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Measurement and Description of Chronic Pain in Rheumatoid Arthritis

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MEASUREMENT AND DESCRIPTION OF CHRONIC PAIN IN RHEUMATOID ARTHRITICS

by

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VITA

The author, Linda Ehrlich Muzio, is the daughter of Sherwyn L. Ehrlich and Edith (Appel) Ehrlich. She was born November 30, 1957, in Chicago, Illinois.

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CHAPTER I

INTRODUCTION

Rheumatoid arthritis is a chronic, systemic, inflammatory disease, of unknown etiology, that results in progressive joint destruction and deformity (Rodnan & Schumacher, 1983). The pain experienced by this patient population has not been well defined. The use of the McGill Pain Questionnaire (1975) in the assessment of pain in rheumatoid arthritis patients has been limited (Anderson & Rehm, 1984; Burckhardt, 1984; Dubuisson & Melzack, 1976; Melzack, 1975). Previous studies using this tool grouped patients with varying rheumatic diseases into one category labeled "arthritis" (Burckhardt, 1984; Dubuisson & Melzack, 1976; Melzack, 1975). Not all rheumatic diseases result from an inflammatory process, nor do all rheumatic diseases progress to severe erosive joint changes as can rheumatoid arthritis (Rodnan & Schumacher, 1983). Therefore, it is unrealistic to assume that the pain of all different types of rheumatic diseases can be defined in exactly the same way. A study of rheumatoid arthritics as a single group will help describe the pain experience of this disease entity.

The purpose of this study was to determine if patients with rheumatoid arthritis describe their pain with a homogeneous set of word descriptors, using the McGill Pain Questionnaire (1975).

Problem Statement

The problem under investigation is: Do rheumatoid arthritics describe their pain with a homogeneous set of word descriptors found in the McGill Pain Questionnaire (1975)?

Research Questions

Two research questions are suggested by the problem:

I. How do rheumatoid arthritics describe their pain using the McGill Pain Questionnaire (MPQ) (1975)?

II. Is there a relationship between respondent demographic factors and responses made on the MPQ by rheumatoid arthritics?

Theoretical Framework

The gate control theory of pain, proposed by Melzack and Wall in 1965, is the theoretical framework upon which the McGill Pain Questionnaire (MPQ) from 1975 is based. The gate control theory states that neural mechanisms in the dorsal horns of the spinal cord act like gates that can increase or decrease the flow of nervous impulses from peripheral fibers to the central nervous system (Melzack, 1980). Large fiber stimulation tends to close the gate, while small fiber stimulation tends to open it. Also, the gate is influenced by inhibition from the brain. Sensory input is modulated at successive synapses from the spinal cord. Pain occurs when the number of nerve impulses that arrive at the brain exceeds a critical level (Melzack & Wall, 1965).

Melzack and Casey (1968) reported that the output of the dorsal horns is projected to the brain along three major ascending systems that contribute to the quality and pattern of the pain experience. One system is the sensory-discriminative system which feeds the somatosensory thalamus and cortex by rapid conducting pathways. Sensory-discriminatory activities give information about time, location, space and intensity. A second system feeds the reticular areas of the brain and the limbic system by way of slow conducting pathways. This contributes to the motivational-affective part of the pain experience. These activities indicate discomfort or unpleasantness which triggers action to decrease the noxious stimulus. Thirdly, a central control or cognitive-evaluative system is fed by the most rapid conducting system. Cognitive processes analyze past experiences, probable outcomes and the meaning of pain. This evaluative system has control over the sensory and motivational systems. All three systems influence the motor response to the pain experience (Melzack & Casey, 1968; Siegele, 1974).

Summary

In summary, this study proposed to describe the pain experience of rheumatoid arthritics using the MPQ (1975). This study also addressed relationships among demographic factors and responses on the MPQ by rheumatoid arthritics.

CHAPTER II

REVIEW OF THE LITERATURE

From the gate control theory of pain, Melzack and Torgerson (1971) put together a list of pain descriptors reflecting the three dimensions of pain: sensory-discriminative; motivational-affective; and cognitive-evaluative. They started with the 44 words compiled by Dallenbach in 1939. Melzack and Torgerson (1971) obtained additional words from clinical literature and descriptions given by hospitalized patients. The final list consisted of 102 words.

The words were categorized into three major classes: sensory, affective, and evaluative, and then 16 subclasses. The sensory class included groups of words expressing the temporal, spatial, pressure, thermal and brightness/dullness quality of the pain experience. The affective class included groups of words expressing the tension, fear, autonomic and punishment quality of the pain experience. The evaluative class included words describing the subjective overall intensity of the pain experience. The result of this work became the McGill Pain Questionnaire (MPQ) (Melzack, 1983).

There are three measurements that can be derived from the completed MPQ: the pain rating index (PRI); the number of words chosen (NWC); and the present pain intensity (PPI). Each measurement represents a quantitative index of the subject's pain experience (Melzack, 1975).

When Melzack (1975) devised the tool, he studied seven different pain syndromes in order to correlate them with the rank and scale values of the PRI, the PPI, and the NWC. Dubuisson and Melzack (1976) went on to study the reliability of the MPQ among several patient groups. They administered the tool to 95 patients for whom a diagnosis had been established in one of the following clinical categories: rheumatoid or osteoarthritis; menstrual pain; labor pain; toothache; phantom limb pain; degenerative disc disease; metastatic carcinoma and postherpetic neuralgia. They found a .77 correlation between clinical diagnosis and particular verbal description of the pain experience. They concluded that the MPQ was a valuable tool for classification of pain and diagnostic differentiation between disease entities. These two studies became the basis for many future research projects.

Prieto et al. (1980) studied 198 outpatients from a back pain clinic using the MPQ. The mean duration of back pain was about eight years. The data were factor analyzed and the study supported the three factor conceptualization of the MPQ, that is, sensory, affective and evaluative classes. This lends support to the individual PRI-pain rating index scores of the MPQ. Research done by Reading (1982) and Kremer and Atkinson (1981) also supported the three classes. Reading (1982) compared chronic and acute pain experiences in women; 95 experiencing acute pain after episiotomy and 166 experiencing chronic dysmenorrhea. He found that patients with chronic pain used more affective and evaluative words, while those experiencing acute pain did not differentiate between sensory, affective and evaluative words as well as did the chronic pain patients.

Kremer and Atkinson (1981) studied 68 patients in a California pain clinic. All subjects complained of pain lasting greater than or equal to three months duration. The patients who scored high in the affective word group were shown to be more depressed and anxious than those with low affective scores. The depression and anxiety were measured with the Brief Symptom Inventory (Derogatis, 1978). Also, those with high affective scores reported a higher level of pain-related physical and psychosocial disability as scored on the Sickness Impact Profile (Gibson et al., 1978). Kremer and Atkinson (1981) concluded that the MPQ can serve as an index of overall affective status in pain patients. A limitation, that Kremer and Atkinson (1981) found, was that women reported higher affective components than men and they suggested this should be taken into consideration when interpreting results.

