



Correlation Of Self Perceived Burden On Kinesiophobia In Old Age Female Following Total Knee Replacement. Observational Study

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ABSTRACT: The health of the old has long been a concern in many nations, and our research has focused heavily on measures to improve the quality of life for the elderly. In order to give evidence for disease recovery, this study was carried out to learn more about the reality of social support and pain, self-perceived load, and kinesiophobia in senior patients with osteoarthritis of the knee.

KEYWORDS: Introduction ,kinesiophobia, self perceived burden, total knee replacement ,osteoarthritis

Introduction

- Osteoarthritis (OA) are most common disease that cause pain and limited mobility in patients.[1]
- In developed countries, increased life expectancy has resulted in an aging population, which, together with a tendency to greater overweight, has led to changes in morbidity which, in the case of musculoskeletal diseases, has meant an increase in the prevalence of osteoarthritis.[1]
- Osteoarthritis of the knee is a prevalent problem that causes pain and functional limitations, especially in the elderly population (>80% in population above 65 years)
- Common treatments for osteoarthritis involve the use of medications and exercise. End-stage osteoarthritis cause pain, disability, and loss of health related quality of life (HQOL).
- The overall highest prevalence of those having at least one joint replacement surgery due to OA in old age.(8)
- All necessitate TKR, which relieves pain, improves long-term function, and restores mobility.
- The TKR is one of the common procedures performed globally and is considered cost effective with excellent long-term survivorship, with substantial variations in rates across different countries.(6)

- TKR improve the quality of life in old age.
- Kinesiophobia is defination as _an excessive, irrational and debilitating of physical movement and activity resulting from feeling of vulnerability to painful injury or reinjury .
- Kinesiophobia or “pathologic fear of movement” is well documented disorder where person believe that movement can cause more injury and pain.(5)
- Kinesiophobia creates the avoidance of movement or activities in older population and this Avoidance of pain provoking situations will lead to different an increasing disabilities.
- Kinesiophobia is considered to be factor that hinders rehabilitation and actually prolong disability and pain.
- According to fear avoidance model painful experience will elicit fear of movement or re-injury in certain individuals, which often leads to behavioral avoidance and, in the long run, disuse, depression and increase disability.(5)



FIG. FEAR AVOIDANCE MODE

- Kinesiophobia negatively affects functional outcomes up until 1 year postoperatively, while active ROM is reduced up to 6 months post-procedure.
- Self-perceived burden (SPB), it has been defined as “a multidimensional construct arising from care recipients’ feelings of dependence and the resulting frustration and worry, which then lead to feelings of guilt at being responsible for the caregiver’s hardship”(4).
- Self-perceived burden (SPB) can not only make patients feel guilt, anxiety, feeling of burden, and other emotions[9], but also some researchers have suggested that social support may affect patients’ self-perceived burden [9].
- SPB not only includes physical burdens, but it also includes physical and psychological burdens, etc. The study found that nearly 50% of KOA patients in different countries have a pain burden [7]. The financial burden is also one of the most important factors affecting the self-perceived burden of patients with osteoarthritis of the knee following TKR.

Need Of Study

- Demographic, clinical, social are the factors associated with kinesiophobia.
- 40-60% of TKR patient experience kinesiophobia (fear of movement).
- Higher rates in females, older adults and those who experienced preoperative pain and anxiety .
- Kinesiophobia negatively affects functional outcomes up until 1 year post-operatively, while active ROM is reduced up to 6 months post- procedure.
- Social support, pain and self perceived burden are the important factors associated with kinesiophobia in older adults.[9]
- Social support plays an essential role in the treatment and management of chronic diseases. At present, the main concern for the social support of patients at home in daily life [5], but social support and pain (SPQ) is more concerned about the patient’s satisfaction with external support [9].
- Higher social support can reduce the degree of fear of disease in TKR patients, thereby promoting recovery [5,9].
- High-quality, comprehensive, and effective social support from the medical sector and state agencies can reduce the negative attitude of elderly patients towards the disease.
- As the self perceived burden is important factor associated with kinesiophobia. The self perceived burden (SBP) on patients is increasing year by year [9].
- High Self-perceived burden (SPB) could affect patient preference for palliative care to avoid further burdening their caregiver and also affect the degree of fear. [6]
- As there is lack of literature for the same. So it is important to study the effect of self perceived burden on kinesiophobia in older age TKR patient.

Aim

To study the correlation of self perceived burden on kinesiophobia in old age female following total knee replacement.

