ORIGINAL ARTICLE

Cases, Prevalence and Treatment of Low Back Pain at Bandung Pain Rehab

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ABSTRACT

Background: Low back pain (LBP) is one of the pain complaints that affects almost every aspect of a person's life. In this study, we aim to determine the distribution of prevalence, demographic data, and the success of LBP treatment in order to help clinicians in management of LBP to reduce the global burden.

Methods: This was a descriptive analytic study with a cross-sectional design. We included all patients complaining of low back pain who came for treatment at the BPRC. The data of this study were taken from medical records. The success of therapy in the interventional pain management (IPM) and non-IPM groups was assessed by comparing the VAS values before and after treatment. Statistical analysis was performed using the IBM SPSS Statistics 23 program with the Wilcoxon test.

Results: Of the 704 patients, the majority were female (59,2%), aged 51-60 years (23,6%), with obese body mass index (54,4%), and worked as housewives (35,5%). The most common etiology of LBP was piriformis syndrome (50,9%). In the IPM and non-IPM groups, there was a significant decrease in pain intensity after therapy ($p < 0,001$).

Conclusion: LBP is most common at the age of 51-60 years, female gender, with a body mass index classified as obese, and working as a housewife. Piriformis syndrome is the most common prevalent etiology of LBP. The use of therapy in both IPM and non-IPM showed significant improvements in alleviating pain.

Keywords: Low back pain, case, prevalence, IPM, non-IPM, VAS score

ABSTRAK

Latar Belakang: Nyeri punggung bawah (LBP) merupakan salah satu keluhan nyeri yang memengaruhi hampir setiap aspek kehidupan seseorang. Pada studi ini, kami ingin mengetahui persebaran prevalensi, data demografi, serta keberhasilan pengobatan LBP untuk membantu klinisi dalam penatalaksanaan LBP yang pada akhirnya dapat menurunkan beban global.

Metode: Penelitian ini merupakan sebuah studi deskriptif analitik dengan desain penelitian potong lintang. Subjek penelitian adalah seluruh pasien dengan keluhan nyeri punggung bawah yang datang berobat ke BPRC. Data penelitian ini diambil dari data rekam medis. Keberhasilan terapi pada kelompok *interventional pain management* (IPM) dan non-IPM dinilai dengan membandingkan nilai VAS sebelum dan sesudah terapi. Analisa statistik dilakukan dengan menggunakan program IBM SPSS Statistics 23 dengan uji Wilcoxon.

Hasil: Dari 704 pasien, mayoritas berjenis kelamin perempuan (59,2%), berusia 51-60 tahun (23,6%), memiliki indeks massa tubuh obesitas (54,4%), dan bekerja sebagai ibu rumah tangga (35,5%). Etiologi LBP terbanyak adalah sindrom piriformis (50,9%). Pada kelompok IPM dan non-IPM didapatkan penurunan intensitas nyeri yang signifikan setelah dilakukan terapi ($p < 0,001$).

Kesimpulan: LBP paling banyak terjadi pada usia 51-60 tahun, jenis kelamin perempuan, dengan indeks massa tubuh tergolong obesitas, dan bekerja sebagai ibu rumah tangga. Sindrom piriformis merupakan prevalensi etiologi LBP terbanyak. Penggunaan terapi baik IPM maupun non-IPM menunjukkan perbaikan yang signifikan dalam menurunkan nyeri.

Kata Kunci: Nyeri punggung bawah, kasus, prevalensi, IPM, non-IPM, skor VAS

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INTRODUCTION

Pain is a complaint that can occur at any age, and its management is still a challenge in the medical field. Although pain is a physiological defense mechanism of the body, if it persists for a long time with severe intensity, it can interfere with a person's quality of life. Low back pain (LBP) is one of the pain complaints that urges many patients to come for treatment since it affects almost every aspect of a person's life, particularly activities of daily living. Routines such as working, bending, lifting weights, walking, and even sleeping can be disrupted due to the pain.[1,2]

Various etiologies can cause LBP, including infections, degenerative diseases, neoplasms, trauma, congenital disorders, metabolic diseases, and autoimmune. Each etiology affects different structures in the spine, such as muscles, facets, joints, discs, or nerves. Therefore, a clinician must establish a precise and accurate diagnosis based on anamnesis, physical examination, and or supporting examinations to be able to manage

the patient according to the etiology, starting from posture correction, core stability exercise, pharmacologic treatment (such as NSAIDs), dry needling, up to interventional or other alternative modalities.[2,3]

