International Islamic Medical Journal
Journal Homepage ://journal2.unusa.ac.id/index.php/IIMJ

The Effect of Age and Gender on the Pain Scale of LBP Patients

Nurlisa Naila Aulia[1]*, Shobihatus Syifak[2], Anabela Amoret Amsori[3], Ain Darojah Siddiq Ramadhana[4]

[1]Department of Neurology, Faculty of Medicine, Universitas Nahdlatul Ulama Surabaya, Indonesia
[2]Department of Neurology, Faculty of Medicine, Universitas Nahdlatul Ulama Surabaya, Indonesia
[3]Faculty of Medicine, Universitas Nahdlatul Ulama Surabaya, Indonesia
[4]Unit Penelitian dan Pengabdian Kepada Masyarakat, Faculty of Medicine, Universitas Nahdlatul Ulama Surabaya, Indonesia
*Corresponding Author: ain.aspen25@gmail.com
DOI : 10.33086/iimj.v7i1.7252

ARTICLE INFO

Keywords:
Low Back Pain, Age, Gender, Pain Scale

Submitted: April 24th 2025
Reviewed: May 5th 2025
Accepted: June 20th 2025

ABSTRACT

Introduction: Low back pain (LBP) is a prevalent condition affecting people across various age groups and genders. Age-related degeneration and gender-specific hormonal factors are believed to influence pain perception in LBP patients.
Objective: This study aims to examine the influence of age and gender on pain intensity in patients with LBP.
Methods: A cross-sectional observational study was conducted on 47 patients diagnosed with LBP at RSI Jemursari Surabaya. Pain was assessed using the Numeric Rating Scale (NRS). Respondents were grouped by age (20–30, 31–40, 41–50, 51–60, >60 years) and gender (male, female). Pearson correlation and independent t-tests were used for statistical analysis.
Results: Among the respondents, 89.4% were female, with the largest age group being 41–50 years (42.6%). There was a significant positive correlation between age and pain scale ($r = 0.42$, $p = 0.003$). Females reported significantly higher pain scores compared to males ($p = 0.018$).
Conclusions: Age and gender are significantly associated with pain severity in LBP patients. Older individuals and females tend to report more intense pain. These findings highlight the importance of personalized pain management strategies considering demographic factors.

Introduction

Low back pain (LBP) has consistently ranked as one of the leading causes of disability worldwide over the past three decades, resulting in substantial healthcare costs and lost productivity (Hayden et al., 2021). It is typically characterized as discomfort localized in the lower back region, from the lower ribs to the gluteal fold, and may radiate to the lower extremities (Chiodo et al., 2020). Large population-based studies also confirm that the prevalence of chronic pain increases with age and is consistently higher among women, possibly due to both biological and psychosocial factors (Martínez & Sánchez, 2023)

It is estimated that approximately 80% of the global population experiences LBP at some point in their lives (Sahara & Pristya,

2020). In a large-scale national study conducted in the United States, the prevalence of chronic low back pain (cLBP) was found to be over 13%, with higher rates among older adults and women, reinforcing the global burden of this condition (Shmagel, Foley, & Ibrahim, 2016). Numerous factors influence the intensity and perception of pain, with age and gender identified as significant contributors. Aging is commonly associated with spinal degeneration, which may exacerbate pain severity, while hormonal and psychosocial differences contribute to gender-related variations in pain perception (Mu et al., 2020; Fonseca-Rodrigues et al., 2022).

Low back pain (LBP) is not only the leading cause of disability globally but also imposes a substantial economic burden. According to the Global Burden of Disease study, LBP accounts for over 60 million years lived with disability (YLDs) worldwide, leading to productivity loss and increased healthcare expenditures (Wu et al., 2020). In Indonesia, the economic impact is particularly evident in informal workers and labor-intensive sectors, where even short-term disability from LBP can significantly disrupt household income. However, data on national cost estimations remain scarce, underscoring the need for more localized studies that combine epidemiological and economic analyses.

Low back pain (LBP) has consistently ranked as one of the leading causes of disability worldwide over the past three decades, resulting in substantial healthcare costs and lost productivity (Hayden et al., 2021). It is typically characterized as discomfort localized in the lower back region, from the lower ribs to the gluteal fold, and may radiate to the lower extremities (Chiodo et al., 2020). Large population-based studies also confirm that the prevalence of chronic pain increases with age and is consistently higher among women, possibly due to both biological and psychosocial factors (Martínez & Sánchez, 2023).

