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Assessment Of Kinesiophobia In Lumbar Spinal Surgery Patients

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Abstract:
Background: *Lumbar spine surgery encompasses various surgical interventions aimed at addressing disorders and abnormalities in the lower back. It is performed to treat conditions affecting the lumbar region of the spine, aiming to repair and improve the health of the affected area. This study aimed to assess kinesiophobia in patients who underwent lumbar spinal surgeries, specifically discectomy or laminectomy.*
Methods: *A total of 80 participants who had undergone either discectomy or laminectomy surgeries were included in this study. Each participant completed the Tampa Scale for Kinesiophobia (TSK) questionnaire, consisting of 17 questions related to their fear of movement. The data obtained from the completed TSK questionnaires were collected and analyzed.*
Results: *Out of the total patients, 68.75% patients were male, 31.75% were female.The kinesiophobia was present in a higher proportion of patients who underwent discectomy (85%) compared to laminectomy (76.25%), but the association between kinesiophobia and the type of lumbar surgery was not statistically significant (odds ratio = 2.01, p=0.22).*
Conclusion: *The assessment of kinesiophobia in lumbar spinal surgery patients using the TSK questionnaire provides valuable information for understanding the psychological aspect of post-surgery rehabilitation. The findings may contribute to developing targeted interventions and support strategies to address kinesiophobia and optimize the patients' recovery process. Further research with larger sample sizes and longitudinal follow-up would enhance the understanding of kinesiophobia in the context of lumbar spinal surgeries.*
Keywords: *Kinesiophobia, Spinal surgery, surgical treatment, Tampa scale,Post-operavtive surgery*

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I. Introduction:

The surgical treatment of lumbar spinal disorders carries a significant risk of intraoperative and perioperative complications. However, advancements in perioperative care and the emergence of innovative techniques in anesthesia and surgical sciences have resulted in a considerable decrease in complications associated with lumbar spine surgery (1).

The volume of lumbar spinal surgeries has been on the rise due to its cost-effectiveness. These procedures have been proven to be beneficial in terms of cost-effectiveness, as they reduce morbidity, shorten the duration of hospitalization, and expedite the return to daily activities. Different types of lumbar surgeries are performed globally, including Discectomy, Laminectomy, Disc Replacement, and Spinal Fusion, all of which are conducted at the lumbar spinal level. Various outcomes had been measured in patient's undergone lumbar spinal surgeries showing positive outcomes (1-4). Kinesiophobia is a one factor that can alter the outcomes of postoperative lumbar surgeries (5).

Kinesiophobia, also known as fear of movement, is characterized by an overwhelming and irrational dread of engaging in physical activities due to the belief that it could lead to pain or re-injury, resulting in a significant impairment in daily functioning (6). There is a high prevalence of kinesiophobia, with 79% of patients experiencing musculoskeletal pain and referred for physiotherapy showing symptoms of kinesiophobia in France (7).

Patients who exhibit kinesiophobia tend to require longer duration of physiotherapy care and express lower levels of satisfaction with the treatment they receive. Additionally, these patients experience increased disability and report higher levels of pain intensity compared to those without kinesiophobia. The evaluation of pain behavior components is essential within a biopsychosocial approach, but there is no consensus on the optimal method for assessing kinesiophobia (8). Various questionnaires have been developed to assess patients with kinesiophobia, such as the Tampa Scale for Kinesiophobia (TSK), the Fear Avoidance Beliefs Questionnaire (FABQ), the Pain Anxiety Symptoms Scale (PASS), and the Photograph series of daily activities (PHODA) (9-7).

Assessing kinesiophobia has become increasingly significant in recent years due to its impact on rehabilitation (10). Studies have indicated that kinesiophobia is associated with adverse outcomes, including

pain, disability, reduced range of motion, and muscle strength, in various types of surgeries. Consequently, identifying the presence of kinesiophobia in patients who have undergone lumbar spinal surgery is crucial, as it can be a contributing factor that influences the patient's rehabilitation process (11). The evaluation of kinesiophobia will aid in addressing the psychological aspects of patients, resulting in improved outcome measures and enhanced performance in daily activities.

