# Chronic Low(er) Back Pain (LBP): Preliminary results for Anxiety and Depression in patients suffering with Chronic LBP.

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## ABSTRACT

**Background:** In spite of the high prevalence rates of major depression and anxiety observed in patients with chronic low back pain, there has been no systematic attempt to investigate this issue thoroughly in our country.

**Objective:** This study examines the relationship between anxiety, depression and pain intensity in patients with lower back pain (LBP).

**Methods:** In this descriptive correlation study we present the preliminary result of forty (40) patients with chronic low back pain receiving treatment in the neurosurgical department of a General Hospital in Attica region, Greece. Data were collected with individual interviews using the demographic and pain related data instrument a short form McGill Questionnaire, the modified Hamilton Rating Scale of Depression and the Hamilton Rating Scale of Anxiety.

**Results:** In this descriptive correlation study we present 40 patients (16male-24 female) with chronic lower back pain. The average depression level on a 3-40 scale was 15,15 (SD=10,13) which is mild. The average anxiety level on a 2-26 scale was evaluated 7,40 (SD=6,52) which was less than moderate anxiety. There was no significant correlation between depression, anxiety and pain intensity.

**Conclusions:** Findings showed that younger and higher educated people perceived pain as more severe than older people and those with less formal education. In addition, highly educated patients reported pain with longer duration, therefore severe higher levels of intense. Patients with high anxiety levels also suffered from high levels of depression. It was also found that the longer the pain the more severe it was said to be. A significant relationship was observed between depression and anxiety indicated that depressive symptoms were more common in anxious patients.

**Relevance to clinical practice:** We assess patients with lower back pain to set a baseline uncover psychological problems and select a suitable intervention that will evaluate the patients' response to treatment.

**Key words:** acute care, anxiety, depression, low back pain, nursing care

## I. Introduction & Background

Low back pain is a common reason for consulting primary care. During any 12-month period approximately 7% of UK adult population will consult their general practitioner (GP) with low back pain (Wynne, et. al., 2008, Royal College of General Practioners and Office of Population Censuses and Surveys, 1995). This is a common health problem in Hong Kong as well (Mok, Lee, 2008). In addition, in the US it has been reported that 149 million working days are lost every year due to low back pain (Wynne, et. al,. 2008, Guo, et. al., 1999). Similarly, according to data 1 to 10 people in Greece have visited either the emergency department or the orthopedic and physiotherapy clinics of a hospital setting complaining about low back pain at least once. During 1986-87 it was estimated that the cost of laboratory examinations and tests done on an out-patient basis was as high as 5,000drs per case of low back pain without taking into account the operational costs of the clinics (Beltsios, et. al.,1990). This amount has risen considerably throughout the years. Nevertheless, there is initial research evidence indicating that approximately 12% of the Greek people have been diagnosed as suffering from some type of low back pain (Beltsios, et. al., 1990).

Furthermore, study results show that there are no significant differences between the two sexes in terms of the demographic parameters (age, occupation, place of residence) of the disease. Age is found positively related to chronic pain (Anderson, 1999) and to long-term disability in patients with low back pain (Clauw, et. al., 1999). Both sexes are more vulnerable to developing low back pain in the 4th decade of their life (Beltsios, et. al., 1990). Although the prevalence rate seems to be slightly higher in young men and housewives, men are at higher risk of a recurrence of low back pain (Anderson, 1999) which may be due to greater physical demands of men's jobs (Mok, Lee, 2008). Evidence support that the physical demands of work are associated with low back pain; for example flexion and rotation of the trunk, lifting, unexpected movements, excessive loads, the vibration exposure during operation of heavy moving equipment and twisting of the body (Hoogendoorn, et. al., 2000, Jayson, 2001, Wing, 2001, Yip, 2004). Moreover, education, socio-economic status and unemployment predict back pain duration and recurrence, though it is not clear from existing literature how these exert their effect on the outcome (Dionne, et. al., 2001). Further literature suggest that such social characteristics are likely to be closely associated with psychological variables, acting as both precipitating and maintaining factors for psychological problems (Keeley, et. al., 2008). Therefore, a number of factors influence the expression of the above disorder. Moreover, pain has serious socio-economic and psychological implications which go beyond the patient to affect all members of his/her family and the wider society and which cannot be ignored.

