ORIGINAL ARTICLE

The Most Common Causes of Low Back Pain in Surabaya Hajj General Hospital

Rita Vivera Pane[1,2], Eko Agus Subagio[3], Aufar Zimamuz Zaman Al Hajiri[4]

[1] Department of Physical Medicine and Rehabilitation, Faculty of Medicine Universitas Nahdlatul Ulama Surabaya, Surabaya, Indonesia.

[2] Department of Physical Medicine and Rehabilitation, Hajj General Hospital of Surabaya, Surabaya, Indonesia.

[3] Department of Neurosurgery, Faculty of Medicine Universitas Airlangga, Surabaya, Indonesia.

[4] Faculty of Medicine Universitas Nahdlatul Ulama Surabaya, Surabaya, Indonesia.

ABSTRACT

Introduction: Low back pain (LBP) become one of the major complaints among the worldwide population leading to morbidity increase. LBP affects the patient's productivity and quality of life. Frequent hospital visits among patients due to the unknown cause of LBP. This study aimed to determine the most common causes among LBP patients at Surabaya Hajj General Hospital.

Methods: A descriptive study to determine the most common cause of LBP. Patients with complaints of LBP who came to the Department of Physical Medicine and Rehabilitation at Hajj General Hospital Surabaya from May to September 2019 were included in this study. While the exclusion criteria were patients with a history of surgery, autoimmune disease, and congenital disease.

Results: This study involved a total of 223 participants. Chronic LBP was reported to occur mostly in the mean age of 58.37 years and female participants. The average BMI in this study fell within the obesity range. The three most common causes of LBP included sacroiliac joint (35.4%), piriformis syndrome (27.3%), and facet joint (23.7), followed by other causes such as myofascial trigger point syndrome, canal stenosis, discogenic, and radiculopathy.

Conclusion: The most common causes of LBP patients at Haji General Hospital are sacroiliac joint, piriformis syndrome, and facet joint. It is important for the physician to determine the cause of LBP to treat the patient appropriately.

Keywords: Low back pain, sacroiliac joint, piriformis syndrome, facet joint

ABSTRAK

Latar belakang: *Low back pain* (LBP) menjadi salah satu keluhan utama di seluruh dunia yang menyebabkan peningkatan morbiditas. LBP mempengaruhi produktivitas dan kualitas hidup pasien. Peningkatan kunjungan rumah sakit pada pasien berkaitan dengan penyebab LBP yang tidak diketahui. Penelitian ini bertujuan untuk mengetahui penyebab tersering pada pasien LBP di Rumah Sakit Umum Haji Surabaya.

Metode: Sebuah penelitian deskriptif untuk mengetahui penyebab LBP tersering. Pasien dengan keluhan nyeri punggung bawah yang datang ke Departemen Kedokteran Fisik dan Rehabilitasi Rumah Sakit Umum Haji Surabaya dari bulan Mei sampai September 2019 diikutsertakan dalam penelitian ini. Sedangkan kriteria eksluasi adalah pasien dengan riwayat pembedahan, penyakit autoimun, dan penyakit kongenital.

Hasil: Penelitian ini melibatkan total 223 peserta, paling banyak pasien mengalami LBP kronis dengan rata-rata usia 58,37 tahun dan berjenis kelamin wanita. Hasil rata-rata BMI pada penelitian ini termasuk kriteria obesitas. Tiga penyebab paling umum dari LBP adalah sacroiliac joint (35,4%), sindrom piriformis (27,3%), dan facet Joint (23,7), diikuti oleh penyebab lain yaitu myofascial trigger point syndrome, canal stenosis, discogenic, dan radiculopathy.

Kesimpulan: Penyebab paling umum pada pasien LBP Rumah Sakit Umum Haji adalah sacroiliac joint, piriformis syndrome dan facet joint. Penting bagi dokter untuk menentukan penyebab LBP agar dapat melakukan penanganan dengan tepat.

