

Correlation of Kinesiophobia and Quality of Life in Subjects with Frozen Shoulder

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Abstract

Background: Adhesive capsulitis, sometimes called frozen shoulder, is a common shoulder ailment that produces pain and limits shoulder motion. It can last up to 10 years and affects up to 40% of patients. In addition to a patient's characteristic and objective symptoms, psychiatric problems can impact pain, disability, and quality of life. Kinesiophobia, or the dread of movement, is a psychological condition linked to chronic pain that can be devastating. The illness can be exacerbated by psychological issues like fear, which has a big impact on day-to-day activities and general quality of life. Thus, this study aimed to evaluate the correlation of Kinesiophobia and quality of life in subjects with frozen shoulder.

Method: 82 patients diagnosed with stage 1 and stage 2 of frozen shoulder, falling under the 20 to 40 age group, participated in this study. The Tampa scale of Kinesiophobia was used to screen patients, and patients having a Tampa score of 37 and above were included. WHOQOL-BREF Questionnaire was used to evaluate Quality of life. The scores were then calculated according to the formula and segregated into physical, psychological, social and environmental domains and both the scales were correlated.

Results: Spearman's correlation analysis revealed statistically significant, negative relationships between Kinesiophobia and all QoL domains. Strong negative correlations were found with the Physical and Psychological domains. Moderate negative correlations were observed with the Environmental and Social domains.

Conclusion: The present study establishes that Kinesiophobia negatively correlated with all domains of quality of life in patients with frozen shoulder. High fear of movement contributes to physical inactivity, emotional distress, social withdrawal, and environmental dissatisfaction. These findings underscore the importance of integrating biopsychological approaches in frozen shoulder rehabilitation to reduce Kinesiophobia, promote active participation, and improve well-being.

Keywords: Frozen shoulder, Kinesiophobia, Quality of life, TAMPA Scale of Kinesiophobia, WHOQOL-BREF Questionnaire.

1. Introduction

Adhesive capsulitis, commonly referred to as Frozen Shoulder, is a prevalent condition affecting approximately 2% to 5% of the overall population.⁽¹⁾ The primary characteristics of adhesive capsulitis include pain, stiffness, and limited functionality of the glenohumeral joint, which adversely affects the overall use of the upper extremities. Patients experiencing frozen shoulder often report shoulder pain and

a reduction in their range of motion, with limitations most frequently observed in flexion, abduction, and lateral rotation.⁽²⁾

One of the fears related to movement is Kinesiophobia, which is the fear of moving.⁽³⁾ Functional limitations are associated with both the severity of pain and the mental responses to pain in chronic situations. The fear-avoidance model (FAM) is centred on the cognitive reactions to pain.⁽⁴⁾ This model indicates that after an accident, individuals who are predisposed to feeling fear and thinking catastrophically in response to pain are more prone to developing chronic musculoskeletal pain (CMP) compared to those who are not. When they encounter actual or perceived threats, these individuals tend to overreact and engage in avoidance behaviours (such as hypervigilance) to prevent further injury.⁽⁵⁾ Individuals with chronic musculoskeletal pain (CMP) frequently experience a fear of movement ^(6,7), which hinders their ability to perform movements or exercises effectively and encourages a more sedentary lifestyle.⁽⁸⁾ This apprehension creates an obstacle when exercise is recommended as part of their treatment, leading to meaningful clinical consequences, such as lower adherence to prescribed therapies and a continuation of negative associations with pain.⁽⁹⁾ One significant consequence of a frozen shoulder is reduced mobility and a decline in quality of life.⁽¹⁰⁾ The WHO defines quality of life (QoL) as how individuals view their situation in life based on the cultural and value systems they inhabit, as well as in relation to their aspirations, expectations, standards, and concerns.⁽¹¹⁾ QoL reflects an individual's overall satisfaction with life, as assessed by the mentally aware person evaluating their own life.⁽¹²⁾ This evaluation is inherently subjective and encompasses all aspects of life, incorporating elements of a biopsychosocial-spiritual framework.⁽¹³⁾