Turk, Rudy and Salovey (1985) studied two diverse samples of chronic pain patients. The first sample included 70 patients from a pain clinic with varying types of pain. The second sample included 98 patients from a back pain clinic. They found that the three classes of pain were highly intercorrelated and could not be measured independently. Therefore, only the PRI(T) or total pain rating index, which includes the total score of all classes of word descriptors, is appropriate for describing chronic pain. If this finding is replicated, the tool could not be used for differential diagnosis.

Anderson and Rehm (1984) also found the MPQ unsuitable for differential diagnosis of chronic versus acute pain. They examined the relationship between coping and the perception of intensity and quality of pain among three chronic pain groups. They assessed 60 black outpatients who were diagnosed with either sickle cell disease, rheumatoid arthritis or low back pain. The instruments used included a self-control schedule, a spouse response questionnaire and the MPQ. They concluded that the three patient groups could not be distinguished in coping, personality or experience of pain. In some groups, particularly low back pain patients, there was a direct relationship between pain intensity and sympathetic responses from family members. Demographic statistics, particularly education, age, and number of siblings, appeared to be related to number of coping methods used and measures of pain.

Burckhardt (1984) used the MPQ to assess pain in 188 arthritis patients. The sample was equally divided between inpatients and outpatients. The subjects consisted of white, middle class, private patients of a group of rheumatologists, with varying rheumatic disease complaints such as rheumatoid arthritis, osteoarthritis, systemic lupus erythematosus, ankylosing spondylitis and other less common forms of rheumatic disease. The assessment was done in an interview format with the patient being asked to recall their pain during the past week.

Burckhardt (1984) found that the inpatients used sensory class words more often than the outpatients. Also, the inpatients used more intense affective and evaluative responses, although the outpatients used the affective and evaluative responses more often. This correlates with the findings presented by Reading (1982). Burckhardt concluded that the MPQ appears to be a useful instrument for describing arthritis pain.

Limitations that Burckhardt (1984) identified in her study included the homogeneity of the population and the heterogeneity of the diagnoses of the sample. The subjects all came from the private patient listing of a group of rheumatologists. Generalizations to other groups may not be consistent with these results. Because of the diverse disease entities, one could describe the pain, but not know whether it relates to inflammation or degeneration of the joints. Other limitations identified by Burckhardt (1984) include the fact that the inpatients had been diagnosed for a shorter period of time than the outpatients; some were experiencing their first acute pain episode. Also, the inpatients were not as highly educated as the outpatients.

There are some inconsistencies noted between the original works of Melzack (1975, 1976) and subsequent studies. Graham, Bond, Gerkovich, and Cook (1980) studied 36 cancer outpatients with varying specific diagnoses. They found that their patients selected a larger set of pain descriptors than originally described by Dubuisson and Melzack (1976). McGuire (1984) studied 24 cancer inpatients of varying diagnoses at a large metropolitan university hospital. She found that results of the total PRI (pain rating index) and NWC (number of words chosen) agreed with the results of Graham et al. (1980).

The internal structure of the MPQ has been studied by Prieto et al. (1980), Reading (1979) and Burckhardt (1984). Using factor analysis, both Prieto et al. (1980) and Reading (1979) identified four factors. The four factors identified by Prieto et al. (1980) accounted for 51% of the variance in responses by low back pain patients.

Three of these factors were easily perceived as sensory, affective and evaluative, while the fourth factor was a combination of sensory and affective subclasses. The four factors identified by Reading (1979) accounted for 79.6% of the variance in responses of dysmenorrhea patients. Two of these factors were perceived as sensory, one was affective and the other factor was a combination of affective and evaluative subclasses.

Burckhardt (1984) extracted six factors from her data accounting for 58.3% of the variance among arthritis patients. Four of these factors were clearly sensory, one was a combination of sensory and affective subclasses and the last was a combination of affective and evaluative subclasses. The sensory-affective factor was composed of four of the five affective subclasses making it appear that arthritis pain has a large affective component. Reading (1982) also found in a comparison of acute episiotomy pain and chronic dysmenorrhea that the chronic pain patients' responses were more affective-evaluative suggesting that the type of pain experienced is related to the specific subclass of words chosen.

Turk et al. (1985) calculated the alpha coefficients for reliability of the MPQ as: sensory .78; affective .71; evaluative .46; and the alpha coefficient for the total scale was .84. They stated that a criterion for subscale distinctiveness is that the correlations between the three subclasses be smaller than the correlations within the subclasses. The PRI (pain rating index) did not meet this criterion. Analysis of Turk et al.'s (1985) data and its failure to meet the criterion for discriminate validity of the three subclasses has given raise again to a question regarding the discriminate validity of the MPQ. The alpha coefficients were not presented in any of the other studies. Consequently, in future studies using the MPQ, tests of discriminate validity should be attempted.

There is disagreement about the appropriate administration format of the MPQ. Melzack (1975) suggested that the tool be used in an interview format. He felt that patients might misread the instructions or choose more words than allowed. He stressed the importance of the patient's understanding of the instructions as well as the word descriptors. Graham et al. (1980) professed that no difference was evident between self administration of the tool and the interview format. Graham et al. (1980), however, only used the self administration format. They felt the interviewer might bias the subject particularly with word emphasis or body language.

Klepac, Dowling, Rokke, Dodge, and Schafer (1981) studied the difference between the two modes of administration. They noted that not all researchers document the mode of administration. They studied 80 volunteer college students who underwent experimental cold pressor pain experiences. They found that mode of administration does have an impact on the pain scores, particularly the PRI descriptors. They found that the interviewed subjects had higher scores. Klepac et al. (1981) proposed that this was due to the definitions provided the subjects upon request. Subjects did not mark descriptors that they did not fully understand.

Summary

The MPQ has been used frequently and shown to be a reasonably valid and reliable tool for the assessment of pain in a variety of patient groups. There is, however, some controversy about its use for differential diagnosis, actual discriminate validity and the mode of administration. Reliability data on the tool has not been consistently reported. A study assessing pain in rheumatoid arthritics using the MPQ may help to establish validity with this patient population.

CHAPTER III

METHODOLOGY

The design of this study was descriptive. According to Polit and Hungler (1983), descriptive research studies center upon the "accurate portrayal of the characteristics of persons, situations, or groups and the frequency with which certain phenomena occur" (p. 613). The lack of previous studies using this specific client population, rheumatoid arthritics, supports the use of this methodology.