Objective

1. Primary objective:

- 1) To assess self perceived burden in TKR (total knee replacement) patient using self perceived burden scale (SPB).
- 2) To assess kinesiophobia in TKR patient by using Tampa scale.

2. Secondary objective :

- 1) To study the correlation of self perceived burden on kinesiophobia in old age female following total knee replacement (TKR)

Hypothesis

➤ Null hypothesis(HO):

- There will be no correlation of self perceived burden on kinesiophobia in older adult patients following total knee replacement.

➤ Alternative hypothesis (H1):

- There will be correlation of self perceived burden on kinesiophobia in older adult patients following total knee replacement.

Review of Literature

➤ 1. The effects of kinesiophobia on outcome following total knee replacement: a systematic review. Knee Arthroplasty Published: 24 August 2020 Volume 140,

➤ Kinesiophobia negatively affects functional outcomes up until 1 year postoperatively, while active ROM is reduced up to 6 months post- procedure

➤ 2. Factors associated with kinesiophobia in Chinese older adults patients with osteoarthritis of the knee: A cross-sectional survey. Mingyang Tan, Yanping Liu, Jingyan Li, Xiaofu Ji, Yinghan Zou, Yanli Zhang, Hongyu Li Geriatric Nursing 48,

➤ To identify important determinants of kinesiophobia in older adults with osteoarthritis of the knee based on demographics, social support and pain, and self-perceived burden factors.

3. Patients' self-perceived burden, caregivers' burden and quality of life for amyotrophic lateral sclerosis patients: a cross-sectional study Dan Geng, RuWei Ou, XiaoHui Miao, LiHong Zhao, QianQian

Wei, XuePing Chen, Y26 (19-20), 3188-

SPB is a multidimensional construct that arise from care recipients feelings of frustration dependance and worry which may lead to feel guilty and responsible for caregivers hard shift. High SPB could affect patient preference for palliative care to avoid further burdening their caregiver.

4. Self-perceived burden, perceived burdensomeness, and suicidal ideation in patients with chronic pain. Keith G. Wilson ORCID Icon, John Kowal, Sara M. Caird, Dyana Castillo, Lachlan A. McWilliams Pages 127- 136 | Received 23 May 2017, Accepted 13 Aug 2017, Published online: 18 Sep 2017 This belief has been termed self-perceived burden, and it has been defined as “a multidimensional construct arising from care recipients’ feelings of dependence and the resulting frustration and worry, which then lead to feelings of guilt at being responsible for the caregiver’s hardship”

6. Current Status and Changes in Pain and Activities of Daily Living in Elderly Patients with Osteoarthritis Before and After Unilateral Total Knee Replacement Surgery by Yen-Feng Lai 1, Pei-Chao Lin 2,3, Chung-Hwan Chen 4,5,6,7, Jyu-Lin Chen 8 and Hsin-Tien Hsu 2,3,* ORCID. Knee osteoarthritis (OA) is a very common disease in the elderly, and total knee replacement (TKR) surgery is currently considered the most effective treatment. The estimated prevalence rate of knee OA in people over 65 years old.

7. Self-perceived Burden in Cancer Patients. Validation of the Self- perceived Burden Scale Simmons, Leigh Ann PhD Factor analysis results indicated that a 9-item version of the scale consisted of a single factor and had good reliability ($\alpha = .938$). Convergent validity was demonstrated with global quality of life ($r = -0.546$, $P < .001$), physical well-being ($r = -0.547$, $P < .001$), emotional well-being ($r = -0.549$, $P < .001$), functional well-being ($r = -0.404$, $P < .001$), financial satisfaction ($r = -0.284$, $P = .001$), and depression ($r = 0.414$, P)

5. Effect of yoga therapy on kinesiophobia pain and function in pateint with osteoarthritis randomized control trial. Isha ghanshyam Dhonde under guidance of Kiran jeswani. Osteoarthritis (OA) are most common disease that cause pain and limited mobility in patients. OA involving joint cartilage degeneration, synovitis and osteophyte hyperplasia.

6. A psychometric evaluation of the Tampa Scale for Kinesiophobia—from a physiotherapeutic perspective Mari KE Lundberg, Jorma Styf, Sven G Carlsson Physiotherapy theory and practice 20 (2), 121-133, 2004 All in all, 102 patients suffering from chronic low back pain (CLBP) and 60 subjects who took part in aerobics were included in the study. The test of reliability included stability over time and internal consistency. The intraclass correlation coefficient for the total sum of the TSK-SV was 0.91. The Pearson’s product-moment correlation coefficient for the total sum of the instrument was $r = 0.91$. Internal consistency assessed with Cronbach’s alpha was 0.81 ($n = 75$). The test of validity included face and content validity assessed by a panel of experts, while construct validity was measured by an exploratory factor analysis and the known groups.

