

## ORIGINAL ARTICLE

# Impact of Chronic Non-Specific Low Back Pain on Psychosocial Effects of Different Age Groups

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## ABSTRACT

**Introduction:** Non-specific low back pain is common cause of disability, with up to 90% of population experiencing pain at some stage in their lives. Psychosocial factors measure the psychological phenomena to the social environment and to pathophysiological changes within body. Psychosocial factors influence pain, disability, and response to treatment, Depression Anxiety Stress Scale (DASS-21) assessed the psychological and emotional states of the subject before and after the onset of pain.

**Methodology:** 201 participants were selected for the study. Subjects were classified in 3 groups, group A – (young)- 16-35 years, group B (adults) - 36-55 years & group C (geriatrics) - 56-75 years. DASS-21 was assessed for levels of stress, anxiety & depression and PSEQ was evaluated for level of confidence to perform ADLs while in pain in different age groups.

**Result:** Highest level of self-efficacy was seen in the participants of group B followed. The participants of group C showed low self-efficacy. VAS score was found to be lowest in the participants of group B. The participants of group B also exhibited lowest scores in all three domains of DASS-21 compared to group A and group B.

**Conclusion:** The study concluded that measures across the groups A, B & C revealed presence of statistically significant difference in the scores of PSEQ, DASS-21 & VAS, among all three groups, group C showed lowest self-efficacy & lowest scores in all three domains of DASS-21 compared to group A and group B.

## KEYWORDS

• Chronic Non-specific Low Back Pain • Psychosocial factors.

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## INTRODUCTION

Low back pain affects people of all ages and is a great contributor to disease burden worldwide. Non-specific low back pain (NSLBP) is common, in about 90% of adults experiencing low back pain at some stage in their lives & fails to have a known pathoanatomical cause.<sup>1</sup> It is a major health problem around the world which accounts for considerable socioeconomic and health care burden.<sup>2</sup> The life time incidence of LBP has been reported between 60-80 % of these incidents in about 80-90% cases pain subsides within first 2-3 months rest of the patients (around 10-20%) develop chronic pain syndromes.<sup>4</sup>

Psychosocial factors are defined as a measurement that potentially relates psychological phenomena to the social environment and to pathophysiological changes & it has been hypothesized that exposure to suboptimal psychosocial factors may lead to altered spinal loading due to increased muscle tension in pain.<sup>8</sup> Psychological factors in influencing pain, disability & response to treatment has been firmly established. Presence of fear, depression, catastrophizing and anxiety predicts recovery in pain.<sup>6,7</sup> It is well demonstrated that depression, anxiety, distress, and related emotions have an important impact on back pain disability, especially in the development of persisting LBP.<sup>8</sup>

A non-specific LBP (NSLBP) can be diagnosed when it is not possible to identify a specific cause to the spinal pain. Once clinician have identified a patient with NSLBP, they should consider the social and psychological aspects of patient's experience of pain. Depression Anxiety Stress Scale (DASS-21) assesses the psychological and emotional states of the subject before and after the onset of pain.<sup>9,10</sup>

## METHODOLOGY

### Sample

Cross-sectional study using convenient sampling.

201 Male & Female subjects of ages from 16-75 years (divided in 3 groups) on the basis of inclusion criteria from various clinics and hospitals of Dehradun were selected.

### Inclusion Criteria:

1. Localized LBP starting from T12 to gluteal fold, more than 6 week's
2. Baseline measures included at least 4 or more on VAS scores.

### Exclusion Criteria:

1. Diagnosed cases of LBP related to common degenerative inflammatory disease, cancer, spinal disorders.
2. Osteoporosis
3. Pregnancy
4. History of vertebral fracture
5. Severe psychiatric disorder with hospitalization

## PROCEDURE

Subjects were classified into 3 groups

- Group A (16-35 years) - young age group
- Group B (36-55 years) - adult age group
- Group C (56-75 years) - old age group

All the subjects with non specific Low Back Pain were evaluated for VAS to analyze the level of pain, DASS-21 questionnaire i.e depression, anxiety, stress scale to analyze the psychological condition of patient, PSEQ (pain self efficacy questionnaire) to analyze the level of confidence in each group.

## RESULT

The data collected in the study were processed in IBM SPSS Statistics 23. The data was analyzed for descriptive and then the data was tested for normality utilizing both Kolmogorov-Smirnov test and Shapiro-Wilk test. The analysis of variance of PSEQ scores and DASS-21 scores across the different age groups of the participants was performed utilizing Kruskal-Wallis test. The statistical significance was set at 0.05 at 95% confidence level and P value <0.05 was considered significant.

A total of 201 participants were enrolled for the study with each group comprising of 67 participants. The mean age of participants was 21.19±5.22 years, 41.64±5.28 years and 62.28 ± 6.4 years respectively. The descriptive analysis is tabulated in table 1.