It is estimated that approximately 80% of the global population experiences LBP at some point in their lives (Sahara & Pristya, 2020). In a large-scale national study conducted in the United States, the prevalence of chronic low back pain (cLBP) was found to be over 13%, with higher rates among older adults and women, reinforcing the global burden of this condition (Shmagel, Foley, & Ibrahim, 2016). Numerous factors influence the intensity and perception of pain, with age and gender identified as significant contributors. Aging is commonly associated with spinal degeneration, which may exacerbate pain severity, while hormonal and psychosocial differences contribute to gender-related

variations in pain perception (Mu et al., 2020; Fonseca-Rodrigues et al., 2022).

Beyond biological explanations, the biopsychosocial model offers a comprehensive framework for understanding LBP. This model considers how psychological variables—such as mood, catastrophizing, and coping styles—along with social factors, like family support and work environment, interact with biological components to shape pain experience (Gatchel et al., 2007; Kamper et al., 2015). Notably, women are more likely to experience depression and anxiety, which may heighten their sensitivity to pain and influence pain behaviors (Mayer et al., 2022).

Despite abundant global studies, research focusing specifically on the Indonesian population remains limited. This study aims to fill that gap by evaluating the relationship between age, gender, and pain intensity in patients with LBP at RSI Jemursari Surabaya. Through this investigation, we hope to provide evidence that can inform tailored pain management strategies sensitive to demographic characteristics.

Previous research also indicates a strong association between anxiety levels and pain intensity in LBP patients (Amsori et al., 2024). However, few studies have comprehensively analyzed the direct influence of age and gender on pain intensity in the Indonesian population. This study aims to fill that gap by evaluating the relationship between these demographic factors and pain severity in LBP patients at RSI Jemursari Surabaya.

In Indonesia, low back pain (LBP) remains one of the most commonly encountered musculoskeletal conditions in primary healthcare settings, particularly among working-age adults and women. Data from national health reports indicate that musculoskeletal disorders rank among the top ten contributors to years lived with disability (YLD) in individuals aged 30–59 years (Ministry of Health Republic of Indonesia, 2018). However, despite this high prevalence, challenges persist in the clinical management of LBP at the primary care level. Many general practitioners lack structured training in pain assessment and evidence-based interventions, leading to variability in diagnosis and treatment (Yusuf, Kurniawan, & Widajanti, 2022). Furthermore, sociocultural norms and economic constraints may influence pain perception, care-seeking behavior, and adherence to therapy. These contextual factors emphasize the need for demographic-specific studies that can inform effective and equitable LBP management strategies tailored to Indonesia’s healthcare landscape.

A recent study highlighted that age and BMI were significantly associated with

both the duration and severity of LBP, although no meaningful difference was observed between genders in terms of pain intensity (Yilmaz, Demirkol, & Aydin, 2024). Central obesity, as measured by a body shape index (ABSI), was found to be associated with an increased risk of LBP, particularly in men and older adults, highlighting the importance of body composition beyond simple BMI (Xie et al., 2025).

Methods

This study employed an analytical observational design with a cross-sectional approach. The research was conducted at the Outpatient Clinic of RSI Jemursari Surabaya between September and November 2024. Ethical clearance was obtained from the Health Research Ethics Committee of Universitas Nahdlatul Ulama Surabaya (No. 015/EC/RSIJ/X/2024).

A total of 47 patients diagnosed with low back pain (LBP) were recruited using consecutive sampling. Inclusion criteria included patients aged over 20 years, diagnosed clinically with nonspecific LBP, and capable of providing informed consent. Exclusion criteria included individuals with neurological deficits, spinal fractures, malignancies, pregnancy, or severe cognitive impairment. All participants signed written informed consent prior to data collection.

Pain intensity was measured using the Numeric Rating Scale (NRS), a validated tool where respondents rated their pain on a scale from 0 (no pain) to 10 (worst imaginable pain). Sociodemographic data, including age and gender, were also recorded. Age was grouped into five categories: 20–30 years, 31–40 years, 41–50 years, 51–60 years, and over 60 years. Gender was classified as male and female.

Data were analyzed using SPSS version 25.0. Pearson correlation was used to assess the relationship between age and pain intensity. An independent t-test was applied to determine the difference in mean NRS scores between genders. A p-value < 0.05 was considered statistically significant.

