

KINESIOPHOBIA: FREQUENCY, ASSOCIATED FACTORS AND IMPACT ON THE LIFE QUALITY OF PARTICIPANTS WITH CHRONIC LOW BACK PAIN IN SUB-SAHARAN AFRICA

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Yirozounlomian Tiaho¹, Wendlassida Joelle Stéphanie Zabsonre Tiendrebeogo², Charles Sougue³, Fulgence Kabore², Jean Emmanuel Savadogo², Salifou Gandema⁴, Dieu-Donné Ouedraogo²

¹DEPARTMENT OF PHYSICAL MEDICINE AND REHABILITATION, UNIVERSITY HOSPITAL OF BOGODOGO, OUAGADOUGOU, BURKINA FASO

²DEPARTMENT OF RHEUMATOLOGY, UNIVERSITY HOSPITAL OF BOGODOGO, OUAGADOUGOU, BURKINA FASO

³DEPARTMENT OF INTERNAL MEDICINE, UNIVERSITY HOSPITAL SOURÔ SANOU OF BOBO-DIOULASSO, BURKINA FASO

⁴DEPARTMENT OF PHYSICAL MEDICINE AND REHABILITATION, UNIVERSITY HOSPITAL SOURÔ SANOU OF BOBO-DIOULASSO, BURKINA FASO

ABSTRACT

The aim: To study the frequency of kinesiophobia, the associated factors and its impact on the life quality in black Africa of participants with chronic low back pain

Materials and methods: It was a cross-sectional, descriptive and analytical study, conducted over the period extending from March 2019 through September 2019. The study population included all black African participants with chronic low back pain who were seeking care at the rheumatology and physical medicine departments, during the study period. Pain intensity, duration of symptoms, medical history, endurance of trunk muscles, kinesiophobia index, and quality of life were assessed. We used the Visual Analog Scale (VAS) to measure pain intensity, the Shirado-Ito and Sorensen tests to assess trunk muscles endurance. The kinesiophobia index, as well as its impact on life quality were measured using the "Tampa Scale for Kinesiophobia" (TSK), and the Dallas Auto-Questionnaire (D.R.A.D) scale for spine Pain respectively.

Results: One hundred and twenty patients were involved. Eighty-five patients (70.83%) had kinesiophobia. The factors associated with kinesiophobia included pain intensity ($p = 0.0006$); duration of symptoms ($p = 0.027$); hypertension ($p = 0.03$). Loss of endurance in trunk muscles, weight and gender were not found to be factors associated with kinesiophobia. Based on the DALLAS self-questionnaire, the quality of life was altered.

Conclusions: Kinesiophobia was a recurrent disease. It was associated with the presence of hypertension, the intensity of pain, the duration of the low back pain with an impairment in quality of life.

KEY WORDS: chronic low back pain, kinesiophobia, quality of life, rehabilitation

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INTRODUCTION

Chronic low back pain is defined as a pain located between the thoracolumbar hinge and the lower gluteal fold, persisting for more than three months. It may be associated with a radiculalgia of one or both lower limbs. Low back pain is recurrent across the globe (84% over a lifetime) and its evolution towards chronicity (duration for more than 3 months) can be observed in 6 to 8% of cases [1]. The chronic low back pain clinical course is often characterized by a reduction and avoidance of some activities, for fear of pain or worsening of initial lesion. This fear is referred to as "kinesiophobia", which is an important factor in low back pain chronicity and the resulting functional disabilities [2-4]. Kinesiophobia results in loss of flexibility, decrease in muscle performance, muscle wasting and all this leads to a reduction in social and physical activities which, in turn, maintain and aggravate disabilities. This is known as the deconditioning syndrome [5]. This syndrome causes socio-professional disorders which lead to professional disinsertion as well as desocialization, which are at the

origin of the genesis and maintenance of psycho-behavioral disorders, such as anxiety, depressed mood or self-deprecation [6, 7]. The current response to chronic low back pain is based on a "bio psycho-social" model, as well as the recommendation to keep physical activity [1]. Assessing kinesiophobia in chronic low back pain patients could help improve care for them. Very few studies, particularly in Africa, have been devoted to this purpose.