Kata kunci: *Low back pain, sacroiliac joint, piriformis syndrome, facet joint*

Correspondent Detail:

Rita Vivera Pane

Department of Physical Medicine and Rehabilitation, Faculty of Medicine Universitas Nahdlatul Ulama Surabaya, Surabaya, Indonesia.
Email: dr.rita@unusa.ac.id

INTRODUCTION

Complaints of low back pain (LBP) are common in populations worldwide. It becomes the major cause of morbidity and disability that affect patients' productivity and quality of life, significantly increasing medical costs and burdening the country's health system. Everyone has complained of acute LBP at least once in their lifetime. A multicenter study in fourteen Indonesian hospitals reported that 18.37% of patient visits complained of LBP. Low back pain mostly occurs in productive age, usually increases at the age of 30, and decreases at the age above 60 years, as also reported by a study in West Java, Indonesia, where more than a third (38.4%) of LBP cases occurred in productive age. The increased prevalence in this age group was related to excessive physical activity at work including several body positions, which is a risk factor for LBP. [1,2]

The chronicity of LBP, in terms of its duration, could be classified into several categories, include acute LBP (less than six weeks), subacute LBP (around six to twelve weeks), and chronic LBP (more than twelve weeks). Some patients (10-40%) who complain of acute pain less than

6 weeks will continue longer and usually become chronic pain. Chronic LBP was defined as more than 12 weeks, one-third of whom reported moderate-intensity LBP occurring one year after the acute episode. Complaints of LBP are usually self-limiting but often become chronic. In chronic LBP patients, a multidisciplinary approach is needed for effective treatment, including medical, psychological, physical therapy, and interventional treatments.[3]

The etiology of LBP is usually nonspecific or mechanical. Based on patient complaints, LBP includes different types of pain, including neuropathic, nociceptive pain, and mixed of both, which is in some cases like nociceptive origins, the type of pain might be changed to neuropathic if not treated well. Mechanical LBP can occur intrinsically from the spine itself, include intervertebral discs, ligaments, zygapophyseal joints, or other soft tissues arounds. LBP not only comes from spine origin but can include pelvic structures. They include sacroiliac joints, piriformis muscles, and tuberosity eminence.[2,4]

This study aimed to describe the most common cause of LBP in Surabaya Hajj General Hospital.

METHODS

This is a descriptive study that evaluates the LBP's most common cause. The total sampling technique was applied. Patients with complaints of LBP who came to the Physical Medicine and Rehabilitation Department of Surabaya Hajj General Hospital from May to September 2019 were included in this study. While the patient with a history of surgery, autoimmune, and congenital disease were excluded.

The diagnosis causes of LBP was performed by a physiatrist based on clinical diagnosis and some of participants added by diagnostic block musculoskeletal ultrasound guided. General data such as age, gender, weight, height, BMI, duration of LBP, and history of metabolic comorbidities were recorded. Duration of LBP was grouped into two categories: acute (in the first three months) and chronic (more than three months). The metabolic comorbidities include diabetes mellitus, hypertension, obesity, and dyslipidemia.

Data were collected and distributed based on other variables, including LBP's duration and metabolic comorbidities. Data were analyzed descriptively and presented as a number (%) or mean ± SD, performed by IBM SPSS Statistic 26 version. This study has been approved by ethical clearance from the Hajj General Hospital of Surabaya ethics committee.

RESULT

This study involved 223 participants who met the inclusion criteria. Demographic data in Table 1 showed that the patients' mean age was 58.37 years, and most of them were female. Chronic LBP was the most common cause of patients visiting the Physical Medicine and Rehabilitation Installation. The distribution of most common causes among LBP patients is presented in Table 2. The most common cause of LBP was the sacroiliac joint (35.4%), followed by piriformis syndrome (27,3%) and facet joint (23,7%). The most common cause of LBP was analyzed based on the duration and metabolic comorbid, as shown in Table 4.

Table 1. Demographic variable

Variable	Results
Age (years), mean ± SD	58,37 ± (12,78)
Gender, n (%)	
Male	58 (26)
Female	165 (74)
Weight (kg), mean ± SD	62 ± (10,09)
Height (cm, mean ± SD	156 ± (11,94)
Body mass index, mean ± SD	40.2 ± (219,55)
Low back pain duration, n (%)	
Acute	43 (19,3)
Chronic	180 (80,7)
Metabolic comorbid, n (%)	
Obesity	77 (34,5)
Hypertension	54 (24,2)
Dyslipidemia	37 (16,6)
Diabetes Mellitus	34 (15,2)

Table 2. Low back pain cause, n (%)

Most common causes	Results
Sacroiliac Joint	79 (35,4)
Piriformis Syndrome	61 (27,3)
Facet Joint	53 (23,7)
Discogenic	8 (3,5)
Myofascial Trigger Point Syndrome	9 (4,0)
Canal Stenosis	9 (4,0)
Radiculopathy	4 (1,7)

