BAB III

Naskah Publikasi

Plagiasi Dosen 6

Prodi Fisioterapi

University of Muhammadiyah Malang

Document Details

Submission ID
trn:oid:::1:3211304058

Submission Date
Apr 10, 2025, 11:33 AM GMT+7

Download Date
Apr 10, 2025, 11:49 AM GMT+7

File Name
27-1684820848_5.pdf

File Size
85.8 KB

4 Pages

2,490 Words

13,684 Characters

3% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

Filtered from the Report

- Bibliography
- Quoted Text
- Cited Text
- Small Matches (less than 8 words)

Exclusions

- 26 Excluded Matches

Match Groups

3 Not Cited or Quoted 3%
Matches with neither in-text citation nor quotation marks

0 Missing Quotations 0%
Matches that are still very similar to source material

0 Missing Citation 0%
Matches that have quotation marks, but no in-text citation

0 Cited and Quoted 0%
Matches with in-text citation present, but no quotation marks

Top Sources

3% Internet sources
4% Publications
0% Submitted works (Student Papers)

Integrity Flags

0 Integrity Flags for Review

No suspicious text manipulations found.

Our system's algorithms look deeply at a document for any inconsistencies that would set it apart from a normal submission. If we notice something strange, we flag it for you to review.

A Flag is not necessarily an indicator of a problem. However, we'd recommend you focus your attention there for further review.

Match Groups

- **3** Not Cited or Quoted 3%
  Matches with neither in-text citation nor quotation marks
- **0** Missing Quotations 0%
  Matches that are still very similar to source material
- **0** Missing Citation 0%
  Matches that have quotation marks, but no in-text citation
- **0** Cited and Quoted 0%
  Matches with in-text citation present, but no quotation marks

Top Sources

3% Internet sources
4% Publications
0% Submitted works (Student Papers)

Top Sources

The sources with the highest number of matches within the submission. Overlapping sources will not be displayed.

1 Internet

discovery.researcher.life **3%**

Original Article

Analysis of depression, activity daily living and balance among elderly with knee osteoarthritis in Malang, Indonesia

Sri Sunaringsih Ika Wardojo,[1] Rakhmad Rosadi,[1] Owen Nkoka,[2] Sun Qianhui,[3] Aqila Cintia,[4] Prasasti Millenia Seputri[4]

Physiotherapy Department, [1]Faculty of Health Science, University of Muhammadiyah Malang, [2]School of Health and Wellbeing, University of Glasgow, [3]Department of Physical Education and Sport Sciences, National Taiwan Normal University and [4]Physiotherapy Profession Department, Faculty of Health Science, University of Muhammadiyah Malang, Indonesia

Objective: To investigate the relationship between depression and activity daily living (ADL) towards balance among knee osteoarthritis patients in Malang.
Methodology: This cross-sectional study with purposive sampling technique was conducted in primary healthcare centers in Malang and included 166 participants. Patients aged above 60 years, diagnosed with knee osteoarthritis with Kellgren-Lawrence grade 1-2, had symptoms of depression/mild depression (based on medical diagnosis), did not have severe visual disturbances; did not have neurological problems and did not consume any antidepressants were included in the study. We used Geriatric Depression Scale, Barthel Index, and Single Leg Standing test. All the data were analyzed using the Independent T-test and Pearson Correlation.
Results: Depression negatively correlated with balance ability ($p<0.05$; r1=-0.25). Ability to do daily activities was positively correlated with balance ability ($p<0.05$; $r = 0.55$).
Conclusion: It is urged to focus on maintaining and promoting knee osteoarthritis patients' psychological health and recommend it to be included in the policy of geriatric health management. This will minimize the occurrence of potentially harmful secondary effects and gain an optimal quality of life for the elderly.
Keywords: Depression, activities of daily living, balance, elderly, knee osteoarthritis.