2. Materials and methods

A cross-sectional study was conducted in Pune region. 82 patients diagnosed with stage 1 and stage 2 of frozen shoulder, falling under the 40 to 60 age group, participated in this study. The study was explained to the patients and consent was taken. The Tampa scale of Kinesiophobia was used to screen patients, and patients having a Tampa score of 37 and above were included. WHOQOL-BREF Questionnaire was used to evaluate Quality of life. The scores were then calculated according to the formula and segregated into physical, psychological, social and environmental domains. The data was analysed and results were calculated.

3. Results

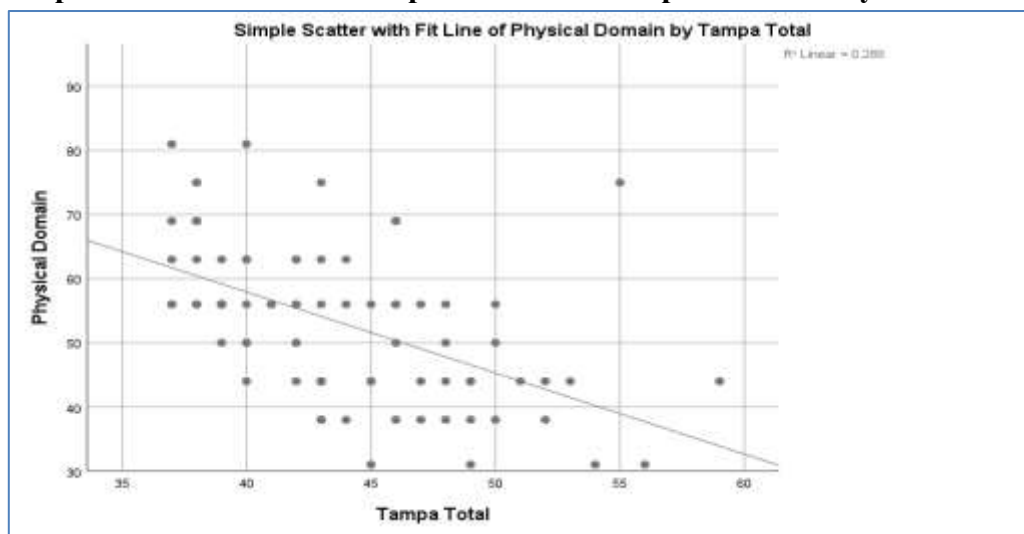
The study aimed to find out the correlation between kinesiophobia and quality of life in patients with frozen shoulder. Spearman's correlation analysis revealed statistically significant, negative relationships between Kinesiophobia and all QoL domains. Strong negative correlations were found with the Physical Health ($\rho = -0.591$, $p < 0.001$) and Psychological Health ($\rho = -0.574$, $p < 0.001$) domains. Moderate but statistically significant negative correlations were observed with the Environmental Health ($\rho = -0.319$, $p = 0.004$) and Social Relationships ($\rho = -0.273$, $p = 0.013$) domains. Females reported moderately higher Kinesiophobia (Mean TSK = 44.26) than males (Mean TSK = 42.86), while the WHOQOL-BREF Questionnaire revealed males having better QOL scores than females in each domain.

Table 1 – Correlation analysis between TAMPA and WHOQOL domains.