As there were not many studies conducted to investigate kinesiophobia in patients who had undergone lumbar surgeries, this study aimed to assess kinesiophobia using the 17-item Tampa Scale in such patients.

II. Materials And Methodology:

This study was an observational study conducted over one year, with a study population selected from various hospitals, OPDs, and medical camps.

Inclusion criteria:

- Male and female participants
- Age between 35 to 65 years
- Individuals who had undergone any lumbar spinal surgeries (laminectomy and discectomy) within one year of the study period

Exclusion criteria:

- Permanent disability
- Presence of comorbidities, such as mental disorders
- Patients waiting for surgery
- Serious spinal complications

Methodology:

A total of 80 participants were included in this study. These participants were individuals who had undergone either Discectomy or Laminectomy surgeries. All 80 participants were given the Tampa Scale for Kinesiophobia (TSK) questionnaire to answer the 17 questions related to their fear of movement. After the completion of the TSK questionnaire, the data was collected and compiled for analysis.

Statistical analysis:

The collected data was organized in a Microsoft Excel Worksheet, and statistical analysis was performed using SPSS version 20.0. Fisher's exact test was used to analyze the data. Additionally, the odds ratio was calculated using Graphpad Instat software to assess the association between kinesiophobia and the type of lumbar surgeries (discectomy and laminectomy).

III. Results:

Table-1: Demographic distribution of patients.

Demographic	No. of patients	Percentage
Gender		
Male	55	68.75%
Female	25	31.75%
Types of Lumber surgeries		
Discectomy	39	48.75%
Laminectomy	41	51.25%
Kinesiophobia		
Present	71	88.75%
Absent	9	11.25%

Table 1 provides the comprehensive overview of the patient demographics and medical conditions in a specific population. Regarding the gender distribution, out of the total patient population, 55 patients were male, accounting for approximately 68.75% of all patients. Meanwhile, 25 patients were female, representing around 31.75% of the patient population.

Moving on to the types of lumbar surgeries performed, there were 39 patients who underwent a discectomy, making up approximately 48.75% of all the lumbar surgeries conducted. On the other hand, 41 patients received a laminectomy, constituting approximately 51.25% of the total lumbar surgeries.

The prevalence of kinesiophobia among the patients was assessed. Out of the total patient population, 71 patients were reported to have kinesiophobia, which corresponded to about 88.75% of all patients. Conversely, there were 9 patients who did not exhibit kinesiophobia, accounting for approximately 11.25% of the patient population.

Table-2: Presence of Kinesiophobia in Discectomy and Laminectomy in patients.

Kinesiophobia	No. of patients	Percentage
Discectomy		
Present	68	85%
Absent	12	15%
Laminectomy		
Present	61	76.25%
Absent	19	23.75%

Table-2 displays the prevalence of kinesiophobia among patients who underwent two different types of lumbar surgeries: discectomy and laminectomy. In the discectomy group, 68 individuals were found to experience kinesiophobia, making up around 85% of all patients who had this specific surgery. On the other hand, 12 patients from the discectomy group did not show signs of kinesiophobia, accounting for approximately 15% of this group.

For patients who underwent a laminectomy, 61 individuals were reported to have kinesiophobia, constituting about 76.25% of all patients who had this particular surgical procedure. Conversely, 19 patients from the laminectomy group did not display kinesiophobia, making up around 23.75% of this category.

Table-3: Association between Kinesiophobia and Lumber surgeries

	Kinesiophobia		Total	Odds Ratio and p value
	Yes	No		
Discectomy	35 (44%)	6 (8%)	41 (51%)	2.011 (p=0.22)
Laminectomy	29 (36%)	10 (13%)	39 (49%)	
Total	64 (80%)	16 (20%)	80 (100%)	

In Table-3, we present the association between kinesiophobia and two distinct lumbar surgeries: discectomy and laminectomy. For the discectomy group, out of the 41 patients who underwent the procedure, 35 individuals were reported to experience kinesiophobia, accounting for approximately 44% of the discectomy patients. Conversely, 6 patients in the same group did not manifest kinesiophobia, representing about 8% of the discectomy patients.