The prevalence of LBP in the global population in 2017 was 7,5%. In fact, LBP is one of the leading causes of disability every year. Based on WHO data, around 33% of the population in developing countries experience persistent pain. Meanwhile, in Indonesia, data from the Basic Health Survey (abbreviated Indonesian: Riskesdas) in 2018 stated that the prevalence of musculoskeletal diseases diagnosed by health workers was 11,9%. In addition, the prevalence of LBP in Indonesia is estimated to be between 7,6% and 37%, although it is still precisely unknown. Treatments of LBP require a lot of money, and recoveries usually take a long time. Eventually, this can become a global burden itself.[4,5]

Given the data above, updating the prevalence of LBP etiologies is essential to determine the patient's differential or working diagnoses. Appropriate LBP treatment is vital, addressing a decrease in the global burden regarding back pain. Therefore, we aim to determine the distribution of prevalence, demographic data, and the success of LBP treatment in patients at Bandung Pain Rehab Center (BRPC).

METHODS

This research was a descriptive-analytic study with a cross-sectional design. The research subjects were all patients with complaints of low back pain who came for treatment at the Bandung Pain Rehab Center (BPRC) clinic from July 2019 to December 2021 and had met the inclusion criteria with the purposive sampling data collection method.

The inclusion criteria in this study were all newly-admitted patients at the BPRC clinic, could speak Indonesian and/or English, have complete medical record data, and were willing to become respondents in the study by signing informed consent. The exclusion criteria were patients who didn't come back for control visits. The research data were taken from electronic and written medical records at the BPRC clinic. After filtering the data based on inclusion and exclusion criteria, we included 704 patients.

To assess the response to the therapy given, we used the visual analog scale (VAS), which was asked at the beginning of the patient's arrival and after the pain intervention. The examination was performed using an image with a 10 cm straight line, with one side showing no pain and the other with unbearable severe pain. The attending doctor then recorded the intensity of pain stated by the patient. Pain intensity was classified into several sections: 0 for without pain, 1-4 for mild pain, 5-7 for moderate pain, and >7 for severe pain. VAS scores were taken before and after treatments of interventional pain management (IPM) and dry needling (DN) and one-week post-treatment for patients receiving exercise and drug therapy. Patients who received IPM underwent intramuscular ultrasonography-guided injections of 1% lidocaine and 30 mg triamcinolone.[6]

The collected data was validated by rematching it with written medical records and the information system. This research has received approval from the Ethics Commission of the Faculty of Medicine, Padjadjaran University, Bandung, with the letter

Number 732/UN6.KEP/EC/2022. Statistical analysis was carried out using the IBM SPSS Statistics 23 program. The existing qualitative data was calculated for frequency, and the quantitative data was calculated for the average, median, and standard deviation. On the VAS score data, the distribution was examined by Kolmogorov-Smirnov and found an abnormal data distribution. Bivariate analysis was performed using the Wilcoxon test to compare the VAS before and after the procedure. A statistically significant result was defined when the p-value < 0,05.

RESULT

Overall, 704 patients met the inclusion criteria and were involved in this study. Based on the respondents involved in this study, the incidence of LBP can occur at all ages. The prevalence of LBP increases with age, and the peak occurs in the age range of 51-60 years (23,6%). A decrease followed it in patients older than 60 years. Based on the available data, the highest demographic results were female gender with 417 patients (59,2%), body mass index of obesity in 383 patients (54,5%), and working as a housewife in 250 patients (35,5%), as shown in Table 1.