		TAM-PA TO-TAL	PHYSI-CAL DOMAIN	PSYCHOLOGI-CAL DOMAIN	SOCIAL DO-MAIN	ENVIRONMEN-TAL DOMAIN
TAM-PA TO-TAL	Spearman's ρ	-	-0.591**	-0.574**	-0.273*	-0.319**

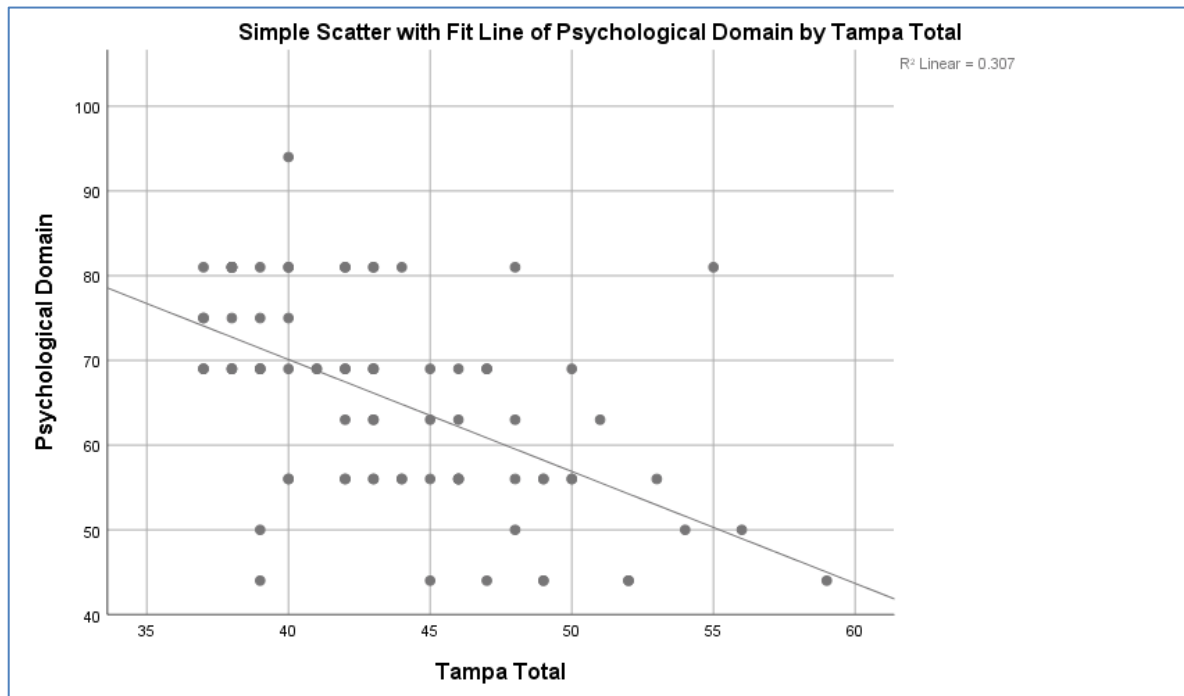
Interpretation- The Spearman's rank correlation analysis revealed statistically significant relationships between kinesophobia and quality of life domains in patients with frozen shoulder, demonstrating a clear pattern of negative associations that varied in strength across different life domains.