In diagnosing patients with pain, there are really two separate but interrelated tasks. The first task is to face the pain itself, almost as if the patient did not exist or as it was merely the carrier of a tissue specimen. The goal of this task is to understand the patho-physiological mechanisms involved in the pain so as to prescribe the appropriate somatic treatments. For instance, at a basic research level it is known that neuro-endocrinological changes that are conducted at certain ages make patients sensitive to developing chronic pain, as well as, depression and anxiety symptoms. Specifically, it has been determined that abnormalities in the production of certain CNS amines including serotonin and nor-epinephrine are linked to the disorders of emotion while at the same time they are known to affect the regulation and perception of anxiety (Atkinson, et. al., 1988). However, it is interesting to comment that among all people diagnosed with lower back pain only 4% of them report neurological symptoms (Beltsios, et. al., 1990). Therefore, another task is to assess the patient holistically as a person who is in pain and has a unique history. Pain is subjective, and the literature shows that low back pain sufferers who seek medical treatment perceive greater pain than do sufferers who do not seek medical treatment (Carey, et. al., 1996) Furthermore, pain control is likely to be the primary concern amongst patients with low back pain, particularly for those who are newly admitted to hospitals (Katz, 1998). Therefore, the patients' subjectivity in perceiving pain must be examined as to how it can be influenced by the persons' psychological, social and economic state, but also in the way it can influence the intensity of pain as well as its control. However, there should always be an attempt to understand how each of the two diagnoses influences the other and not ignore the pathophysiological mechanisms that cause pain. However, little previous research has focused on investigating this critical moment of pain and its factors.

In this project low back pain has been chosen as a means to investigate the way in which pain affects the emotional state of patients and, in particular, their levels of depression and anxiety. Studies show that depression and anxiety are associated with the occurrence of low back pain (Anderson, 1999, McCracken, Gross, 1998) and that people with low back pain are more likely to develop anxiety and depression disorders (Polatin, et. al., 1993). In addition, depression and fear-avoidance predict disability, time off-work and healthcare utilization (Sullivan, et. al, 2003, 2005, 2006, Smith, et. al., 2004, Boersman, Linton, 2005, Carragee, et. al., 2005) though their predictive power may depend on the chronicity of the pain (Boersma, Linton , 2005, 2006). On the other hand, depression and anxiety sensitize the patients understanding of their organic problems and in some cases; pain is only a cover for depression and anxiety disorders (Keefe, et. al., 1988, Magni, et. al., 1988).

Furthermore, in spite of the large percentage of depression and anxiety that is observed in patients with chronic lower back pain, we believe that this correlation

has rarely been studied in Greece and therefore is not well known. This lack of knowledge is a result of the tendency of health care researchers to examine the epidemiological and biomedical characteristics of pain rather than its cognitive and psychological elements and consequences. This project thus intends to fill the knowledge gap by reviewing the theoretical literature of pain.

Moreover, by conducting a small-scale study we intend to explore the interrelationships of low back pain, anxiety and depression. An in-depth knowledge of the subject could support efforts to develop programs aimed to protect both patients and health care professionals' health condition. Taking into account the facts cited above it is evident that theoretical and research efforts aimed to increasing knowledge regarding pain and its psychological correlates seem to be valued and warranted. Such information is essential for the holistic care to which contemporary nursing is ascribed.

## 2. Material & Methods

### 2.1 The study

This study represents a combination of quantitative and qualitative research designs. A descriptive correlational design facilitated the examination of the research problem under investigation, ie the description of the variables of modifying factors, Low Back Pain, Depression and Anxiety as well as the description of the interrelationships among these variables.

