level of satisfaction with family life. Findings for satisfaction with family life were congruent with those of Scheidt and Windley (1982). Scheidt and Windley surmised that older women living in the more rural areas may engage in more frequent contact with family to compensate for lower likelihood of socializing with friends.

Across the three environmental groups, friendships were reported to provide a source of satisfaction with life. Rural women reported the highest level of satisfaction; urban women reported a moderate level of satisfaction; and frontier women reported the lowest level of satisfaction with friendships. Findings for satisfaction with friendships from this study were congruent with those in the professional literature. Scheidt and Windley (1982) found that significant differences for satisfaction with friendships existed among individuals living in differing rural contexts. Larger towns may possess facilities which can host more formal and informal activities and in addition, provide a larger population of possible confidants. Thus, Scheidt & Windley suggested that the greater degree of social self-sufficiency in large counties may relate to higher satisfaction levels with friendships.

#### Limitations

A purposive sample was used in this study; therefore, members of the sample may not be an accurate representation of older women with OA. However, findings

from this study can be generalized to a volunteer sample in similar urban, rural, and frontier environments.

### Implications for Nursing

Osteoarthritis is a chronic disease that progresses with the aging process. Little can be done to stop the disease, but much can be done to slow the progression of the disease and to improve the quality of life of individuals affected by the chronic pain and disability which accompanies OA. Professional nurses are able to recognize chronic pain as an extremely complex phenomenon which encompasses sensory, affective, and cognitive components of an individual's life.

In the process of helping older women cope with the chronic pain from osteoarthritis, nurses must be sensitive to the individual's reports of pain and the impact of the pain on the individual's quality of life. In order to maintain the OA victim's quality of life, preventive and promotional educational programs should address the psychological as well as the physiological and sociocultural needs. These educational programs can be used to improve knowledge, enhance pain management skills, improve functional status, and promote health habits which may possibly slow the disease process.

Nurses must be very cautious about making broad generalizations about all older women with OA. Results of this study indicate that there are differences in the perceptions of women living in urban, rural, and frontier environments. Frontier women in the same age group with the same chronic disease reported less pain and higher quality of life than did women living in urban and rural environments. Nursing intervention should be designed to maintain the cultural values and perspectives of the

population served. Instead of trying to adapt the frontier women to the nursing intervention, nurses must adapt the intervention to the older population within their specific environment.

Health care needs of rural and frontier dwellers cannot be adequately addressed by applying models developed in urban areas. However, the use of Christiaens' adaptation of the Neuman Systems Model would allow for the care of rural as well as urban dwellers. This model indicates the care for the "total person" through a composite of four variables: physiological, psychological, sociocultural, and environmental. These variables include the different elements that are vital to caring for needs of the "total person," encompassing their physical, psychological, cultural, and environmental backgrounds.

#### Recommendations

One recommendation is to replicate this study using a larger sample. The purpose of the replicated studies in similar settings would establish reliability.

A longitudinal study comparing osteoarthritic perception of pain and quality of life at several time intervals would establish facts indicating the effects of the disease progression. This data may then provide a comprehensive picture of the chronic nature of the disease.

Testing the directional hypothesis indicated by the results of this descriptive study is also recommended. The hypothesis indicates that pain should have a negative effect on quality of life. Increased understanding of factors associated with changes in the extent of pain and the effect of pain on the quality of life could expand

the scientific understanding of chronic pain. The clinical appreciation of the complexities of the chronic pain experience, could also be enhanced by further study.

The results of this study indicated that women with osteoarthritis can maintain a high quality of life by adapting to the chronic pain and the disability that accompanies this disease. Further research is needed to examine the elements which promote adaptation to the chronic pain and the disability that accompanies OA in order to preserve quality of life.

Future studies are recommended to examine differences in persons residing in different environments. The magnitude and nature of the differences between urban, rural and frontier environments also need additional study.

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APPENDICES

APPENDIX A

CONSENT FORM

SUBJECT CONSENT FORM  
FOR  
PARTICIPATION IN HUMAN RESEARCH  
MONTANA STATE UNIVERSITY

Project title: Comparison of Perceived Health, Hardiness, Social Support, Functional Independence, and Use of Health Care Facilities Between Older Women with Arthritis Living in Urban, Rural, and Frontier Environments.

Investigator: Helen Lee, Ph.D., R.N., Assistant Professor,  
College of Nursing  
455-5610 (Great Falls) 243-6515 (Missoula)

You are being asked to participate in a long term study to learn about factors which may make a difference in how you meet your health needs. Knowing more about whether differences exist between those who live in a city as compared to those living in rural areas or very rural (frontier) areas will help us obtain a better understanding of your health care needs. This study is of no direct benefit to you; however, the information you provide will be used to design ways that nurses and other health professionals can help elderly people living in different environments.