INTRODUCTION

Osteoarthritis (OA) is a medical condition that affects the joints and is mainly caused by the progressive weakening of cartilage. All joint tissues, meniscus, subchondral bone, synovial membrane, and infrapatellar fat pad are affected.[1] OA typically affects knees, hands, hips, spine, and feet, and these patients experience pain, stiffness, crepitation, edema, joint deformity, instability, limited range of motion (ROM), physical activity limits, and muscle weakness, which limiting their abilities on doing daily activities like standing and walking.[2,3]
In 2018, Global Burden of Diseases, Injuries, and Risk Factor Study (GBD),[4] reported that depression and anxiety were the most devastating mental diseases, and depression disorders among knee OA patients was increasing their risk of death.[5] WHO also reported that 43.3% elderly with knee OA had depressive disorder.[6] In 2020, the Indonesian Ministry of Health also reported that depression prevalence increases with age, peaking at 8.9% for those aged 75+, 8.0% for those aged 65-74, and 6.5% for those aged 55-64.[7]
Depression-executive dysfunction syndrome is a significant depression-related condition.[8] It describes cognitive abnormalities among elderly with depression which included psychomotor retardation, the predominant symptom of depression, and slows movement, which causes cognitive deficiencies that lead to functional abnormalities.[9,10] Depressed elderly with knee OA tends to have slower walking speeds, which increased their balance issues and risk of falling.[10] Depression and falling are interconnected.[11] Depressive disorders negatively affect balance, therefore as depression rises, it might lead to increased risk of falls.[12] When added as a predictor of falls, depressive disorder increased from 59% to 63%.[13] The knee OA patients who are depressed receive little mental health care.[14] Only few studies explored this issue, thus it is an urge to find the correlation between depression, activity daily of living (ADL), and balance among knee OA patients.

METHODOLOGY

This cross-sectional study used purposive sampling technique with homogeneous method. The inclusion criteria were aged 60 or older diagnosed with knee OA with Kellgren Lawrence grade 1-2 (mild to moderate OA), had symptoms of depression/mild depression (based on medical diagnosis) did not have severe visual disturbances that cannot be corrected with glasses or

hearing aids, did not have neurological problems and did not take any antidepressants. There were 166 participants recruited from Puskesmas Rampal Celaket and Posyandu Lansia Samaan Malang from June to September 2021 (Fig. 1).We used Geriatric Depression Scale, Barthel Index, and Single Leg Standing test.

The University of Muhammadiyah Malang Health Research Ethics Committee (No.E.5. a/225/KEPK-UMM/XI/2021) approved this study. All patients signed an informed consent.

Barthel Index is 10-item questionnaires which measures ADL function (feeding, bathing, grooming, dressing, bladder control, bowel control, toilet use, transfers, mobility, climbing stairs). The Barthel index score is 100, with higher scores indicating better ADL ability and lower scores indicating worse ADL.[15]

Geriatric Depression Scale (GDS-15) evaluated depression using the 15-item version of the GDS (range 0–15),[12] which is a standardized self-questionnaire (response: yes or no). Higher scores indicate more depressive symptoms (0 point indicates no depression and 15 points indicates severe depression). The GDS score is now one of the most widely used depression scales in the older population.[16]

Single Leg Stand (SLS) test were employed to identify balance ability.[17] This test was conducted by asking respondents to stand with both feet on a flat platform and lift one leg as long as feasible, with open eyes. When one leg is lifted off the floor, the time computation begins. SLS test results <5 seconds indicate poor balance, while SLS results ≥5 seconds indicate good balance.[17]

Statistical Analysis: Data analysis was done by SPSS version 26. Independent T-tests were used to compare participants' characteristics between poor and good balance groups. While, Pearson Correlation was utilized to examine the correlation between depression and ADL towards balance. $p<0.05$ was considered significant.

RESULTS

Out of 166 participants, 90 had good balance (SLS≥5 seconds) and 76 had poor balance (SLS<5 seconds) (Table 1). Independent T-test showed that participants with good balance tend to have better ADL, lower depression score, and lower BMI compared to poor balance groups, with means were 95.25, 3.08, and 25.55, respectively($p<0.05$).

