

Relationship between Pain Severity and Kinesiophobia in Patients with Chronic Neck Pain

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ABSTRACT

Objective: to determine the relationship between pain severity and kinesiophobia in patients with chronic neck pain.

Study Design: Cross-sectional analytical study

Place and Duration of Study: Pakistan Society of Rehabilitation of Disabled, Arif Memorial Hospital, Rashid Latif Medical Institute and Jinnah Hospital, from Aug 2020 to Jan 2021.

Methodology: One hundred seventy subjects with neck pain for more than three months were included in the study. Tampa scale was used to measure kinesiophobia, and the Numeric Pain Rating scale was used to assess the pain severity.

Results: Out of 170 subjects, 83(48.8%) were males and 87(51.2%) were females with a mean age of 31.31 ±4.062 years. A significant association was found between kinesiophobia, pain severity and chronic neck pain with 0.01 p-value. The crammer phi value was 0.418, which showed a strong association.

Conclusion: High levels of kinesiophobia and pain belief should be considered in patients with chronic neck pain as these are both associated with each other.

Keywords: Kinesiophobia, Tampa scale, Neck pain, Pain belief, Physical movement.

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INTRODUCTION

Kinesiophobia is termed as a fear associated with movement and activities based on a fear that they are prone to have serious injuries while doing movements or exercise.^{1,2} Kinesiophobia (which is also known as fear of movement) is defined as an excessive, irritable, irrational and vitality fear to follow through physical strength and movement, due to a sense of being vulnerable to painful injury or re-injury.^{3,4} Chronic neck pain is one of the most common musculoskeletal complaints that causes motor changes in the cervical area and associated structure, which may result in variations in both psychological and physical behaviours of the subjects.⁵ The prevalence of musculoskeletal neck pain varies among young people, targeting between 4%-40% of children and adults. Cervical pain has drastically raised in the last decade in adolescents from 22.9% to 29.5%.^{6,7}

The outcome measurement tools used for the study were the Numeric pain rating scale (NPRS) for pain assessment and the Tampa Scale for Kinesiophobia (TSK) for kinesiophobia assessment. The role of kinesiophobia in chronic neck pain has been examined thoroughly.^{8,9} It is a fear of movement,

activity and any venture stemming from the belief that one is prone to painful injury or re-injuries.¹⁰ This study was carried out to find out the association between chronic neck pain and fear of movement, leading to workplace absenteeism. The main objective of the study was to determine the relationship between pain severity and kinesiophobia in patients with chronic neck pain.

METHODOLOGY

The cross-sectional analytical study was conducted from August 2020 to January 2021 at various setups i.e., Pakistan Society of Rehabilitation of Disabled, Arif Memorial Hospital and Jinnah Hospital, Lahore after the approval of the ethical review committee (Ref. No. 740-V). The sample size was computed using the World Health Organization (WHO) calculator.

Inclusion Criteria: Patients of either gender aged 25-50 years, with non-specific neck pain for more than three months were included in the study.

Exclusion Criteria: Patients having acute neck pain or with a history of falls, surgery or psychological disorder were excluded from the study.

The Tampa Scale for Kinesiophobia (TSK) for kinesiophobia assessment, a 17-item questionnaire¹¹ used to measure fear avoidance or fear of re-injury, was administered to all subjects. The total (TKS) score

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ranges between 17 and 68. A high value on the TSK indicates a high degree of kinesiophobia. In contrast, a score of 37 or more was considered high, while scores below are considered NPRS measures low scores and pain severity. Subjects were guided on filling out the Likert-scale questionnaire and instructed to choose the options consistent with them from the past six months. The Likert scale was a 4-item tool ranging from strongly disagree to agree. The reliability of the Tampa scale was concluded in which the coefficient for Cronbach α was found to be 0.843. Pain severity was measured by the Numeric pain rating scale NPR. In this, patients were asked to rate their pain on a scale from 0 to 10, in which 0 was no pain, 5 was moderate pain, and 10 was worst possible pain.

