LEARNING NEEDS AND PERCEIVED SELF-EFFICACY OF PATIENTS WITH CHRONIC LOW BACK PAIN

by

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ABSTRACT

Learning Needs and Perceived Self-Efficacy

of Patients with Chronic Low Back Pain

The purpose of this study was to assess the learning needs and self-efficacy of 41 patients with chronic low back pain (CLBP), in an outpatient pain treatment clinic in St. John's, Newfoundland, and to examine relationships between perceived learning needs, pain-related self-efficacy, demographic and injury-related factors. Knowles' (1980) adult learning theory and Bandura's (1977) self-efficacy theory guided this study. Learning needs were assessed using the patient learning needs scale (PLNS) and self-efficacy was measured using the self-efficacy scale, developed by Lorig et al. (1989a).

Patients in this study reported having many learning needs in order to manage their own care at home. Of most importance to these subjects was information about treatments and complications, medications and enhancing quality of life. Learning needs were associated with education level, pain experienced "most of the time" and distress experienced "most of the time". As a group, subjects reported low self-efficacy for all three self-efficacy subscales--pain, function and other symptoms. The lowest scores were reported for pain self-efficacy. Self-efficacy was associated with education level and distress

experienced by the patient at the time of interview. A statistically significant inverse relationship was found between learning needs and self-efficacy. This relationship was particularly evident between learning needs and function self-efficacy with a correlation of -0.70. These findings have implications for nursing practice and future research.

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CHAPTER 1

Introduction

Self-care by persons with chronic conditions has always been a component of health care. In recent years however, with the advancement in technology and the shift in health care from the institution into the community, self-care has gained emphasis in health care delivery (Davis, Busch, Lowe, Taniguchi, & Djkowick, 1994; Lorig, 1993; Redman, 1993; Skelton, Murphy, Murphy, & Dowd, 1995). As a result of this increased emphasis on self-care, patients with chronic health problems are required to assume a significant role in the management of their own care. To carry out this role adequately, patients require an understanding of their chronic condition and a belief in their own ability to fulfil this task (Lorig, 1992).

Many persons with chronic health problems experience pain. Bonica (1990) contends that, "Pain is the most frequent cause of suffering and disability that seriously impairs the quality of life for millions of people throughout the world" (p. 20). In industrialized countries, fifty percent of people with painful conditions have acute pain and thirty percent suffer with chronic pain; one half to two thirds are partially or totally disabled for days, months, and even years (Bonica, 1990). Chronic low back pain (CLBP), in particular, has been identified as an important focus for research because of the high prevalence in the

general population, the negative impact that effects of pain and disability has on the individual and his/her family's quality of life, and the high cost to society of the long term physical and psychosocial impairment that often accompanies this condition (Anderson, Pope, & Frymoyer, 1984; Bonica, 1990; LeFort, 1989; Pope, 1991).

Traditionally, health education has played a major role in the management of chronic low back pain. It may not be enough, however, for people to be taught a variety of cognitive methods or behavioral strategies to control their pain. Self-efficacy--perceiving oneself as having the ability to successfully perform the specific tasks required in order to manage his/her own care--may also be an important factor in pain management. This study focuses on identifying the perceived learning needs of patients with chronic low back pain (CLBP) and assessing their self-efficacy in relation to those learning needs.

Problem Statement

Health education programs should provide patients with the necessary information to help them assume more responsibility for their own care. Research studies which explore what content should be included in these education programs often reveal a discrepancy between what the professionals

and patients believe is most important (Dilorio, Faherty, & Manteuffel, 1993; Lauer, Murphy, & Powers, 1982; Waters, 1987). Teaching-learning theory mandates that the learner's needs and priorities be the foundation of any program established (Redman, 1993). Specifically, a knowledge of the information needs perceived by patients with CLBP as important, would help provide a basis for health education programs directed towards meeting these needs.

There is an increasing emphasis in patient education programs on patient self-management, especially among patients with chronic conditions (Lorig, 1992). There is some evidence that self-efficacy is important in self-care management. According to Bandura (1977) and Lorig, Chastain, Ung, Shoor, and Howman, (1989a), patients who have enhanced self-efficacy in relation to their condition, believe that they have the knowledge and skills necessary for their own health care management. It may be hypothesized, then, that level of self-efficacy would make a difference in the patient's perceived need for information regarding his/her care. In order to design or revise patient education programs which will be effective in light of the added responsibilities being given to patients for their own care, it is important to better understand the relationship between learning needs and self-efficacy, as well as the factors which influence either perception.

Several factors have been researched in relation to perceived learning needs and self-efficacy of patients. These factors are of two types: (a) personal factors, including age, education and gender (Bostrom, Crawford-Swent, Lazar, & Helmer, 1994; Casey, O'Connell, & Price, 1984; Dodge, 1969; Forsyth, Delaney, & Gresham, 1984; Pellino, & Oberst, 1992; Richardson, 1990) and (b) illness-related factors, including duration of illness, pain and distress (Bowman, 1991; Bubela, Galloway, McCay, McKibbon, Nagle, Pringle, Ross, & Shamian, 1990b; Galloway, Bubela, McKibbon, Rebeyka, & Saxe-Braithwaite, 1995; Headley, 1990). Findings in these studies were inconsistent and no studies were found which examined the relationship between learning needs and self-efficacy among patients with chronic low back pain or any other patient population.

Significance of the Study

There are several reasons why the learning needs and self-efficacy of people with CLBP should be studied. First of all, back injuries have been identified by researchers as the leading cause of disability and absenteeism in the working population (Bonica, 1990; Strang, 1992). Up to 80% of the general population will be affected by back pain at some time in their lives (Bonica, 1990; Strang, 1992). In Canada, 131,772 people are reported as having back

injuries which required them to lose time from work (Statistics Canada, 1992). Back pain persists or reoccurs in many instances (Bonica, 1990).

When low back pain becomes chronic, its long-term, persistent nature affects most areas of an individual's life. Stress levels are often high, exercise and activity levels may be altered, sexual activity may be affected and family relationships may be strained (Aronoff, 1992; Bowman, 1991). Patients with CLBP spend much of their time dealing with the pain and seeking medical help. When relief of pain cannot be obtained, individuals are often left with feelings of despair. The presence of CLBP causes patients to feel out of control, with the pain being in control of their lives, a situation that often leads to feelings of helplessness (Adams, Ravey, & Bell, 1994; Bowman, 1991; Headley, 1990; Pellino, & Oberst, 1992). Other psychological factors are also related to CLBP. Mood disorders, low self-esteem, increased anxiety and depression have been found to be associated with this chronic problem (Adams et al., 1994; Jones, 1993).

Patients with CLBP, like those with other chronic pain problems, must learn to cope with and care for themselves within the context of their daily lives. Education can help patients in making the right decisions about adjustments in their treatment regime and in attaining the necessary self-care skills (Lorig et al., 1989a; Skelton et al., 1995; Taal, Riemsma, Brus, Seydel, Rasker, &

Wiegman, 1993). Providing knowledge alone may not be the best approach in patient education programs (Moore, 1990; Spelman, 1984). Patient education research has demonstrated that people not only need knowledge about their condition but a belief in their own ability to perform the health behaviours required to enhance their daily living. The most successful educational programs (i.e., those affecting health status and behaviour) emphasize the development of a daily routine of self-management activities and pay attention to physical exercise, coping, self-efficacy and problem-solving (Lorig, 1992).

Purposes of the Study

The purposes of this study were threefold: (a) to describe the learning needs of patients with chronic low back pain; (b) to describe pain-related self-efficacy in patients with chronic low back pain; and, (c) to examine relationships between perceived learning needs, pain-related self-efficacy, demographic and injury-related factors.

Research Questions

The research questions were:

1. What are the learning needs of patients with chronic low back pain?
2. What is the level of pain-related self-efficacy of patients with chronic low

back pain?

3. What is the relationship between pain-related self-efficacy and learning needs?

4. What is the relationship between selected background variables (gender, duration of illness, age, education level, number of injuries, pain and distress) and learning needs?

5. What is the relationship between selected background variables (gender, duration of illness, age, education level, number of injuries, pain and distress) and pain-related self-efficacy?

Definition of Terms

Chronic low back pain (CLBP) is persistent or recurring non-malignant pain in the lower lumbar region of longer than six (6) months duration (Aronoff, 1992; International Association for the Study of Pain, 1994).

Perceived self-efficacy is "one's belief that one can perform a specific behaviour or task in the future. It refers to personal judgement of performance capabilities in a given domain of activity" (Bandura, 1977, p. 192). The specific domain being examined in this study was pain-related self-efficacy which was operationally defined as the score on the Perceived Self-efficacy Scale, developed initially for patients with arthritis (Lorig et al., 1989a).

Perceived learning need is defined as knowledge or skill identified by patients with chronic low back pain as necessary in order to manage their associated health problem and maximize their ability to carry out their activities of daily living. In this study, learning need was operationally defined as the score on the Patient Learning Needs Scale (PLNS)(Bubela, Galloway, McCay, McKibbon, Nagle, Pringle, Ross, & Shamian, 1990a).

Patient education is a planned learning experience using a combination of methods such as teaching, counselling, and behaviour modification techniques which influence patients' knowledge and health behaviour (Bartlett, 1985).

Theoretical Context

Although this study did not aim to test a specific theoretical framework, Knowles' Theory of Adult Learning and Bandura's Self-efficacy Theory were used as guides in selecting the measures of self-efficacy and learning needs, and for interpretation of findings.

Health professionals can strengthen their understanding and become more effective in providing patient education by becoming more familiar with the ways adults learn and the effective methods of adult teaching. Adult learning theory emphasizes the importance of identifying the learner's perception of

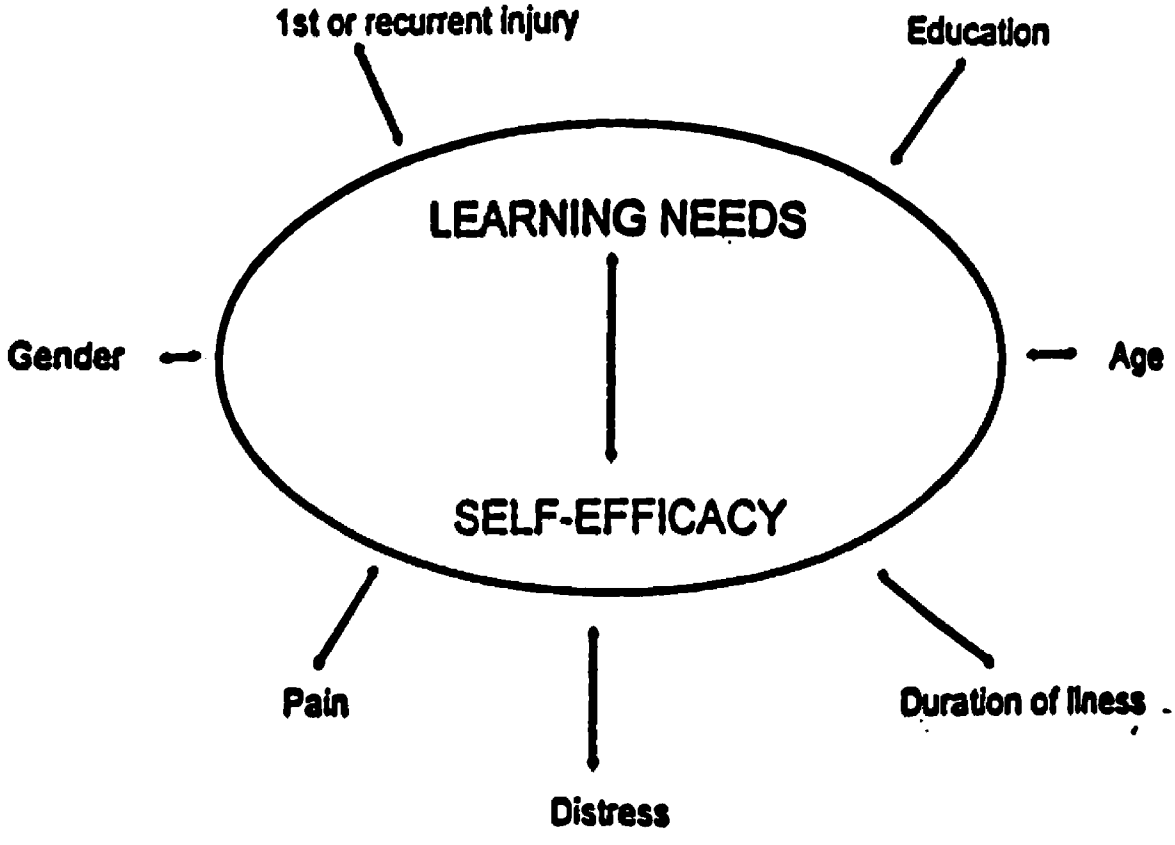
his/her learning needs (Knowles, 1986; Knowles, 1980). Knowles provides a conceptual framework which can help guide health professionals in their approach to patient education. Health educators are encouraged to assist and facilitate rather than try to assume the professional responsibility for presenting important health information to the patient. Adults are viewed as independent learners who should take an active role in deciding what will be learned. Patients, therefore, should be partners in health education rather than passive recipients of health information from professionals who assume the "authority" role. People are motivated to learn when the learning is relevant to their own needs and goals. Knowles (1986) viewed teaching as a response to the learner's perceived needs, and only through a learning needs assessment can professionals better understand and structure health education to respond to what the patient views as the problems or tasks he/she must undertake.

