

Evolving Associations between Psychosocial Factors and Knee Function across Chronicity in Knee Osteoarthritis: A Cross-Sectional Study

Neha Seayad¹, Isaac Okumura Tan¹, Chien Joo Lim², Bryan Yijia Tan²

¹Rehabilitation Research Institute Singapore, Nanyang Technological University
²Woodlands Health Campus, Singapore

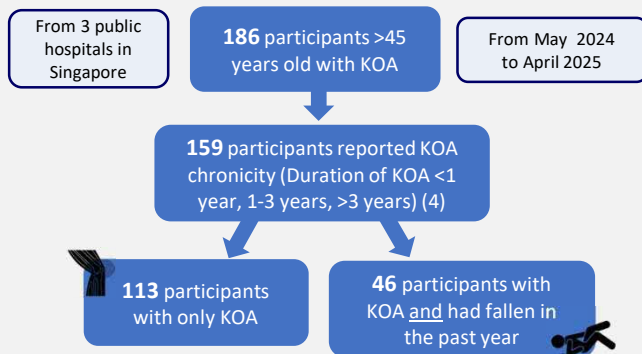
Background

Knee osteoarthritis (KOA) is a major contributor to disability and reduced mobility among older adults in Singapore. While the physical consequences of KOA are well-established, the interaction between psychosocial factors and knee function remains under studied.

Previous research has shown that anxiety, depression and life-space mobility (LSM) influence knee pain and related outcomes (1-3). However, it is unclear whether the interaction between psychosocial variables and clinical outcomes differs over the duration of the disease, particularly in KOA.

This study aims to examine how **psychosocial factors**, namely depression, anxiety, kinesiophobia and life-space mobility (LSM), relate to **knee function across stages of KOA chronicity**.

Methods



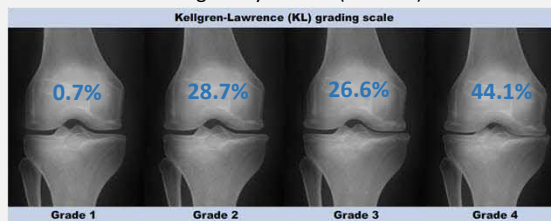
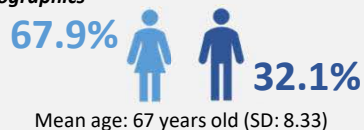
This study was part of a larger study known as the Built Environment in Falls and Arthritis (BE-FIT) Study, which investigates how the built environment and psychosocial factors influence physical activity, social participation and functional outcomes in a population with KOA and falls.

Variables of interest	Questionnaire administered
Depression	Patient Health Questionnaire-9 (PHQ-9)
Anxiety	General Anxiety Disorder-7 (GAD-7)
Kinesiophobia	Brief Fear of Movement Scale (BFOM)
LSM	UAB Life-Space Assessment (UAB-LSA)
Knee function	Knee Injury and Osteoarthritis Outcome Score-12 (KOOS-12)

Psychosocial factors (Depression, Anxiety, Kinesiophobia, LSM) and Outcome measure (Knee function).

Spearman's correlation was used to assess correlation between psychosocial factors and knee function across KOA duration.

Participant Demographics



Acknowledgement

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Results

PHQ-9, GAD-7 and BFOM were found to be significantly negatively correlated with KOOS-12 among all stages of chronicity, with PHQ-9 and BFOM having the strongest associations in patients with a KOA duration of less than 1 year. GAD-7 was observed to have the strongest association in patients with a KOA duration of 1-3 years. Furthermore, UAB-LSA was significantly positively correlated with KOOS-12 only in the group with KOA duration less than 1 year, while loneliness was only significantly negatively correlated with KOOS-12 in the group with KOA duration more than 3 years.

		KOA Duration		
		<1 year	1-3 years	>3 years
PHQ-9	Coefficient	-0.551	-0.363	-0.265
	P-value	<0.001	0.017	0.018
GAD-7	Coefficient	-0.361	-0.538	-0.261
	P-value	0.028	<0.001	<0.001
BFOM	Coefficient	-0.445	-0.378	-0.328
	P-value	0.006	0.012	0.003
UAB-LSA	Coefficient	0.367	-0.165	0.182
	P-value	0.025	0.291	0.109

Discussion and Conclusion

Previous research has shown that the onset of a chronic disease, such as KOA, can trigger depressive symptoms and psychological stress (6,7), which could explain the strong correlations between psychosocial factors, especially depression, kinesiophobia and LSM, and knee function in older adults with early KOA.

Our findings further suggest that this correlation decreases over time, possibly due to familiarity with the disease, associated changes or adaptations in lifestyle and interventions.

Therefore, our findings support a **stage-specific rehabilitation approach**.

In early KOA, physicians and therapists should also proactively **address these psychosocial factors**, in addition to conventional interventions, to **improve knee function**.

As chronicity increases, rehabilitation may shift toward biomechanical and structural management. A **biopsychosocial model** is recommended to optimize KOA care across its trajectory.

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