The patients who constituted the study population were obtained from the Neurosurgery department of a General Hospital located in Elefsina, in which a member of the study group is employed as a head nurse. This department was chosen because a great number of patients with low back pain receive treatment and caring services there. The present study was conducted in an appropriate place (office) within General Hospital which provided comfortable setting. For the patients who were not able to move, the data were collected in the patient's room.

### 2.2 Operational definitions

Chronic Low back pain is a pain which regardless of its etiology is located at the lumber or sacrum section of the spinal cord and lasts six months or longer.

Depression is defined as a multifaceted health problem (symptom, syndrome or disease) associated with chronic low back pain and associated with the presence of pervasive low mood and additional cognitive and somatic symptoms.

Anxiety is defined as the excessive anxiety and worry which is caused by chronic low back pain and is accompanied by cognitive, emotional and somatic symptoms. This study examines the state rather than the trait anxiety. Anxiety is operationally defined by the Hamilton Anxiety Rating Scale (HARS, Hamilton, 1959).

### 2.3 Sample Selection

The sample of this study was formed by forty low back pain patients who were hospitalized in the Neurosurgery department of the aforementioned General Hospital, from December 2006 till December 2007. The subjects were selected by convenience sampling method. The sample was chosen by using specific inclusion and exclusion criteria which are described in theoretical and research account (Krishnan, et. al., 1985, Atkinson, et. al., 1988, Weickgenant, et. al., 1993)

Inclusion criteria

Each patient should:

1. be between the ages of 35-65,
2. belong to any of the two sexes,
3. agree to participate in the study voluntarily,
4. be hospitalized due to chronic low back pain as his/her primary medical complaint,
5. communicate effectively in the Greek language,
6. feel pain "on a daily basis" for the last 6 months or longer.

Exclusion criteria:

Each patient should:

1. have a co-existing major medical illness (eg. chronic obstructive pulmonary disease, congestive heart failure, diabetes mellitus),
2. suffer from co-existing orthopedic or pain problems,
3. have organic brain syndrome or psychiatric disorder based on Diagnostic and Statistical Mental Disorders (DSM IV),
4. have experienced major surgery within the previous 12 months,
5. take medications known to precipitate depression or other mental disorders,
6. suffer from abolition of tension reflexes and muscular atrophy.

### 2.4 Data Collection

#### 2.4.1 Study instruments

Because pain is difficult to assess, there are many different opinions as to the best approach. There are several ways to "measure" pain, but there is no yet a purely objective pathophysiological method that can be used. Therefore, health care professionals often combine several diagnostic methods in order to get an approximate estimation of pain. Data were collected using the following instruments:

i) Demographic and pain related data instrument

Includes 12 items and was constructed by the investigator to collect: information about the patients sociodemographic situation ie sex, age, educational level, occupation residence and marital status (questions 1-6) and pain related data (questions 7-12).

ii) The short-form McGill Questionnaire

The qualitative and quantitative characteristics of

chronic low back pain are estimated by questions 1-12 of the Sociodemographic and Pain related Data Instrument as well as the Short term McGill Pain Questionnaire. This provides valuable information on the sensory, affective and evaluative dimensions of pain experience and is capable of discriminating among different pain problems (Melzack, 1987).

iii) The modified Hamilton Rating Scale

Depression is measured by Modified Hamilton Rating Scale (MHSRSD, Miller, et. al., 1984). The 17-item Hamilton's depression rating scale is used to assess the severity of depressive symptoms and provides a valuable guide of the patients progress over time (Hamilton, 1960). Items are scored 0-4 and in general the higher the total scores the more severe the depression. Questions are related to symptoms such as the patient's mood guilt feelings, thoughts of suicide, disturbed sleep, anxiety levels, and weight loss (J. Rymaszewska, et. al., 2008, Kramlingler, et. al., 1983, Kraus, et. al., 1994).

iv) the Hamilton Rating Scale for Anxiety

This was one of the first rating scales developed to measure the severity of anxiety symptoms (Hamilton, 1959). The scale includes 13 symptoms regarding: moods of anxiety, tension, and fear, insomnia, cognitive changes, depression and somatic symptoms of a general type and of the cardiovascular, respiratory, gastrointestinal, genitourinary, and autonomic systems. Each item is rated on a 5-point scale. The measure of anxiety is the sum of the scores for each item. The five scores are none (O), mild (1), moderate (2), severe (3) and very severe (4). This is a widely used scale and an accepted outcome measure in clinical trials (J. Rymaszewska, et. al., 2008, Kramlingler et. al., 1983, Kraus et. al., 1994).