Self-efficacy theory focuses on an individual's perceived skills and abilities to act effectively and competently in a given domain. In turn, these beliefs influence actions and coping behaviours, the situations and environments that individuals choose to access, and their persistence in performing the tasks required of them (Bandura, 1977). Bandura indicated that self-efficacy theory is based on the principle that cognitive processes can mediate behaviour, but focusing only on cognitive process does not provide for

successful behavioral change. Cognitively-based interventions can provide individuals with the knowledge and awareness of the skills and abilities underlying the execution of the behaviour. However, if individuals do not believe that they can actually execute the behaviour effectively, the behaviour will not occur (Bandura, 1977).

On the basis of these two theories, identifying perceived learning needs and self-efficacy are essential steps in the education process if education is to be patient-focused, patient driven, and not only influence an individual's knowledge, but his/her health behaviours as well. The conceptual framework (see Figure 1) indicates selected background variables which may affect the learning needs and/or self-efficacy of individuals.

Figure 1: Conceptual Framework



CHAPTER 2

Literature Review

The review of the literature is divided into two sections: first, a review of research studies which have addressed perceived learning needs of patients, and second, a discussion of literature addressing the role of self-efficacy in health behaviours and its possible relationship to learning needs. A brief summary of the literature is then presented.

Perceived Learning Needs

Patient education has expanded beyond the professional "telling" the patient what to do. Today, the necessity to move toward more patient-oriented teaching is recorded in the literature as a means to strengthen the effectiveness of patient education (Jenny, 1990; Padberg, & Padberg, 1990; Richardson, 1990). One of the first steps toward this mandate is to assess what learning needs patients have (Boyd, 1992; Johnson, & Jackson, 1989; Sullivan, 1993; Volker, 1991). This assessment phase, the initial step of the teaching-learning process, is considered to be the most important one because all other phases develop from it (Bille, 1981; Boyd, 1992; Redman, 1993). The learning needs assessment identifies what the individual perceives to be important to know and therefore, what content should be addressed as part of the focus for health

teaching (Boyd, 1992; Lauer, Murphy, & Powers, 1982; Volker, 1991). In addition to the patient's identified learning needs, the health professional must also be perceptive to learning needs not initially recognized by the patient. These too must be considered when developing health education programs (Johnson, & Jackson, 1989).

In the past, health care professionals alone often decided what patients needed to know. However, studies which have compared the perception of professionals with that of patients have demonstrated that these perceptions are often incongruent (Dilorio, Faherty, & Manteuffel, 1993; Konkol et al., 1989; Lauer et al., 1982). Differences in perceptions between patients and professionals about what is important to learn has been found in patients with epilepsy (Dilorio et al., 1993), patients with cancer (Lauer et al., 1982) and patients with spinal cord injuries (Waters, 1987).

To date, there is little substantiated knowledge about the learning needs of patients with CLBP. Only one study was found that compared perceptions of the learning needs of patients with low back pain and the health professionals who assist in their care. Skelton et al. (1995), carried out semi-structured interviews with 52 patients and 10 general practitioners (GPs) to compare the perceptions of patients and GPs about the management of low back pain (LBP) as a basis for the future development of patient education for this condition.

Again, significant differences in perceptions of patients and professionals were noted. For the GP, patient education meant offering advice to patients about how to prevent LBP from recurring in the future. Prevention was thought to comprise three separate but interrelated issues: knowledge, skills, and attitudes. GPs regarded patient education as the most important aspect of LBP management, yet it was failing to have a great impact on patients. The two reasons GPs gave for patients not following prevention advice were: (a) patients do not retain the information that is given to them and, (b) patients lack the motivation required to carry out prevention-related skills/behaviours and are not prepared to take responsibility for their LBP.

The patient's perspective, on the other hand, was very different. Over half (56%) of the patients reported having a disciplined approach to prevention but many thought that it was not prevention knowledge they required, but advice about how to apply this knowledge. Patients felt that the information given to them was theoretical and did not transfer well to real life situations. The precise interplay between rest, exercise and recovery was rarely made explicit to them.

The above studies reveal incongruencies between the perceptions of professionals and patients and reinforce the need to assess the teaching content desired by the patient. Close (1988) states: "teaching the patient

what he already knows is a waste of time and energy and teaching him irrelevant matter becomes frustrating and confusing" (p.206).

The literature records that patients' perceived learning needs during hospitalization and after discharge home are similar across patient populations in areas related to knowledge of condition, treatments, medications, managing activities of daily living and interpersonal communication (Bubela et al., 1990b; Dodge, 1969; Hentinen, 1986; Nicklin, 1986). Although many research studies documented the learning needs of patients, these learning needs were often conceptualized differently in the various studies, making comparisons of research findings difficult. In five studies, the researchers--Bubela et al. (1990b), Bostrom, Crawford-Swent, Lazar, and Helmer (1994), Galloway, Bubela, McKibbon, McCay, and Ross (1993), Galloway, Bubela, McKibbon, Rebeyka, and Saxe-Braithwaite (1995) and Galloway, and Graydon (1996), conceptualized learning needs in the same way and used the same instrument, the Patient Learning Needs Scale. This is a 50-item self-administered instrument where subjects rated each item, on a scale from 0 "does not apply" to 5 "extremely important", according to how important it is to know in order to manage their care at home.

Bubela et al. (1990b) carried out a study with 301 adult medical and surgical patients who were within 72 hours of discharge from hospital to

determine which person and illness-related factors influenced patient's learning needs at the time of discharge from hospital. Patients reported that information concerning treatments and complications, medications, quality of life issues and activities of living were most important. Bostrom et al. (1994) expanded on the work of Bubela et al. (1990b) and surveyed two groups: 76 hospitalized and 89 recently discharged patients with medical-surgical conditions. Learning needs were ranked similarly in both studies with highest priority being given to the same three subscales: enhancing quality of life, medications and treatments and complications.

A third study by Galloway et al. (1993) identified the perceived learning needs of 40 patients following open thoracotomy surgery for primary lung cancer and the effect of symptoms on activities after surgery. Subjects were surveyed prior to discharge and again 8 to 65 days following discharge. The information related to treatments and complications and quality of life was considered most important by patients both prior to and following discharge.

Galloway et al. (1995) identified the perceived learning needs of 38 patients after peripheral arterial bypass surgery. These learning needs were examined in relation to symptom distress, anxiety, and depression. Patients were given a thirty-minute interview 48 hours or less before hospital discharge and 32 subjects who agreed were interviewed again during their follow-up

medical appointment. Before discharge, the areas of learning need identified as most important (in order of ranking) were: treatment and complications, skin care and enhancing quality of life. After discharge, treatment and complications remained the number one priority; however, enhancing quality of life was ranked second and skin care post-discharge was ranked third. The lower score given for learning needs in relation to skin care post-discharge is consistent with the healing process when incisional care is no longer a priority for patients.

A fifth study by Galloway and Graydon (1996) was carried out to determine the relationships between uncertainty, symptom distress and discharge information needs of individuals ($n = 40$) after a colon resection for cancer. Again, highest priority was given to learning needs in relation to treatments and complications and activities of living. Patients who had their condition longer had an increased level of uncertainty ($r = 0.37$, $p < 0.05$) and more symptom distress ($r = 0.48$, $p < 0.01$). An increase in uncertainty was significantly associated with an increase in learning needs ($r = 0.33$, $p < 0.05$). A positive but nonsignificant association was reported between learning needs and symptom distress.

Although the same learning needs scale was used in each of these studies, the findings are difficult to compare for various reasons. First, Bostrom et al. (1994) collected data within 2 weeks following discharge, Galloway and

Graydon (1996) collected data 4 weeks post-discharge and Galloway et al. (1993) surveyed patients 8 to 65 days following discharge. Second, Bostrom et al. (1994) used a second study group for post discharge data collection, while Galloway et al. (1993) interviewed the same subjects prior to and following discharge. Galloway et al. (1995) also interviewed the same subjects prior to and following discharge, however, the time span between the two interviews was unspecified.

Despite the importance placed on assessing patient's perceived learning needs for the development of education programs, only one study addressed the perceived learning needs of patients with low back pain. Shotkin, Bolt and Norton (1987) surveyed back injured patients in an acute care setting in order to identify their perceived learning needs. This study focused on the acute phase of back injury during which diagnostic tests, surgery, acute pain etc., were the main focus for patients. Over a 9-month period, 170 questionnaires were distributed in a United States military hospital, with a response rate of 57%. This questionnaire was divided into four parts: a) demographic data, b) patient perception of how important each of a list of topics was on a 5-point Likert scale, c) perceived knowledge of each of the same topics on a 3-point Likert scale, d) any questions the patients might have concerning the topics listed in the questionnaire. The areas identified by the patients as important to know

included: what to expect of your doctors, proper body mechanics, and follow-up medical care needed after discharge. Under areas of perceived knowledge, patients reported no knowledge of: the hospital exercise program, home care needed after discharge, follow-up medical care needed after discharge, and sexual activity with low-back pain. These findings helped with the development of teaching modules within that hospital for patients with low back pain as well as the development of standard nursing care plans. The questionnaire used in this study was not tested for reliability and also many items could not be generalized to other back-injured patients, as items were often military related or hospital specific. Despite these limitations, this study provides useful information for health professionals to consider when developing education programs for patients with low back pain.

Learning Needs and Demographic and Injury-related Variables

Perceived learning needs have been studied in relation to several demographic and injury-related variables. These variables include gender, age, education, duration of condition, recurrence of injury, pain and distress. Research studies have demonstrated inconsistent results in each category.

Gender. While some studies found that males did not differ significantly from females in their perceived learning needs (Galloway, & Graydon, 1996;

Galloway et al., 1993; Lauer et al., 1982), Bubela et al. (1990b) found that females had significantly higher learning need scores than males. The subscales concerned with information relating to activities of living and quality of life issues, were scored highest by females and contributed to the overall higher mean scores. Dodge (1969) also found that learning needs were associated with gender. Males and females expressed equal desire to receive certain basic information about the nature and cause of their condition. Males, however, were more concerned with receiving information that would help them to make a realistic assessment of the extent to which their condition and need for health care would affect their ability to work. Females desired information about chances of recurrence, meaning of their symptoms and effects of medication. The time frame for this study must be considered in relation to these findings as gender roles may have changed since that time. In a study by Galloway et al. (1995) the eight women reported more learning needs than the thirty men in the study. The comparison must be interpreted with caution however, given the small and unequal numbers of subjects.

Age. Dodge (1969) found that priority given to specific learning needs varied depending on the subject's age. Older patients were less concerned with the total recovery time involved with their condition and were more interested in the details of their care. Younger patients, however, were concerned with the

day to day progress they were making and were eager to return to their daily routine. This association between age and learning needs was not found in other studies (Galloway, 1993; Galloway et al., 1995; Lauer et al., 1982).

Education. Bubela et al. (1990b) found that learning needs were associated with the patient's educational background. Higher levels of education were associated with lower learning need scores. On the other hand, Galloway and Graydon (1996) and Galloway et al. (1993, 1995) found no difference in the overall mean scores on the basis of education.

Duration of condition/illness and recurrence of injury Bubela et al. (1990b) found a significant positive correlation between the number of days in hospital and the patient's total perceived learning needs score. Patients with longer hospital admissions reported a greater learning need for information in the following areas: medications, activities of living, quality of life and community and follow-up. In this study, medical patients required significantly more information than surgical patients. Medical patients were generally the patients with longer hospital admissions and were prescribed more medications as well. These findings may reflect the severity of the patient's condition rather than the actual nature of their illness, as there was no significant difference between the total learning needs scores of patients with chronic disease and those of patients with acute illness.

Pain and distress. When examined in relation to information needs, pain was identified as one of the symptoms which most affected the subjects' ability to complete their usual activities prior to and following discharge (Galloway et al., 1993). Pain was positively correlated with total learning needs ($r = 0.35$, $p = 0.03$), particularly regarding such topics as medications, feelings related to condition, treatments and complications and quality of life. Galloway et al. (1995) examined the distressing effects of pain and other symptoms in relation to total learning needs. In this study, however, no significant relationships were found between these variables. Galloway and Graydon (1996) also examined learning needs in relation to the symptom distress caused by pain. Although there was a positive association, it was not statistically significant, perhaps due to the small sample size ($n = 40$).