In the case of the laminectomy group, out of the 39 patients who underwent the surgery, 29 patients were found to have kinesiophobia, making up around 36% of the laminectomy patients. Conversely, 10 patients in the laminectomy group did not exhibit kinesiophobia, representing approximately 13% of this group.

Additionally, we calculated the odds ratio (OR) for the association between kinesiophobia and discectomy. The odds ratio is a measure of the likelihood of experiencing kinesiophobia in patients who underwent discectomy compared to those who did not have the surgery. In this context, the odds ratio was found to be 2.011.

IV. Discussion:

Lumbar surgeries are considered as major surgery which could have psychological impact in patients. Kinesiophobia is considered to have a detrimental impact on the rehabilitation outcomes for individuals with low back pain. Patients with persistent low back pain often exhibit a high prevalence of kinesiophobia. Physical activity and exercise are essential components of the post-surgery rehabilitation program. However, kinesiophobia may hinder the recovery process. Based on the data analysis, it was observed that a significant number of post-spinal surgery patients, 61% experienced a high degree of kinesiophobia even after the healing period of 4-6 weeks, specifically during the 6-10 week period (12).

In the present study, the patient population was characterized by a gender distribution where 68.75% were male and 31.75% were female. Interestingly, a high degree of kinesiophobia was noted among the participants in this study. In another research focusing on chronic musculoskeletal pain, it was found that men displayed a higher mean Tampa Scale of Kinesiophobia score when compared to women (13). In contrast, the study conducted by Trocoli TO exhibit a different gender distribution, with a higher representation of female participants compared to male participants (14).

In the present study, the distribution of surgical procedures revealed that 48.75% of the patients underwent discectomy, while 51.25% underwent laminectomy. Similarly, in another study conducted by Huang YC, discectomy was also found to be the most common procedure, accounting for 48.2% of cases, followed by laminectomy, which constituted 32.2% of the surgeries. The prevalence of discectomy in both studies indicates its significant role in the treatment of lumbar spine conditions (15).

In the present study, a significant 88.75% of patients reported experiencing kinesiophobia. Another study reported a high degree of kinesiophobia at 58.33% among their participants. The prevalence of kinesiophobia in the present study is consistent with this finding, indicating that a considerable proportion of patients experience kinesiophobia across different studies (16).

The present study findings suggest that kinesiophobia is prevalent among post-lumbar surgical patients, particularly in those who underwent discectomy and laminectomy procedures. A substantial 88% of the participants in the present study reported experiencing kinesiophobia. To assess the association between the surgical procedures and the occurrence of kinesiophobia, the odds ratio was calculated. The analysis revealed a positive association, with an odds ratio of 2.011. This implies that for every two cases of laminectomy or discectomy, kinesiophobia can be expected to be present in one patient who underwent either of these surgeries.

V. Conclusion:

The assessment of kinesiophobia in patients undergoing lumbar surgeries reveals that kinesiophobia was relatively prevalent in both discectomy and laminectomy patients. Further research may be needed to explore the factors contributing to kinesiophobia in lumbar surgery patients and its potential impact on their outcomes and recovery.

VI. Limitations:

The study's limitations include a small and homogenous sample size. The focus on acute-phase rehabilitation patients limits its applicability to other stages of rehabilitation or different patient populations with chronic conditions. Additionally, the study only considered two types of lumbar surgeries, and a broader range of surgical procedures could provide a more comprehensive understanding of kinesiophobia in post-surgical patients. Furthermore, the lack of long-term follow-up prevents insights into the persistence of kinesiophobia over time. Lastly, potential external factors, such as psychological or social variables, were not accounted for, which may impact the prevalence of kinesiophobia among the participants.

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