### 2.4.2 Ethical considerations

After permission was granted the investigator group submitted the protocol to the Board of Directors of the Hospital at which the data collection was about to take place. When approval was obtained the nursing and medical stuff of the Neurosurgery Department was contacted. An oral and written consent was obtained from the patients.

## 3. Results

Descriptive characteristics of the sample:

From the people who participated in our study 60% were women and 40 % were men. The age of the patients constituting the sample ranged from 35-65. The mean age of the sample was 50, 40 years (SD=11,65). The majority of the subjects belonged to the age group 60-65. The subjects were technicians and factory workers (35%) while the rest of the subjects reported several other professions such as farmers (10%), traders and salesmen (10%) clerks (10%) and scientists (5%). Six women (15%) reported housekeeping as their occupation.

**Table 1: Frequency distribution and percentages of the sample by marital status and place of residence**

| MARITAL STATUS | | | PLACE OF RESIDENCE | | |
|---|---|---|---|---|---|
| | v | 5 | | v | % |
| Marital | 34 | 85 | Suburb | 18 | 45 |
| Single | 4 | 10 | Urban area | 22 | 55 |
| Widow | 2 | 5 | | | |
| TOTAL | 40 | 100 | TOTAL | 40 | 100 |

frequency distribution and the percentages of the patients are described according to marital status and place of residence in Table I.

As far as the patients' educational level is concerned most of them had received basic education while a small percent received education at a College or University level. With regard to occupation the majority of the

Pain related characteristics of the sample:

The majority (65%) of the subjects said that their pain episodes first appeared six to eight months ago. Two patients reported that their pain started 36 months ago. The various kinds of treatments received by patients to alleviate their pain as well as the frequency of the use of pain killers are shown bellow at Table 2.

**Table 2: Frequency distribution and percentages of received treatment and use of medications**

| TYPE OF TREATMENT | v | % | USE OF PAINKILLERS | v | % |
|---|---|---|---|---|---|
| Neurosurgery operation | 6 | 15 | Constantly | 6 | 15 |
| Medications | 34 | 85 | Only when in pain | 26 | 80 |
| Physiotherapy | 22 | 55 | Constantly +when in pain | 6 | 15 |
| Psychosocial | 2 | 5 | Without specific restrictions | 2 | 5 |

As far as the changed of pain levels over time are concerned 65% mentioned that their pain shows periodical changes. Moreover, 12 patients said that their pain changes constantly and the remaining 2 patients said that their pain changes indefinitely. The majority of the subjects admitted that there are activities which relieve or increase their pain 85% and 100% respectively. The majority (60%) of patients said that the most effective way to relieve pain is by taking medication. In contrast, body activities were found to increase pain levels in many patients along with other factors such as psychological and environmental factors.

Results of the Short-Form McGill Pain Questionnaire:

The mean score of the SF-MPQ was found to be 20,15 (SD=3,30). The lowest score was 15 and the highest 29. Furthermore, the mean score of the 11 sensory items was 13,30 (SD=2,26) while the lowest score was found 10 and the highest 20. Finally the mean score of the 4 items included in the affective subscale of the pain questionnaire was found to be 6,85 SD=1,81) and ranged from 5 to 11. Most patients mainly described their pain as shooting, tiring-exhaustion, sharp, cramping and heavy. In contrast, only a few patients attributed to their pain qualitative characteristics such as aching, sickening or punishing -cruel. The two indices (Visual Analogue Scale and the Present Pain Index) estimating pain intensity showed that the subjects' pain was moderate to slightly severe. With possible values from 5 to 5, the VAS was found to range from 1,24 to 5 and its means score was calculated to be 3,94 (SD=1,34).