Self-efficacy and Patient Education

In addition to identifying the patient's perceived learning needs and which factors may affect them, it is also important to promote self-care among patients. This is especially true for patients with chronic conditions, as they will be required to manage their own care on a daily basis. However, providing patients with knowledge alone may not be enough to achieve the goal of self-care management. According to Merritt (1989), patients also require a belief in

their own ability to carry out the specific behaviours necessary for the self-care of their condition; this is called self-efficacy. Redman (1985) also agrees that self-efficacy is an important component of the patient education process. According to Redman, there are five essential steps for patient education to be effective:

1. The patient must believe the action will work.
2. The patient must learn how to perform the action.
3. The patient must believe they are capable of performing the necessary activities (self-efficacy).
4. The desired outcomes should be attributed to the patient's action.
5. The patient must value the outcomes sufficiently to maintain the behaviour (p. 425).

Redman suggests that much patient education fails to be effective because it only addresses step two.

Self-efficacy, as described by Bandura (1977), is one's belief that one can perform a specific behaviour or task in the future. It refers to personal judgements of performance capabilities in a given domain of activity. Although it is related to other psychological concepts, such as locus of control, learned helplessness and self-esteem, it is different in that self-efficacy is behaviour specific. For example, a patient diagnosed with diabetes may have high self-efficacy with regard to testing his/her own blood sugar, but when it comes to self-administering insulin, he/she may feel incapable (low self-efficacy).

According to self-efficacy theory (Bandura, 1977) self-efficacy influences

an individual's choices of activities. If an individual judges him/herself as capable of performing an activity he/she is more likely to undertake and perform it. Activities that individuals believe exceed their capabilities tend to be avoided. Therefore, it is not surprising that studies which have examined self-efficacy and health behaviours have revealed positive relationships (Gillis, 1993; Stretcher, DeVellis, Becker, & Rosenstock, 1986). Positive performance experiences enhance one's self-efficacy, which then has a positive effect on one's health (O'Leary, 1985). For example, if individuals use relaxation therapy to help them lower their blood pressure and blood pressure readings decrease, their self-efficacy related to this specific behaviour is likely to increase. As a result, there is a positive effect on the individual's overall health. But is one's level of self-efficacy related in any way to the learning needs identified by patients regarding their health? In other words, does self-efficacy affect which learning needs patients pursue further or does self-efficacy only impact on health behaviours or outcomes in the education process? According to Merritt (1989), "self-efficacy influences both the initiation and persistence of learning activities" (p. 69).

Identifying the patient's perceived learning needs provides the teaching content for the development of education programs. No studies were found however which examined the relationship between self-efficacy and learning needs. As patient education focuses on enhancing knowledge and health

behaviours, studies that looked at self-efficacy in relation to these two topics were reviewed.

There is some evidence that patient education affects both knowledge and self-efficacy. Davis, Busch, Lowe, Taniguchi, and Djkowich (1994) evaluated the effects of an education program on the knowledge and self-efficacy of 51 patients with rheumatoid arthritis. Using a one-group repeated measures research design, they found that at the completion of the program, both knowledge and self-efficacy were significantly improved. These findings were maintained at the three month follow-up assessment. There was no correlation between knowledge and self-efficacy at baseline or follow-up, suggesting that these variables improved independently of each other. No other studies were identified that examined the relationship between knowledge and self-efficacy.

Lorig and Holman (1989b), carried out a study to evaluate the Arthritis Self-Management Course. They found a weak association between changes in behaviour and changes in health outcomes. However, in a second study by Lorig et al. (1989a) that further examined this self-management program, self-efficacy was found to be positively correlated with health outcomes. Salazar (1991), supports these findings and suggests that behavioral change is ultimately the result of changes in one's beliefs, and that people will perform

behaviour if they think they should perform it. This is consistent with Bandura's theory that suggests that self-efficacy strongly influences these choices and decisions, determines the amount of effort made, and the persistence of the effort in performing self-management activities (Bandura, 1986).

Gillis (1993) reviewed the research literature published between 1983 and 1991 that focused on the determinants of health-promoting lifestyles. Twenty-three studies were reviewed in total, 17 of which focused on the adult. Results from these studies identified self-efficacy as the strongest predictor of a health-promoting lifestyle, followed by social support, perceived benefits, self-concept, perceived barriers and health definition. Lorig, Konkol and Gonzalez (1987) reviewed 41 studies from the arthritis patient education literature and found that the most successful education programs, in terms of health status and behaviour, emphasized the development of a daily routine of self-management activities and paid attention to physical exercise, coping, self-efficacy and problem-solving.

Self-efficacy has been found to be negatively correlated to reported pain. Individuals with higher self-efficacy report less pain and better functioning as measured by minutes tolerated in sitting and standing positions (Kores, Murphy, Rosenthal, Elias, & North, 1990). Kores et al., examined the relationship of perceived pain-related self-efficacy to treatment outcome of individuals with

chronic, intractable, non-malignant pain. Many of the subjects in this study suffered from chronic back pain. The study sample (n = 62) was divided into two equal groups for two studies. Results of the first study revealed that subjects with a high level of self-efficacy in relation to their pain were able to sit for longer periods of time (p = 0.03). Although not statistically significant, subjects with high self-efficacy could also tolerate standing for longer periods of time by the end of the program than subjects with low self-efficacy. Subjects with high self-efficacy in this study also reported substantially, but not significantly, better scores for walking distance, percent reduction of pain and reduced resting time required. The second study utilized the University of Alabama at Birmingham (UAB) Pain Behaviour Scale to measure treatment outcome on all patients at follow-up. Those with high pain-related self-efficacy scores after treatment had lower scores on the pain behaviour scale, indicating more adequate functioning. The results of the latter study support the hypothesis that measurement of pain-related self-efficacy could be used to predict treatment outcome in patients with chronic pain. Furthermore, if individuals with higher levels of pain-related self-efficacy are functioning better than those with lower self-efficacy, their perceived need for information to help them improve their functioning at home may also be reduced.

Three groups of researchers have examined pain-related self-efficacy in

relation to short term conditions. Klepae, Dowling, and Hauge (1982) focused on self-efficacy as one means to help patients during dental procedures to lessen their reaction to pain. Genest (1981) examined self-efficacy and the ability to tolerate pain during childbirth. Holroyd, Pensien, and Hershey (1984) analyzed self-efficacy in relation to tension headaches. Perceived self-efficacy to tolerate pain was positively correlated with both pain threshold and tolerance in each of these studies. Each of these three studies involved short term conditions which may not require the same coping ability as that required of individuals with CLBP.

Self-efficacy does appear to be related to the use of coping strategies. Jensen, Turner, Romano, & Karoly (1991) carried out a study of 118 patients with chronic pain. The majority (46%) of these subjects suffered from chronic low back pain (CLBP) and the remainder suffered from a variety of other chronic pain syndromes. All subjects were interviewed by telephone, using questionnaires and rating scales to assess four content areas: pain severity, control appraisals (how the subject perceived their ability to control their pain), pain coping efforts, and adjustments. Findings indicated that control appraisals and the practice of ignoring pain, using coping self-statements, and increasing activities were positively related to psychological functioning. Control appraisals and the practice of diverting attention, ignoring pain, and using coping self-

statements were also positively related to activity level, but only for patients reporting relatively low levels of pain severity. Although items used to measure control appraisals in this study did not directly reflect the construct of self-efficacy, these results are consistent with Bandura's social learning theory in that a strong belief in control over pain led subjects in the Jensen et al. study to initiate and persist in the use of adaptive coping strategies.

Buescher et al. (1991) examined the effects of self-efficacy on the pain behaviours exhibited by patients with rheumatoid arthritis. Seventy-two patients with arthritis were assessed using a standardized videotaping procedure for rating specific pain behaviours such as limps, facial grimaces, and guarded movements. Patients also completed questionnaires measuring self-efficacy and depression. Higher self-efficacy was found to be related to fewer pain behaviours and better functioning ($r = -0.33$, $p = 0.04$).

Dolce, Crocker and Doleys (1986) examined exercise quotas, anticipatory concern and self-efficacy expectations in patients with chronic pain and observed that both self-efficacy regarding ability to engage in exercise and actual exercise performance increased over the course of treatment in a behavioral chronic pain treatment program. A composite study looked at self-efficacy in relation to exercise, work, and ability to function while remaining medication free. Self-efficacy was positively associated with post-treatment

work status and exercise level, and negatively associated with post-treatment medication use (Dolce et al., 1986). Finally, Council, Ahern, Follick, and Kline (1988) found that the ratings that patients with CLBP gave of their ability to perform ten specific movements varied directly with the observed performance of the movements and inversely with pain behaviours observed during the movements.

Demographic and Injury-related Variables

Researchers have also studied the association of self-efficacy with various demographic variables. These studies report that males and females do not differ in their global self-efficacy measurements (Schuster, Wright, & Tomich, 1995). No studies were identified that examined self-efficacy in relation to age, however, in one study, more highly educated patients (n = 40) believed that they had more control over their pain (Pellino, & Oberst, 1992). It was believed by the authors that higher educational achievement may indicate that the subjects had better problem solving ability or a higher level of self-efficacy in dealing with their chronic pain.

In relation to injury-related variables no research findings were identified that addressed associations between self-efficacy and duration of condition. Lazarus and Folkman (1984) suggest however, that through coping, one may

better deal with a stressor such as a chronic illness. In contrast, other authors believe that the presence of chronic low back pain may cause individuals to feel out of control (Bowman, 1991). The recurrence of an injury may also have negative effects on self-efficacy in relation to pain (O'Leary, 1985). Studies have reported that self-efficacy is negatively related to reported pain. Higher self-efficacy is associated with lower scores for pain and increased functioning (Kores et al., 1990). However, Lin and Ward (1996) found no correlation between pain-related distress and self-efficacy.

Learning needs and self-efficacy

Studies which specifically examined the relationship between self-efficacy and perceived learning needs were not found in the literature search. However, self-efficacy has been linked with motivation (Buescher et al., 1991), health care behaviours (Buescher et al., 1991) and knowledge (Davis et al., 1994). Self-efficacy is also believed to influence the initiation and persistence of learning activities (Merritt, 1989), and it is suggested that knowledge in conjunction with experiences that enhance self-efficacy may be the way to improve one's health (O'Leary, 1985). Therefore, understanding if a relationship exists between perceived learning needs and self-efficacy may assist with the development of future patient education programs.

Summary of Literature Findings

In summary, authors believe that assessment of patient learning needs is the first step in planning health education. There is a considerable body of evidence that suggests a discrepancy often exists between what health professionals and patients believe should be included in patient education programs. Since patients respond more favourably to health education which focuses on information that is relevant and useful to them, determining what learning needs they perceive as most important is the first step in the development of education programs.

Similar learning needs have been recorded in the literature for all patients in areas related to knowledge of condition, treatments, medications, managing activities of living and interpersonal communication. The relationship between patient learning needs has been explored in relation to various personal and injury-related factors, however, findings reported in the literature have been inconsistent.

The direct relationship between self-efficacy and learning needs has not been examined. There is evidence to support a positive relationship between pain tolerance, activity level and perceived self-efficacy. There is also some

evidence that self-efficacy is positively related to health status and therefore, better functioning.

CHAPTER 3

Methods

This chapter contains a description of the methods used in this study, under the following headings: study design, study sample, setting, data collection procedures, ethical considerations, pilot study, research instruments, and data analysis.

Study Design

This study was a descriptive correlational one that utilized quantitative measures. The descriptive portion of this study was designed to explore the perceived learning needs and perceived self-efficacy of patients suffering from chronic low back pain (CLBP). The relationship between learning needs and self-efficacy was examined as well as the relationship of these two variables to a number of demographic and injury-related variables.

Sample

The study sample consisted of 41 individuals who suffered with CLBP as a result of a workplace injury. The subjects were patients who were admitted to an Injured Workers' Rehabilitation Program in St. John's, Newfoundland over a three and a half month time period, from September to mid-December, 1994.

The sample included both men and women and all subjects were receiving Workers' Compensation benefits, as this program is sponsored by the Workers' Compensation Commission of Newfoundland and Labrador.

A convenience sample of 41 patients was recruited into the study from the Injured Workers' Rehabilitation Program. Ten patients were admitted to this program biweekly, but not all of those admitted had CLBP. Some patients presented to the clinic with other problems such as neck, shoulder, or upper back pain. To be eligible for inclusion in this study, CLBP had to be the primary, but not the exclusive, reason for referral to the program. The criteria for selection of the sample were as follows:

1) Oriented to person, place and time.
2) Able to read, write and understand English.
3) Enroled in the Injured Workers' Rehabilitation Program.
4) Pain in the lower back for a minimum of 6 months.
5) Older than 18 years of age.

Over the three and a half month time period, 41 subjects were eligible for and voluntarily consented to participate in the study. None of the potential subjects refused to participate. The only reason for exclusion of subjects was the fourth criterion. One patient, who suffered from CLBP, was excluded because the pain was present for only four months. All other ineligible patients had chronic pain, but not in the lower back.

Setting

Subjects completed the questionnaires given by the researcher in a private office located within the Injured Workers' Program. The researcher was available while the subjects completed the questionnaires to answer any questions or to clarify questions about the research.