Table 3. Low back pain cause based on the duration, n (%)

Most common causes	Acute Low Back Pain	Chronic Low Back Pain
Sacroiliac Joint	12 (15,2)	67 (84,8)
Piriformis Syndrome	8 (13,2)	53 (86,8)
Facet Joint	8 (15,1)	45 (84,9)
Discogenic	3 (37,5)	5 (62,5)
Myofascial Trigger Point Syndrome	2 (22,3)	7 (77,8)
Canal Stenosis	2 (22,3)	7 (77,8)
Radiculopathy	0	4 (100)

Table 4. Low back pain cause based on the metabolic comorbid, n (%)

Most common causes	Obesity		Hypertension		Dyslipidemia		Diabetes Mellitus	
	Yes	No	Yes	No	Yes	No	Yes	No
Sacroiliac Joint	34 (43,1)	45 (56,9)	17 (21,5)	62 (78,5)	20 (25,3)	59 (75,7)	11 (14,0)	68 (86,0)
Piriformis Syndrome	21 (34,4)	40 (65,6)	9 (14,8)	52 (85,2)	10 (16,4)	51 (83,6)	8 (13,2)	53 (86,8)
Facet Joint	16 (30,2)	37 (69,8)	9 (17,0)	44 (83,0)	17 (32,1)	36 (67,9)	8 (15,1)	45 (84,9)
Discogenic	5 (62,5)	3 (37,5)	1 (12,5)	7 (87,5)	3 (37,5)	5 (62,5)	3 (37,5)	5 (62,5)
Myofascial Trigger Point Syndrome	0	9 (100)	1 (11,1)	8 (88,9)	1 (11,1)	8 (88,9)	2 (22,3)	7 (77,8)
Canal Stenosis	2 (22,3)	7 (77,8)	2 (22,3)	7 (77,8)	2 (22,3)	7 (77,8)	2 (22,3)	7 (77,8)
Radiculopathy	1 (25,0)	3 (75,0)	0	4 (100)	0	4 (100)	0	4 (100)

DISCUSSION

This study showed LBP occurs in middle age until the elderly and the most common one in female patients (Table 1). This finding is in line with other studies in Indonesia reporting that chronic LBP patients in their studies have a mean age of above 50 years old and mostly occur in female patients.[5–7] This finding relates to factors related to women such as pregnancy, use of hormonal contraception, and use of estrogen during menopause. The increased risk of LBP in older women is related to postmenopausal hormonal changes.[8] Postmenopausal women experience faster disc degeneration due to estrogen deficiency, thus affecting the narrowing of the intervertebral disc space compared to men of the same age. A study reported an increased prevalence of spondylolisthesis and an increased prevalence of facet joint arthritis in postmenopausal women. Estrogen affects the molecular biological processes in collagen. Decreased estrogen levels during postmenopausal result in decreased collagen, which affects bones and skin.[9,10]

This result showed that participants' BMI fell within the obesity range, which is in line with metabolic comorbidity, as shown in Table 4, that obesity was the most common comorbidity. This result supports previous studies showing a strong association between obesity and LBP. Obesity is reported to increase the risk factors of LBP in both males and females. [6,11–13] Adipose tissue in obesity triggers releasing the pro and anti-inflammatory cytokines such as C-reactive protein (CRP), interleukin-6 (IL-6), and tumor necrosis factor alpha (TNF-α). [14]

Approximately 90% LBP are non-specific with unknown causes. Non-specific LBP may relate to structural causes. The differential diagnosis of LBP such as facet joint, discus intervertebral joint, canal stenosis, sacroiliac joint, extensor back muscles, piriformis, greater trochanteric pain, sciatica, hip joint, and radiculopathy. [15–18]

The three most common causes in this study were sacroiliac joints, piriformis syndrome, and facet joints (Table 2), which were also the most common cause of chronic LBP (Table 3). It should be noted that most participants in this study fell under the chronic LBP category. Several studies suggest that the sacroiliac joint is the most common cause (about 15-30% of LBP cases). The sacroiliac is due to ligament tension, excessive compression, shear force, hypomobility or hypermobility, and changes in mechanics and kinetic joint dysfunction that cause inflammation.[19] Piriformis syndrome was the structural cause in 17.2% of LBP cases. Piriformis syndrome is caused by the compressed sciatic nerve due to the inflamed or irritated piriformis muscle. Therefore, proper examination is needed to diagnose piriformis syndrome which is an important differential diagnosis and a frequent cause of LBP complaints. Based on several studies, facet joint pain (also known as lumbar zygapophyseal pain) occurs in 30-45% of LBP cases. LBP may result from inflammation stimulating the nociceptive nerve terminals surrounding the facet joint causing meniscus or synovial entrapments, also a swollen capsule. Making the facet joint syndrome diagnosis requires an appropriate clinical assessment based on the history taking and physical examination, but sometimes requires radiological investigation to confirm. [15,20–23]