Statistical Package for Social Sciences (SPSS) version 21.0 was used for the data analysis. Quantitative variables were expressed as Mean \pm SD and qualitative variables were expressed as frequency and percentages. Chi-square test was applied to explore the inferential statistics. The *p*-value lower than or up to 0.05 was considered as significant.

RESULTS

A total of 170 subjects were included in the study, with a mean age of 31.31 \pm 4.062 years. The male patients were 83(48.8%) and female patients were 87(51.2%) (Table-I).

Table-I: Variables related to Chronic Neck Pain (n=170)

	n(%)
Pain severity	
No pain	1(0.6)
Mild pain	51(30)
Moderate pain	104(61.2)
Severe pain	14(8.2)
Tampa Score	
Low Kinesiophobia	26(15.3)
High kinesiophobia	144(84.7)

Out of 170 patients, 51(30.0%) had mild pain, of which 18(35.3%) were presented with a low level of kinesiophobia, and 33(64.7%) had a high level of kinesiophobia. Among 104 (61.2%) patients had moderate pain, 7(6.73%) were presented with a low level of kinesiophobia and the rest, 97(93.27%) were presented with a high level of kinesiophobia. 14(8.2%) patients had severe pain with only a high level of kinesiophobia. Only 1 out of 170 had no pain. The *p*-value calculated was 0.001, which showed the significant association (Table-II).

Table-II: Association of Neck pain with Kinesiophobia (Tempatotal) (n=170)

		Tempatotal		<i>p</i> -value
		Low Kinesiophobia(%)	High Kinesiophobia(%)	
Pain Score	No pain	1(0.59)	0(0)	0.001
	Mild pain	18(10.0)	33(19.4)	
	Moderate pain	7(4.1)	97(57.05)	
	Severe pain	0(0)	14(8.2)	
Total		26(15.29)	144(84.7)	

DISCUSSION

People with chronic neck pain are usually presumed to develop kinesiophobia. They are used to avoid such activities, which are assumed to provoke a potential or risk injury/re-injury, developing over or further physical inactivity. This fear may carry out certain movements that can cause a negative vicious cycle where people with chronic neck pain show greater pain levels.¹¹ The present study examined the influence of kinesiophobia on pain severity, explaining the association between kinesiophobia and the severity of pain.

Kinesiophobia is a notable issue that is a sort of outcome which negatively affects the quality of life and leads to profuse disabilities, which include pain-related fear in response to movement.¹² The ability to carry on the daily chores is difficult while having disease-related kinesiophobia. These patients feel reluctant while performing activities.¹³ Therefore, patients with probable fear should be appraised, and pain management should be designed so that kinesiophobia may be overcome. One of the studies designed in 2018 in which the main outcome measure was the Tampa scale of Kinesiophobia (TKS-11) to check its association with pain severity, level of disability and chronicity in patients of non-specific chronic neck pain.¹⁴ The secondary outcome to measure pain severity was a visual analogue scale (VAS). The findings showed that kinesiophobia is not affected by the level of disability. However, pain intensity and chronicity were associated with kinesiophobia in chronic neck pain.¹⁴ In the present study. We chose the Numeric pain rating scale as a secondary outcome to measure pain severity. The Tampa kinesiophobia (TKS-17) was used to measure kinesiophobia, in which 144 subjects out of 170 had high kinesiophobia. In contrast, 26 had low levels of kinesiophobia. In another study, which was a retrospective cross-sectional study, there was a comparison of baseline levels of

kinesiophobia using (TKS-11) and their association with health-related quality of life across sites of injury. The other outcome measure was the medical outcomes study 8-Item short-form health survey (SF-8) to measure the quality of life. A total of 853 patients were included in the study in which kinesiophobia appeared high and was found to be negatively correlated with health-related quality of life and showed no effects with disability in activities of daily living. This study showed a significant association of kinesiophobia with pain severity in chronic neck pain. This study has found the score of kinesiophobia using 17 item scale (TKS-17).¹⁵ Many studies have proved strong associations between fear of pain and patient's behaviour towards treatment.^{16,17}