The Injured Workers' Rehabilitation Program consists of a multi-disciplinary team assessment followed by implementation of any recommended management plans or further investigations. The multi-disciplinary team is made up of the medical director and other medical specialists, as well as physiotherapists, occupational therapists, a nurse, dietitian, recreation therapist, social worker and psychologist. At the request of staff from the Injured Workers' Rehabilitation Program, a copy of the proposal for this study was given to a representative of the Workers' Compensation Commission of Newfoundland and Labrador and a letter of permission was received from this agency that allowed the study to proceed. (See Appendix A).

The multi-disciplinary team assessment takes approximately two weeks, during which time individuals are seen by each member of the team and observed in their activities of daily living on the nursing unit. Back care information is provided during these two weeks. Any physical or medical tests that are considered necessary are usually carried out during this two week

period. Following the two week period, there is a team meeting to discuss the results of the individual's evaluation. Recommendations about further assessment, investigations and treatment are presented to the individual during the meeting and opportunity for discussion and questions is available at that time.

Data Collection Procedures

A member of the nursing supervisory staff of the Injured Workers' Rehabilitation Program identified the potential participants who met the eligibility criteria. The initial contact and brief explanation of the purpose of the study was carried out by this same individual. All potential subjects who agreed were then approached by the researcher and a full verbal explanation of the study was given. If subjects understood and agreed to participate in this study, they were given a written explanation and a consent form was signed (Appendix B). All subjects were offered a copy of the consent form and one copy was kept for the researcher's records. Questionnaires were administered to the subjects by the researcher on the first day of the Injured Workers' Rehabilitation Program, in order to measure learning needs before they received the education component of the program.

Ethical Considerations

Although this study was considered to be of low physical and psychological risk to study participants, the rights of the subjects were protected in several ways. The proposal for the study was reviewed by the Human Investigations Committee of Memorial University of Newfoundland and was approved (Appendix C). Subject participation in the study was voluntary and a written consent was then obtained (See Appendix B). In order to maintain confidentiality, the questionnaires were coded by number. All data obtained during this study were stored in a locked cabinet to which only the researcher had access.

Pilot Study

A pilot study was carried out with the first 5 subjects admitted to the study to assess face validity of the research instruments and to ensure that any problems could be addressed before commencing the full data collection phase. As no major problems were identified at that time, the data from these five subjects were included in the study. The visual analogue scale did require explanation by the researcher however, and this was done for all subjects.

Research Instruments

The questionnaire used in this study had four components. The general information section, developed by the researcher, was administered to the subjects initially, followed by the Pain Questionnaire, the Patient Learning Needs Scale (Bubela, Galloway, McCay, McKibbon, Nagle, Pringle, Ross, & Shamian, 1990), and finally, the Perceived Self-Efficacy Scale (Lorig, Chastain, Ung, Shoor, & Howman, 1989). On average, the subjects required 30 minutes to complete the total questionnaire.

General information. This component consisted of fourteen (14) questions which were described in the literature as important and relevant for patients with chronic low back pain or patients with back injuries in general (Appendix D). Socio-demographic data such as level of education, employment status, type of occupation, and injury-related data, such as medical history of the back problem and information regarding the back pain, were collected in this section.

Pain Questionnaire. The Pain Questionnaire used in this study measured pain intensity and pain-related distress (Appendix E). The importance of measuring these two components of the pain experience is reported in the literature (Abbott, Gray-Donald, Sewitch, Johnston, Edgar, & Jeans, 1992). Abbott et al. found that pain intensity is not the only determinant

of functional impairment. The level of pain-related distress a patient experienced was also significantly correlated to functional ability. Therefore, when relating pain to the patient's quality of life, distress level should also be considered. The pain questionnaire is a short six-item questionnaire. All items used a 100 mm visual analog scale (VAS). For items 2 and 3 (pain now and pain most of the time), "No Pain" is used as the left anchor and "Worst Pain Imaginable" as the right anchor. For items 5 and 6 (distress now and distress most of the time), the anchor words are similar, with "No Distress" for the left anchor and "Worst Distress Imaginable" as the right anchor. Subjects were asked to mark an X on the point on the line that best described how much pain they have experienced and how much distress this pain has caused.

The VAS has been used in the past to measure subjective feelings, perceptions, sensations and symptoms (Cline, Herman, Shaw, & Morton, 1992; Polit, & Hungler, 1993). A VAS is a unidimensional measure that represents a continuum of pain intensity. It has become a commonly used instrument because it is clinically feasible, simple for the subject to understand and it is considered to be a valid method for measuring subjective feelings (Cline et al., 1992; Gift, 1989; Youngblut, & Casper, 1993). The VAS has been reported to have good reliability with repeated use by the same individuals (Cline et al., 1992; Polit, & Hungler, 1993; Youngblut, & Casper, 1993), with validity having

been assumed (McGuire, 1984). A ruler is used to measure the distance between the left anchor and where the X is placed on the 100mm line. The measurement obtained is the subject's score.

Patient Learning Needs Scale. Perceived learning needs of the subjects with CLBP were assessed using the Patient Learning Needs Scale (PLNS), developed by Bubela et al. (1990a). (See Appendix F). This scale (PLNS) was developed and used in studies with general medical/surgical patients (Bubela et al, 1990b; Galloway, Bubela, McKibbon, McCay, & Ross, 1993). The PLNS is a 50-item self-administered scale designed to measure patients' perceptions of information which they think they need to know for management of health care at home (Bubela et al., 1990a). The scale does not measure the amount of information that the subjects have been given, but rather how important they think the information is in order to manage their care at home. There are two different versions of the scale: one for use in hospital and the other for use at home. The home version of the scale was used in this study because the Injured Workers' Rehabilitation Program focuses on the outpatient population.

The PLNS was the most appropriate instrument found in the literature to measure the patient's learning needs and therefore, written permission was obtained to use this instrument for this current study (Appendix G). Scoring for the PLNS is done on a 6-point Likert scale. The scale ranged from 1, "of

minimal importance" to 5, "extremely important". Subjects could also select a rating of 0 for "does not apply".

The PLNS is made up of seven subscales which are as follows: medications, activities of living, community and follow-up, feelings related to condition, treatment and complications, enhancing quality of life and skin care. After completion of the PLNS, an open ended question invited subjects to identify any additional learning needs they perceived as important, but that were not included on the learning needs scale.

The PLNS has content and face validity based on findings in the literature, patient interviews and personal clinical experiences of five nurse clinicians and clinical nurse specialists (Bubela et al., 1990a). Beginning construct validity was found when factor analysis demonstrated the presence of seven factors or subscales. Internal consistency reliability for the 50-item scale was assessed using Cronbach's alpha and was 0.95. This result was based on the responses of 301 adults hospitalized with a medical or surgical illness who were approaching hospital discharge (Bubela et al., 1990a). Reliability analysis was completed for the present study and resulted in an alpha coefficient of 0.94 for the total scale. Alpha coefficients for the subscales were: Medications, 0.92; Feelings Related to Condition, 0.76; Enhancing Quality of Life, 0.85; Community and Follow-up, 0.77; Treatments and Complications, 0.68; Skin

Care, 0.69; Activities of Living, 0.77. Subjects were encouraged to score each item on the scale.

Self-efficacy Scale. In this study, self-efficacy was measured by a scale originally developed for arthritis patients (Lorig et al., 1989a). The scale consists of 20 items. These items make up three different subscales: the 5-item pain self-efficacy subscale (PSE); the 9-item function self-efficacy subscale (FSE); and the 6-item other symptoms self-efficacy subscale (OSE).

Each question in the scale is followed by a 10-point numerical graphic rating scale for scoring purposes (Appendix H). Each subscale is scored separately, by taking the mean of the subscale items. If one-fourth or less of the data are missing, the score is a mean of the completed data. If more than one-fourth of the data are missing, no score is calculated.

Under the FSE subscale, four items of the nine were not applicable to the back injured population; therefore, this section was modified with permission and items were replaced with four that were more appropriate to the patient with low back pain. The four items omitted from the original FSE subscale involved activities of buttoning/unbuttoning, cutting up meat, turning on an outdoor faucet and putting on a long-sleeve shirt. These items were replaced with others (items 6, 7, 8, & 9) which involved activities of bending, lifting and sitting for a period of one hour (See Appendix H). These changes were

discussed with and approved by the instrument's author (Personal Communication, K. Lorig, November 29, 1993). Since no other scales specifically dealing with the back injured population and self-efficacy were available, permission to use this instrument, as modified, was obtained (Appendix I). The instrument was completed by each subject in the presence of the researcher, following the guidelines outlined by Lorig et al., (1989a).

Cronbach's alpha was also used to estimate the internal reliability of the self-efficacy scale because of the alteration in items under the FSE subscale and the use of this instrument with a different population. Alpha estimates of internal reliability were carried out for each subscale when the instrument was developed with arthritis patients and were as follows: 0.90 for FSE, 0.87 for OSE, and 0.75 for PSE (Lorig et al., 1989a). In this study, the alpha estimates of internal reliability for each subscale were: 0.87 for FSE, 0.80 for OSE, and 0.75 for PSE.

Data Analysis

Data analyses were conducted using SPSS 6.1 for Windows (SPSS, 1995). Descriptive statistics were used to describe sample characteristics according to the demographic data collected. The PLNS was designed to obtain an individual item score, which was considered to be ordinal, but when

summed as a total score could be treated as interval data (Bubela et al., 1990a). According to Munro and Page (1993), ordinal measurements may be treated as interval, however, the researcher must be aware that the intervals possibly are not equal. Similarly, the self-efficacy scale obtained scores which were considered interval data.

To examine the relationships among variables assumed to be normally distributed, parametric tests were used in the data analysis. The Pearson Product Moment Correlation Coefficient was used to test relationships between patient learning needs, self-efficacy, age, education, duration of injury, pain and distress. This is the most common method by which the relationship between two variables is quantified and it allows one to state mathematically the relationship that exists between two variables (Munro, & Page, 1993). To compare learning needs and self-efficacy of subjects based on the number of injuries they had previously experienced, the non-parametric Mann-Whitney U test was used. This test is used to compare two groups, however, no assumption about the distribution of the variables in the population is required (Munro, & Page, 1993). Because of the very small numbers of subjects who reported having greater than two injuries ($n = 4$), these subjects were excluded from the analysis. To test the differences in learning needs and self-efficacy based on gender, the independent Student *t*-test was used. Statistical

significance was set at the level of 0.05 for all tests used in this study. The responses to the open-ended question were grouped and analyzed based on the topic of learning need identified.

CHAPTER 4

Results

The findings of this study are presented in four sections. First, the characteristics of the sample are presented. The second section contains a description of the learning needs of subjects and includes the findings from the open ended question on that instrument. The relationship between the patients' learning needs and their demographic and injury-related variables is also reported. The third section includes a description of the subjects' perceived pain intensity and their level of pain-related distress. The fourth section includes a description of the subjects' perceived self-efficacy. The relationship between self-efficacy and the demographic and injury-related variables is also presented and finally, the relationship between perceived self-efficacy and patient learning needs is reported.

Characteristics of the Sample

Demographics. A total of 41 subjects voluntarily consented to participate in the study, 24 of whom were male (59%) and 17 of whom were female (41%). Other demographic characteristics of the study sample are presented in Table 1. Ages of the study subjects ranged from 21 to 58 years with the mean age

Table 1

Demographic Characteristics of the Sample (N = 41)

Characteristics	n	%
Gender		
Male	24	59
Female	17	41
Marital Status		
Married/Partner	32	78
Divorced/Separated	4	10
Single	3	7
Widowed	2	5
Number of People in Household		
Live alone	4	10
Live with spouse/partner	5	12
Live with spouse/partner & children	24	59
Live with spouse/partner & children & elderly relative	2	5
Other	6	14
Age (years)		
Mean ± standard deviation	40.1 ± 9.24	
Range	21 - 58	
Schooling (years)		
Mean ± standard deviation	10.5 ± 3.05	
Range	5 - 17	

being 40.1 years (*SD* = 9.24). Subjects in this study had an average of 10.5 years of schooling (*SD* = 3.05). Most of the subjects were married with children.

Occupations of the subjects are reported in Figure 2. These were coded by the researcher using the Statistics Canada Standard Occupational Classification as a guide (Statistics Canada, 1991). All occupational classifications were represented. The largest number of individuals (*n* = 16) worked in the construction and trades category, most of these as painters and plasterers. Nurses and other health care workers (*n* = 9) represented the second highest number of subjects.

Injury-related. More than half of the subjects (61%) in this study reported lifting as the cause of their injury (see Table 2). Four subjects (9.7%), categorized the cause of their injury as "other". In all four cases, twisting was identified as the specific cause.