THE AIM

Our study aimed at determining its frequency, the factors associated with kinesiophobia, as well as its impact on the life quality of chronic low back pain patients.

MATERIALS AND METHODS

It was a descriptive and analytical cross-sectional study, covering the March 2019 to September 2019 period. The study population consisted of all black African patients

Table I. Factors associated with kinesiophobia and quality of life in chronic low back patients.

	*Kinesiophobia positive (85 patients)	**Kinesiophobia non positive (35 patients)	Probability
Pain (VAS out of 100)	47.71 ±20.75	28.14 ±18.54	0.0017
Duration of symptoms (years)	3.43 ±1.37	2.24 ±0.83	0.027
Age (years)	54.55 ±15.25	51.8 ±11.07	0.33
BMI (kg/m ²)***	25.23 ±5.05	25.81 ±5.22	0.57
High blood pressure	38.82	17.14	0.03
Spinal syndrome	97.65	82.86	0.007
Shirado-Ito test (s)	43.27 ±27.85	74.6 ±28.47	0.057
Sorensen test (s)	67.63 ±22.73	92.2 ±32.01	0.09
Quality of life			
Daily life activities (Average value)	37.28 ±13.62	21.22 ±8.39	<0.001
Professional activities and leisure (Average value)	37.01 ±14.51	18.42 ±9.98	<0.001
Mood (Average value)	15.88 ±13.63	05.85 ±7.52	<0.001
Social life (Average value)	20.35 ±9.28	09.42±7.93	<0.001

*Kinesiophobia positive: kinesiophobia positive patients .

**Kinesiophobia non-positive: kinesiophobia non-positive patients.

***BMI: Body Mass Index.

suffering from chronic low back pain and being seen in Physical Medicine and Rehabilitation (MPR) or Rheumatology consultation. We included all the patients over 18, who had been diagnosed with low back pain going on for more than three months. Pregnant women with chronic low back pain and patients who did not provide informed consent were excluded from the study. The patients were examined by the same physical medicine and rehabilitation physician. All the patients had a standard x-ray of the lumbar spine from a front and side view. Scanning and Magnetic Resonance Imaging were not systematically done. Complete blood count, sedimentation rate and C-Reactive Protein were normal in all patients. Socio-demographic variables such as age and gender were studied.

Clinical history data (hypertension, diabetes mellitus, knee osteoarthritis, gout, spine trauma, spine surgery), body mass index, duration of symptom progression, and endurance of trunk muscles were analyzed. Pain intensity was measured using the Visual Analog Scale (VAS) [8]. Trunk muscles endurance was assessed using the Shirado-Ito test [9, 10] and Sorensen test [11, 12].

The Shirado-Ito test assesses the trunk flexor muscles (abdominals) endurance. The patient is set in supine position. The hips and knees are bent at 90°, the calves rest on a stool, the arms are crossed on the chest and the hands rest on the shoulders. The patient must rise the shoulders off the ground, the nape (of the neck) in flexion position. They must stay in this position as long as possible. The average duration is 155 ± 79 seconds. Low back pain patients stay on average for 41 ± 23 seconds [9]. The validity of the Shirado-Ito test remains debated because of the influence

of personal factors, such as motivation, which complicates the interpretation of the results. However, the Shirado Ito test for measuring trunk flexor and extensor endurance has high reliability, reproducibility, and safety, and is easy to perform with no need for any special equipment [10].

The Sorensen test measures the trunk extensor muscles endurance. The patient is prone and positions their Anterior Superior Iliac Spines (ASIS) on the edge of the table. They must keep their chest in a horizontal position as long as possible, their pelvis, knees and ankles being fastened. Horizontality is checked using a measuring stick. The test is carried out twice, with an interval of 15 minutes, and the best of both times is kept. On average, men hold for 116 seconds, women for 142 seconds, and patients with chronic low back pain for 95 seconds. Less than 58 = 03 times greater risk of developing low back pain in the course of the year [11]. The Sorensen test has a satisfactory reproducibility, which is reflected by an ICC higher than 0.75 for both healthy subjects and those with low back pain [12].