Sample

The sample was a convenience sample drawn from a large urban medical center. The subjects were 30 outpatients. Some of the subjects were private patients and some were clinic patients. In order to participate in the study, the individual was an adult at least 20 years of age, had been diagnosed with rheumatoid arthritis for greater than six months and was alert, coherent and understood the English language.

Variables

There were two variables in this study: rheumatoid arthritics and pain experienced by rheumatoid arthritics. Rheumatoid arthritics can be conceptually defined as individuals with chronic inflammation occurring symmetrically in the joints, particularly the small joints of the body. Pain can be conceptually defined as, "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage (International Association for the Study of Pain, 1979, p. 250). In this case, the pain is characterized by its chronicity and therefore is defined as pain experienced for greater than six months.

Operationally, rheumatoid arthritics can be defined as individuals, 20 years or older, having been diagnosed with rheumatoid arthritis for longer than six months. Pain can be operationally defined by the measurements resulting from administration of the McGill Pain Questionnaire: the PRI (pain rating index), the NWC (number of words chosen) and the PPI (present pain intensity).

Instruments

The McGill Pain Questionnaire (MPQ) (1975) was used to collect data about the rheumatoid arthritic pain experience (see Appendix II, p. 57). The MPQ consists of lists of adjectives. The adjectives were read to the patients, using the prescribed 20 categories. The patients were instructed to choose adjectives that most accurately described their pain at the time of the interview. If not experiencing pain at that time, the patients were asked to describe their most typical pain. They were to choose no more than one adjective in each group; if none of the words accurately described their pain, the patients were to respond "none". If the patients did not understand a word, they could request a definition or synonym of the word. A definition and/or synonym was provided from a standardized list which had been pretested on a group of rheumatoid arthritics from similar demographic backgrounds.

For the present pain intensity (PPI), the patients were to choose a number and a word that best described their pain at that time or the pain they typically experience. The patients were then asked to describe the pattern of their pain as either, "constant, periodic, or brief". Next they were asked to mark the silhouette drawings indicating where their pain was located with either an "E" if the pain was external, an "I" if it was internal or an "EI", if the pain was both external and internal. The patients were then to choose any accompanying symptoms to their pain. They had the option to offer further comment on these symptoms. Then the patients were to describe their sleep as "good, fitful, or can't sleep" and their food intake and activity patterns as either "good, some, little or none". These three categories also allowed for further comment by the patients.

Scoring of the McGill Pain Questionnaire

There has been discussion about the scoring of the McGill Pain Questionnaire (MPQ). Melzack (1975) described the types of data that can be obtained as the PRI-pain rating index, the PPI-present pain intensity and the NWC-number of words chosen. The PRI can be divided into an individual score for each subclass of words, i.e., the sensory PRI(S), the affective PRI(A), the evaluative PRI(E), and the miscellaneous PRI(M). There is also a total score, PRI(T), that can be obtained by adding the above. Several authors believe that the unequal sizes of the categories within the subclasses do not provide accurate interpretation of the rank score of the PRI (Burckhardt, 1984; Charter & Nehemkis, 1983; Walsh & Leber, 1983). Charter and Nehemkis (1983) proposed an alternate scoring method that places the descriptors on a visual analog scale. They claim that this allows for greater sensitivity, in that patients can describe their pain along a continuum.

Melzack, Katz and Jeans (1985) propose the use of weighted-rank scores as opposed to the traditional rank scores. These weighted-rank scores are equivalent to the scale scores originally described by Melzack and Torgerson

(1971). Doctors, patients and students were asked to place the word descriptors on a scale from one to five. The scale scores were derived from the means. These scale scores give the true relative intensity of the word descriptors that is lost when simply using the rank scores (Melzack et al., 1985).

To convert the rank scores into the weighted-rank scores, each descriptor within a category is multiplied by one of twenty weights. The 20 weights were derived by taking the sum of the mean intensity scale value of the doctors' and patients' ratings of the descriptors in each category and dividing by the sum of the rank scores of the descriptors in the same category. For example, for category 1, the formula would read:

$$W1 = \frac{(1.65 + 2.05 + 2.43 + 2.62 + 2.73 + 2.98)}{1 + 2 + 3 + 4 + 5 + 6} = 0.69$$

(Melzack et al., 1985). (See Table 7, p. 34, for the listing of the weights of the 20 categories).

When Melzack devised the tool in 1975, he developed correlation coefficients for each category as a measure of reliability within each category. For the sensory subclass (refer to MPQ, Appendix II, p. 57), he found the following intercorrelations: category 1, 0.91; category 2, 0.97; category 3, 0.95; category 4, 0.84; category 5, 0.92; category 6, 0.95; category 7, 0.93; category 8, 0.92; category 9, 0.92; category 10, 0.95. For the affective subclass (refer to MPQ, Appendix II, p. 57), the following intercorrelations were noted: category 11, 0.82; category 12, 0.94; category 13, 0.90; category 14, 0.87; category 15, 0.92. The intercorrelation for the evaluative subclass (refer to MPQ, Appendix II, p. 57), category 16 was 0.93; and the miscellaneous subclass intercorrelations were: category 17, 0.90; category 18, 0.88; category 19, 0.23; and category 20, 0.94. Factor analysis was done in some studies (Burckhardt, 1984; Prieto et al., 1980; Reading, 1982; Turk et al., 1985) as a means of testing reliability and validity.

Melzack (1975) studied the consistency of subclasses chosen by a person with a particular pain syndrome upon repeated administration of the MPQ. He found a mean consistency of 70.3%. The short range of time between administration, three to seven days, and his small sample of 10 patients may have influenced his results. The repeated use of the MPQ in pain assessment with one subject requires further study.

There are several overall limitations to the MPQ. The tool is lengthy and patients can lose interest during the assessment (McGuire, 1984). It appears more appropriate to use the tool for immediate pain experiences as opposed to recall of pain (Graham et al., 1980). There may be difficulty with understanding the descriptors by patients with lower educational levels (Gaston-Johansson, 1984; McGuire, 1984).

Demographic information was elicited from the patients by way of a second questionnaire (see Appendix I, p. 55). This questionnaire was designed specifically for this study.

Data Collection Procedures

Prior to data collection, the proposed research was submitted for review by the Institutional Review Board of the hospital at which data were collected. Due to the nature of the study, it was exempt from review and approved.

The collection of data proceeded as follows. A list of available outpatient rheumatoid arthritics was provided by the Director of Rheumatology. All patients were approached and asked to participate in the study. The researcher explained the purpose of the study, the process of the study and answered questions. The patients consented to the interview and signed a written consent, in the format prescribed by the institution used for data collection (see Appendix III, p. 59). There was no known risk for the patients from participation and the patients were able to withdraw from the interview at any time without prejudice. No patients withdrew from the study. The interview took place in an examining room of the Arthritis Clinic.