Graph 1 - Correlation of Tampa scale of Kinesiophobia and Physical domain



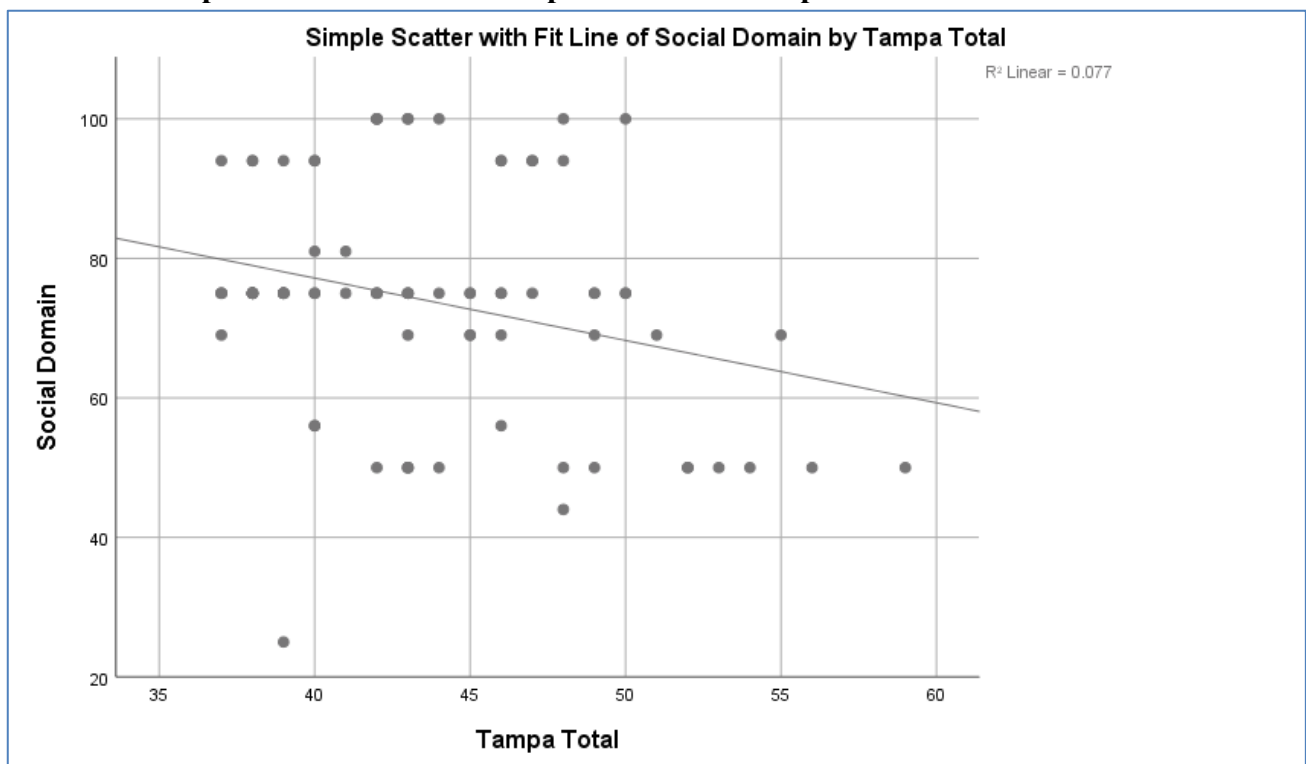
Interpretation- The scatter plot depicting the relationship between Tampa Kinesiophobia Scale (TKS) scores and the Physical Health domain of the WHOQOL-BREF demonstrates a statistically significant negative linear relationship. The R^2 value of 0.288 indicates that approximately 28.8% of the variance in physical health-related quality of life is explained by the level of Kinesiophobia in patients with frozen shoulder. This visual representation corroborates the strong negative correlation identified in Spearman's analysis ($\rho = -0.591$, $p < 0.001$), confirming that fear of movement is a substantial determinant of physical dysfunction.

Graph 2 - Correlation of Tampa scale of Kinesiophobia and Psychological domain.