**Table 1:** Descriptive Analysis

|                         | Group A<br>(16-35years) | Group B<br>(36-55years) | Group C<br>(56-75years) |
|-------------------------|-------------------------|-------------------------|-------------------------|
| Age                     | 21.19±5.22              | 41.64±5.28              | 62.28±6.4               |
| PSEQ Score              | 42.94±7.56              | 43.66±5.9               | 36.55±4.99              |
| VAS score               | 6.17±1.29               | 5.71±1.24               | 7.44±1.03               |
| DASS-21<br>(Depression) | 15.43±6.10              | 13.23±5.26              | 20.4±4.82               |
| DASS-21<br>(Anxiety)    | 14.56±4.98              | 13.86±4.93              | 22.79±4.73              |
| DASS-21<br>(Stress)     | 17.46±6.01              | 16.86±5.99              | 25.37±5.24              |

The result of the descriptive analysis revealed the highest level of self-efficacy in the participants of group B (36-55 years) followed by group A (16-35 years). The participants of group C showed low self-efficacy. VAS score was found to be lowest in the participants of group B (5.71 ± 1.24). The participants of group B also exhibited lowest scores in all three domains (depression, anxiety and stress) of DASS-21 compared to group A and group C.

The test of normality utilizing both Kolmogorov-Smirnov test and Shapiro-Wilk test showed absence of normality for PSEQ scores, VAS scores, DASS-21 (depression), DASS-21 (anxiety) and DASS-21 (stress). Hence, Kruskal-Wallis test was utilized to compare the variables across the groups. The results of test of normality are tabulated in table 2.

**Table 2:** Test for normality

| Variables            | Significance            |                   |
|----------------------|-------------------------|-------------------|
|                      | Kolmogorov-Smirnov test | Shapiro-Wilk test |
| PSEQ Score           | 0.06                    | 0.003*            |
| VAS Score            | <0.01*                  | <0.01*            |
| DASS-21 (Depression) | <0.01*                  | 0.002*            |
| DASS-21 (Anxiety)    | <0.01*                  | 0.007*            |
| DASS-21 (Stress)     | 0.002*                  | 0.109             |

The analysis of variance of the outcome measures across the groups revealed presence of statistically significant difference in the scores of PSEQ (p<0.01), VAS (p<0.01), DASS-21 (Depression) (p<0.01), DASS-21 (Anxiety) (p<0.01) and DASS-21 (stress) (p<0.01) across the groups. The results of Kruskal-Wallis test is represented in table 3.

**Table 3:** Kruskal-Wallistest

| Variables            | χ <sup>2</sup> | Significance |
|----------------------|----------------|--------------|
| PSEQ Score           | 52.46          | <0.01*       |
| VAS Score            | 61.37          | <0.01*       |
| DASS-21 (Depression) | 58.94          | <0.01*       |
| DASS-21 (Anxiety)    | 83.243         | <0.01*       |
| DASS-21 (Stress)     | 69.85          | <0.01*       |

## DISCUSSION

This study described the effect of chronic nonspecific low back pain on psychosocial factors like stress, anxiety, depression on different age groups and effects on self-efficacy on chronic pain. Pain perception and psychological distress may be caused by beta-endorphin levels, which have been shown to be lower in physically active individuals whereas higher resting beta-endorphin levels have been observed to be associated with depression, and physical activity may decrease resting plasma beta-endorphin and improve mood.<sup>3</sup>

Our study showed highest level of self-efficacy in group B, higher scores demonstrates stronger self-efficacy scores followed by group A and group C, VAS score was lowest in group B which coincided with the study where the participants with mean age of 49.83 years showed poor pain self-efficacy.<sup>9</sup>

Previous research on chronic low back pain has primarily focused on ways to modulate the amount of pain that patients endure. It has been shown that medication, both by itself and in combination, is beneficial in reducing pain, improving the quality of sleep, and reducing anxiety. Researchs have focused on the risk of psychological problems linked with poor performance of ADL activity and ambulatory ability making it a crucial skill for mobility and daily life.

Association between depression and chronic pain has been previously established & Anxiety and stress have also been closely linked to depression which had shown impact on the mental health<sup>2</sup> our study showed lowest scores of depression, anxiety & stress in group B compared to group A & group C.

DASS evaluated the level of depression, anxiety and stress.group C showed highest level of stress, anxiety and depression which

was supported by Birgit Abberger *et al.* where younger patients had the lowest level of stress due to higher multimorbidity or the longer pain history in older patients, which is associated with greater restrictions and could be the reason to reduce the experience of joy and satisfaction.<sup>10</sup>

The DASS-Anxiety subscale has the worst psychometric values in General this adds up to our study where anxiety levels were higher in all groups. Sathya P *et al.* saw that mechanical low back pain had higher rates of Depression in younger age group (48.64%), stress was more in the older age group of 36-45 (23.07%) which supports our study where stress levels were highest in group C.<sup>11</sup>

Bandura *et al.* defined the concept of self-efficacy as a self-regulatory mechanism by which it is possible to change as a result of being motivated by others or through goal-setting and education. Thus, enhancing self-efficacy seems to be an important intervention strategy when aiming to improve HRQOL in adolescents with persistent pain. PSEQ highest levels of self efficacy was seen higher in group B as compared to group A and group C.<sup>12</sup> This may be because of higher rates of physical activity seen in adults and better coping abilities also mentioned in a RCT that participation in sport or recreational physical activities would reduce levels of low back pain, disability, and psychological distress.<sup>3</sup>

## CONCLUSION

It has been concluded that non-specific low back ache had negative impacts on different age groups. The clinical significance of these findings is to incorporate a comprehensive physiotherapy program to improve the effectiveness of treatment and reduce the risk of psychosocial distress in chronic non-specific low back pain.

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