The interview consisted of demographic questions and the reading of the McGill Pain Questionnaire (1975). The total interview lasted approximately 30 minutes. Data collection extended over three months, from June 13, 1986 to September 13, 1986.

Limitations

Internal Validity

According to Polit and Hungler (1983), internal validity is "the degree to which it can be inferred that the experimental treatment (independent variable), rather than uncontrolled, extraneous factors, is responsible for observed effects" (p. 615). Limitations of this study affecting internal validity include the fact that the sample was a convenience sample. Also, the chronicity of the disease made it difficult to control for description of retrospective pain rather than current pain. Educational level of the subjects was not controlled and difficulty with high level words, despite the opportunity for definition or synonym, may also have affected the validity.

External Validity

According to Polit and Hungler (1983), external validity is "the degree to which the results of a study can be generalized to settings or samples other than the one studied" (p. 614). Limitations of this study affecting external validity include the fact that the results of this study can only be applied to a similar population.

Summary

This study was descriptive in nature. Outpatients were approached for participation in the research study. Written consent was obtained for 30 subjects. The McGill Pain Questionnaire and a demographic questionnaire were used as means of data collection.

CHAPTER IV

ANALYSIS OF DATA

Response to Request to Participate

Patients were approached and asked to participate in the study by the researcher. Only four patients refused to participate from the list of available outpatients provided by the Director of Rheumatology. Those who refused gave reasons such as, "really not feeling well" or "other family member's health was their major concern at this time". No patients withdrew after initiating participation in the study.

Sample Demographics

Demographic data of age, sex, marital status, employment, ethnic background, educational level and duration of illness were elicited and are reported in Tables 1 and 2.

The occupations that were held at some time by the patients were quite varied. The most popular type of job was a clerical/desk job followed by manual labor such as janitoress or CTA lineman. Other positions included

TABLE 1

Frequencies and Percentages on Nominal Level Demographic Data for Sample Subjects

Variable	N	Frequency	Percentage
Sex	30	Women = 27	90.0
		Men = 3	10.0
Marital Status	30	Married = 21	70.0
		Widowed = 4	13.3
		Divorced = 3	10.0
		Never Married = 2	6.7
Employment	30	Yes = 11	36.7
		No = 19	63.3
Ethnic Background	29	Black = 10	34.5
		Jewish = 6	20.7
		Western European = 6	20.7
		Polish = 4	13.8
		Slavic = 2	6.9
		Mexican = 1	3.4

TABLE 2

Means, Standard Deviations and Ranges on Interval Level Demographic Data for Sample Subjects

(N=30)

Variable	Mean	S.D.	Range
Age (years)	55	1.33	33-75
Educational Level (grade)	12	1.48	8th graduate-PhD
Duration of Illness (years)	9.85	1.05	0.5-41

teacher, administrator, pharmacist, nurse, hospital volunteer and housewife. Eighty percent of the subjects reported quitting, retiring or changing their jobs because of their rheumatoid arthritis.

Eleven patients reported no other medical diagnoses aside from their rheumatoid arthritis. Eight had one other medical problem, eight had two other medical problems and three had three other medical problems. The medical diagnoses included: lung disease, heart disease, hypertension, cancer, diabetes, hypothyroidism, "stomach problems", hemorrhoids, visual disturbances, anemia, osteoarthritis, palindromic rheumatism, osteoporosis, eczema and depression. Many of these patients took medications for these problems. There was also the possibility of interactions between the medical problems and the rheumatoid arthritis that could affect pain perception by the patients.

Of the sample subjects taking medications for rheumatoid arthritis, 29 patients took at least one anti-inflammatory medication; 14 were also taking Prednisone. Twenty-four patients were taking a remittive agent such as D-Penicillamine, Plaquenil, Myochrysine, Ridaura, Methotrexate or Imuran (see Table 3). Two patients reported taking tranquilizers and three patients reported taking narcotics on a prn basis.

Patients were asked if they had ever used any over the counter remedies to treat their rheumatoid arthritis.

TABLE 3

Percentages of Sample Subjects Using Typical Arthritis Medications

(N=30)

Type of Medication	Percentage*
Aspirin	53.33
Non-Steroidal Anti-Inflammatory Drugs	43.33
Prednisone	46.67
Remittive Agent	80.00
Tylenol	3.33

*Some patients were on more than 1 type of medication and therefore the total percentage will not = 100.

Twelve patients denied ever trying any of these remedies. Seven stated they had followed special diets, four took excess Vitamin C or E, four ingested fish oils and three drank herbal tea, sea water or apple cider vinegar and water. One patient used linament and one patient tried wax therapy. Six had worn copper jewelry and four took regular hot showers or used hot packs. Some of the patients expressed limited relief, but no one stated extended relief from their rheumatoid arthritis pain after using one of these remedies (see Table 4).

Patients were asked if they had ever received a cortisone injection into a painful joint during the course of their arthritis. Twenty-three answered affirmatively. Patients were then asked if they had ever had surgery for their arthritis. Twenty-three denied ever having corrective surgery for their arthritis. Of those having had surgery, hand or wrist surgery was most popular. Total hip, knee and shoulder replacements, as well as knee arthroscopy and ankle synovectomy had also been performed on these patients for their rheumatoid arthritis (see Table 5).

Eleven patients (36.7%) stated that they were having pain during the interview. Six stated it was their typical arthritis pain, while five stated that the pain was different. Of these five, three said the pain was worse during the interview than their typical pain and two said

TABLE 4

Percentages of Sample Subjects Using Typical Arthritis Remedies

(N = 30)

Type of Remedy	Percentage*
None	40.00
Special Diet	23.33
Copper Jewelry	20.00
Excess Vitamins	13.33
Fish Oils	13.33
Hot Showers	13.33
Special Drinks	10.00
Linaments	3.33
Wax Therapy	3.33

*Some patients used more than 1 type of remedy and therefore the total percentage will not = 100.

TABLE 5

Percentages of Sample Subjects Having Had Arthritis Therapeutic Procedures

(N = 30)

Type of Procedure	Percentage*
Local Cortisone Injection	76.67
No Surgical Procedure	76.67
Hand or Wrist Surgery	26.67
(including Carpal Tunnel Release)	-
Total Knee Replacement	16.67
Total Hip Replacement	6.67
Knee Arthroscopy	6.67
Total Shoulder Replacement	3.33
Ankle Synovectomy	3.33

*Some patients underwent more than 1 therapeutic procedure and therefore the total percentage will not = 100.

the pain was better. When asked later on in the interview, if their current pain control method was effective, 23 stated "yes", while seven said "no". Reasons given for ineffective pain control included: "too much activity"; "still having lots of pain"; "the pain has gotten worse"; "has had pain relief in the past"; and "never has had good pain relief".