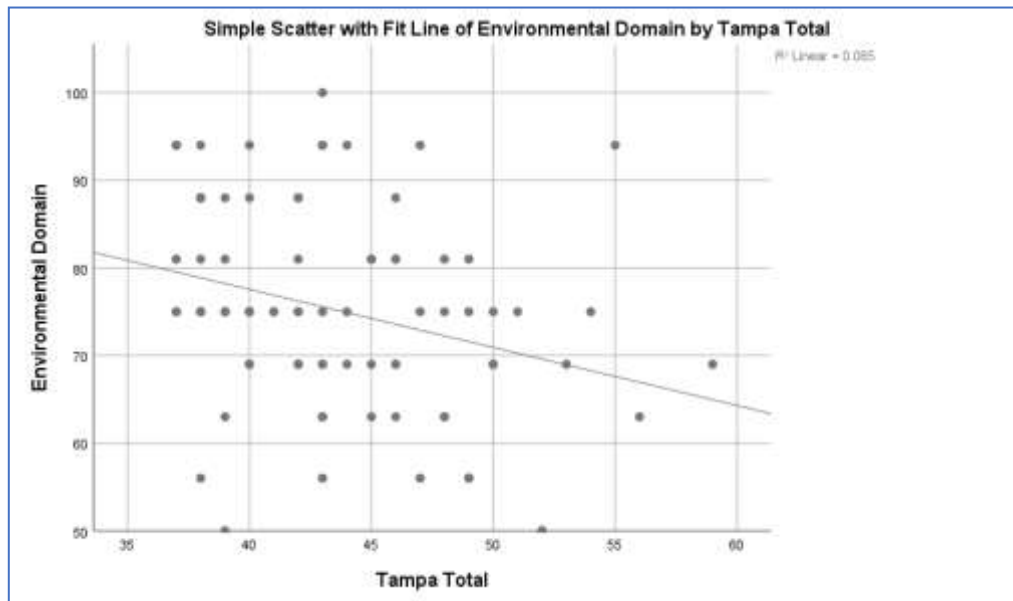
Interpretation- There is a moderate negative correlation ($r \approx -0.55$, $R^2 = 0.307$) between Tampa Total and Psychological domain. Higher levels of Kinesiophobia are associated with lower psychological well-being.

Graph 3- Correlation of Tampa scale of Kinesiophobia and Social domain.



Interpretation- There is a weak negative correlation ($r \approx -0.28$, $R^2 = 0.077$) between Tampa Total and Social Domain Scores.

Graph 4- Correlation of Tampa scale of Kinesiophobia and Environmental domain.



Interpretation- There exists a weak negative correlation ($r \approx -0.29$, $R^2 = 0.085$) between Tampa Total and Environmental domain. This suggest that individuals with higher kinesiophobia report slightly lower environmental quality of life, but the association is weak and explains only 8.5% of the variance.

4. Discussion

The research aimed to assess the relationship between Kinesiophobia and the quality of life in individuals diagnosed with frozen shoulder by utilising the Tampa Scale for Kinesiophobia and the WHOQOL-BREF questionnaire. The results indicate that patients suffering from frozen shoulder demonstrate elevated levels of Kinesiophobia, and this fear of movement is significantly linked to a reduction in overall quality of life, especially in the physical and psychological aspects.

In this research, a heightened TSK score signifies that movement-related fear is a significant factor contributing to the extended disability seen in frozen shoulder patients. The score range of 37-59 indicates that while all participants displayed significant Kinesiophobia, the intensity varied widely among individuals, with females showing higher levels of Kinesiophobia than males.

Analysis of the WHOQOL-BREF Questionnaire showed decreased scores in all areas, with the physical health domain being the most affected, followed by psychological well-being, social relationships, and environmental factors, in that order. A significant disparity was noted, with men scoring higher than women in every area.

The comparison of scores between TAMPA and WHOQOL-BREF revealed a strong negative correlation between the Tampa score and the physical domain, suggesting that an increase in fear of movement corresponds with a significant decline in physical functioning, which includes experiencing more pain, reduced mobility, challenges in carrying out daily tasks, and decreased energy levels.

In a similar vein, a significant negative correlation between TSK and the psychological domain indicates that a heightened fear of movement is strongly linked to poor emotional health, manifesting as increased anxiety, depression, and emotional turmoil.

Moderate yet noteworthy correlations were found between Kinesiophobia and the social aspects of life, indicating a reduction in interpersonal relationships and social engagement. Frozen shoulder

significantly hampers a person's capacity to carry out daily activities like grooming, dressing, and reaching overhead, which can restrict social engagement and interaction.⁽¹⁴⁾

There is also a moderate correlation observed between TSK and the Environmental domain. Individuals experiencing frozen shoulder frequently encounter challenges in adjusting their physical surroundings and accessing rehabilitation services due to pain, restricted mobility, and mental obstacles. The fear of experiencing pain may lead to decreased interaction with healthcare providers or lower compliance with therapy recommendations.⁽¹⁵⁾