The Numeric Rating Scale (NRS) was selected due to its high validity and ease of use across diverse patient populations. Previous studies have shown that the NRS has strong concurrent validity with other pain assessment tools and is sensitive to changes in pain intensity over time (Ferreira-Valente et al., 2011). Its simplicity allows patients of varying educational backgrounds to report pain on a scale from 0 (no pain) to 10 (worst possible pain), making it particularly suitable for clinical settings in Indonesia. To minimize inter-rater variability, all pain assessments were conducted by the same trained evaluator using a standardized script.

Results and Discussion

Out of 47 respondents diagnosed with low back pain (LBP), the majority were female (89.4%) and fell within the 41–50 year age group (42.6%). The mean pain intensity score based on the Numeric Rating Scale (NRS) was higher among older patients and females.

Out of 47 respondents diagnosed with low back pain (LBP), the majority were female (89.4%) and fell within the 41–50 year age group (42.6%). The mean pain intensity score based on the Numeric Rating Scale (NRS) was higher among older patients and females.

Statistical analysis using Pearson correlation revealed a significant positive correlation between age and pain intensity ($r = 0.42$, $p = 0.003$), indicating that older individuals tended to report higher pain levels. Furthermore, the independent t-test showed a significant difference in pain scores between genders ($p = 0.018$), with females reporting greater pain intensity compared to males.

These results reinforce prior findings that aging is strongly linked to spinal structural degeneration, including decreased disc hydration, narrowing of intervertebral spaces, and facet joint osteoarthritis, all of which contribute to increased pain (Balagué et al., 2012). In addition, decreased pain tolerance and central sensitization have been documented in older adults, which may further explain their elevated pain perception (Lautenbacher et al., 2017).

The observed gender differences are consistent with literature showing that women typically report higher pain sensitivity and lower pain thresholds than men (Bartley & Fillingim, 2013). Hormonal influences, particularly estrogen, may play a modulatory role in nociceptive transmission, explaining the higher sensitivity observed among female patients (Mogil, 2020). Social and psychological constructs, such as willingness to report pain, anxiety levels, and coping strategies, may also contribute to gender-based disparities (Riley et al., 2002; Mayer et al., 2022).

The psychological component is particularly relevant in chronic pain syndromes. As noted by Amsori et al. (2024), anxiety is significantly associated with pain intensity in LBP, particularly among women. This supports the biopsychosocial model of pain, emphasizing the integration of psychological well-being into pain management approaches.

Interestingly, not all studies support the same conclusions. For example, Kowalski et al. (2022) reported no significant association between age or gender and pain severity among patients undergoing conservative rehabilitation for discopathy,

suggesting that therapeutic context or intervention stage may mediate these relationships. Additionally, cultural differences in pain expression and treatment-seeking behavior may also influence findings across populations (Tsang et al., 2008).

In this study, the large proportion of female participants may have amplified the gender–pain relationship; however, it also reflects the higher prevalence of LBP among women in the general population. While age was significantly correlated with pain, future studies with larger and more balanced samples are warranted to further validate these findings and account for potential confounders such as occupation, physical activity level, and comorbidities.

From a clinical standpoint, these findings support the need for personalized pain management strategies. For older adults, interventions that include posture correction, physical therapy, and core muscle strengthening may be emphasized. For female patients, a holistic approach addressing psychological stressors and hormonal influences may enhance outcomes. Education on pain coping mechanisms and lifestyle modification could also be tailored based on demographic risk profiles.

Comparative findings across Asian countries reflect similar trends in the influence of demographic factors on LBP. Sedentary lifestyles, often compounded by age-related musculoskeletal changes and limited access to health education, have been consistently linked to greater pain severity and chronicity (Chen et al., 2009). In countries with limited resources, such as Indonesia, older adults and women are particularly vulnerable due to barriers in accessing appropriate care and ergonomic infrastructure.

Within the Indonesian healthcare context, primary care physicians play a pivotal role in addressing musculoskeletal pain. However, challenges persist related to diagnostic capacity and adherence to pain management protocols. Yusuf et al. (2022) emphasized that variations in physician training and awareness significantly affect how LBP is treated at the primary care level. To enhance outcomes, system-wide integration of standardized assessment tools and age- and gender-sensitive treatment guidelines is essential.