8. Incidence and prevalence of total joint replacements due to osteoarthritis in the elderly: risk factors and factors associated with late life prevalence in the AGESReykjavik Study Helgi Jonsson^{1,5*}, Sigurbjorg Olafsdottir², Solveig Sigurdardottir²Thor Aspelund^{2,3}, Gudny Eiriksdottir (2016).

The overall prevalence of those having at least one joint replacement operation due to OA was 13.6 % and the overall incidence in the follow up group was 1.4 %/year during the five-year follow-up.

9. Self-perceived burden, social support and pain, and kinesiophobia correlates in Chinese older adults with knee osteoarthritis: a cross-sectional survey. The burden of KOA on patients and families is increasing year by year [20]. Self perceived burden (SPB) [21] can not only make patients feel guilt, anxiety, feeling of burden, and other emotions [22], but also some researchers have suggested that social support may affect patients' self-perceived burden [23]. SPB not only includes physical burdens, but it also includes physical and psychological burdens, etc. The study found that nearly 50% of KOA patients in different countries have a pain burden [24]. The financial burden is also one of the most important factors affecting the self-perceived burden of patients with osteoarthritis of the knee.

Methodology

- **STUDY DESIGN** _ cross sectional study
- **SAMPLE SIZE**- 70
- **SAMPLING METHOD**-purposive sampling method
- **STUDY POPULATION** –Old age female following TKR.
- **STUDY SETTING**- Hospitals in an around Pune.
- **STUDY DURATION** - 6 Months

Criteria

1. Inclusion criteria

- Age -60 or above
- Female
- TKR patients
- NPRS 4 _7
- Kinesiophobia score >27
- SPB score _20_40 or >40
- Those who are taking physiotherapy

2.Exclusion criteria

- Recent fracture past 1 year
- Ligament injury of knee joint past 1 year
- Visual and auditory impairment
- Presence of other musculoskeletal condition affecting normal lower limb function.
- Neurological conditions (stroke, GBS , etc)
- Patients with cardiac condition like myocardial infraction, coronary artery disease, hypertension.

Materials

- Conccent form
- Pen
- Paper
- Tampa scale
- Self perceived burden scale
- NPRS

Outcome Measures

1. NPRS
2. Tampa scale
3. SPB scale

OUTCOME MEASURES

- *NUMERICAL PAIN RATING SCALE (NPRS)*
- The NPRS is a self-reported, or clinician administered, measurement tool consisting of a numerical point scale with extreme anchors of no pain to extreme pain
- The scale is typically set up on a horizontal or vertical line, ranges most commonly from 0–10 and can be administered in written or verbal form. The patient is asked to rate his/her pain intensity on NPRS scale [12,13,14] Reliability of NPRS -0.67 to 0.96. [12,15 ,16,17]
- Validity of NPRS -0.79 to 0.95. [12,15,17]

Tampa Scale

- Tampa Scale of Kinesiophobia(TSK-11), designed by Woby et al. [42] in the UK, mainly detects kinesiophobia in patients .it is 11 items questionnaire. Total score range 11-44 points. Kinesiophobia is defined as a score of ≥ 27 . The higher the score, the higher the patient's level of kinesiophobia.
- The scoring has done in 4 components-
- 1-Strongly disagree
- 2-Dissagree
- 3-Aggree
- 4-Strongly Agree
- The Reliability score for Tampa scale is 0.91

Self Perceived Burden

Self-perceived Burden(SPBS) was developed by Cousineau et al[21] in Canada. Cronbach's alpha coefficient of the scale is 0.85. It is currently the most used scale for evaluating SPB in patients with chronic diseases at home and abroad. This study uses the Chinese version of SPBS translated by Wu et al. [40], and the internal consistency reliability is 0.91. The scale is divided into three dimensions with a total of 10 items, using the Likert 5-level scoring method. Self perceived burden scale(SPBS) is used to measure self perceived burden.it is 10 item questionnaire.