The length of time since injury ranged from 6 months to 19 years. The majority of subjects had experienced low back pain from 6 to 12 months. Slightly less than half (44%) had suffered a recurrent injury. The high recurrence rate in this study is consistent with findings in the literature. Only a small number of subjects reported having previous back surgery (12.2%). The

Figure 2: Occupational Classification of Study Subjects (N=41)

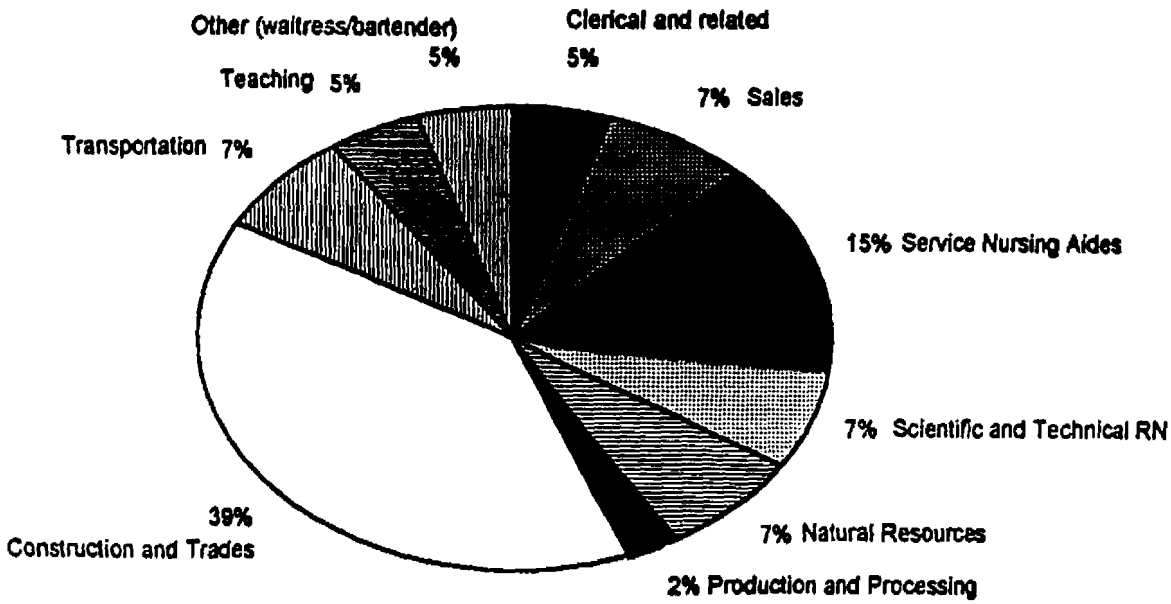


Table 2

Injury-related Characteristics

Characteristic	Frequency (N=41)	Percent
Cause of injury		
Lifting	25	61.0
Fall	8	19.5
Struck	4	9.8
Other (twisted)	4	9.7
First or recurrent injury		
One injury	23	56.0
Two injuries	14	34.6
Three injuries	3	7.0
> than three injuries	1	2.4
Time since injury		
6 - 9 months	19	46.0
10 - 13 months	8	20.0
14 - 17 months	3	7.0
18 - 21 months	2	5.0
22 - 25 months	2	5.0
> 25 months	7	17.0
Previous surgery		
Yes	5	12.2
No	36	87.6
Regular medication use for LBP		
Yes	31	75.6
No	10	24.4
Other health problems		
None	28	68.3
Cardiovascular	4	9.8
Dermatological	3	7.3
Musculoskeletal	2	4.9
Stomach ulcers	2	4.9
Allergies	1	2.4
Vit. B deficiency	1	2.4

majority of subjects (75.6%), were taking medication to help minimize their pain and most subjects (n = 28) did not have other health problems (Venning, 1988; Anderson, Pope, & Frymoyer, 1984).

Pain and Pain-related Distress

Forty of the 41 subjects reported that they were experiencing pain at the time of the interview. Of this group, 83 percent (n = 34) were also experiencing pain-related distress. Both intensity of pain and pain-related distress were measured using a 100mm visual analogue scale. Mean scores for pain and pain-related distress are reported in Table 3. Patients with CLBP reported similar pain scores as patients in a study by Galloway et al. (1993) who were recovering from surgery for lung cancer ($\bar{x}$ = 58.1, SD = 35). In the study by Galloway et al. (1995), however, patients who were post-operative following peripheral arterial bypass reported lower scores for pain ($\bar{x}$ = 44.6, SD = 28.5). Patients suffering from arthritis also reported moderate levels of pain when a similar 10-point pain measurement scale was used ($\bar{x}$ = 5.0, SD = 2.4), (Lorig, & Holman, 1989) .

Table 3

Mean Scores for Pain Intensity and Pain-Related Distress

variable (0 - 100mm)	Mean	*SD*
Pain at this present time	57.7	20.2
Pain most of the time	55.9	16.5
Pain-related distress at present time	47.9	20.0
Pain-related distress most of the time	49.6	29.9

Reported Learning Needs

The mean total Patient Learning Needs Scale (PLNS) score was 181.8 (*SD* = 37.8) from a maximum possible score of 250 (see Table 4). This score was higher than that of patients with medical-surgical conditions (Bubela et al., 1990b) where the predischarge mean was 157 (*SD* = 50.1). Patients with lung cancer had similar PLNS scores before hospital discharge ($\bar{x}$ = 179.2, *SD* = 50.1); however, once home these same subjects had a mean score of 164.3 (*SD* = 52.7) on the community version of the PLNS (Galloway et al., 1993). Patients who had peripheral arterial bypass surgery also reported lower information needs both prior to and after discharge from hospital ($\bar{x}$ = 156.2, *SD*

= 41.4 and $\bar{x}$ = 154.1, *SD* = 48.2 respectively) than patients with CLBP (Galloway et al., 1995).

To determine the relative importance of content areas to subjects, the mean score of each subscale was calculated by dividing the raw subscale score by the number of items in the subscale, as subscales have unequal numbers of questions.

The mean subscale score for treatments and complications, medications and enhancing quality of life were similar and subjects reported these three content areas as the ones of most importance to them to learn in order to manage their care at home (see Table 4). The treatment and complications subscale included items dealing with preventing and assessing for the seriousness of a complication, purpose of treatments and possible side effects that may occur. The subscale, medications, included information regarding possible side effects of medications, how each medication worked, what to do if a reaction to a medication occurred and when to stop taking medication. The subscale for enhancing quality of life included information about pain management, stress management, other symptoms commonly associated with their injury, and the effect of the injury on their lives at present and in the future.

A second set of three subscales--activities of living, feelings related to condition and community and follow-up--were ranked next in importance and

Table 4

Patient learning needs: Total and subscale scores

Category (number of items)	Raw total & subscale scores			Subscale Mean scores		
	Highest possible score	Mean score	*SD*	Highest possible score	Mean score	*SD*
Total learning needs (50)	250	181.8	37.8		N/A	
Treatment & complications (9)	45	37.5	9.7	5	4.17	1.08
Medications (7)	35	29.2	10.3	5	4.17	1.47
Enhancing quality of life (8)	40	33.3	7.9	5	4.16	0.99
Activities of living (9)	45	33.1	11.2	5	3.78	1.16
Feelings related to condition (5)	25	16.6	8.2	5	3.32	1.64
Community and follow-up (7)	35	22.3	12.0	5	3.18	1.71
Skin care (5)	25	9.8	9.5	5	1.95	1.91

were rated similarly by subjects (see Table 4). The activities of living subscale addressed learning needs related to physical activity, rest, bowel elimination and nutrition. The feelings related to condition subscale included psychosocial aspects of coping with illness. The subscale for community and follow-up content addressed the need for information regarding transportation to appointments, home care and involvement in various community groups.

Finally, the skin care subscale, which includes items relating to information about caring for an incision, bathing, and preventing the skin from getting sore or red, was ranked lowest of the seven subscales (see Table 4). Not surprisingly, the information represented by this subscale was not perceived as an important learning need by subjects.

The ten items on the PLNS with the highest mean scores are reported in Table 5. Information about the impact of injury on future life, managing pain, exercise/activity level and managing potential complications was very important to subjects in this study. The information perceived as most important by patients with CLBP was "how this illness will affect my future." This item was ranked as the number one item in relation to the total learning needs scale ($\bar{x}$ = 4.98, *SD* = 0.20).

Table 5

Most Important Learning Needs on the Patient Learning Needs Scale

To manage care at home I need to know:	Highest Possible Score	Mean	*SD*
How this injury will affect my future.	5	4.9	0.2
How to manage my pain.	5	4.8	0.5
What the possible side effects of my treatment are.	5	4.7	0.6
How this injury will affect my life.	5	4.7	1.0
What physical exercise I should be getting.	5	4.7	0.6
What physical activities I cannot do such as lifting.	5	4.7	0.5
What to do if I have a reaction to a medication.	5	4.6	1.1
What complications might occur from my injury.	5	4.6	0.6
How to prevent a complication from occurring.	5	4.6	0.9
What the purposes of my treatments are.	5	4.6	0.8

Responses to Open-ended Question: In addition to the items listed on the PLNS, subjects were asked if there were any other learning needs they thought would be useful to know in order to manage their back pain. Thirteen subjects (31.7%) reported having additional learning needs. Two subjects listed more than one additional learning need. Although 5 of these 13 subjects also reported having other current health problems, all additional learning needs identified were related exclusively to their CLBP. The PLNS included items on pain management but voluntary responses from patients identified pain management as an additional learning need as well. The learning needs identified by subjects most often, focused on "how to fix my back" (n = 3) or "what to do to make the pain go away" (n = 5). The remaining learning needs identified focused on back injury prevention techniques (n = 5) or health conditions which subjects stated resulted from their chronic pain (n = 2), ie., depression and chronic fatigue.

Total Learning Needs and Relationship to Demographic and Injury-related Variables

Table 6 presents the strength of the relationships between total learning needs and each of the demographic and injury-related variables. This is expressed by the Pearson Product Moment Coefficient. Statistically significant

Table 6

Correlations Between Patient Learning Needs and Demographic and Injury-related Variables (N = 41)

Variable	Age	Education	Time since Injury	Pain 1 at interview	Pain 2 most of time	Distress 1 at interview	Distress 2 most of time
PLNS Total	.27	-.33*	.13	.30	.35*	.26	.42**

$p \leq .05$ *

$p \leq .01$ **

small to moderate positive relationships were found between pain intensity and pain-related distress "most of the time" and the total PLNS score. A statistically significant inverse relationship was found between education and learning needs. There were no significant relationships found between the variables of pain intensity and pain-related distress at the time of interview or the time since the patient's injury and the learning needs scores. No statistically significant relationship was found between the total PLNS score and age.

Using the Mann-Whitney U test, no statistically significant relationships were found between the PLNS score and the number of injuries subjects had previously experienced ($z = -0.17$, $p = 0.86$). Mean total PLNS scores of males and females were compared using an independent Student *t*-test and scores were not significantly different ($t = 0.64$, $p = 0.53$).

Reported Self-efficacy

Of the three subscales, subjects reported the lowest scores for the pain self-efficacy subscale (see Table 7). Items in this subscale addressed subjects' certainty of their ability to perform various activities related to managing their pain. The "other symptoms" self-efficacy subscale mean score was higher than the mean score for pain self-efficacy. The questions in this section asked subjects how certain they were that they could regulate their

Table 7

Perceived Self-efficacy: Subscale scores (N = 41)

Variable (10 - 100)	Mean	*SD*
Function Self-Efficacy (FSE)	41.11	25.98
Other Symptoms Self-Efficacy (OSE)	38.05	22.18
Pain Self-Efficacy (PSE)	31.51	21.18

activity to control fatigue and manage the frustrations and feelings associated with their pain. Finally, the self-efficacy function subscale had the highest mean score of the three subscales. Items in this section asked subjects about specific functions eg., walking a certain distance in a specific time or lifting a given amount of weight. Despite the changes made to items in the FSE subscale, all three subscale means (PSE, OSE, & FSE) were ranked in the same order as reported by Lorig, Mazonson and Holman (1993) with PSE receiving the lowest mean score and FSE receiving the highest mean score of the three subscales. When compared to patients with arthritis (Lorig et al., 1989), the mean self-efficacy scores of this sample were low in relation to their pain (PSE), function (FSE), and other related symptoms (OSE) (See Table 7).

Lorig et al. (1993), reported baseline scores for this scale in their study with patients suffering from arthritis as: PSE = 52.04 (*SD* = 21.14), OSE = 55.62 (*SD* = 21.64), and FSE = 73.27 (SD = 20.22). Buescher et al. (1991) used this scale with patients suffering from arthritis as well, and reported the following baseline scores: PSE = 51.2, OSE = 59.3 and FSE = 54.5. All three studies reported lowest scores for the PSE subscale.

Self-efficacy and Relationship to Demographic and Injury-related Variables

The relationships between self-efficacy and several background variables were examined using Pearson Product Moment Coefficient. Statistically significant positive relationships were found between education and the FSE subscale ($r = 0.48$, $p = 0.00$), and education and the OSE subscale ($r = 0.35$, $p = 0.03$). A significant negative relationship was found between pain-related distress at the time of interview and the PSE subscale ($r = -0.42$, $p = 0.01$). There were no significant relationships found between the background variables of age, duration of injury, pain at the time of the interview, pain or pain-related distress most of the time and the self-efficacy subscales (see Table 8).