From a public health perspective, understanding the influence of age and gender on LBP is essential for designing effective prevention programs. Workplace ergonomics, early musculoskeletal screenings, and gender-tailored health education should be prioritized by primary healthcare services. Moreover, integrating pain management into national non-communicable disease (NCD) strategies

could help mitigate the burden of chronic LBP across aging populations

Finally, these results highlight the importance of early screening and targeted prevention for populations at risk—especially aging women. By acknowledging the demographic dimensions of pain, healthcare providers can offer more empathetic, effective, and evidence-based treatment protocols.

Furthermore, there is growing evidence supporting community-level approaches for musculoskeletal care. Hoy et al. (2010) highlighted that empowering local healthcare workers with training in pain screening, lifestyle counseling, and physical rehabilitation is effective in reducing the chronicity of LBP, especially in underserved populations. In Indonesia, such approaches can be integrated into community health centers (Puskesmas), leveraging existing structures for broader outreach and continuity of care.

Comparable findings have been observed in other low- and middle-income countries. In Brazil, a national population-based study found that 39% of adults experienced chronic pain, with a higher prevalence among women and older adults. This disparity was attributed to hormonal changes, musculoskeletal degeneration, and sociocultural barriers to accessing care (de Souza et al., 2017). Similarly, in Northern India, a community-based study highlighted the significant burden of low back pain, both in terms of decreased quality of life and economic loss, particularly among elderly individuals engaged in manual labor (Sharma et al., 2020). These international findings align with the present study, reinforcing the influence of age and gender in shaping LBP experiences.

For Indonesia, the integration of low back pain prevention and management into existing community health systems—such as Puskesmas and Posyandu—offers a promising solution. Community health workers can be empowered to deliver early screening, ergonomic education, and non-pharmacological interventions tailored to at-risk groups. Embedding musculoskeletal care into national non-communicable disease (NCD) strategies would ensure sustainability and improve outcomes for populations most affected by LBP.

Limitations & Future Directions

This study has several limitations that should be acknowledged. First, the relatively small sample size (n = 47) may reduce the statistical power and limit the generalizability of the findings. The predominance of female participants (89.4%) also introduces a gender imbalance that could have influenced the observed outcomes. Although the gender disparity mirrors clinical trends in LBP care, a more balanced sample would provide more

nuanced insights into gender-specific pain patterns.

Second, the study was conducted at a single institution using a cross-sectional design, which restricts the ability to draw causal inferences. Longitudinal studies with larger, multicenter samples are recommended to better understand how age and gender influence pain trajectories over time.

Additionally, psychosocial variables such as anxiety, depression, occupational strain, and cultural factors were not measured, even though prior studies have highlighted their importance in shaping pain perception (Gatchel et al., 2007; Fonseca-Rodrigues et al., 2022). Future research should incorporate these multidimensional factors to improve the comprehensiveness of LBP assessments.

In terms of clinical practice, further investigation is needed to explore the effectiveness of community-based interventions, digital self-management tools, and integrated care models tailored to demographic characteristics. These strategies could contribute to more equitable and patient-centered management of LBP in Indonesia and other low-resource settings.

Conclusion

This study concludes that both age and gender significantly influence pain intensity in patients with low back pain (LBP). Older adults and female patients tend to report higher levels of pain, which may be attributed to biological degeneration, hormonal influences, and psychological vulnerability. These findings emphasize the relevance of demographic profiling in designing patient-centered interventions.

Clinicians should consider integrating age- and gender-sensitive approaches in LBP management, such as tailored physical rehabilitation programs, psychological support, and pain education. Recognizing these demographic patterns not only aids in early identification of high-risk groups but also enhances adherence to therapy and long-term outcomes. Furthermore, these results reinforce current guidelines that recommend biopsychosocial, non-pharmacologic strategies as a first-line approach to LBP.

Future research should focus on larger samples and explore additional variables such as occupation, obesity, physical activity level, and mental health status. Such efforts are essential to build comprehensive care pathways that are culturally appropriate and demographically responsive.

These findings call for the incorporation of musculoskeletal health into national health agendas, especially within primary and community-based care systems. Policies that support training of primary

care staff, improve access to pain assessment tools, and promote early screening programs can help reduce the burden of LBP, particularly among vulnerable populations such as older adults and women. Addressing LBP not only improves individual quality of life but also reduces societal costs associated with disability and productivity loss. An integrative, demographic-sensitive approach must be prioritized in future health planning.