- ❖ The scoring are as follows _
- 1.<20
- 2.20_30% mild SPB
- 3.30_40% moderate SPB
- 4.>40% severe SPB

Procedure

- The Study was initiated with synopsis presentation in front of ethical community in PES modern college of physiotherapy.
- Ethical changes was obtained from committee.
- Subject were selected according to inclusion criteria and study was explained to the subject individually and return concent was taken from them.
- Various hospitals in and around Pune.
- For the Study all the objects will inform about study and the written consent will obtain
- Explain procedure to the patient
- Scale will be given to the patient

Self perceived Burden Scale Item

1. I worry that the health of my caregiver could suffer as a result of caring for me.
2. I worry that my caregiver is over extending himself or herself in helping me
3. I am concerned that it costs my caregiver a lot of money to care for me
4. I feel guilty about the demands that I make on my caregiver
5. I am concern that I am “to much trouble” to my caregiver
6. I am concern that because of my illness, my caregiver is having to do too many thing at once
7. I am confident that my caregiver can handle the demands of caring for me
8. I think that I make things hard on my caregiver
9. I feel I am burden on my caregiver

Tampa Scale 11

1.	I'm afraid that I might injure myself if I exercise	1	2	3	4
2.	If I were to try to overcome it, my pain would increase	1	2	3	4
3.	My body is telling me I have something dangerously wrong	1	2	3	4
4.	People aren't taking my medical condition seriously enough	1	2	3	4
5.	My accident has put my body at risk for the rest of my life	1	2	3	4
6.	Pain always means I have injured my body	1	2	3	4
7.	Simply being careful that I do not make any unnecessary movements is the safest thing I can do to precent my pain from worsening	1	2	3	4
8.	I wouldn't have this much pain if there weren't something potentially dangerous going on in my body	1	2	3	4
9.	Pain lets me know when to stop exercising so that I don't injure myself	1	2	3	4

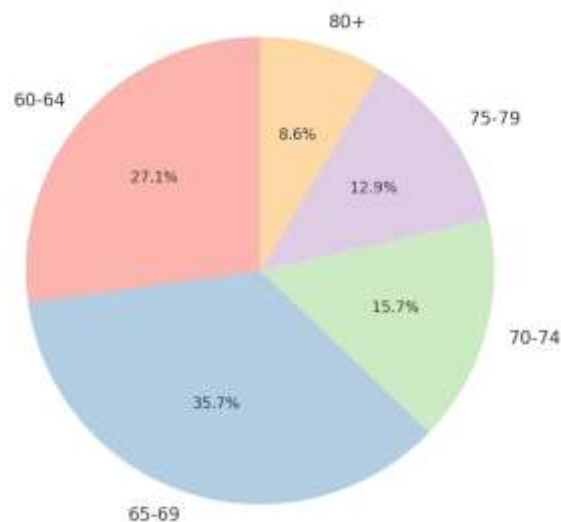
10.	I can't do all the things normal people do because it's too easy for me to get injured	1	2	3	4
11.	No one should have to exercise when he/she is in pain	1	2	3	4

Age group	Percentage
60-64	27.1%
65-69	35.7%
70-74	15.7%
75-79	12.9%
80+	8.6%

DATA AND STATISTICAL ANALYSIS:

- Knee pain was assessed using Numerical Pain Rating Scale.
- Kinesiophobia was assessed using TAMPA-11 scale.
- Self-perceived burden was assessed using self-perceived burden scale (SPB).
- Data was entered in excel spread sheet, tabulated and subjected to Statistical analysis.
- The data entered was analyzed with the help of Python statistical tools and IBM SPSS Software to check correlation between self-Perceived burden and kinesiophobia.