Table 2 shows the Pearson Correlation results between depression and ADL towards balance among knee OA patients. It showed depression had a negatively correlated with balance ability ($p<0.05$; $r1=-0.25$). While ability to do daily activities (ADL) were positively correlated with balance ability ($p<0.05$; $r = 0.55$).

DISCUSSION

This study found that balance was positively connected with ADL and adversely correlated with depression

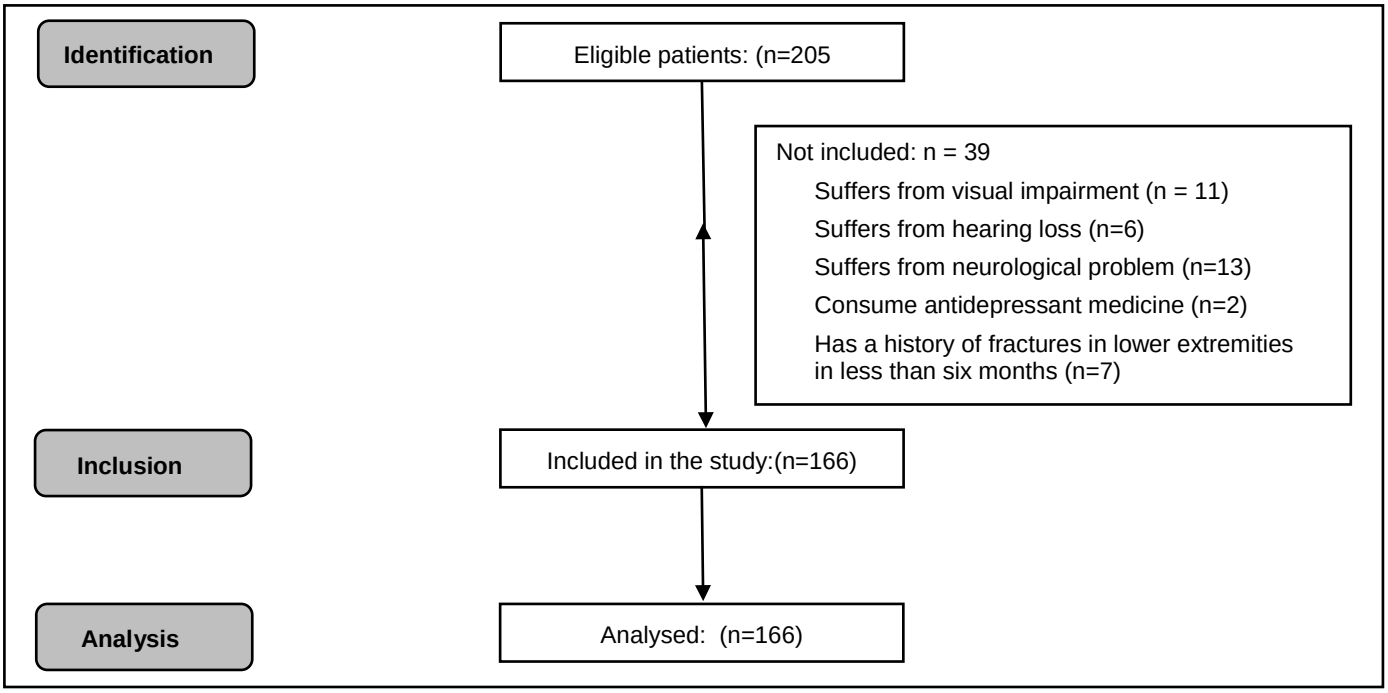

Fig. 1: Diagram of recruitment.

among knee OA patients. According to an earlier study, depression in knee OA patients is linked to cognitive deficiencies, which can lead to poor balance stability if given a cognitively taxing gait test, and executive function.[18] Lespasio et al,[3] observed that depressive patients had poorer balance than healthy controls. Patients with depression have postural difficulties that disturb body equilibrium.[2,3]

The posture of a depressed individual, with the head, always dropped due to the desire to look at the floor, postural kyphosis, and hip retroversion, might compromise balance.[1,3] Driban et al,[2] showed that depressive illness patients had slower gait speeds, shorter step lengths, and longer gait cycles than healthy controls. Depression in the elderly increases the chance of falling due to decreased walking speed.[2]