As far as PPI is concerned study results indicate that none of the patients was free of pain at the time of the interview. 20% said that their pain was mild, 10% reported that their pain was discomforting, 35% characterized their pain as distressing and the remaining 35% of patients said that their pain was horrible or excruciating.

From the drawing used to provide information about the parts of the body, findings showed that for the majority (60%) of the patients the pain was located in the lumbar section of the spinal cord (especially L4-L5). 40% of the patients indicated the sacrum part of the spinal cord as the area of their pain problem.

Description of Depression:

A depression index score was calculated for each patient by the psychiatrist. Individual depression scores ranged from 3-40. Based on the scores provided, we categorized each subject in one of the following four levels of depression: no depression, mild depression, moderate depression and severe depression. The frequency distributions and the percentages of the subject as categorized in each of the levels of depression are cited in Table 3.

**Table 3: Frequency distributions and percentages of the patients by sex and levels of depression**

| LEVELS OF DEPRESSION | Males | | Females | | Total | |
|---|---|---|---|---|---|---|
| | v | % | v | % | v | % |
| No depression | 8 | 20 | 4 | 10 | 12 | 30 |
| Mild depression | 6 | 15 | 8 | 20 | 14 | 35 |
| Moderate depression | 2 | 5 | 8 | 20 | 10 | 25 |
| Severe depression | - | - | 4 | 10 | 4 | 10 |
| TOTAL | 16 | 40 | 24 | 60 | 40 | 100 |

It was found that the majority of patients reported mild levels of depression. However, a considerable percentage of them was observed to suffer from moderate or severe depression. In addition, depression seems to be a more serious problem for women than for men.

A mean score was estimated for each scale of items. The mean of means was estimated to be 15,15 (SD=10,13). Initial insomnia and work interest received the highest vales (1,55 and 1,40 respectively). The items regarding the other types of insomnia (ie delayed and middle insomnia) as well as anxiety also scored high. Contrary, the sample was not found to suffer from retardation or to have paranoid or obsessional symptoms.

Description of anxiety:

An anxiety index score was estimated for each subject by the psychiatrist. Individual anxiety scores ranged from 2 to 26. According to scores obtained, the patients were categorized as being not anxious, mild anxious or very anxious. The three levels of anxiety as well as the number and percentage of patients observed are shown in Table 4.

**Table 4: Frequency distributions and percentages of the patients by sex and levels of anxiety**

| LEVELS OF ANXIETY | Males | | Females | | Total | |
|---|---|---|---|---|---|---|
| | v | % | v | % | v | % |
| Not anxious | 14 | 35 | 10 | 25 | 24 | 60 |
| Middle anxious | 2 | 5 | 10 | 25 | 12 | 30 |
| Very anxious | - | - | 4 | 10 | 4 | 10 |
| Total | 16 | 40 | 24 | 60 | 40 | 100 |

Findings pertaining to the extent, to which subjects viewed themselves as anxious or not anxious, indicated that the majority of the patients did not exhibit any sign of anxiety. Only less than half of the subjects who participated in the study reported middle or high levels of anxiety. Similar to depression, anxiety was found to be a more significant problem to women than men.

A mean score was obtained for each of the HRSA scales. The mean of means was calculated to be 7,40 (SD=6,52). Subjects' responses to the individual items of the anxiety scale indicated that tension, anxious mood and insomnia were the most serious problems of the patients. Genito-urinary and skin symptoms as well as fear indicators of anxiety represented the least significant problems of the patients.

Relationship between the variables:

Statistical analysis of data revealed no significant associations between (a) some of the sociodemographic and pain related characteristics of the sample (sex, marital status, occupation, place of residence, change of pain with time and activities increasing/decreasing pain) and (b) chronic low back pain, depression and anxiety. Similarly, no significant correlations were found between quality elements and intensity of chronic low back pain and depression and anxiety (Pilowsky, et. al., 1997). The small number of subjects may account for the observed lack of relationships between the aforementioned variables.