Age-wise Distribution of Participants

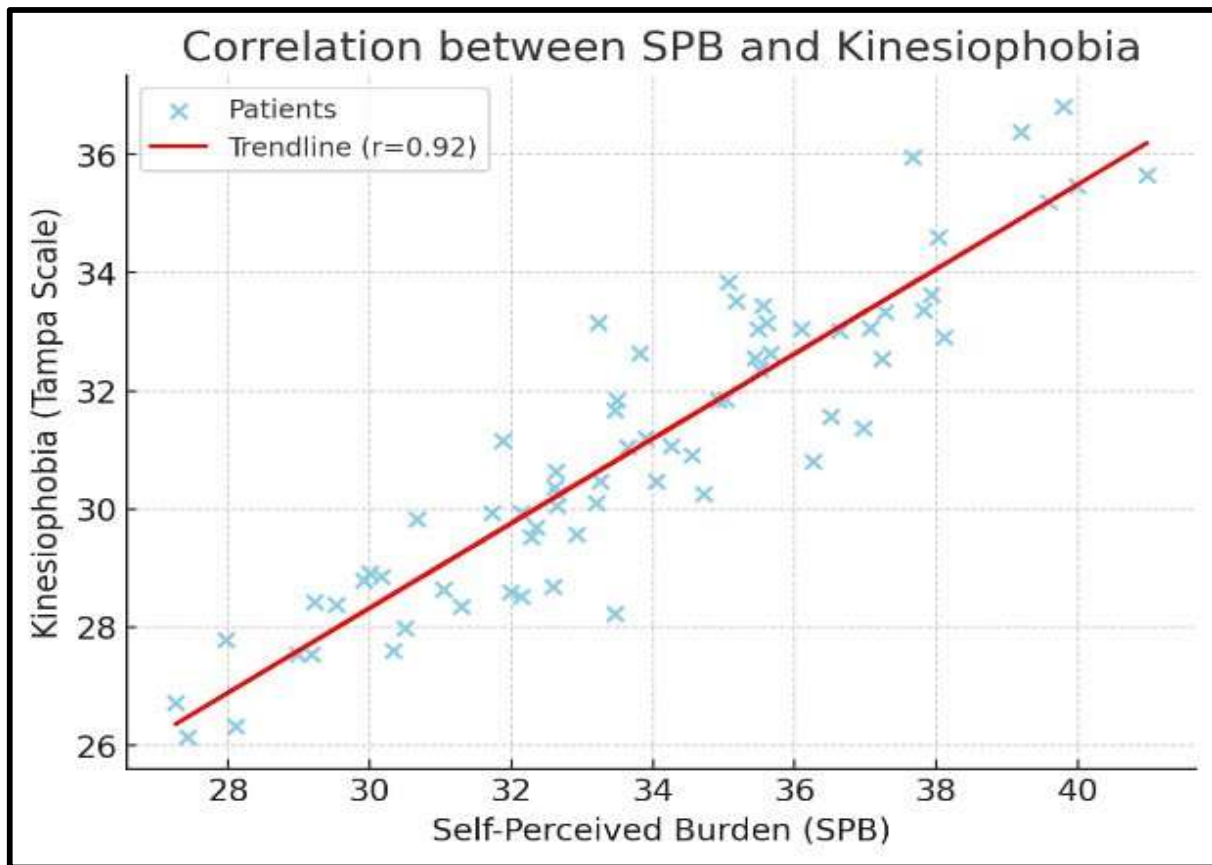


The chart represents how participants are distributed across different age groups. The biggest portion of participants are in the 65–69 years age group (about one-third of all). The second largest group is 60–64 years (around one-fourth). Fewer participants are in the older groups (70+ years), with the least being 80+ years.

STATISTICAL ANALYSIS

- Analysis was done using Pearson Correlation test by using Python statistical tool

variable	Mean	SD	Min	Max
Tampa scale	31.0	3.1	27	39
SPB score	34.3	3.6	28	40



P value	r value	significant
<0.001	0.72	Considered extremely significant

RESULTS:

- The following study was conducted to check the correlation between kinesiophobia and SPB in older female following TKR.
- The values of the kinesiophobia and SPB correlated using Pearson correlation test and Python Statistical tools and IBM SPSS Software.
- The Mean values for kinesiophobia and SPB were 31.0 and 34.3 respectively.
- The statistical analysis shows the correlation, coefficient 'r' is 0.72 which shows that there is a strong positive relationship.
- The statistical analysis shows that p value is < 0.001 which is extremely significant; hence, there is a positive correlation between kinesiophobia and SPB.