A limitation of this study lies in the number of LBP patients enrolled in this study, who may not be representative of the entire hospital. Regarding health care regulations, patients who complain of LBP are not immediately directed to the physical medicine and rehabilitation installation; instead, they undergo an initial examination in other installation, including the neurology or orthopedic surgery installation. Patients who have been treated initially but do not show improvement in their complaints are usually referred to the physical medicine and rehabilitation department.

CONCLUSION

The most common cause of LBP among Surabaya Hajj General Hospital patients was Sacroiliac Joint, followed by Piriformis, Facet Joint, Myofascial Trigger Point Syndrome, Canal Stenosis, Discogenic, and Radiculopathy Syndrome. It is important for a physician to investigate LBP etiology to decide the therapy management.

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REFERENCE

1. Novitasari, D. D., Sadeli, H. A., Soenggono, A., Sofiatin, Y., Sukandar, H., & Roesli, R. M. A. (2016). Prevalence and Characteristics of Low Back Pain among Productive Age Population in Jatinangor. Althea Medical Journal, 3(3), 469–476. https://doi.org/10.15850/amj.v3n3.863
2. Will, J. S., Bury, D. C., & Miller, J. A. (2018). Mechanical Low Back Pain. Am Fam Physician, 98(7), 421–428. https://doi.org/10.1016/B978-1-4160-2384-5.50009-2
3. Urits, I., Burshtein, A., Sharma, M., Testa, L., Gold, P. A., Orhurhu, V., Viswanath, O., Jones, M. R., Sidransky, M. A., Spektor, B.,

& Kaye, A. D. (2019). Low Back Pain, a Comprehensive Review: Pathophysiology, Diagnosis, and Treatment. Current Pain and Headache Reports, 23(3). https://doi.org/10.1007/S11916-019-0757-1

4. Knezevic, N. N., Candido, K. D., Vlaeyen, J. W. S., Van Zundert, J., & Cohen, S. P. (2021). Low back pain. The Lancet, 398(10294), 78–92. https://doi.org/10.1016/S0140-6736(21)00733-9
5. Semeru, G. M., & Halim, M. S. (2019). Acceptance versus catastrophizing in predicting quality of life in patients with chronic low back pain. The Korean Journal of Pain, 32(1), 22–29. https://doi.org/10.3344/KJP.2019.32.1.22
6. Makkiyah, F., Sinaga, T. A., & Khairunnisa, N. (2022). A Study from a Highly Populated Country : Risk Factors Associated with Lower Back Pain in Middle-Aged Adults. Journal of Korean Neurosurgical Society. https://doi.org/10.3340/JKNS.2021.0278
7. Shiri, R., Falah-Hassani, K., Heliövaara, M., Solovieva, S., Amiri, S., Lallukka, T., Burdorf, A., Husgafvel-Pursiainen, K., & Viikari-Juntura, E. (2019). Risk Factors for Low Back Pain: A Population-Based Longitudinal Study. Arthritis Care and Research, 71(2), 290–299. https://doi.org/10.1002/acr.23710
8. Ghafouri, M., Teymourzadeh, A., Nakhostin-Ansari, A., Sepanlou, S. G., Dalvand, S., Moradpour, F., Bavarsad, A. H., Boogar, S. S., Dehghan, M., Ostadrahimi, A., Aghazadeh-Attari, J., Kahnooji, M., Hosseinipour, A., Gohari, A., Hosseini, S. V., Mirzaei, M., Khorram, A., Shahmoradi, M., Pourfarzi, F., … Kordi, R. (2022). Prevalence and predictors of low back pain among the Iranian population: Results from the Persian cohort study. Annals of Medicine and Surgery, 74. https://doi.org/10.1016/j.amsu.2022.103243
9. Wang, Y. X. J. (2017). Menopause as a potential cause for higher prevalence of low back pain in women than in age-matched men. Journal of Orthopaedic Translation, 8, 1–4. https://doi.org/10.1016/j.jot.2016.05.012
10. Wáng, Y. X. J., Wáng, J. Q., & Káplár, Z. (2016). Increased low back pain prevalence in females than in males after menopause age: evidences based on synthetic literature review. Quantitative Imaging in Medicine and Surgery, 6(2), 199. https://doi.org/10.21037/QIMS.2016.04.06
11. Siddiqui, A. S., Javed, S., Abbasi, S., Baig, T., & Afshan, G. (2022). Association Between Low Back Pain and Body Mass Index in Pakistani Population: Analysis of the Software Bank Data. Cureus, 14(3). https://doi.org/10.7759/cureus.23645
12. Chen, X., Tang, H., Lin, J., & Zeng, R. (2022). Causal relationships of obesity on musculoskeletal chronic pain: A two-sample Mendelian randomization study. Frontiers in Endocrinology, 13. https://doi.org/10.3389/fendo.2022.971997
13. Zhang, T. T., Liu, Z., Liu, Y. L., Zhao, J. J., Liu, D. W., & Tian, Q. B. (2018). Obesity as a Risk Factor for Low Back Pain: A Meta-Analysis. Clinical Spine Surgery, 31(1), 22–27. https://doi.org/10.1097/BSD.0000000000000468
14. Fernandes, I. M. da C., Pinto, R. Z., Ferreira, P., & Lira, F. S. (2018). Low back pain, obesity, and inflammatory markers: exercise as potential treatment. Journal of Exercise Rehabilitation, 14(2), 168–174. https://doi.org/10.12965/JER.1836070.035