Research Question I

The first research question was: How do rheumatoid arthritics describe their pain using the McGill Pain Questionnaire (MPQ)(1975)? The data obtained included the specific descriptors that were chosen, the PRI-pain rating index, the NWC-number of words chosen and the PPI-present pain intensity. Data were also gathered from the silhouette drawings, the pattern of pain description, the accompanying symptoms and the sleep, activity and food intake descriptors. Data on analgesic time and analgesic time difference were not collected and no intent to analyze this data was made as the focus of this study was not on medications. Correlations between the elements of the tool were also calculated.

Word Descriptors

The descriptors chosen by at least 33% of the sample subjects are reported in Table 6. Seven of these

TABLE 6

McGill Pain Questionnaire[a] Descriptors Chosen By at Least 33% of the Sample Subjects

(N = 30)

Subscale	Descriptor	Percentage
Sensory	Throbbing	36.7
	Shooting	33.3
	Sharp	60.0
	Hot	36.7
	Tingling	36.7
	Aching	43.3
	Tender	50.0
Affective	Tiring	53.3
	Sickening	33.3
Miscellaneous	Penetrating	33.3
	Nagging	36.7

[a] Refer to MPQ, Appendix II, p. 57.

descriptors came from the sensory subclass, two came from the affective subclass and two came from the miscellaneous subclass.

Weighted PRI-Pain Rating Index Scores

Mean weighted rank scores (Melzack, Katz & Jeans, 1985) were calculated for the 20 individual categories of the McGill Pain Questionnaire (see Table 7). Mean weighted rank scores were also calculated for each subclass and the total PRI-pain rating index (see Table 8). Number of subjects are reported separately due to the overwhelming number of "no answers" given for each category.

Reliability of the McGill Pain Questionnaire

An attempt was made to do reliability coefficients and split-halves reliability on the McGill Pain Questionnaire. Four subjects chose a word in every category of the sensory and the miscellaneous subclasses. Five subjects chose a word in every category of the affective subclass. The evaluative subclass consists of one category. Therefore, the reliability of the questionnaire could not be verified in this sample. Factor analysis also was not feasible due to the sample size.

NWC-Number of Words Chosen

The NWC-number of words chosen is the second measurement that can be calculated from the MPQ. The mean NWC

TABLE 7

Weighted Means, Standard Deviations and Ranges for the 20 Individual Categories of the McGill Pain Questionnaire[a]

Subscale	MPQ Categories	N	Weight	Weighted Mean	S.D.	Range
Sensory	1	18	0.69	2.38	0.59	0.69-4.14
	2	17	1.38	3.40	0.99	1.38-4.14
	3	19	0.93	3.23	1.21	0.93-4.65
	4	21	1.59	1.89	0.81	1.59-4.77
	5	25	0.81	2.43	0.78	0.81-4.05
	6	18	1.19	2.90	0.73	1.19-3.57
	7	19	1.28	1.95	0.99	1.28-5.12
	8	22	0.70	1.49	0.90	0.70-2.80
	9	28	0.72	2.42	0.79	0.72-3.60
	10	25	0.95	1.56	0.94	0.95-3.80
Affective	11	27	1.74	2.45	0.87	1.74-3.48
	12	12	2.22	2.59	0.86	2.22-4.44
	13	12	1.87	3.43	1.75	1.87-5.61
	14	17	1.32	3.26	1.62	1.32-6.60
	15	10	2.33	2.56	0.74	2.33-4.66
Evaluative	16	28	1.01	2.89	1.45	1.01-5.05
Miscellaneous	17	25	1.22	3.37	1.18	1.22-4.88
	18	21	0.82	1.99	1.20	0.82-4.10
	19	8	1.00	1.50	0.53	1.00-3.00
	20	25	1.15	2.48	1.43	1.15-5.75

[a] Refer to MPQ, Appendix II, p. 57.

TABLE 8

Weighted Means, Standard Deviations and Ranges for the PRI-Pain Rating Index Scores of Individuals Who Chose at Least One Descriptor in Each Subscale on the McGill Pain Questionnaire[a]

PRI Subscale	N	Weighted Mean	S.D.	Range
Sensory-PRI(S)	30	22.83	3.77	0.69-40.64
Affective-PRI(A)	29	12.93	4.59	1.32-24.79
Evaluative-PRI(E)	28	2.89	1.45	1.01- 5.05
Miscellaneous-PRI(M)	29	10.21	3.87	0.82-17.73
Total-PRI(T)	30	49.60	9.11	3.84-88.21

---

[a] Refer to MPQ, Appendix II, p. 57.

was 13 for this sample and the mode was 12. Six patients (20.0%) chose 12 words. Two patients chose words in all 20 categories. The least amount of words chosen was five out of a possible 20.

PPI-Present Pain Intensity

The PPI-present pain intensity is the third measurement that can be made from the MPQ. The mode was two on a scale from 0-5 with discomforting as the associated word descriptor. Fourteen patients (46.7%) chose this number and word to describe their pain intensity. The mean was 2.6 on a scale from 0-5. The associated word descriptor would fall between discomforting and distressing.

Additional Pain Related Information

The joints most frequently identified as the location of arthritis pain included the right and left shoulders and the right and left knees. Seventeen patients (56.7%) labeled the right shoulder as painful and 18 patients (60.0%) labeled the left shoulder as painful. Seventeen patients (56.7%) labeled the right knee as painful and 16 patients (53.3%) labeled the left knee as painful. All of these joints were marked by the patients as internal pain or pain felt very deeply from the inside. The pattern of pain described most often by the patients was periodic. Eighteen (60.0%) chose this description for their pattern of arthritis pain.

The accompanying symptoms listed on the McGill Pain Questionnaire include nausea, headache, dizziness, drowsiness, constipation and diarrhea. Only drowsiness was chosen by at least 10 patients (33.3%). Nausea was chosen by 9 patients (30.0%). All other accompanying symptoms were chosen less often by the subjects. Diarrhea was not chosen by anyone. In the area of sleep, 14 patients (46.7%) rated their sleep as good and 11 patients (36.7%) rated their sleep as fitful on a 3 point Likert scale from good to can't sleep. On a 4 point Likert scale from good to none, 16 patients (53.3%) rated their activity as good and 9 patients (30.0%) rated their activity as some. Twenty-seven patients (90.0%) rated their food intake as good, on a 4 point Likert scale from good to none.