Some studies have shown that pain intensity and kinesiophobia are not associated with their level of physical activity. However, the patients with chronic neck pain showed higher pain intensity and fear of movement. It was also speculated that a higher level of kinesiophobia causes low physical activity among women but not in men.^{5,18} Another study in 2019 showed that there was no association between pain severity, kinesiophobia, and gender, with a p-value of 0.39, which is not statistically significant.¹⁹ One study held in 2017 about pain severity and gender differences showed the results with the help of a t-test that pain severity is equal among males and females while females present with higher pain acceptance and higher activity level and on the other hand males are presented with lower pain acceptance & activity level.²⁰

LIMITATIONS OF STUDY

This study had some limitations, such as the study sample needing to be expanded. Data was only collected from government hospitals; it should also be collected from private setups.

CONCLUSION

High levels of kinesiophobia and pain belief should be considered in patients with chronic neck pain as these are both associated with each other. Pain severity and kinesiophobia have a significant association with chronic neck pain.

Conflict of Interest: None.

Authors Contribution

Following authors have made substantial contributions to the manuscript as under:

WN: & FZ: Data acquisition, data analysis, drafting the manuscript, critical review, approval of the final version to be published.

AA: & TS: Study design, drafting the manuscript, data interpretation, critical review, approval of the final version to be published.

AM: & AA: Concept, data acquisition, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

REFERENCES:

1. Treede R-D, Rief W, Barke A, Aziz Q, Bennett MI, Benoliel R, et al. Chronic pain as a symptom or a disease: the IASP Classification of Chronic Pain for the International Classification of Diseases (ICD-11). *Pain* 2019; 160(1): 19-27. <https://doi.org/10.1097/j.pain.0000000000001384>
2. Pitcher MH, Von Korff M, Bushnell MC, Porter L. Prevalence and profile of high-impact chronic pain in the United States. *J Pain* 2019; 20(2): 146-160. <https://doi.org/10.1016/j.jpain.2018.07.006>
3. Roelofs J, Sluiter JK, Frings-Dresen MH, Goossens M, Thibault P, Boersma K, et al. Fear of movement and (re) injury in chronic musculoskeletal pain: Evidence for an invariant two-factor model of the Tampa Scale for Kinesiophobia across pain diagnoses and Dutch, Swedish, and Canadian samples. *Pain* 2007; 131(1-2): 181-190. <https://doi.org/10.1016/j.pain.2007.01.008>
4. Gunay Ucurum S. The relationship between pain severity, kinesiophobia, and quality of life in patients with non-specific chronic neck pain. *J Back Musculoskelet Rehab* 2019; 32(5): 677-683. <https://doi.org/10.3233/bmr-171095>
5. Luque-Suarez A, Martinez-Calderon J, Falla D. Role of kinesiophobia on pain, disability and quality of life in people suffering from chronic musculoskeletal pain: a systematic review. *Br J Sports Med* 2019; 53(9): 554-559. <https://doi.org/10.1136/bjsports-2017-098673>
6. Lundberg M, Styf J, Jansson B. On what patients does the Tampa Scale for Kinesiophobia fit? *Physiother Theory Pract* 2009; 25(7): 495-506. <https://doi.org/10.3109/09593980802662160>
7. Hapidou EG, O'Brien MA, Pierrynowski MR, de las Heras E, Patel M, Patla T, et al. Fear and avoidance of movement in people with chronic pain: psychometric properties of the 11-Item Tampa Scale for Kinesiophobia (TSK-11). *Arch Phys Med Rehab* 2012; 64(3): 235-241. <https://doi.org/10.3138/ptc.2011-10>
8. Gobina I, Villberg J, Välimaa R, Tynjälä J, Whitehead R, Cosma A, et al. Prevalence of self-reported chronic pain among adolescents: Evidence from 42 countries and regions. *Eur J Pain* 2019; 23(2): 316-326. <https://doi.org/10.1002/ejp.1306>
9. Andias R, Neto M, Silva AG. The effects of pain neuroscience education and exercise on pain, muscle endurance, catastrophizing and anxiety in adolescents with chronic idiopathic neck pain: a school-based pilot, randomized and controlled study. *Physiother Theory Pract* 2018; 34(9): 682-691. <https://doi.org/10.1080/09593985.2018.1423590>
10. Noormohammadpour P, Kordi M, Mansournia MA, Akbari-Fakhrabadi M, Kordi R. The Role of a Multi-Step Core Stability Exercise Program in the Treatment of Nurses with Chronic Low Back Pain: A Single-Blinded Randomized Controlled Trial. *Asian Spine J* 2018; 12(3): 490-502. <https://doi.org/10.4184/asj.2018.12.3.490>
11. Neblett R, Hartzell M, Mayer T, Bradford E, Gatchel RJ. Establishing clinically meaningful severity levels for the Tampa Scale for Kinesiophobia (TSK-13). *Eur J Pain* 2016; 20(5): 701-710. <https://doi.org/10.1002/ejp.795>