Depression also affects balance control neurologically, as it caused balance control abnormalities in brain circuits that control autonomic and vestibulo-autonomic pathways.[1] The Parabrachial Nucleus (PBN) in the medulla oblongata controls this neuronal circuit.[3] PBN contains significant connections with the central amygdaloid nucleus, infralimbic cortex, and hypothalamus, which control movement and balance.[6] Depression, panic, and avoidance pathways process vestibular, visual, and sensory input at the PBN.[8] This neural paradigm also explains the correlation between balance issues and depression.[6] Depression disrupts oculomotor and visual control, causing visual abnormalities and balance disorders.[3]

Depression might also diminish motivation to meet demands and promote self-neglect.[3] ADL quality can affect executive function (cognitive flexibility, organization, initiation, maintenance, and action planning.[1] According to the frontal aging theory, prefrontal brain functions including executive function are the first to decline.[9] ADL quality decreases stride length and gait quality, which might influence balance.[3]

Depression illnesses generally raise medical expenditures, hinder social functioning, and lower quality of life.[1] Depressive problems can sometimes cause knee OA patients to lose balance, and it might increase risk of falls.[19] Falls caused hip, forearm, humerus, and pelvis fractures and osteoporosis.[3]

Table 1: Comparison of Patients Characteristics based on its balance category (N=166).

Variable	Goodbalance (≥5") (n=90)	Poorbalance (<5") (n=76)	p value
	Mean (SD)	Mean (SD)	
Age (years)			0.08
Gender			
Male	0.25 (87.68)	0.07 (108.89)	0.12
Female	0.57 (50.20)	0.10 (105.35)	0.32
BMI	25.55 (4.12)	28.30 (5.69)	0.02*
ADL	95.25 (14.18)	58.39 (33.25)	0.01*
Depression	3.08 (3.21)	4.85 (3.66)	<0.00**
Balance	7.71 (12.33)	3.22 (1.55)	0.01*

*p<0.05; **p<0.001

Table 2: Correlation between depression, ADL, and balance (n=166).

Variable	p value	Coefficient Correlation (r)
Depression	0.001*	-0.25
ADL	0.000*	0.55

*p<0.05; **p<0.00

CONCLUSION

Psychological health (depression) had negative correlation with balance ability among elderly knee OA patients. Elderly who have better ability to do their ADL will be more likely to have balance than others. It is an urge to focus on maintaining and promoting elders' psychological health and recommend it to be included in the policy of geriatric health management in Indonesia. It will minimize the occurrence of potentially harmful secondary effects and gain an optimal quality of life for the elderly.

Author Contributions:
Conception and design: Sri Sunaringsih Ika Wardojo.
Collection and assembly of data: Sri Sunaringsih Ika Wardojo, Rakhmad Rosadi, Sun Qianhui.
Analysis and interpretation of data: Sri Sunaringsih Ika Wardojo, Prasasti Millenia Seputri.
Drafting of the article: Rakhmad Rosadi, Sun Qianhui.
Critical revision of article for important intellectual content: Rakhmad Rosadi.
Statistical Expertise: Owen Nkoka, Aqila Cintia.
Final approval and guarantor of the article: Sri Sunaringsih Ika Wardojo, Owen Nkoka.
Corresponding Author Email: Sri Sunaringsih Ika Wardojo Ph D Faculty of Health Science, University of Muhammadiyah Malang, Malang, Indonesia srisunaringsihika@gmail.com
Conflict of Interest: None declared.
Rec. Date: Mar 2, 2023 Revision Rec. Date: Aug 10, 2023 Accept Date: Sep 16, 2023.