The Tampa Scale for Kinesiophobia (TSK) for assessing kinesiophobia index was designed and validated to estimate the level of kinesiophobia in an individual at the time of the evaluation, in order to adjust intervention accordingly, and subsequently, to assess whether the said intervention would have had effect on this problem which is recurrent in people with persistent pain. It includes 17 items and the higher the score, the higher the level of kinesiophobia. A score of 40/68 is considered as significant kinesiophobia [4]. The KSTP has good internal consistency. It is a reliable measure of fear of pain in people with chronic low back pain [13]. The impact of kinesiophobia on the quality of

life was measured using the Spine Pain Dallas Auto-Questionnaire (D.R.A.D) scale [14].

Spine Pain: Dallas Auto-Questionnaire (D.R.A.D) scale: The Dallas Pain Questionnaire (DPQ) was developed to assess the amount of chronic spinal pain that affects four aspects (Daily and work-leisure activities, anxiety-depression, and social interest) of patients' lives. The results of DPQ's statistical properties suggest that the DPQ is an externally reliable instrument, which also has an internal consistency. Two factors emerged from the factor structure analysis. Factor 1 represents the functional activities and Factor 2 the emotional capacities. A correlation analysis suggests the concurrent validity of the psychological functional factors of DPQ. A t-test demonstrated that chronic pain patients have significantly higher DPQ scores than normal. In our work, we used the version validated by the French Society of Rheumatology in 1996 [14].

Mild pain was characterized by a Visual Analog Scale (VAS) score lower or equal to 30 mm, moderate pain by a VAS score ranging from 31 to 69 mm and severe pain by a VAS score higher than 70 mm [8]. The visual analogue scale allows for assessment of the intensity of pain on a scale of 0 to 100 mm; 0 is freedom from pain and 100 is the maximum pain unimagined by the patient.

Alteration in life quality was characterized by a DALLAS score higher than 30 for each of the four items of the questionnaire.

The data were gathered using a collection form, which was filled in by the three rheumatologists and a PMR doctor during the consultations. The data was entered and analyzed by using the French version of Epi Info 7.2.1 software. The statistical comparison tests were obtained using the Analysis of Variance (ANOVA) test, with a significance threshold of $p = 0.05$. We looked for a statistical link between certain factors (intensity of pain, existence of co-morbidity) and kinesiophobia. We also made comparisons between kinesiophobia positive subjects and non-positive ones with regard to aspects of quality of life.

RESULTS

The frequency of kinesiophobia was 70.83 % in patients with chronic low back pain. The study covered one hundred and twenty patients, including 43 men (35.83%) and 77 women (64.17%), with a sex ratio of 0.55. The average age of patients was 53.75 ± 14.17 with extremes of 20 and 80 years. The average duration of low back pain progression was 3.08 ± 2.71 years with extremes of 0.25 and 10.5 years. The average pain intensity was $41.34\% \pm 22.31$ with extremes ranging from 0 to 99 out of 100. The average body mass index (BMI) was $25.4 \pm 5.09 \text{ kg/m}^2$ in all patients with extremes of 16.65 and 36.80 kg/m^2 . The mean kinesiophobia score for the entire study population was 42.02 ± 4.94 with extremes of 25 and 53. According to the TSK score, 85 (70.83%) patients had kinesiophobia. Spinal syndrome was found in 112 patients (93.33%) of the total population, including 83 (97.65%) having kinesiophobia. Table I shows the factors associated with kinesiophobia and quality of life in patients with chronic low back pain

DISCUSSION

The frequency of kinesiophobia was 70.83 % in patients with chronic low back pain. This high proportion of kinesiophobic patients is found in the literature [15-17]. In fact, in the series of Perrot et al. including 700 patients, 504 (72%) had a TSK score greater than 40, that shows the presence of kinesiophobia [16].

In this study, kinesiophobia was not associated with age or gender. Serge Perrot et al. found that patients with kinesiophobia were significantly older, with less physical activity, more pain and less acceptability of musculoskeletal pains [16]. This difference could be explained by the youthful nature (53.75 years) of our study population.