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12. Misterska E, Jankowski R, Glowacki J, Shadi M, Walczak M, Glowacki M, et al. Kinesiophobia in pre-operative patients with cervical discopathy and coexisting degenerative changes in relation to pain-related variables, psychological state and sports activity. *Med Sci Monitor* 2015; 21(1): 181-194. <https://doi.org/10.12659/msm.891045>
13. Sarig Bahat H, Weiss PL, Sprecher E, Krasovsky A, Laufer Y. Do neck kinematics correlate with pain intensity, neck disability or with fear of motion? *Man Ther* 2014 ; 19(3): 252-258. <https://doi.org/10.1016/j.math.2013.10.006>.
14. Beltran-Alacreu H, López-de-Uralde-Villanueva I, Calvo-Lobo C, Fernández-Carnero J, La Touche R. Clinical features of patients with chronic non-specific neck pain per disability level: A novel observational study. *AMB Rev Assoc Med Bras* 2018; 64(8): 700-709. <https://doi.org/10.1590/1806-9282.64.08.700>
15. Goldberg P, Zeppieri G, Bialosky J, Bocchino C, van den Boogaard J, Tillman S, et al. Kinesiophobia and its association with health-related quality of life across injury locations. *Arch Phys Med Rehab* 2018; 99(1): 43-48. <https://doi.org/10.1016/j.apmr.2017.06.023>
16. Akodu AK, Nwanne CA, Fapojuwo OA. Efficacy of neck stabilization and Pilates exercises on pain, sleep disturbance and kinesiophobia in patients with non-specific chronic neck pain: A randomized controlled trial. *J Bodyw Mov Ther* 2021 ; 26: 411-419. <https://doi.org/10.1016/j.jbmt.2020.09.008>.
17. Jensen MP. Research on coping with chronic pain: the importance of active avoidance of inappropriate conclusions. *Pain* 2009; 147(1): 3-4. <https://doi.org/10.1016/j.pain.2009.07.036>
18. Demirbüken İ, Özgül B, Kuru Çolak T, Aydoğdu O, Sarı Z, Yurdalan SU, et al. Kinesiophobia in relation to physical activity in chronic neck pain. *J Back Musculoskelet Rehab* 2016; 29(1): 41-47. <https://doi.org/10.3233/bmr-150594>
19. Bilgin S, Cetin H, Karakaya J, Kose N. Multivariate Analysis of Risk Factors Predisposing to Kinesiophobia in Persons With Chronic Low Back and Neck Pain. *J Manipulative Physiol Ther* 2019; 42(8): 565-571. <https://doi.org/10.1016/j.jmpt.2019.02.009>
20. Rovner GS, Sunnerhagen KS, Björkdahl A, Gerdle B, Börsbo B, Johansson F, et al. Chronic pain and sex-differences; women accept and move, while men feel blue. *PLoS One* 2017; 12(4): e0175737. <https://doi.org/10.1371/journal.pone.0175737>