Correlations Between the Total PRI Scale and Each of the Subscales

The SPSS-X program for Pearson correlations was used to do correlations among the subscales of the McGill Pain Questionnaire (MPQ). There was a significant correlation to the p=0.01 level between the total PRI-pain rating index and each of the subscales (see Table 9). There was also a significant correlation between the sensory subscale and the evaluative subscale. There was not a significant correlation between the sensory subscale and the affective

TABLE 9

Pearson Correlation Coefficients Between the Subscales and the Total PRI-Pain Rating Index of the McGill Pain Questionnaire[a]

	Weighted PRI(T)	Weighted PRI(S)	Weighted PRI(A)	Weighted PRI(E)	Weighted PRI(M)
Weighted PRI(T)	1.00	0.57* (N=30)	0.63* (N=29)	0.66* (N=28)	0.53* (N=29)
Weighted PRI(S)	0.57* (N=30)	1.00	0.07 (N=29)	0.45* (N=28)	0.10 (N=29)
Weighted PRI(A)	0.63* (N=29)	0.07 (N-29)	1.00	0.30 (N=27)	0.06 (N=28)
Weighted PRI(E)	0.66* (N=28)	0.45* (N=28)	0.30 (N=27)	1.00	0.24 (N=27)
Weighted PRI(M)	0.53* (N=29)	0.10 (N=29)	0.06 (N=28)	0.24 (N=27)	1.00

[a] Refer to MPQ, Appendix II, p. 57.
*$p<0.01$.

and miscellaneous subscales. There was not a significant correlation between the affective subscale and the evaluative and miscellaneous subscales. There also was not a significant correlation between the evaluative subscale and the miscellaneous subscale. This finding affords some support for the reliability of the subscales except for the sensory and evaluative subscales which appear to test the same constructs.

Correlations between the PRI, the PPI, and the NWC

The SPSS-X program for Spearman correlations was used to do correlations among the three measurements of the McGill Pain Questionnaire. A significant correlation was found between the total PRI and the PPI as well as the total PRI and the NWC. There was also a significant correlation between the affective subscale and the PPI as well as the evaluative subscale and PPI. Other significant correlations include those between the sensory, affective and evaluative subscales and the NWC. None of the previous correlations were high, actually none were above 0.50. This means that all measures from the tool are associated (see Table 10). The absence of a significant correlation between the PRI(S) and the PPI may be due to retrospective reporting of pain by many subjects.

TABLE 10

Spearman Correlation Coefficients Between the PPI-Present Pain Intensity and NWC-Number of Words Chosen and the WPRI-Weighted Pain Rating Index Scores on the Sensory, Affective, Evaluative and Miscellaneous Subscales, As Well As the Total PRI-Pain Rating Index Score on the McGill Pain Questionnaire[a]

	PPI	NWC
Weighted PRI(S)	.19 (N=30)	.33* (N=30)
Weighted PRI(A)	.37* (N=29)	.47** (N=29)
Weighted PRI(E)	.34* (N=28)	.47** (N=28)
Weighted PRI(M)	.08 (N=29)	.25 (N=29)
Weighted PRI(T)	.39* (N=30)	.35* (N=30)

[a] Refer to MPQ, Appendix II, p. 57.
* $p<0.05$.
** $p<0.01$.

Correlations between the PRI, PPI, NWC and Accompanying Symptoms

The SPSS-X program for Spearman correlations was used to correlate the weighted PRI subscale and total scores with the accompanying symptoms of nausea, headache, dizziness, drowsiness, constipation and diarrhea. There was a significant correlation to the $p<0.05$ level (-0.32 and -0.34) between the affective and evaluative subscales and nausea. There were no other significant correlations between the PRI and the accompanying symptoms, nor were there any significant correlations between the PPI and the NWC and the accompanying symptoms. The meaning of these correlations is not relevant to the question asked.

Research Question II

The second research question was: Is there a relationship between respondent demographic factors and reponses made on the McGill Pain Questionnaire (MPQ)(1975) by rheumatoid arthritics? The data obtained included correlations between the PRI, PPI and NWC and the following demographic data: age, marital status, level of education, occupation and length of time has had the disease. Also a correlation between the PPI and the question from the demographic questionnaire about pain at the present time (see Appendix I, p. 55) was attempted. The SPSS-X program for Spearman correlations was used.

Correlations between the PRI and Demographic Data

There was one significant correlation between the PRI and the demographic data. The miscellaneous subscale had a -0.34 correlation with age at $p<0.05$ level. The meaning of this correlation is not relevant to the question asked.

Correlations between the PPI and Demographic Data

There was one significant correlation between the PPI and the demographic data. The PPI was significantly correlated 0.33, at $p<0.05$ level with the length of time the subject had the disease. Therefore, the longer the patients had the disease, the higher the scores on the PPI.

Correlations between the NWC and Demographic Data

There were two significant correlations between the NWC and the demographic data. There was a significant -0.44 correlation at $p<0.01$ level between the NWC and the length of time the subject had the disease. This means that the longer the patients had the disease, the fewer words they chose. There was also a significant -0.37 correlation at $p<0.05$ level between the NWC and the answer to the question of pain at the present time. This negative correlation implies that the patients who chose fewer words on the MPQ stated that they had pain during the interview.

Correlation between the PPI and Pain at Present

A correlation between the PPI and the question of pain at the present was attempted. There was no significant correlation between these two measurements.

Summary

The responses to the request to participate in this study were very positive. Demographic data were compiled and reported as frequencies, means and percentages. Analysis of the data surrounding Research Question I elicited a listing of word descriptors chosen by at least 33% of the sample. Reliability measures were attempted but were unsuccessful due to the number of subjects not choosing a word in each category. The three measurements generated by the tool, the PRI, the PPI and the NWC were calculated as were correlations between these measures. Some significant correlations were found. Additional pain-related information was also tabulated. Analysis of the data surrounding Research Question II elicited some significant correlations between the demographic data and specific MPQ responses made by the subjects.

CHAPTER V

CONCLUSIONS

In order to explore the description of pain in rheumatoid arthritis, 30 outpatient rheumatoid arthritics were selected to participate in this study. The McGill Pain Questionnaire was used as a means of data collection along with a demographic data sheet specifically designed for this study. The data were analyzed and the following conclusions were drawn.

Research Question I

The first research question was: How do rheumatoid arthritics describe their pain using the McGill Pain Questionnaire (MPQ)(1975)? The data obtained included a list of descriptors chosen by at least 33% of the sample subjects (see Table 6, p. 32). It is interesting to note the similarities and differences between these results and those of Burckhardt (1984) and Dubuisson and Melzack (1976).