Loss of trunk muscles' endurance in people suffering from low back pain does not seem to be a factor of kinesiophobia in this study. This could be explained by the fact that these tests may not be accurate tools for measuring muscle endurance, as they are influenced by personal factors, such as motivation or even increasing pain during the performance of the test. A larger sample for assessing core muscle endurance is required before drawing a conclusion.

In this study, hypertension was associated with kinesiophobia ($p = 0.03$). In patients with cardiovascular diseases, kinesiophobia has multicausal nature and is higher in *New York Heart Association* (NYHA) IV patients; the independent predictors of kinesiophobia are right ventricular dysfunction and anemia [17,18]. The duration of chronic low back pain progression and the intensity of the pain were significantly associated with kinesiophobia. The reasons could be found in the behavioral and cognitive changes relating to the perception of chronic pain itself. Indeed, the psychological variable acts as a pain moderator and mediator, and as a motor activity inhibitor [7,20,21]. Moreover, kinesiophobia would be an aggravating factor of the pain felt during physical activity, whether general or rehabilitative, even in the absence of psychological distress [22]. It seems beneficial to change this perception of chronic pain through care programs including patient's therapeutic education on pain neurophysiology [23]. This could have a beneficial impact on the "fear of movement", and thus facilitate exercise reconditioning in low back pain patients.

Kinesiophobia was associated with an alteration in quality of life according to the DALLAS scale. This deterioration in quality of life mainly affected daily life, professional activities as well as leisure. Indeed, mood and desocialization are affected but later in the evolution of chronic low back pain; direct consequences of chronic pain influence on professional and everyday activity. In order to improve care for chronic low back pain patients and provide them with better quality of life, kinesiophobia should be monitored during their follow-up. The detection should be immediately followed by therapeutic education, focused on the patient and their chronic pain [22]. Moreover, the pain itself should be effectively treated as a whole and more particularly during rehabilitative care [24].

As far as the life quality of a kinesiophobic low back pain patient is concerned, a significant impact on the DALLAS scale was noted. In these kinesiophobic patients, the deterioration in the quality of life affected daily life much more, professional as well as leisure activities. It is also important to better control

the other diseases associated with sedentary lifestyle [25].

In a practical way, we must, from the first episode of low back pain in a patient, provide this education in pain neurophysiology, identify and control the risk factors associated with kinesiophobia in chronic low back pain sufferers. After that, it is essential to identify, with the patient, the type of physical activity that would be suitable for them and thus, establish an individualized therapeutic contract.

Our work in studying the frequency, associated factors and impact on quality of life of kinesiophobia in black African population with chronic low back pain has limitations; the selection of the number of patients to take part was randomized so that the findings of the study could not be generalized to the entire population. Also, the lack of statistical analysis of the reliability of the research results could be disadvantages.

CONCLUSIONS

Kinesiophobia was common in chronic low back pain patients and associated with the intensity of pain and the duration of symptoms. There is a negative impact on the quality of life of patients. The establishment of therapeutic education programs on chronic pain could be an advantage as it may help our patients with chronic low back pain practice adapted physical activity despite the fear of movement.

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ORCID and contributionship

Yirozounloman Tiaho: 0000-0002-7329-7824 ^{A-B,D}

Wendlassida Joelle Stéphanie Zabsonre Tiendrebeogo: 0000-0001-8098-2697 ^{A-F}

Charles Sougue: 0000-0002-8153-6215 ^{A-B,E}

Fulgence Kabore: 0000-0001-6541-5352 ^{A-B,F}

Jean Emmanuel Savadogo: 0000-0002-8580-7676 ^{A-C,F}

Salifou Gandema: 0000-0002-1796-7205 ^{A,E-F}

Dieu-Donné Ouedraogo: 0000-0003-2625-2516 ^{A,C-F}

Conflict of interest

The Authors declare no conflict of interest.

CORRESPONDING AUTHOR

Wendlassida Joelle Stéphanie Zabsonre Tiendrebeogo

Department of Rheumatology, University Hospital of Bogodogo,
Ouagadougou, Burkina Faso

e-mail: t_joelle@hotmail.com

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