15. Probst, D., Stout, A., & Hunt, D. (2019). Piriformis Syndrome: A Narrative Review of the Anatomy, Diagnosis, and Treatment. In PM and R: Vol. 11 Suppl 1. PM R. https://doi.org/10.1002/pmrj.12189
16. Hooten, W. M., & Cohen, S. P. (2015). Evaluation and Treatment of Low Back Pain: A Clinically Focused Review for Primary Care Specialists. Mayo Clinic Proceedings, 90(12), 1699–1718. https://doi.org/10.1016/J.MAYOCP.2015.10.009
17. Kim, B., & Yim, J. (2020). Core stability and hip exercises improve physical function and activity in patients with non-specific low back pain: A randomized controlled trial. Tohoku Journal of Experimental Medicine, 251(3), 193–206. https://doi.org/10.1620/tjem.251.193
18. Vining, R. D., Minkalis, A. L., Shannon, Z. K., & Twist, E. J. (2019). Development of an Evidence-Based Practical Diagnostic Checklist and Corresponding Clinical Exam for Low Back Pain. Journal of Manipulative and Physiological Therapeutics, 42(9), 665–676. https://doi.org/10.1016/J.JMPT.2019.08.003
19. Barros, G., McGrath, L., & Gelfenbeyn, M. (2019). Sacroiliac Joint Dysfunction in Patients With Low Back Pain. Federal Practitioner : For the Health Care Professionals of the VA, DoD, and PHS, 36(8), 370–375.
20. Allegri, M., Montella, S., Salici, F., Valente, A., Marchesini, M., Compagnone, C., Baciarello, M., Manferdini, M. E., & Fanelli, G. (2016). Mechanisms of low back pain: a guide for diagnosis and therapy. F1000Research, 5, 1530. https://doi.org/10.12688/F1000RESEARCH.8105.2/DOI
21. Won, H.-S., Yang, M., & Kim, Y.-D. (2020). Facet joint injections for management of low back pain: a clinically focused review. Anesthesia and Pain Medicine, 15(1), 8–18. https://doi.org/10.17085/apm.2020.15.1.8
22. Chuang, C. W., Hung, S. K., Pan, P. T., & Kao, M. C. (2019). Diagnosis and interventional pain management options for sacroiliac joint pain. Tzu-Chi Medical Journal, 31(4), 207. https://doi.org/10.4103/TCMJ.TCMJ_54_19
23. Vij, N., Kiernan, H., Bisht, R., Singleton, I., Cornett, E. M., Kaye, A. D., Imani, F., Varrassi, G., Pourbahri, M., Viswanath, O., & Urits, I. (2021). Surgical and non-surgical treatment options for piriformis syndrome: A literature review. Anesthesiology and Pain Medicine, 11(1), 1–8. https://doi.org/10.5812/aapm.112825