You were selected as a possible subject in this study because you are female; were born between January 1, 1913, and December 31, 1923; have arthritis; and live in your own home in either a city, a rural area, or a very rural (frontier) area.

If you agree to participate in this study, you will receive a questionnaire and participate in an interview every two years for as long as the study continues (ten years anticipated). The questionnaire asks questions about your life, your opinions, and your health; it will take approximately 30 to 60 minutes to complete. Within 7 to 14 days after you have received the questionnaire, I or my research assistant will contact you to set up a time for an interview. The interview will be conducted by myself or an assistant and will take about an hour. The interview can take place in your home or any other setting you choose. During the interview, I or my assistant will ask questions about how you manage your activities of daily living (bathing, dressing eating) and how much you use the various health care facilities (visits to physicians, number of times hospitalized).

Participating in this study should not represent a risk to you, but it may be an inconvenience because of the time needed to answer questions. If you should become tired during the interview, a second interview can be scheduled.

Please do not write your name anywhere on the questionnaire. The questionnaire and the information obtained from your interview will be kept in an area accessible only to myself. Information taken from your questionnaire and interview will be available only to the health professionals directly involved in this study. Your name will be known only to myself and/or an interviewer who is assisting with this study because the consent form you sign will be stored in a locked office file.

You will not be specifically identified in any reports stemming from this study because only data obtained from the group as a whole will be published. Information from the study may be shared with health professionals through publications in medical and nursing journals, at health professionals meetings and, if appropriate, with the lay public through organizations serving people with arthritis.

You are free to not answer any questions that you feel are an invasion of your privacy. You may withdraw from the study at any time without penalty and without change in any relationship you may have with Montana State University College of Nursing. The study is planned to continue for approximately ten years. If you agree to participate during this first year of the study, you will be given the opportunity to participate in each subsequent year of the study.

This study is funded in part by a grant from Montanans On a New Trac for Science (MONTS), Montana State University.

*AUTHORIZATION: Having read the above, I, \_\_\_\_\_ agree to participate in the research. I have had an opportunity to ask questions, and understand that future questions I may have about the research or about participant's rights will be answered by the investigator. I understand that I may later refuse to or that I may withdraw from the study at any time. I have received a copy of this consent form for my own records.*

Signed \_\_\_\_\_

Witness \_\_\_\_\_

Investigator \_\_\_\_\_

Date \_\_\_\_\_

July 15, 1988

Dear

Thank you for agreeing to be a participant in my study!

Enclosed are two items. The first is a consent form. Please read it carefully. You may feel somewhat overwhelmed by its length; I certainly was when I constructed it for the MSU Human Rights Committee. However, it is a necessary requirement for any study conducted by the University in order to ensure that your rights are protected.

You will note in reading the consent form that there are two activities to study—filling out a questionnaire (the second item enclosed) and participating in an interview. Please fill out the questionnaire as soon as you can after receiving it. Very shortly, I or one of my research assistants, Eleanor Yurkovich or Char Christiaens, will contact you to make an appointment for an interview. The questionnaire will be picked up at the time of the interview.

You will also note in the consent form that I wish to continue the study for a period of time. While you are under no obligation to continue beyond this initial time, I hope you will do so.

If you have any questions, please contact me at 727-8956 (Great Falls) or 721-3983 (Missoula).

Sincerely,

Helen J. Lee, Ph.D., R.N.  
Assistant Professor

APPENDIX B  
MENTAL STATUS QUESTIONNAIRE

## MEMORY QUESTIONS

First, I have a few questions concerned with memory. These questions ask about particular bits of information that many people seem to forget from time to time. These are routine questions we ask everyone.

1. What day in the month is it today? \_\_\_\_\_
2. What day of the week is it? \_\_\_\_\_
3. What year is it? \_\_\_\_\_
4. How old are you? \_\_\_\_\_
5. When is your birthday? \_\_\_\_\_
6. In what year were you born? \_\_\_\_\_
7. What is the name of the president? \_\_\_\_\_
8. Who was president before this one? \_\_\_\_\_
9. What is this place (or: To what town are you nearest)? \_\_\_\_\_
10. Where is this place located (in relation to the above town)?  
\_\_\_\_\_

APPENDIX C

GERIATRIC ARTHRITIS FUNCTIONAL STATUS PAIN SUBSCALE

## SECTION III

PAIN

In this section of the interview, we are trying to measure the amount of pain you experienced when you performed your daily activities during the past week. For each activity, I would like you to judge the amount of pain you experienced when doing it.

By pain, I mean the discomfort or sensation of hurting you experienced when doing the activity. Do you have any questions before we start?

\*\*\*\*\*

I'd like you to consider the amount of pain you experienced, on the average during the past week, for each of the activities listed. Consider the ladder above each activity where the bottom rung equals NO PAIN when performing an activity, the middle rung represents a MODERATE AMOUNT OF PAIN, and the top rung equals EXTREME PAIN when performing that activity during the past 7 days.