The self-efficacy subscales--pain, function and other symptoms were examined in relation to the number of injuries subjects had previously experienced. Using the non-parametric Mann-Whitney U test, no significant

relationships were found for either of the three self-efficacy subscales (p = 0.81, z = -0.24; p = 0.35, z = -0.94; p = 0.43, z = -0.78, respectively). Using independent Student t-tests, a significant difference was found between male and female scores on the PSE subscale (t = -2.40, p = 0.02). Females reported higher levels of self-efficacy for the PSE than males. No

Table 8

Correlations Between Self-efficacy Scale and Demographic and Injury-related Variables (N = 41)

Variable	Pain Self-efficacy	Function Self-efficacy	Other Self-efficacy
Age	-.13	-.12	-.22
Education	.15	.48**	.35*
Time Since Injury	-.01	-.11	.07
Pain at Interview	.05	-.19	-.02
Pain Most of the Time	-.06	-.18	.05
Distress at Interview	-.42**	-.22	-.06
Distress Most of the Time	-.21	-.29	.03

$p \leq .05$ *

$p \leq .01$ **

statistically significant differences were found between male and female scores for the FSE or OSE subscales (t = -1.06, p = 0.30 and t = -1.43, p = 0.16, respectively).

Relationship of Perceived Learning Needs and Self-efficacy

Using Pearson Product Moment Coefficient, moderate significant inverse relationships were found between the subjects' PSE and OSE subscale scores and their perceived learning needs score (r = -0.40, p = 0.01 and r = -0.49, p = 0.00 respectively). This association was particularly evident between learning needs and the FSE subscale score where a strong significant inverse relationship was found (r = -0.70, p = 0.00). Low self-efficacy was associated with high learning needs.

CHAPTER 5

Discussion

This chapter contains a discussion of the results in relation to previous research findings. The information that patients with chronic low back pain (CLBP) perceive as necessary to assist them in caring for themselves in the home environment is described. The patient's level of perceived pain-related self-efficacy is compared to other patient groups. The relationship between self-efficacy and perceived learning needs is also discussed. Learning needs and self-efficacy may be influenced by a number of factors and these are described further in this section.

Perceived Learning Needs

In comparison to a number of studies of other groups, patients with CLBP had somewhat higher total PLNS scores. Although it is difficult to assess how meaningful these differences are, it does suggest that patients with CLBP have greater learning needs in order to manage their care at home. Previous studies documented that patients with cancer (Galloway et al., 1993) had more learning needs overall than patients with benign medical/surgical conditions (Bostrom et al., 1994; Bubela et al., 1990b; Galloway et al., 1995). Patient learning need scores in this study were even higher than those reported in

previous studies.

A number of factors help explain this apparent greater need for information. First, the continual presence of low back pain may result in patients seeking information to help them develop their own strategies for coping with their unrelieved chronic pain (Donnelly, 1993). Second, despite their persistence and great desire to obtain ways to help alleviate their pain, effective treatment is limited (Borenstein, & Wiesel, 1989). When patients cannot find useful ways to manage their pain, they must continue in their search for information about treatments which may be more effective (Hilbert, 1984). Third, the impact of CLBP is far reaching. Patients may experience physical disability but even if able to function in spite of their pain, psychological stress is commonly associated with this condition (Davis, 1992; Jones, 1993; Pellino, & Oberst, 1992). Social relationships as well, may be negatively affected by the constant strain of chronic pain. Patients therefore may spend time trying to find ways to manage their pain, improve their ability to function physically and relieve some of the stressors that often accompany a chronic condition (Davis, 1992; Pellino, & Oberst, 1992). Fourth, as part of their quest to find answers, patients with CLBP are also seeking a medical diagnosis to help them derive meaning for their pain. This diagnosis helps patients legitimize the presence of their pain and may relieve some of the frustrations they often experience as a

result of this pain (Davis, 1992; Hilbert, 1984). Last, uncertainty related to the unpredictable nature of illness-related events is a common component of the chronic pain experience as well (Hilbert, 1984; Jones, 1993; Mishel, 1988). Uncertainty often leads to feelings of distress and anxiety, which are two other psychological processes commonly associated with chronic pain and CLBP (Jones, 1993; Rose, Slade, Reilly, & Dervey, 1995).

Because CLBP is so complex and affects many areas of the patient's life, it is not surprising that subjects would report high PLNS scores. With the exception of low scores reported for skin care, all categories of learning needs were given moderate to high scores by subjects in this study.

The ten most important learning needs identified were ones related to the impact of the injury on the subjects' present lives and future, pain management, medications, treatments and the complications which may occur. These priorities are consistent with previous findings in studies of medical-surgical patients (Bubela et al., 1990b; Bostrom et al., 1994; Galloway et al., 1995) and in a study of long term surgical patients with cancer (Galloway et al., 1993). Collectively, these findings reflect the need for comprehensive information about treatments and complications by all patients.

The mean raw score for the medication subscale in this study was higher than the mean scores listed by Bubela et al. (1990b), Galloway et al. (1993),

and Bostrom et al. (1994). The high scores in this study were not unexpected as the majority of subjects (75.6%) were taking medications to help minimize their pain. Bubela et al. found that the greater the number of medications prescribed for patients, the higher their reported need for information about the medication regime. This finding was also noted in studies of patients with asthma (Richardson, 1990), and epilepsy (Dilorio, Faherty, & Manteuffel, 1993).

Of note, was the finding that when asked about additional learning needs, some subjects reiterated the need for information regarding pain management. Although items were included on the PLNS relating to this topic, eight subjects itemized this again. This may suggest just how important specific information on pain management is to subjects with CLBP or that more or different information is needed beyond that already provided.

Although subjects in this study were not asked which specific type of medication they were using for pain management, this may be useful information to consider in relation to patient learning needs. A variety of medications are prescribed for CLBP which include; narcotic combinations, tricyclic antidepressants (TCADs), anticonvulsant agents, nonsteroidal anti-inflammatory drugs (NSAIDS) and muscle relaxants (Aronoff, 1992). Depending on the specific medication regime being used for pain management, the patient's ability to comprehend information at any one time may be affected

(Cimprich, 1992).

Individuals in this study were concerned with how this injury would affect their quality of life. Since treatment for CLBP does not usually translate into a cure (Borenstein, & Wiesel, 1989; Donnelly, 1993), the continual presence of pain would have a great impact on the patient's life now and in the future. Information relating to pain management, stress management and long-term effects of injury were of great importance to subjects. Patients with cancer also identified these areas as important learning needs (Galloway et al., 1993). Both groups of patients may expect long term changes in their lives in relation to their injury/illness. On the other hand, short term medical/surgical patients may expect minimal long term changes in their lives due to their surgery and treatment regime and therefore have fewer learning needs in relation to quality of life issues (Bostrom et al., 1994; Bubela et al., 1990b).

The subjects had moderate scores in three subscales: activities of living, community and follow-up and feelings related to condition. Again, all three subscales were ranked higher by subjects with CLBP than by patients with medical/surgical conditions (Bostrom et al., 1994; Bubela et al., 1990b) and by patients recovering from open thoracotomy as a result of lung cancer (Galloway et al., 1993). These higher reported scores may be the result of the many problems associated with CLBP, such as distress, anxiety and feelings of

uncertainty, with which patients with chronic pain often have to struggle (Davis, 1992; Hilbert, 1984; Jones, 1993; Rose et. al., 1995).

Enhancing physical activity is important for patients with CLBP (Flor, Fydrich, & Turk, 1992; Frost, & Klaber-Moffett, 1995). The subjects in this study were limited in their levels of activity as well as in the specific activities in which they were able to engage. Patients with CLBP usually require long term follow-up care (Davis, 1992; Pellino, & Oberst, 1992), and this may explain their increased desire for information about this topic compared to some of the short term surgical patients in the other studies of patient learning needs. Similarly, the lower mean scores in relation to the subscale "feelings related to condition" found in the other studies, might be explained by the differences in patient populations. Patients with chronic pain would likely be more concerned with knowing ways to handle stress and better understand the feelings they experience in relation to their condition, than patients recovering from short term surgical procedures.

The subscale concerned with skin care was ranked lowest of the seven subscales. In comparison, this information was of greater importance for the surgical patients in other studies (Bostrom et al., 1994; Bubela et al., 1990b; Galloway et al., 1993; Galloway et al., 1995). This area was not seen as a learning need for many subjects in this study and therefore was given a score

of 0. However, as only 5 (12.2%) of the subjects had previous surgery related to their back injury, and therefore a healed incision which no longer requires specific skin care, the lower scores were anticipated.

Learning Needs and Relationship to Demographic and Injury-related Variables

Pain intensity and pain-related distress that subjects with CLBP experience most of the time were positively associated with their perceived need for information, however no association was found between learning needs and the pain and pain-related distress that subjects were experiencing at the time of the interview. This finding suggests that pain and distress "most of the time" are better predictors of learning needs than pain and distress experienced at any one particular time. No significant relationships were reported by Galloway et al. (1995) for patients following peripheral bypass surgery, between their level of pain or distress from other symptoms and their perceived learning needs score. However, Galloway et al. did not look for a relationship between pain experienced "most of the time" and perceived learning needs.

Patients with CLBP often undergo numerous tests and treatment regimes with very few definitive results (Davis, 1992; Hilbert, 1984). When treatment regimes seem inadequate to alleviate their pain, patients may feel that the

information they have been given to help them manage their pain is also not adequate. Therefore a continued search for answers may be indicated by the high learning needs scores reported by the subjects in this study.

In a recently published article, Galloway and Graydon (1996), documented relationships between uncertainty, symptom distress and information needs of individuals after a colon resection for cancer. They found that there was a positive but nonsignificant association between information needs, as measured by the PLNS, and total symptom (pain, fatigue, loss of appetite, diarrhea) distress scores. They also found that as subjects perceived more uncertainty, they reported greater information needs. Hilbert (1984) and Rose et al. (1995) have identified uncertainty as part of the chronic pain experience. Therefore, it may be that this uncertainty component, although not measured in this study, may help explain the high scores reported on the PLNS by subjects.

Those patients with higher levels of education had fewer perceived learning needs. Patients with higher levels of education might feel more comfortable seeking out information on their own and questioning health professionals to a greater extent than individuals with less education. Another possibility may be that patients with more education may be able to interpret the information given to them more easily than individuals with less education.

This finding is consistent with the findings of Bubela et al. (1990b) and Dodge (1969) who also found that higher education level was associated with a lower level of reported information needs for adult patients with medical-surgical conditions. In contrast, Galloway et al. (1993) and Galloway et al. (1995) found no significant relationship between level of education and the patient's need for information. In each of the four studies a range of education levels similar to the present study were represented.

Although it may seem likely that patients who are experiencing a back injury for the first time would need more information than patients who have experienced injuries previously, there was no evidence of such a difference. The small sample size is one possible reason for this finding. It may be that learning needs may be affected by recurrent injuries but this could only be examined in a longitudinal study. Given the high recurrence rate for CLBP, this type of information would be useful to know in order to meet the learning needs of this group of patients.

The information needs of patients with CLBP were not significantly different based on the subject's age or gender. Similar findings were noted by Bubela et al., (1990b), Galloway et al., (1993) and Galloway et al., (1995).

Self-efficacy

Patients with CLBP reported having low self-efficacy in relation to pain, function and other symptoms in comparison to previous studies which used similar measurement scales for patients with arthritis (Buescher et al., 1991; Lorig et al., 1993). Differences in the type, pattern and level of pain between the two conditions may account for the noted differences (Buescher et al., 1991; Lorig et al., 1993).

Self-efficacy and Relationship to Demographic and Injury-related Variables

The pain-related distress that subjects with CLBP experienced at the time of the interview was negatively associated with their level of PSE . This relationship is consistent with the view that "patients with chronic pain lose a sense of efficacy over seemingly trivial activities because of the overwhelming sense of hopelessness and the expectation of pain" (Headley, 1990, p. 48). Bowman (1994) also contended that the presence of chronic pain often leaves patients feeling out of control and creates within them feelings of despair. The significant relationship noted between pain-related distress and the PSE score helps to reinforce the importance of measuring pain intensity as well as pain-related distress (Abbott et al., 1992).

Patients reported higher levels of pain at the time of the interview than

the pain they experienced most of the time. However, the score for "pain-related distress at the time of the interview" was lower than "pain-related distress most of the time". The patients in this study, although experiencing more pain when interviewed, may have perceived the Injured Workers' Rehabilitation Program as one step towards learning how to control their pain. This perception may help explain why pain-related distress levels were relatively lower at the time of the interview.

Lin and Ward (1996) found that the patient's pain self-efficacy was negatively correlated with pain intensity and pain interference with daily life. However, no correlation was found between pain self-efficacy in relation to distress. Other studies have documented this negative correlation between self-efficacy and pain as well (Buescher et al., 1991: Council et al., 1988; Jensen et al., 1991; Kores et al., 1990; Lorig et al., 1993: Lorig et al., 1989b). However, pain intensity was not significantly related to any of the self-efficacy scores in the present study. Differences in patient populations, the use of different measurement tools and a small sample size may account for these findings.