References

Amsori, A. A., Aulia, N. N., El, W., & Rusdi, M. (2024). *Hubungan Tingkat Kecemasan dengan Intensitas Nyeri pada Penderita Nyeri Punggung Bawah Di RSI Jemursari Surabaya*. *5*(3), 1141–1147.

Balagué, F., Mannion, A. F., Pellisé, F., & Cedraschi, C. (2012). Non-specific low back pain. *The Lancet*, 379(9814), 482–491. https://doi.org/10.1016/S0140-6736(11)60610-7

Bartley, E. J., & Fillingim, R. B. (2013). Sex differences in pain: a brief review of clinical and experimental findings. *British Journal of Anaesthesia, 111*(1), 52–58. https://doi.org/10.1093/bja/aet127

Chiodo, A. E., Bhat, S. N., Harrison, R. Van, Shumer, G. D., Wasserman, R. A., Park, P., & Patel, R. D. (2020). *UMHS Low Back Pain Guideline Update*. *November*, 1–30.

Chen, S.-M., Liu, M.-F., Cook, J., Bass, S., & Lo, S.-K. (2009). Sedentary lifestyle as a risk factor for low back pain: A systematic review. *International Archives of Occupational and Environmental Health, 82*(7), 797–806. https://doi.org/10.1007/s00420-009-0410-0

de Souza, J. B., Grossmann, E., Perissinotti, D. M. N., de Oliveira, J. O., da Fonseca, P. R. B., & Posso, I. P. (2017). Prevalence of chronic pain, treatments, and associated factors in the Brazilian population. *Pain Research and Management, 2017*, 4643830. https://doi.org/10.1155/2017/4643830

Ferreira-Valente, M. A., Pais-Ribeiro, J. L., & Jensen, M. P. (2011). Validity of four pain intensity rating scales. *Pain, 152*(10), 2399–2404. https://doi.org/10.1016/j.pain.2011.07.005

Fonseca-Rodrigues, D., Rodrigues, A., Martins, T., Pinto, J., Amorim, D., Almeida, A., & Pinto-Ribeiro, F. (2022). Correlation between pain severity and levels of anxiety and depression in osteoarthritis patients: A systematic review and meta-analysis. *Rheumatology (United Kingdom)*, *61*(1), 53–75. https://doi.org/10.1093/rheumatology/ke

ab512

Gatchel, R. J., Peng, Y. B., Peters, M. L., Fuchs, P. N., & Turk, D. C. (2007). The biopsychosocial approach to chronic pain: scientific advances and future directions. *Psychological Bulletin*, 133(4), 581–624. https://doi.org/10.1037/0033-2909.133.4.581

Hjermstad, M. J., Fayers, P. M., Haugen, D. F., Caraceni, A., Hanks, G. W., Loge, J. H., ... & Kaasa, S**.** (2011). Studies comparing numerical rating scales, verbal rating scales, and visual analogue scales for pain intensity in adults: A systematic literature review. *Journal of Pain and Symptom Management, 41*(6), 1073–1093. https://doi.org/10.1016/j.jpainsymman.2010.08.016

Hayden, J. A., Ellis, J., Ogilvie, R., Malmivaara, A., & van Tulder, M. W. (2021). Exercise therapy for chronic low back pain. *Cochrane Database of Systematic Reviews*, *2021*(9). https://doi.org/10.1002/14651858.CD009790.pub2

Hoy, D., Brooks, P., Blyth, F., & Buchbinder, R. (2010). The epidemiology of low back pain. *Best Practice & Research Clinical Rheumatology, 24*(6), 769–781. https://doi.org/10.1016/j.berh.2010.10.002

Kamper, S. J., Apeldoorn, A. T., Chiarotto, A., Smeets, R. J., Ostelo, R. W., Guzman, J., & van Tulder, M. W. (2015). Multidisciplinary biopsychosocial rehabilitation for chronic low back pain. *Cochrane Database of Systematic Reviews*, (9). https://doi.org/10.1002/14651858.CD000963.pub3

Kowalski, D., Nowak, K., & Zielinski, P. (2022). *Age and sex in back pain intensity—Retrospective study of patients with discopathy*. Life, 12(11), 1808. https://doi.org/10.3390/life12111808