The more pain you experienced, the higher up on the ladder you should go.

Make a check on the rung of the ladder which best represents the amount of pain you experienced when doing each activity, on the average, last week. Feel free to change your mind as you go along.

(Give the questionnaire to the respondent)

PAIN

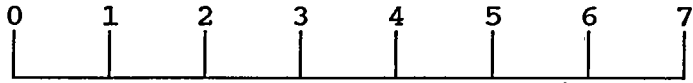
For each activity you perform, on the scale from 0 to 7, where 0 = NO PAIN and 7 = SEVERE PAIN, circle the number that best represents the average amount of PAIN you experienced when performing the activity during the past 3 days.

	NO PAIN								SEVERE PAIN
1. Getting in/out of bed	0	1	2	3	4	5	6	7	
2. Rising from a sitting position	0	1	2	3	4	5	6	7	
3. Walking inside the house	0	1	2	3	4	5	6	7	
4. Climbing stairs	0	1	2	3	4	5	6	7	
5. Doing yardwork	0	1	2	3	4	5	6	7	
6. Putting on a shirt or blouse	0	1	2	3	4	5	6	7	
7. Putting on stockings/pants	0	1	2	3	4	5	6	7	
8. Buttoning clothes	0	1	2	3	4	5	6	7	
9. Opening jars	0	1	2	3	4	5	6	7	
10. Lifting pots and pans	0	1	2	3	4	5	6	7	

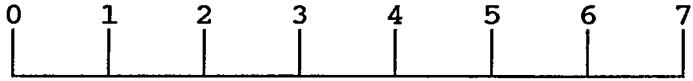
NO  
PAIN

SEVERE  
PAIN

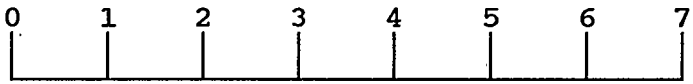
11. Putting dishes into  
high cupboards



12. Doing laundry



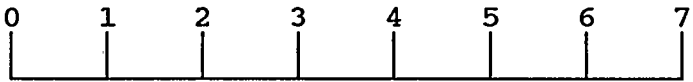
13. Cutting food



14. Washing all areas  
of body



15. Turning on faucets



APPENDIX D  
INDEX OF WELL-BEING

Directions: Here is a list of some of the things that are used to measure quality of life. Most of these things are important to all of us, but each person feels that some of these things are more important than others, and what one person considers most important, someone else may think is less important.

To the right of the list is a scale with numbers from 1 through 5, where 1 means "Not at all satisfied" and 5 means "Extremely satisfied." Think about each thing on the list and circle the number from the scale to show how satisfied you presently are with that area of your life.

Not at all Satisfied————— Extremely Satisfied

1.	Your marital relationship .....	1	2	3	4	5
2.	The work that you do .....	1	2	3	4	5
3.	Your present financial situation ...	1	2	3	4	5
4.	The place where you live .....	1	2	3	4	5
5.	Your non-work activities, such as hobbies .....	1	2	3	4	5
6.	Your family life .....	1	2	3	4	5
7.	Your friendships .....	1	2	3	4	5

Index Well Being

A. Campbell, P. E. Converse, & W. L. Rodgers (1976)

APPENDIX E  
DEMOGRAPHIC QUESTIONS

## DEMOGRAPHIC QUESTIONS

Next, I would like to ask more specific questions about where you lived and your present location within North Central Montana.

1. How would you describe the area where you lived the majority of the time until you reached the age of 17?

1. Rural farm/ranch
2. Rural - not a farm/ranch
3. Small town less than 500 population
4. Small town 501 to 2,500
5. Big town 2,501 to 5,000
6. Small city 5,001 to 15,000
7. Small city 15,001 to 50,000
8. Big city over 50,000

2. How would you describe the area you live in now?

1. Rural farm/ranch
2. Rural - not a farm/ranch
3. Small town less than 500 population
4. Small town 501 to 2,500
5. Big town 2,501 to 5,000
6. Small city 5,001 to 15,000
7. Small city 15,001 to 50,000
8. Big city over 50,000

## BACKGROUND QUESTIONS

1. Are you currently

1. Married? 2. Divorced/Separated? 3. Widowed? 4. Never Married?

2. How many years of school did you finish?

<8 8 9 10 11 12 13 14 15 16 >16

3. How many persons live in the same residence with you?

0 1 2 3 >3

4. Would you tell me within which of the categories on the sheet your total family income last year before taxes fall into?
1. Less than \$4,000
  2. Between \$4,000 and 7,999
  3. Between \$8,000 and 11,999
  4. Between \$12,000 and 14,999
  5. Between \$15,000 and 24,999
  6. \$25,000 or greater

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