REFERENCES

1. Ahmad IW, Rahmawati LD, Wardhana TH. Demographic Profile, Clinical and Analysis of Osteoarthritis Patients in Surabaya. Biomol Heal Sci J 2018;1:34–9.
2. Driban JB, Price LL, Eaton CB, Lu B, Lo GH, Lapane KL, et al. Individuals with incident accelerated knee osteoarthritis have greater pain than those with common knee osteoarthritis progression: data from the Osteoarthritis Initiative. Clin Rheumatol. Springer 2016;35:1565–71.
3. Lespasio MJ, Piuzzi NS, Husni ME, Muschler GF, Guarino A, Mont MA. Knee Osteoarthritis: A Primer. Perm J 2017;21:1–7.
4. Zheng S, Tu L, Cicuttini F, Zhu Z, Han W, Antony B, et al. Depression in patients with knee osteoarthritis: risk factors and associations with joint symptoms. BMC Musculoskelet Disord 2021;22:1–10.
5. Zheng X, Wan Q, Jin X, Huang H, Chen J, Li Y, et al. Fall efficacy and influencing factors among Chinese community-dwelling elders with knee osteoarthritis. Int J Nurs Pract 2016;22:275–83.
6. Abdoli N, Salari N, Darvishi N, Jafarpour S, Solaymani M, Mohammadi M, et al. The global prevalence of major depressive disorder (MDD) among the elderly: A systematic review and meta-analysis. Neurosci Biobehav Rev 2022;132:1067–73.
7. Rosadi R, Wardojo SSI. The effect of fear of falling towards falls incidence among knee osteoarthritis patients in Malang, Indonesia: a cross-sectional study. Bali Med J 2022;11:793–6.
8. AC O, Ogunlana, Adegoke, F. O, Useh U. Depression, pain, and physical function in patients with ostearthritis of the knee: implications for interprofessional care. Niger J Med Rehabil 2015;18:116.
9. Beheydt LL, Schrijvers D, Docx L, Bouckaert F, Hulstijn W, Sabbe B. Psychomotor retardation in elderly untreated depressed patients. Front Psychiatry 2015;6:1–10.
10. Shrestha K, Ojha SP, Dhungana S, Shrestha S. Depression, and its association with quality of life among elderly: An elderly home-cross sectional study. Neurol Psychiatry Brain Res 2020;38:1–4.
11. Wang S-T, Ni G-X. Depression in osteoarthritis: current understanding. Neuropsychiatr Dis Treat 2022;18:375.
12. Iijima H, Aoyama T, Fukutani N, Isho T, Yamamoto Y, Hiraoka M, et al. psychological health is associated with knee pain and physical function in patients with knee osteoarthritis: an exploratory cross-sectional study. BMC Psychol 2018;6:19.
13. Timar B, Timar R, Gai-ă L, Oancea C, Levai C, Lungeanu D. The impact of diabetic neuropathy on balance and on the risk of falls in patients with type 2 diabetes mellitus: A cross-sectional study. PLoS One 2016;11:1–11.
14. Sanders JB, Bremmer MA, Comijs HC, Deeg DJH, Beekman ATF. Gait Speed and the Natural Course of Depressive Symptoms in Late Life; An Independent Association with Chronicity? J Am Med Dir Assoc 2016;17:331–5.
15. Askim T, Bernhardt J, Churilov L, Fredriksen KR, Indredavik B. Changes in physicalactivity and related functional and disability levels in the first six months after stroke: A longitudinal follow-up study. J Rehabil Med 2013;45:423–8.
16. Ouyang P, Sun W. The association between depressive symptoms and fall accidents among middle-aged and elderly people in China. Environ Health Prev Med 2018;23:1–8.
17. Kozinc Ž, Löfler S, Hofer C, Carraro U, Šarabon N. Diagnostic balance tests for assessing risk of falls and distinguishing older adult fallers and non-fallers: A systematic review with meta-analysis. Diagnostics 2020;10:1–16.
18. Labanca L, Barone G, Zaffagnini S, Bragonzoni L, Benedetti MG. Postural stability and proprioception abnormalities in patients with knee osteoarthritis. Appl Sci 2021;11:1–12.
19. Buvneshkumar M, John KR, Logaraj M. A study on prevalence of depression and associated risk factors among elderly in a rural block of Tamil Nadu. Indian J Public Health 2018;62:89.