Contrary, the Spearman's rho (ρ) revealed significant relationships between intensity and duration of pain, and sociodemographic and pain related variables, as shown in Table 5, bellow:

**Table 5: Relationships between sociodemographic characteristics, intensity of pain and duration of pain**

| VARIABLE | VARIABLE | p* | p |
|---|---|---|---|
| Age | Intensity of pain | -0,462 | 0,04 |
| Years of education | Intensity of pain | 0,559 | 0,01 |
| Years of education | Duration of pain | 0,515 | 0,02 |
| Duration of pain | Intensity of pain | 0,499 | 0,025 |

The correlations indicate that younger and more educated patients and those with longer duration of pain tended to report that their low back pain problem was more severe. In addition, the longer the pain, the more severe it was characterized. Spearman's rho (ρ) revealed additional associations between depression and some of the variables examined in the study which are listed bellow and suggest that the subjects with higher formal education and longer duration of pain had higher levels of depression (Kupfer, et. al., 1991). In addition, more depressed low back pain patients were found to be more anxious as in Table 6.

**Table 6: Relationships between sociodemographic and pain-related characteristics, depression and anxiety**

| VARIABLE | VARIABLE | p* | p |
|---|---|---|---|
| Years of education | Depression | 0,446 | 0,049 |
| Duration of pain | Depression | 0,609 | 0,004 |
| Anxiety | Depression | 0,827 | 0,000 |

## 4. Discussion

Similarly to theoretical and research accounts (Klapow, et. al., 1993) subjects chronic low back pain was found to be moderate to slightly severe suggesting thus that the specific pain might have a significant influence on these patients' quality of life which nurses and other health care professional should consider seriously. Although, in this research, no correlation was observed between patients' chronic low back pain and depression (Pilowsky et. al., 1997), the reported high intensity of pain can be explained in terms of the reported high levels of depression. Earlier study results (Hall, Stride, 1954) have shown that patients with depression usually exhibit low tolerance to pain.

From this study, it becomes apparent that patients suffering from chronic low back pain show a clear preference toward the traditional methods for treating their pain problem. This is evident in that a large number of subjects reported medications and surgery as dominate types of medical treatment which they received. Patients' preference to the treatment of chronic low back pain was probably influenced by the medically-oriented philosophy of our country's health care system.

It is evident from the statistical analysis that the younger patients found their pain as more severe than the subjects belonging to the older age groups. Differences in the philosophy of life which is possible to make older people develop greater tolerance to pain might explain this relationship. In addition, younger people are more physically active than older people and thus any somatic pain or physical impairment which restricts their activities seems to be intolerable. Finally, additional serious health problems are usually absent in young individuals who pay acute attention to a part of the body which might be the site of some minor organic dysfunction. Contrary, older people divert their attention to other more serious physical disorders which frequently face them and they have to cope with.

Subjects with higher formal education were found to perceive their low back pain duration longer and more severe in intensity than less educated patients. These results can be explained on the ground of the positive attitudes that highly educated individuals hold toward health issues and the better health education that they usually receive. As a consequence even a minor pain alarms them easily and is thought to be a serious health problem even though it is not assessed as such according to medical and nursing scientific criteria.

Furthermore people with higher education may be more compliant staying away from their jobs (both as a precaution and a cure measure) for a longer period of time and thus consider their pain to have a longer duration. Contrary, due to their lower financial status, less educated people ignore their low back pain and return to work as soon as possible having the false impression that their pain lasts less.

The variables of duration and intensity of pain as related to educational level also seem to involve a hypochondrial-somatization process resulting from the lack of interest in spiritual issues and in social and family activities observed recently in higher middle-class. This process is often supported and protected by our contemporary society. The correlation observed between intensity of pain and its duration might be related to cognitive process's which make patients to believe that the longer the pain the more fearful it is.

Overall, participants' responses showed that depression as a psychopathological disorder occurs in a significant number of patients with chronic low back pain. This is obvious in that 33 % of the sample of the study was found to have moderate to severe depression. This prevalence rate of depression inpatients with chronic low back pain is higher calculated by Love (26%: Love, 1987), but lower than other estimates (44%: Atkinson, et. al., 1988), (78%: Sullivan, D'Eon, 1990).