Lautenbacher, S., Kunz, M., Strate, P., Nielsen, J., & Arendt-Nielsen, L. (2017). Age effects on pain thresholds, temporal summation and spatial summation of heat and pressure pain. *Pain*, 158(4), 698–707. https://doi.org/10.1097/j.pain.0000000000000826

Mayer, T. G., Neblett, R., Cohen, H., Howard, K. J., Choi, Y. H., & Williams, M. J. (2022). Psychological factors affecting chronic pain in women: the influence of depression and anxiety. *Pain Medicine*, 23(1), 3–12. https://doi.org/10.1093/pm/pnab143

Ministry of Health Republic of Indonesia. (2018). *Indonesia Basic Health Research 2018 (RISKESDAS)*. Jakarta: National Institute of Health Research

and Development.

Mogil, J. S. (2020). The translatability of pain across species. *Philosophical Transactions of the Royal Society B: Biological Sciences, 375*(1794), 20190291. https://doi.org/10.1098/rstb.2019.0291

Mu, J., Furlan, A. D., Lam, W. Y., Hsu, M. Y., Ning, Z., & Lao, L. (2020). Acupuncture for chronic nonspecific low back pain. *Cochrane Database of Systematic Reviews*, *2020*(12). https://doi.org/10.1002/14651858.CD013814

Portney, L. G., & Watkins, M. P. (2015). *Foundations of clinical research: Applications to practice* (3rd ed.). F.A. Davis Company.

Qaseem, A., Wilt, T. J., & McLean, R. M. (2022). Noninvasive treatments for acute, subacute, and chronic low back pain: Clinical guideline from the American College of Physicians. *Annals of Internal Medicine*, 175(3), 440–450. https://doi.org/10.7326/M16-2367

Riley, J. L., Robinson, M. E., Wise, E. A., Myers, C. D., & Fillingim, R. B. (2002). Sex differences in the perception of noxious experimental stimuli: a meta-analysis. *Pain, 74*(2–3), 181–187. https://doi.org/10.1016/S0304-3959(97)00199-1

Sahara, R., & Pristya, T. Y. (2020). Faktor Risiko yang Berhubungan dengan Kejadian Low Back Pain (LBP) pada Peker-ja: Literature Review. *Jurnal Ilmiah Kesehatan*, *19*(3), 92–99.

Sharma, R., Kaur, M., & Singh, R. (2020). Prevalence and impact of low back pain in a community-based population in Northern India. *Pain Physician, 23*(2), E179–E187. https://www.painphysicianjournal.com/current/pdf?article=NzA4OQ%3D%3D&journal=128

Shmagel, A., Foley, R., & Ibrahim, H. (2016). Epidemiology of chronic low back pain in US adults: National Health and Nutrition Examination Survey 2009–2010. *Arthritis Care & Research*, 68(11), 1688–1694. https://doi.org/10.1002/acr.22890

Tsang, A., Von Korff, M., Lee, S., Alonso, J., Karam, E., Angermeyer, M. C., ... & Watanabe, M. (2008). Common chronic pain conditions in developed and developing countries: gender and age differences and comorbidity with depression-anxiety disorders. *Journal of Pain*, 9(10), 883–891. https://doi.org/10.1016/j.jpain.2008.05.005

Wu, A., March, L., Zheng, X., Huang, J., Wang, X., Zhao, J., ... & Hoy, D. (2020). Global low back pain prevalence and years lived with disability from 1990 to 2017: Estimates from the Global Burden of Disease Study 2017. *Annals of*

Translational Medicine, 8(6), 299. https://doi.org/10.21037/atm.2020.02.175

Xie, S., Xiao, H., Li, G., Zheng, J., Zhang, F., Lan, Y., & Luo, M. (2025). Association between a body shape index and low back pain: A cross-sectional study highlighting gender-specific differences in NHANES data. *BMC Public Health*, 25, 21904. https://doi.org/10.1186/s12889-025-21904-3

Yilmaz, B., Demirkol, O., & Aydin, M. (2024). *Effects of age, gender and modifiable risk factors on low back pain*. Medicine Science. Manuscript accepted for publication.

Yusuf, M., Kurniawan, F., & Widajanti, N. (2022). Factors influencing primary care physicians' management of musculoskeletal pain in Indonesia. *Journal of Primary Health Care, 14*(3), 215–222. https://doi.org/10.1071/HC22045