Lazarus and Folkman (1984) suggest that the increasing length of a stressor such as chronic pain is associated with more internal control and therefore higher self-efficacy scores in relation to the stressor. Self-efficacy did not differ significantly in relation to the duration of CLBP or the number of

injuries of subjects. Again, the sample size may have been too small to detect differences in self-efficacy because of the limited variation in the sample regarding duration of pain.

Education level was positively correlated with the FSE and OSE subscales. Pellino and Oberst (1992), in their study of 40 patients with CLBP, examined perception of control and appraisal of illness and found that more highly educated patients believed they had more control over their pain. The authors thought that higher educational achievement may indicate better problem solving ability or a higher level of self-efficacy in dealing with chronic pain.

Age did not correlate with any of the self-efficacy subscales. It would appear that patients, regardless of age, are equally affected by their level of self-efficacy. Previous studies did not address the relationship between age and self-efficacy, so no direct comparisons can be made.

Females reported having higher pain self-efficacy than males. No significant differences were noted between gender and the FSE or OSE subscales. Past research on self-efficacy levels reports no significant gender differences (Schuster, Wright, & Tornich, 1995).

Learning Needs and Self-efficacy

Perceived learning needs were negatively correlated to all three of the self-efficacy subscales (PSE, FSE, and OSE) indicating that those with a high sense of self-efficacy attributed less importance to information needs. This relationship was particularly strong for FSE ($r = -0.70$, $p = 0.00$) and somewhat more moderate for OSE ($r = -.49$, $p = 0.00$) and PSE ($r = -.40$, $p = 0.01$). These findings indicate that patients who believe they can function, despite their pain, have fewer learning needs. Thus, functional self-efficacy may be a better predictor of learning needs than pain intensity, pain-related distress or pain self-efficacy.

In a study by Davis et al. (1994) evaluating the effects of an education program on the knowledge and self-efficacy of patients with arthritis, knowledge and self-efficacy significantly increased after the completion of the education program. Further, Davis et al. also reported that no correlation between knowledge and self-efficacy was found, suggesting these two variables improved independently. Although knowledge is not the same concept as learning needs, the two concepts would be expected to be reflective of each other. In this study, patients with higher self-efficacy may also have had more knowledge and therefore reported a lower score for learning needs, however, this study was not designed to test these relationships. Self-efficacy is not

concerned with the skills one may have, but with judgements or beliefs of what one can do with whatever skills one possesses (Bandura, 1986). Subjects who reported lower self-efficacy scores may also have the necessary knowledge to manage their care but they may not judge themselves as capable. This contention is supported by Bandura (1977) who argued that perceived self-efficacy influences all aspects of behaviour, including the acquisition of new knowledge. The results of this study support the work of Bandura and self-efficacy theory, but given the complex nature of these theories, further research is required in the area of perceived learning needs and self-efficacy before conclusions may be drawn.

Because no other studies could be found in the literature which directly examined possible relationships between self-efficacy and patient learning needs, for persons with CLBP or other patient populations, these results could not be directly compared with others.

Summary of Discussion

Patients with CLBP have high learning needs and low self-efficacy and these are comparatively more extreme than for other patient populations, even those with life-threatening illness.

The patient's total learning needs score was significantly related to all

three self-efficacy subscale scores. Patients with higher self-efficacy reported having fewer learning needs. This relationship was particularly strong in relation to functional self-efficacy.

Information needs of greatest concern for subjects were: how their injury would affect their future, how to manage their pain, knowing the side-effects of their treatment and which complications may occur.

Learning needs were affected by such demographic variables as; education level, pain experienced "most of the time" and distress experienced "most of the time". Self-efficacy was affected by education level and distress experienced by the patient at the time of the interview.

CHAPTER 6

Limitations and Implications of the Study

In this chapter, the limitations of this study and implications of the study as they relate to nursing and future research are discussed.

Limitations

There are several limitations of this study related to the sample and the questionnaires used to collect data. First, a convenience sample was used for data collection and this may not be representative of the chronic low back pain population. Therefore, generalizations of the findings beyond this group cannot be made. Second, the sample size may have been too small to detect differences between the variables examined. Therefore findings must be interpreted with caution. Third, the questionnaires used in this study were not originally developed for this patient population. While there is evidence of validity and reliability for the Patient Learning Needs Scale (PLNS) to examine the learning needs of medical-surgical patients (Bubela et al., 1990a), validity was not examined beyond face validity for this group of subjects with CLBP. Similarly, the scale used to measure self-efficacy, developed for patients with arthritis, had to be changed in order to make it more applicable to patients with CLBP. Again this scale was not examined for validity, beyond face validity, with

this group of subjects. Despite these limitations, the results of this study have implications for nursing practice and research.

Implications for Nursing

Most nurses can expect to encounter a patient who is experiencing chronic low back pain, given the high prevalence of low back pain in the general population (Borenstein, & Weisel, 1989). Nurses should recognize that the majority of these individuals will be responsible for managing their own care at home, most of the time. Therefore, it is important for nurses to understand the nature of CLBP and the effects it has on the patient's life. In this study, subjects reported having high levels of pain most of the time which was accompanied by pain-related distress. Nurses need to realize that patients may need encouragement and assistance in dealing with their persistent pain. Bowman (1994) states,

> Chronic pain is not a single phenomenon but a complex experience that affects all areas of an individual's life. Individuals living with such pain focus primarily on finding a cause for and dealing with the pain. Nurses can play a major role in clients' adaptation to life with chronic low back pain. (p.94)

With regard to patient education, patients may not be receptive to teaching if experiencing pain or pain-related distress. This persistent pain may

impair the patient's ability to comprehend the information provided during health education sessions. Therefore, a follow-up contact from a health professional may be beneficial to this group of patients to provide ongoing support. Another alternative is to give patients a phone number for a health professional in the community, who they may contact if questions should arise. Patients may also be given information about relevant support groups that may be available within their community.

Subjects with CLBP reported having low self-efficacy. Pain-related self-efficacy is a concept associated with self-care for patients with chronic pain conditions (Merritt, 1989; Moore, 1990), thus interventions that enhance pain-related self-efficacy may enhance self-care among patients with CLBP. Therefore, nurses may need to focus on ways to assist these patients in improving their pain-related self-efficacy as well as provide teaching content which addresses the perceived learning needs of patients. Methods suggested by Bandura (1986) to improve self-efficacy are: a) have patients practice carrying out the desired behaviour, b) encourage patients to observe others perform the required behaviour, c) encourage patients that they are "capable of doing" the required activities and d) allow the patient to partly judge their own capability. Such interventions have been incorporated into the Arthritis Self-Management Program (Lorig, & Holman, 1989b), an approach that has been

effective in increasing the self-efficacy of patients with arthritis. Patient education interventions designed to enhance self-efficacy appeared to yield greater health benefits to patients than similar interventions that did not emphasize self-efficacy. Therefore, this approach to health teaching may be useful for patients with CLBP.

As patient educators, nurses are often responsible for developing education programs. In this study, self-efficacy was negatively associated with perceived learning needs. Therefore, the content areas of most concern for subjects in this study should be considered priority topics to include in these programs, when preparing patients with CLBP for self-care at home. Information about treatments and complications has been identified as an important topic for all patients and an area for health professionals to consider when preparing patients to assume more responsibility for their own care.

In planning education programs, nurses might include content which outlines the usual course of recovery for a back injury and the rehabilitation process involved. Patients may become frustrated by their condition as many clients with CLBP do not understand the nature of their injury and do not anticipate the set backs that are often involved in the course of rehabilitation (LeFort, 1989). Nurses must be aware of the frustrations often experienced by these patients during the rehabilitation process, as patients may interpret these

set backs as their inability to manage their condition. Such feelings have negative implications regarding self-efficacy and the associated learning needs.

Implications for Nursing Research

There are several recommendations for future nursing research based on the findings of this study. One suggestion for further research is to explore the relationship between learning needs and self-efficacy to determine the causal order of these two variables. Second, exploration of the possible sources for the high distress levels reported by patients with CLBP is recommended. Such factors as uncertainty and anxiety should be examined to determine their relationship to pain-related distress. Third, the factors pain, pain-related distress, self-efficacy and learning needs should be further explored using a larger sample since some of these relationships have not been evident in previous research. Fourth, further study of the psychometric properties of the research tools, beyond face validity, would lead to further refinement of the tools for this patient population and help to verify the findings of this study. Further exploration of recurrent low back injuries and the relationship it has with learning needs and self-efficacy, using a larger sample size and a longitudinal approach is recommended. The high reoccurrence rate of low back injuries and the high learning need scores patients continue to report with repeat injuries,

are important factors to assess in order to determine why subjects continue to have such a great need for information.

Conclusion

Despite efforts used to alleviate pain, individuals with CLBP suffer considerably. Not only do they suffer persistent pain, but also a high level of associated distress. This high distress level may be related to their low self-efficacy scores, particularly pain-related self-efficacy. These factors--self-efficacy and pain-related distress, were found to be associated with the patients' overall learning need.

Because self-care is a lifetime requirement for individuals with chronic illness, approaches to their care which enhance their ability to manage their own condition are of fundamental importance. In order to facilitate the self-care of patients in their home environment, health care professionals must identify and attend to the patients' perceived learning needs. Self-efficacy, however, may well be an essential element for most health behaviours and thus an important element to consider when developing these patient education programs as well. Despite the limitations noted, the results of this study are useful for health professionals in the development of educational programs and when caring for patients experiencing CLBP.

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APPENDIX A

WORKERS' COMPENSATION COMMISSION
OF NEWFOUNDLAND AND LABRADOR

146-148 FOREST ROAD, P.O. BOX 9000, ST. JOHN'S, NFLD., CANADA A1A 3B8
Telephone: (709) 778-1000
Fax: (709) 778-1241

EXECUTIVE OFFICE

1994 05 24

Ms. Elizabeth Hynes, B.N., R.N.

Dear Ms. Hynes:

Re: Your letter dated May 19, 1994
concerning a study on Chronic Low Back Pain

Please be advised that the Chronic Pain Program is administered by the General Hospital Corporation and the approval for your study should come from this hospital. However, the Commission endorses your study to "Assess the Learning Needs and Pain-Related Self-Efficacy Identified by Patients with Chronic Low Back Pain".

Good luck with your study.

Sincerely,

Norman R. Kennedy, CMA
Executive Director
Compensation Services

/fdl

APPENDIX B

SCHOOL OF NURSING
MEMORIAL UNIVERSITY OF NEWFOUNDLAND
ST. JOHN'S, NEWFOUNDLAND A1B 3V6

CONSENT TO PARTICIPATE IN NURSING RESEARCH

TITLE:Learning Needs and Pain-Related Self-Efficacy Identified by Patients with Chronic Low Back Pain

INVESTIGATOR: Elizabeth Hynes

You are asked to participate in a research study. Participation in this study is entirely voluntary. You may decide not to participate or may withdraw from the study at any time.

Confidentiality of information concerning participants will be maintained by the investigator. You man contact the investigator by phoning 745-1745 during the study at any time should you have any problems or questions about the study.

Purpose of Study

The purpose of this study is to find out what people feel they need to know about their back pain in order to function effectively at home. Also information about how certain people can perform specific tasks despite their pain will be obtained to see if this affects the learning needs identified. The results of this study will help nurses and other health professionals better understand peoples' learning needs and give information which will be most helpful.

Description of procedure and tests

Participation in this study will involve completing a questionnaire which will be given to you on the first day of the Injured Workers Rehabilitation Clinic. This questionnaire will ask how important it is for you to have specific information about your Chronic Low Back Pain. Your name will not appear on the questionnaire form. The forms will be stored in a locked file and only the investigator will have access to them. When the study is over, they will be destroyed.

Duration of subject's participation

You are being asked to complete one questionnaire. It is anticipated that it will take approximately 30-40 minutes to complete.

Foreseeable risks, discomforts, or inconveniences

There are no expected risks involved in completing this questionnaire. However, you may refuse to respond to any questions on the form that make you feel uncomfortable. The only inconvenience to you is the personal loss of time.

Benefits which the subject may receive

You may not benefit directly from this study. However, if you agree to participate, the information that you give may help nurses and other health professionals address the needs of people with chronic low back pain to help them function more effectively.

Alternative procedures or treatment for those not entering the study

Participation in this study is voluntary and you may decide to withdraw at any time.

Any other relevant information

If there are any areas of the study that are not clear, please feel free to ask any questions before you sign the consent form. Findings will be available to you and health care professionals upon request. Findings of this study may be published but you will not be identified.

Liability disclaimer statement

Your signature on this form indicates that you have understood to your satisfaction the information regarding your participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities.

I,_____, the undersigned, agree to my participation in the research study described.

Any questions have been answered and I understand what is involved in the study. I realise that participation is voluntary and that there is no guarantee that I will benefit from my involvement. I acknowledge that a copy of this form has been offered to me.

_____ (Signature of Participant) (Date)_____

To be signed by investigator:

To the best of my ability I have fully explained to the subject the nature of this research study. I have invited questions and provided answers. I believe that the subject fully understands the implications and voluntary nature of the study.