5. Conclusions

The present study establishes that Kinesiophobia negatively correlated with all domains of quality of life in patients with frozen shoulder. High fear of movement contributes to physical inactivity, emotional distress, social withdrawal, and environmental dissatisfaction. Females exhibited lower QOL scores, suggesting gender-based differences in coping and psychological resilience. These findings underscore the importance of integrating biopsychological approaches in frozen shoulder rehabilitation to reduce Kinesiophobia, promote active participation, and improve well-being. Since higher Kinesiophobia is linked with poorer quality of life, physiotherapists should focus not only on pain relief and range of motion but also on reducing fear of movement through education and reassurance.

Gradual exposure to movement and confidence-building exercises can help patients overcome fear and improve participation in therapy. Early identification of patients with high fear scores can prevent long-term disability. Including counselling, motivation, and home-based exercises may further enhance recovery and improve overall quality of life.

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7. References

1. Carette S. Adhesive capsulitis--research advances frozen in time?. *The Journal of rheumatology*. 2000 Jun;27(6):1329-31.
2. Boyle-Walker KL, Gabard DL, Bietsch E, Masek-VanArsdale DM, Robinson BL. A profile of patients with adhesive capsulitis. *Journal of hand therapy*. 1997 Jul 1;10(3):222-8.
3. Vlaeyen JW, Kole-Snijders AM, Boeren RG, van Eek H. Fear of movement/(re) injury in chronic low back pain and its relation to behavioral performance. *Pain*. 1995 Sep 1;62(3):363-72.
4. Leeuw M, Goossens ME, Linton SJ, Crombez G, Boersma K, Vlaeyen JW. The fear-avoidance model of musculoskeletal pain: current state of scientific evidence. *Journal of Behavioural Medicine*. 2007 Feb;30(1):77-94.

5. Stubbs B, Patchay S, Soundy A, Schofield P. The avoidance of activities due to fear of falling contributes to sedentary behavior among community-dwelling older adults with chronic musculoskeletal pain: a multisite observational study. *Pain medicine*. 2014 Nov 1;15(11):1861-71.
6. Bränström H, Fahlström M. Kinesiophobia in patients with chronic musculoskeletal pain: differences between men and women. *Journal of rehabilitation medicine*. 2008 May 11;40(5):375-80.
7. Picavet HS, Vlaeyen JW, Schouten JS. Pain catastrophizing and kinesiophobia: predictors of chronic low back pain. *American journal of epidemiology*. 2002 Dec 1;156(11):1028-34.
8. Lundberg M, Styf J. Kinesiophobia among physiological overusers with musculoskeletal pain. *European Journal of Pain*. 2009 Jul 1;13(6):655-9.
9. Vlaeyen JW, Linton SJ. Fear-avoidance and its consequences in chronic musculoskeletal pain: a state of the art. *Pain*. 2000 Apr 1;85(3):317-32.
10. Constant CR, Murley AH. A clinical method of functional assessment of the shoulder. *Clin Orthop Relat Res*. 1987 Jan 1;214(214):160-4.
11. Orley J. World Health Organization: Programme on Mental Health. *Journal of Mental Health*. 1996 Jan 1;5(3):319-22..
12. Meeberg GA. Quality of life: a concept analysis. *Journal of advanced nursing*. 1993 Jan;18(1):32-8.
13. Hiatt JF. Spirituality, medicine, and healing. *Southern medical journal*. 1986 Jun 1;79(6):736-43.
14. Lee KH, Xu H, Wu B. Gender differences in quality of life among community-dwelling older adults in low-and middle-income countries: results from the Study on Global Ageing and Adult Health (SAGE). *BMC Public Health*. 2020 Jan 28;20(1):114.
15. Zhou Y, Gao W, Gao S, Guo X, Liu M, Cao C. Pain catastrophizing, Kinesiophobia and exercise adherence in patients after total knee arthroplasty: the mediating role of exercise self-efficacy. *Journal of pain research*. 2023 Dec 31:3993-4004.

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