Word Descriptors Chosen

Burckhardt (1984) cited 11 descriptors chosen by at least 30% of the sample. Aching, a sensory descriptor, was the most frequently chosen word, with exhausting, an affective descriptor, being the second most frequently chosen word by both inpatients and outpatients. The sensory descriptors: sharp, throbbing, tender and shooting were chosen by at least 30% of both groups. The outpatients chose the evaluative descriptors, annoying and miserable and the miscellaneous descriptor, nagging, most frequently. The inpatients chose the affective descriptor, sickening, the evaluative descriptor, unbearable and the miscellaneous descriptor, nagging most frequently.

In comparison, the sample of outpatients in this study chose the sensory descriptor, sharp, most frequently and another sensory descriptor, tender, the second most frequently. The sensory descriptors: throbbing, shooting, hot, tingling, and aching were chosen by at least 33% of the sample. Therefore, five out of the seven sensory descriptors are in congruence with Burckhardt's (1984) findings. The sample in this study chose the affective descriptors, tiring and sickening most frequently. This is similar to the affective descriptors chosen by Burckhardt's (1984) inpatients. As for the miscellaneous descriptors, the sample in this study chose penetrating and nagging which are consistent with both Burckhardt's (1984) groups.

The results from this sample of outpatients are fairly congruent with the results of Burckhardt (1984).

On the other hand, the results of this study are not consistent with the results of Dubuisson and Melzack (1976). They found that at least 38% of their sample of arthritis patients chose the sensory descriptors, gnawing and aching, the affective descriptor, exhausting and the evaluative descriptor, annoying, most frequently. Only aching was chosen by the samples in these two studies.

In conclusion, it appears that the word descriptors chosen by this sample agree with Burckhardt's (1984) findings and therefore are representative of arthritis patients.

No Answer Responses

In this study, there were a significant number of patients who chose no answer in at least one category of the MPQ. There are 11 categories in which no answer was the most frequent response (see Table 11). In five out of the 10 sensory categories, no answer was most frequently chosen. In four out of the five affective categories, no answer was most frequently chosen. In two out of the four miscellaneous categories, no answer was most frequently chosen. Therefore, it appears that there is an absence of words on the McGill Pain Questionnaire that capture the pain experience of the chronic rheumatoid arthritic, or

TABLE 11

Frequencies and Percentages of Subjects Choosing No Answer in the 20 Categories of the McGill Pain Questionnaire[a]

(N = 30)

Subscale	MPQ Category	Frequency	Percentage
Sensory	1	12*	40.0
	2	13*	43.3
	3	11*	36.7
	4	9	30.0
	5	5	16.7
	6	12*	40.0
	7	11**	36.7
	8	8	26.7
	9	2	6.7
	10	5	16.7
Affective	11	3	10.0
	12	18*	60.0
	13	18*	60.0
	14	13*	43.3
	15	20*	66.7
Evaluative	16	2	6.7
Miscellaneous	17	5	16.7
	18	9**	30.0
	19	22*	73.3
	20	5	16.7

[a] Refer to MPQ, Appendix II, p. 57.

* Most frequent response.

** Most frequent response was no answer and one other descriptor.

at least the pain experience of outpatient rheumatoid arthritics in this sample.

Due to the overwhelming number of no responses, reliability measures and validity for this tool cannot be supported by data generated from this sample.

Additional Words

Patients were asked if there were words that did not appear on the MPQ, that they felt described their pain. Four patients responded with one of the following words: sticking, disgusting, aggravating and frustrating. Sticking implies sensory description, while disgusting, aggravating and frustrating imply affective descriptions. Two patients stated that the words found in category 9 were all appropriate and had difficulty choosing a response.

Research Question II

The second research question was: Is there a relationship between respondent demographic factors and responses made on the McGill Pain Questionnaire (MPQ) (1975) by rheumatoid arthritics? The data obtained included significant correlations between the PPI-present pain intensity and the length of time the patients had the disease and the NWC and the length of time the patients had the disease.

Correlation between the PPI and the NWC and Demographic Data

The significant correlation between the PPI and the length of time the subject had the disease implies that the longer the patients had the disease, the higher the scores on the PPI. The significant negative correlation between the NWC and the length of time the subject had the disease implies that the longer the patients had the disease, the fewer number of words were chosen. This supports the premise that the descriptors did not capture the pain experience of the rheumatoid arthritic. Patients having the disease for a longer period of time had defined their pain using certain descriptors and those descriptors were not found on the MPQ. It also is unclear if the PPI, reported by patients having the disease for a length of time, is reporting current acute pain or retrospective chronic pain.

Implications for Future Research

This study should be replicated to verify these findings. Further options for patients to generate words to describe their rheumatoid arthritis pain should be elicited to help develop a tool with better descriptors of the pain of rheumatoid arthritis. Other pain assessment tools, such as visual analog scales, could be used to help validate the pain description of rheumatoid arthritis.

Also, as suggested by Charter and Nehemkis (1983), placing the descriptors on a visual analog scale may assist the patients in choosing appropriate pain descriptors.

As previous studies did not report the "no answer" responses by their subjects, it is unclear whether this posed a problem in their findings. According to Melzack (1975), he supported the interview administration mode because he thought that patients "may feel compelled to choose a word from every subclass" (p. 282), if they are allowed to fill out the questionnaire by themselves. Why no other study either had this problem, or did not report it, is uncertain. Since the "no answer" response was significant in this study, future studies should report this finding.

Since reliability measures are dependent upon patient responses, it is important to repeat this study with a larger sample to verify the reliability of this tool. A sample large enough to apply factor analysis would be appropriate. Future studies should report the reliability measures.

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APPENDIX I

APPENDIX I

Demographic Data

Age:

Sex: Male/Female

Inpatient/Outpatient

Marital Status: Single/Married/Widowed/Separated/Divorced

Ethnic Background:

Highest level of education:

Occupation
(If not working now, what was occupation?)

Quit or changed job due to RA: Yes/No

Length of time has had RA:

Pain at present time: Yes/No

Is this your typical pain? Yes/No
If no, how does it differ?

Other medical diagnoses:

Medications:

Drug name:	Dosage:	How long been taking:	When last dose:

Any OTC drugs or home remedies:
(copper bracelets, epsom salts, etc.)

Is your current pain control method effective: Yes/No
If no, explain

Any corrective surgeries for arthritis?