The positive correlation between years of education and depression indicating that highly educated people exhibit more depression symptoms is probably related to the statement of Maruta (Maruta, et. al., 1976) according to which psychological complaints and treatment is more acceptable to this socio-economic class. Individuals belonging to this class may also consider the losses associated with their chronic low back pain as higher in number and more serious in nature and thus feel more depressed. Thus, patients that suffer from lower back pain and show anxiety disorders exhibit depression more often (Von Knorring, et. al., 1983, Krishnan, et.al., 1985).

Symptoms of moderate and major anxiety were also noted in some of the patients (40%) who participated in the study. The use of HRSA allowed the discrimination among the subjects with these various levels of anxiety. Tension, anxious mood and insomnia were the anxiety symptoms which were reported more frequently by the sample.

Contrary to older research findings (Atkinson, et. al.,1988, Love, 1987, Merskey, Boyd, 1978) this study showed that chronic low back pain was neither associated with depression nor with anxiety. Therefore, chronic low back pain cannot be considered a causative factor for depression and anxiety disorders (Krishnan, et. al., 1985, Pilowsky, et. al., 1997). This lack of significant correlations between these variables can be attributed to the small sample size, or that patients' chronic lower back and their levels of anxiety and depression are not indeed related. This finding indicated that chronic low back pain may not be always seen either as a complication of depression and anxiety or as their primary etiologic factor. In this sense, the present study does not provide exact information about the existence and nature of the relationship between chronic low back pain, depression and anxiety which remain unclear.

In the present study, statistical analysis enabled us to affirm that there is a clear link between variable of depression and anxiety (Kupfer, et.al., 1991, Maruta, et.al. 1976). The Spearman's rho revealed that the symptoms of anxiety were more common among those patients with chronic low back pain who were also diagnosed as having depressive symptomatology. It is interesting that this similarity was observed even though these studies have employed different research methods and procedures as compared to those used in this study. The observed relationship between the two variables raises questions regarding the role of anxiety in altering chronic low back pain patients' levels of depression as well as in modifying their perceptions of pain experience.

## 5. Conclusions

The results of the present study, especially when considered in conjunction with the theoretical and research reports presented in the literature, suggest that consideration of chronic low back pain as an etiologic factor of depression and anxiety might be an oversimplification of the issue. In some cases, chronic low back pain might be a factor which masks these emotional and psychological disorders. That is to say, considerable levels of depression and anxiety could be concomitant features of chronic low back pain.

Such alternative explanations of the relationships among these variables provide reasonable ground to support that, in some patients with chronic low back pain, anxiety symptoms may be related to trait anxiety and/or that depressive symptoms may be associated with a genetic vulnerability to depression. Therefore, careful assessment and consideration of all key factors are a crucial role for nurses when providing caring services to patients with chronic low back pain.

Furthermore additional studies are required to examine alterations of chronic low back pain as related to alterations in patients' levels of depression and anxiety, the meanings attached to pain experience as determined by the cultural beliefs and values of the patient and the psychopathological disturbances other than depression and anxiety which might play a key role in the onset, duration, intensity and effects of chronic low back pain.

There is no doubt that further research on the subject will increase nurses' understanding of the theoretical relationships among chronic low back pain, depression and anxiety. In order to better understand this issue further intervention trials are required to identify how to best treat psychological, social and physical problems together in chronic low back pain patients. Moreover, assessments of combined treatments, such as psychological treatments, in addition to standard treatments for physical problems, are required. Finally, more studies are necessary so as to determine whether outcomes, such as physical health-related quality of life and health-care utilization improve when treatments for social stresses, depression and maladaptive beliefs about back pain, are offered in addition to usual rehabilitation techniques (Sullivan, et. al., 2006, Keeley, et.al., 2008). Such an understanding will be extremely useful to nurses when they assess individuals in pain and when they plan their professional intervention.

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