Discussion

- The following study was done to assess the correlation between self-perceived burden (SPB) and kinesiophobia by using Self perceived burden scale (SPB) and TAMPA-11 scale respectively,
- Total knee replacement is one of the most successful surgeries for reducing pain and improving mobility in people with severe osteoarthritis. However, the surgery is only one part of recovery — the patient's mindset and emotional state also play a huge role in how well they regain function.
- A statistically significant correlation was seen between self-perceived burden and Kinesiophobia score. It was seen that as the self-perceived burden score increased the kinesiophobia score also increased.
- Our findings of a strong, statistically significant positive correlation between self-perceived burden and kinesiophobia align well with existing literature. Oliver et al. (2020) reported that kinesiophobia negatively impacts recovery and functional outcomes after knee surgery, persisting for several months postoperatively.[10] This article found that kinesiophobia decrease recovery and functional outcomes after knee surgery by causing patients to avoid movement due to fear of pain or re-injury. This reduced activity delays muscle strengthening and joint mobility, slowing rehabilitation progress. The persistent fear also increases pain perception and lowers confidence in movement, creating a cycle of limited recovery. Early identification and psychological support are therefore essential to improve postoperative outcomes.
- After surgery, many elderly women often feel dependent on family members for basic daily tasks such as walking, bathing, or cooking. This dependence can create a feeling of guilt and worry — a thought like, "I'm troubling my family too much." This emotional strain is what we call self perceived burden (SPB).
- Our results agree with Tan, Mingyang et al. (2022). In a study 304 older adults with knee osteoarthritis Prevalence of kinesiophobia ~ 57.89% in the sample. Study shows that SPB positively correlated with kinesiophobia ($r \approx 0.605$, $p < 0.01$). (3) due to pain and fear of injury, many patients develop kinesiophobia, where they hesitate to move or exercise properly, fearing that activity might cause pain or damage to their new knee joint. When both these feelings come together, they form a negative cycle. The more a patient feels like a burden, The less confident she becomes. The more she avoid movement, Which delays recovery and increases dependence — reinforcing the feeling of burden again.
- Patients with coronary heart disease who felt like a burden to others were more likely to fear physical activity after undergoing PCI. This may be because these patients worry that overexertion or complications could cause concern or extra care needs for their families. Such feelings of dependence and guilt increase anxiety about movement. As a result, emotional stress and self-perceived burden together contribute to greater kinesiophobia and reduced participation in cardiac rehabilitation. He et al. (2025), 255 patients with CHD after successful PCI self-perceived burden positively correlated with kinesiophobia ($r = 0.271$, $p < 0.01$).[14]
- And the findings revealed a strong positive correlation between SPB and kinesiophobia ($r = 0.72$, $p < 0.0001$). This means that as patients felt more like a burden to their caregivers or family members, their fear of movement also increased significantly.

- According to Vlaeyen and Linton (2000), the fear-avoidance model explains how pain perception and fear of movement lead to avoidance behaviour, muscular deconditioning, and ultimately, greater disability.[13]
- When people are afraid of pain, they tend to avoid physical activities or movements. This lack of movement slowly causes their muscles to weaken and their body to lose strength. Over time, this makes daily activities more difficult and increases disability. These findings highlight how fear and pain are closely linked to physical health and recovery.
- Keith et al. (2017) linked SPB with feelings of hopelessness and even suicidal ideation among patients with chronic pain, further illustrating the emotional toll of feeling like a burden. .[12]
- Gang et al. (2017) explored SPB among patients with chronic neurological diseases and found that high SPB was associated with greater psychological distress and reduced quality of life.[11]
- Patients with chronic neurological diseases who felt a strong self-perceived burden experienced more psychological distress and a lower quality of life. This happens because constantly feeling dependent on others can lead to guilt, sadness, and a loss of self-worth. Such emotional strain increases anxiety and depression, which in turn worsens overall well-being. The study highlights how emotional factors like SPB can deeply affect mental health and life satisfaction in long-term illness.
- Additionally, self-perceived burden may lead to physical inactivity and disuse, further cause the increase kinesiophobia (fear of movement).
- The strong correlation (r values above 0.72) found in this study suggests that self-perceived burden may serve as a potential functional marker of kinesiophobia which causes reduced quality of life.
- The above studies support our findings which showed that the self-perceived burden and kinesiophobia are related
- Hence, self-perceived burden and kinesiophobia has the potential to impair post-operative recovery in TKR patient

LIMITATIONS

- This study was limited to a single group of patients and used self-reported questionnaires, which may not fully capture every patient's experience.
- Other factors like pain, depression, or family support were not measured, which could also affect the results.
- Another limitation of this study was the lack of subgroup analysis comparing kinesiophobia characteristics between unilateral and bilateral total knee replacement. While our study included both unilateral as well as bilateral TKR patient.

Future Scope

- In the future, this study can be extended with larger and more diverse groups of patients to better understand how burden and fear of movement are connected.
- It also opens the way for testing supportive programs like counselling, family education, or digital rehab tools to see if reducing the feeling of burden helps patients recover faster and with more confidence.
- Explore interventional strategies such as cognitive behavioral therapy (CBT) or mindfulness training to reduce SPB and kinesiophobia.

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