Comments:

APPENDIX II

McGill - Melzack Pain Questionnaire

Patient's Name ______________ Date ______________ Time ________ am/pm
Analgesic(s) ______________ Dosage ______________ Time Given ________ am/pm
______________ Dosage ______________ Time Given ________ am/pm

Analgesic Time Difference (hours): +4 +1 +2 +3
PRI: S ________ (1-10) A ________ (11-15) E ________ (16) M(S) ________ (17-19) M(AE) ________ (20) M(T) ________ (17-20) PRI(T) ________ (1-20)

1 FLICKERING ___
QUIVERING ___
PULSING ___
THROBBING ___
BEATING ___
POUNDING ___

2 JUMPING ___
FLASHING ___
SHOOTING ___

3 PRICKING ___
BORING ___
DRILLING ___
STABBING ___
LANCINATING ___

4 SHARP ___
CUTTING ___
LACERATING ___

5 PINCHING ___
PRESSING ___
GNAWING ___
CRAMPING ___
CRUSHING ___

6 TUGGING ___
PULLING ___
WRENCHING ___

7 HOT ___
BURNING ___
SCALDING ___
SEARING ___

8 TINGLING ___
ITCHY ___
SMARTING ___
STINGING ___

9 DULL ___
SORE ___
HURTING ___
ACHING ___
HEAVY ___

10 TENDER ___
TAUT ___
RASPING ___
SPLITTING ___

11 TIRING ___
EXHAUSTING ___

12 SICKENING ___
SUFFOCATING ___

13 FEARFUL ___
FRIGHTFUL ___
TERRIFYING ___

14 PUNISHING ___
GRUELLING ___
CRUEL ___
VICIOUS ___
KILLING ___

15 WRETCHED ___
BLINDING ___

16 ANNOYING ___
TROUBLESOME ___
MISERABLE ___
INTENSE ___
UNBEARABLE ___

17 SPREADING ___
RADIATING ___
PENETRATING ___
PIERCING ___

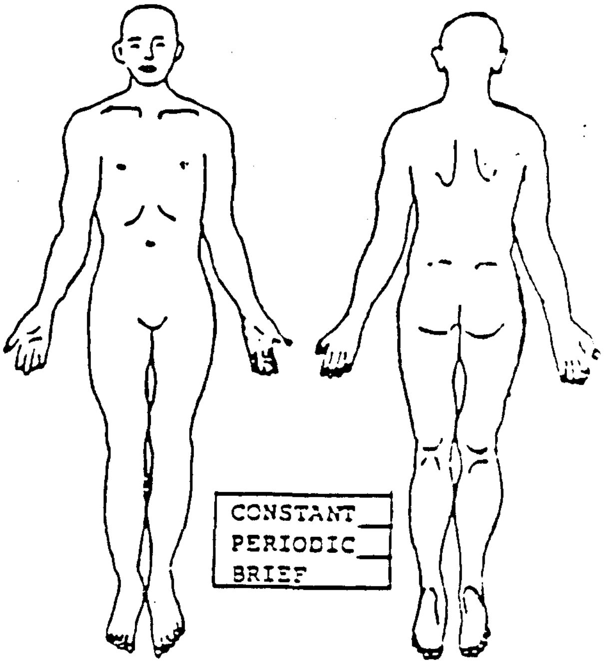
18 TIGHT ___
NUMB ___
DRAWING ___
SQUEEZING ___
TEARING ___

19 COOL ___
COLD ___
FREEZING ___

20 NAGGING ___
NAUSEATING ___
AGONIZING ___
DREADFUL ___
TORTURING ___

PPI
0 No pain
1 MILD ___
2 DISCOMFORTING ___
3 DISTRESSING ___
4 HORRIBLE ___
5 EXCRUCIATING ___

PPI ________ COMMENTS:



CONSTANT ___
PERIODIC ___
BRIEF ___

ACCOMPANYING SYMPTOMS:
NAUSEA ___
HEADACHE ___
DIZZINESS ___
DROWSINESS ___
CONSTIPATION ___
DIARRHEA ___
COMMENTS:

SLEEP: ___
GOOD ___
FITFUL ___
CAN'T SLEEP ___
COMMENTS:

FOOD INTAKE:
GOOD ___
SOME ___
LITTLE ___
NONE ___
COMMENTS:

ACTIVITY:
GOOD ___
SOME ___
LITTLE ___
NONE ___

COMMENTS:

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(4/15/86)

APPENDIX III

APPENDIX III

Informed Consent

TITLE: Measurement and Description of Chronic Pain in Rheumatoid Arthritics

INVESTIGATORS: Linda E. Muzio, Graduate Nursing Program, Loyola University of Chicago; and Michael H. Ellman, M.D.

1. Introductory Statement:

I, ______________________, voluntarily agree to participate in a research study, the purpose of which is to describe the pain of rheumatoid arthritis using the McGill Pain Questionnaire, and to determine if this type of questionnaire is helpful in quantifying the pain in rheumatoid arthritis.

2. Procedure:

I will be asked to complete a questionnaire regarding my background such as my age and how long I have had rheumatoid arthritis. Then I will be asked to choose words that best describe my pain from the McGill Pain Questionnaire. This interview will last approximately 30 minutes.

3. Risks and Discomforts:

There are no anticipated risks or discomforts.

4. Benefits:

I understand that there will be no benefit to me for participating in the study, but this study may help better understand rheumatoid arthritis and may help other people with the disease.

5. Alternative Procedures:

There is no specific alternative procedure other than not participating in the study.

6. Confidentiality of Data:

Information about me that will be obtained in this study will remain confidential and it will be disclosed only with my written permission or as required by law.

7. Compensation for Injury:

I understand that in the event of physical injury resulting from the research procedures the Hospital will provide me with free emergency care, if such care is necessary. I also understand that if I wish, the Hospital will provide non-emergency medical care, but that neither Linda Muzio, Michael Ellman, nor the Hospital assumes any responsibility to pay for such care or to provide me with financial compensation.

Linda Muzio nor Michael Ellman has not made or represented any guarantee to me as to the results that I may expect from participation in this study.

8. Right to Withdraw:

I have been advised that Linda Muzio or Michael Ellman will answer any questions I may have regarding this research study and that I am free to withdraw my consent and discontinue participation at any time without penalty and that standard treatment for my condition will remain available to me.

Date:______________ Time________ ______________________
Signature of Patient

WITNESS:

______________________________ ______________________
Name of Witness (PLEASE PRINT) Signature of Witness

APPROVAL SHEET

The thesis submitted by Linda E. Muzio has been read and approved by the following committee:

Dr. Claudette Varricchio, D.S.N., Director
Associate Professor, Nursing, Loyola

Dr. Esther Matassarin-Jacobs, PhD.
Assistant Professor, Nursing, Loyola

Dr. Sheila Haas, PhD.
Assistant Professor, Nursing, Loyola

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the Committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Science in Nursing.

12-2-86
Date

Claudette Varricchio D.S.N., R.N.
Director's Signature