_____ (Signature of Investigator) (Date)_____

Phone Number 745-1745

APPENDIX C

Memorial
University of Newfoundland

Human Investigation Committee
Office of Research and Graduate Studies (Medicine)
Faculty of Medicine, The Health Sciences Centre

14 July 1994

Reference #94-79

Ms. Elizabeth Hynes
46 Burton Street
St. John's, NF
A1E 5M4

Dear Ms. Hynes:

Thank you for providing the Human Investigation Committee with a copy of the revised consent form for the research study entitled **"Learning Needs and Pain-Related Self-Efficacy Identified b Patients with Chronic Low Back Pain"**.

We now wish to advise that the Committee recommended approval of the revised consent form as submitted.

Sincerely yours,

C.S. Mellor, MD, PhD, FRCP(C)
Chairman
Human Investigation Committee

cc Dr. K.M.W. Keough, Vice-President (Research)
Dr. Ford Bursey, General Hospital Representative, HIC
Dr. Eric Parsons, Medical Director, General Hospital
Ms. M. Lambe, Supervisor

APPENDIX D

I.D. Number:_____

GENERAL INFORMATION

Directions: When answering the following questions, please check or write in the answers which most closely describes yourself. Please refrain from writing your name on this form, however, ensure that the identification number is written above. This information will be kept strictly confidential and will not be personally identified with you.

1. What is your age? _____ Years

2. What is your sex? _____ Male _____ Female

3. What is your marital status?

   _____ Single _____ Married/Partnered

   _____ Divorced/Separated _____ Widowed

4. Who besides yourself lives with you at home? Check as many answers as apply to you.

   _____ Live alone

   _____ Spouse/Partner

   _____ Child/Children:
   Age(s) of Child/Children: _____

   _____ Adult relative(s) (ie. elderly parent etc.)

   _____ Other: please specify _____

5. In total, how many years of schooling do you have? This includes the total of grade school, high school, vocational, technical, and university.

   _____ Years of Schooling

6. What do you do for a living?_____

   How long have you been doing this type of work:_____years

7. If presently unable to work, are your receiving any disability income? yes_____ no_____

8. Is this: _____ your 1st back injury

_____ a recurrent back injury

If recurrent how many back injuries have you had? _____

When did your back pain originally begin _____(months)?

9. How long have you had your present injury? _____(months)?

10. What is the cause of your back injury/pain?

_____ Lifting
_____ Fall
_____ Struck by or against an object/accident
_____ Arthritis
_____ "Slipped disc"
_____ Unknown
_____ Other. Please specify._____

11. Do you have any other health/medical problems other than your back problem? Please specify.

_____

12. Do you currently take medication for your back problem?

_____ yes _____ no

13. Have you ever had surgery for your back problem?

_____ yes _____no

How many surgeries have you had on your back? Please check one.

One_____ Two_____ More than two_____

14. Have you ever participated in an education program for patients with back pain?

_____ yes _____ no

APPENDIX E

PAIN QUESTIONNAIRE

The following 6 questions are concerned with your pain and pain-related distress which you may or may not be experiencing. Please answer these questions as described in the example. To answer the following question, place an X at the spot that best describes your situation.

For example;

Please mark an X at the spot that best describes your fatigue right now. A possible response may be

NO FATIGUE ----------X---------- WORST FATIGUE IMAGINABLE

This would indicate that one is more than moderately fatigued but not to the extreme level of worst fatigue imaginable.

QUESTIONS

1. Are you having pain right now? Yes_____ No_____

2. Please mark an X at the spot that best describes your pain right now.

   NO PAIN _____ WORST PAIN IMAGINABLE

3. Please mark an X at the spot that best describes your pain most of the time.

   NO PAIN _____ WORST PAIN IMAGINABLE

4. Is your pain causing you distress right now?

   Yes_____ No_____

5. Please mark an X at the spot that best describes your pain-related distress right now.

NO DISTRESS _____ WORST DISTRESS IMAGINABLE

6. Please mark an X at the spot that best describes your pain-related distress most of the time.

NO DISTRESS _____ WORST DISTRESS IMAGINABLE

APPENDIX F

PATIENT LEARNING NEEDS SCALE
ADAPTED FOR PATIENTS WITH CHRONIC LOW BACK PAIN

People with chronic low back pain, people like yourself, often have questions about how best to manage their care at home. Because you are the one who best knows how you feel and what you are capable of doing, you are also the best one to identify what information you need to know to manage your own care.

When answering the following questions, please circle the numbers which most closely describes your learning needs. For example, if the item relates to your situation or illness, please circle the appropriate number 1 through 5 with 1 having the least importance and 5 being extremely important. If the item does not apply to your situation or illness please circle "0", "does not apply", and go on to the next statement.

IN ORDER TO MANAGE MY OWN CARE AT HOME I NEED TO KNOW:

	Does Not Apply	Of No Importance				Extremely Important
	0	1	2	3	4	5
1. Which complication I should seek immediate help for?	0	1	2	3	4	5
2. How to change my activities to save my energy.	0	1	2	3	4	5
3. How each medication works.	0	1	2	3	4	5
4. How to recognize a complication.	0	1	2	3	4	5
5. What to do if I have trouble with my bowels?	0	1	2	3	4	5
6. What a Home Care program provides?	0	1	2	3	4	5
7. How to talk to family/friends about my illness.	0	1	2	3	4	5
8. What to do if I have a reaction to a medication?	0	1	2	3	4	5
9. Where I can get help for family to deal with illness?	0	1	2	3	4	5
10. What complications might occur from my illness?	0	1	2	3	4	5
11. How this illness will affect my future.	0	1	2	3	4	5
12. When I can take a bath or shower?	0	1	2	3	4	5
13. What symptoms may I have related to my illness?	0	1	2	3	4	5
14. When can I start to do household activities safely.	0	1	2	3	4	5
15. How to manage my pain.	0	1	2	3	4	5
16. When to stop taking each medication.	0	1	2	3	4	5
17. How much rest I should be getting.	0	1	2	3	4	5
18. How to take each medication.	0	1	2	3	4	5

	Does Not Apply	Of No Importance				Extremely Important
19. Who will I see at my follow-up appointments?	0	1	2	3	4	5
20. What the possible side effects of my treatment are.	0	1	2	3	4	5
21. How to manage the symptoms that I might experience.	0	1	2	3	4	5
22. How to get through 'red tape' in the health care system.	0	1	2	3	4	5
23. Who my family members can call about questions of my illness.	0	1	2	3	4	5
24. What caused my illness.	0	1	2	3	4	5
25. How to care for my wound or incision.	0	1	2	3	4	5
26. What to do if I have trouble urinating.	0	1	2	3	4	5
27. How to prepare the foods I am allowed to eat.	0	1	2	3	4	5
28. Which foods I can and cannot eat.	0	1	2	3	4	5
29. What to do if I cannot sleep properly.	0	1	2	3	4	5
30. What physical activities I cannot do such as lifting.	0	1	2	3	4	5
31. How to get through 'red tape' to get services at home.	0	1	2	3	4	5
32. Who to talk to about my concerns about death.	0	1	2	3	4	5
33. How to care for my feet properly	0	1	2	3	4	5
34. Which vitamins and supplements I should take.	0	1	2	3	4	5
35. Where I can get help in handling my feelings about my illness.	0	1	2	3	4	5

	Does Not Apply	Of No Importance				Extremely Important
36. How to contact community groups for my health condition.	0	1	2	3	4	5
37. Why I need to take each medication.	0	1	2	3	4	5
38. How to prevent a complication from occurring	0	1	2	3	4	5
39. The possible reactions to each medication.	0	1	2	3	4	5
40. How I can manage stress.	0	1	2	3	4	5
41. How to arrange transportation to follow-up appointments.	0	1	2	3	4	5
42. How to recognize my feelings towards my illness.	0	1	2	3	4	5
43. How to prevent my skin from getting sore.	0	1	2	3	4	5
44. When to take each medication.	0	1	2	3	4	5
45. Where I can get my medications.	0	1	2	3	4	5
46. How I can avoid stress.	0	1	2	3	4	5
47. What the purposes of my treatments are.	0	1	2	3	4	5
48. What physical exercise I should be getting.	0	1	2	3	4	5
49. How to prevent my skin from getting red.	0	1	2	3	4	5
50. How this illness will affect my life.	0	1	2	3	4	5

In addition to these items are there any other topics or information needs you feel would be useful to know in order to manage your back pain.

YES_____ NO_____

If yes, please list these additional learning needs below.

APPENDIX G

SUNNYBROOK
HEALTH
SCIENCE
CENTRE

September 14, 1993

Ms. Elizabeth Haines,
46 Burton Street,
St. John's Newfoundland
A1E 5M4

Dear Ms. Haines,

Thank you for your interest in the Patient Learning Need Scale. Enclosed you will find instructions on the use of the scale, the referances of articles which describe the scale and its use, and a consent for use form. The scale is designed for either hospital or home administration. In our present research we are using the scale with additional measures specific to select populations. If you decide to use the scale please sign and return two copies of the consent for use form. I will sign them and return one to you along with copy of the scale, directions for home and hospital administration and the scoring structure.

I wish you well in your project.

Sincerely

Susan Galloway

Susan Galloway, RN, MScN.
Clinical Nurse Specialist, General Surgery
Office # C418B.

APPENDIX H

SELF-EFFICACY SCALE

Self-Efficacy Pain Subscale

In the following questions, we'd like to know how your back pain affects you. For each of the following questions, please circle the number which corresponds to your certainty that you can now perform the following tasks.

1. How certain are you that you can decrease your pain quite a bit?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

2. How certain are you that you can continue most of your daily activities?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

3. How certain are you that you can keep your back pain from interfering with your sleep?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

4. How certain are you that you can make a small-to-moderate reduction in your back pain by using methods other than taking extra medication?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

5. How certain are you that you can make a large reduction in your back pain by using methods other than taking extra medication?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

Self-Efficacy Function Subscale

We would like to know how confident you are in performing certain daily activities. For each of the following questions, please circle the number which corresponds to your certainty that you can perform the tasks as of now, without assistive devices or help from another person. Please consider what you routinely can do, not what would require a single extraordinary effort.

1. Walk 100 feet on flat ground in 20 seconds?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

2. Walk 10 steps downstairs in 7 seconds?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

3. Get out of an armless chair quickly, without using your hands for support?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

4. Scratch the upper right or left side of your back using your opposite hand?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

5. Get in and out of the passenger side of a car without assistance from another person and without physical aids?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

6. Bend over to pick up a piece of paper off the floor (you can bend your knees).

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

7. Pick up a 15 lb child (6.8 kg).

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

8. Travel in a car for <u>one</u> hour as a passenger.

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

9. Carry one 10 lb bag of groceries for 100 feet, ie. from car to the house.

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

Self-Efficacy Other Symptoms Subscale

In the following questions, we'd like to know how you feel about your ability to control your back pain. For each of the following questions, please circle the number which corresponds to the certainty that you can now perform the following activities or tasks.

1. How certain are you that you can control your fatigue?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

2. How certain are you that you can regulate your activity so as to be active without aggravating your back pain?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

3. How certain are you that you can do something to help yourself feel better if you are feeling blue?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

4. As compared with other people with back pain like yours, how certain are you that you can manage back pain during your daily activities?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

5. How certain are you that you can manage your back pain symptoms so that you can do the things you enjoy doing?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

6. How certain are you that you can deal with the frustration of back pain?

10	20	30	40	50	60	70	80	90	100
very uncertain				moderately uncertain					very certain

APPENDIX I

Stanford Patient Education Research Center

Stanford University School of Medicine
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November 29, 1993

TO WHOM IT MAY CONCERN:

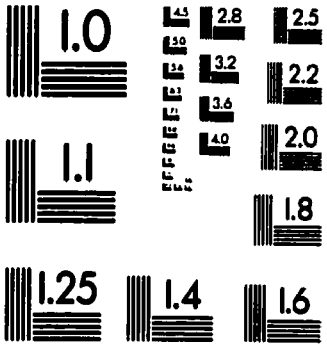
Elizabeth Hynes has my permission to alter the Self-Efficacy Disability Scale to make it more relevant to patients with back problems.

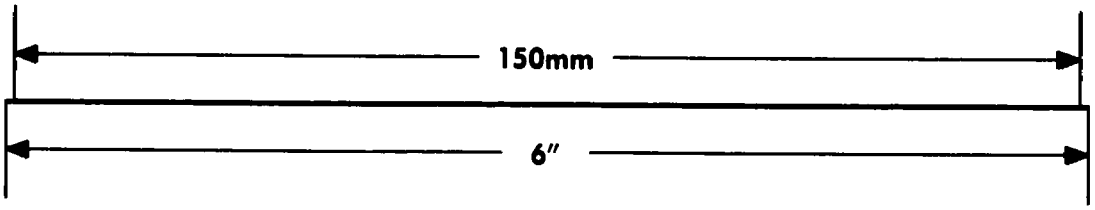
We discussed by phone all relevant changes on November 29, 1993.

Sincerely,

Kate Lorig, RN, DrPH
Senior Research Scientist

TEST TARGET (QA-3)





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