Table 1. Demographic Characteristics of Respondents

Characteristic	N	Percentage (%)
Age (Mean ± SD: 55,52 ± 15,54 years; Median: 56 years)		
11-20 years	3	0,4
21-30 years	37	5,3
31-40 years	99	14
41-50 years	120	17,1
51-60 years	166	23,6
61-70 years	141	20
71-80 years	112	15,9
81-90 years	26	3,7
Gender		
Male	287	40,8
Female	417	59,2
Body Mass Index* (Mean ± SD: 25,26 ± 3,8 kg/m2; Median: 25,34 kg/m2)		
Underweight	29	4,1
Normal	153	21,8
Overweight	139	19,7
Obesity	383	54,4
Occupation		
Housewife	250	35,5
Entrepreneur	114	16,2
Retired	108	15,3
Employee	103	14,6
Government employees	53	7,5
Teacher	22	3,1
Doctor	20	2,8
Others	34	5

Note: *Body mass index referred from World Health Organization Asia-Pacific body mass index; SD= standard deviation

The most common etiology of LBP in BPRC was piriformis syndrome which occurred in 358 patients (50,9%), followed by sacroiliac joint arthropathy in 130 patients (18,5%), lumbar radiculopathy in 104 patients (14,8%), and lumbar facet joint arthropathy in 32 patients (4,5%) which can be seen in Table 2. Then, the therapy was given based on pain intensity and its etiology, such as exercise, drugs, dry needling, and IPM.

Table 2. Etiologies of Low Back Pain

Diagnosis	N (%)	Treatment			
		Exercise	Drugs	DN	IPM
Hip osteoarthritis	16 (2,3)	1	2	-	13
Piriformis syndrome	358 (50,9)	13	30	6	309
Sacroiliac joint arthropathy	130 (18,5)	3	13	-	114
Ischial tuberositis	29 (4,1)	-	4	1	24
Lumbar radiculopathy	104 (14,8)	1	21	2	80
Myofascial trigger point syndrome	1 (0,1)	-	-	-	1
Lumbar facet joint arthropathy	32 (4,5)	1	16	-	15
Greater trochanteric bursitis	12 (1,7)	1	2	-	9
Coccydynia	2 (0,3)	-	-	-	2
Subgluteus maximus bursitis	3 (0,4)	-	-	-	3
Lumbar discogenic pain	11 (1,6)	1	8	-	2
Trauma	1 (0,1)	-	1	-	-
Hamstring tightness	4 (0,6)	-	1	-	3
Postherpetic neuralgia	1 (0,1)	-	-	-	1

Note: DN= dry needling; IPM= interventional pain management

Based on the therapy given, we measured the treatment success rate using the VAS score. This data was then classified based on the procedures into non-IPM (such as exercise, dry needling (DN), and pharmacotherapy) and IPM. Patients receiving IPM had a higher VAS score (7,88 ± 0,727) than non-IPM patients. Both groups showed a significant decrease in pain intensity with $p < 0,001$. A higher considerable reduction in VAS score was found in the IPM group, with an average decrease in VAS value of 7,07 compared to the non-IPM group with a reduction of 2,26 (Table 3).

Table 3. Visual Analog Scale Pre and Post Procedure

Treatment	VAS pre-procedure $\bar{x} \pm SD$	VAS post-procedure $\bar{x} \pm SD$	Δ VAS	P value
IPM	7,88 ± 0,727	0,81 ± 0,607	7,07	< 0,001
Non-IPM	5,23 ± 0,51	2,97 ± 0,698	2,26	< 0,001

Note: VAS= Visual analog scale; SD= standard deviation; IPM= interventional pain management

DISCUSSION

Low back pain (LBP) is one of the most common diseases in the world, causing a global disease burden. Research by the World Health Organization (WHO) reported that 70% of the population in industrialized countries had experienced non-specific LBP throughout their life. Moreover, in recent years, several studies have shown a rise in the prevalence of LBP, particularly in developing countries. This increase is in parallel with increasing age, peaking at 35 to 55 years old.[7]
Furthermore, it is consistent with the results of this study which showed an increase in the number of LBP cases with increasing age, with a peak in the 51 to 60-year age group (23,6%). Then, the prevalence of LBP decreased as the age got older. Similar results were also obtained in an epidemiological study of LBP in the United States, which showed increased cases following age due to decreased muscle strength. Research conducted by Asemota et al. stated that the increase in cases occurred due to damage to body tissues and decreased physiological and neurological functions, which most often began at 30-40 years old. If it occurs in the back muscles, the muscle strength will diminish, which in turn causes a reduction in physical ability and disruption of daily activities.[5,7,8]

Moreover, the results of this study also showed a decrease in the number of LBP cases over the age of 60 years, which continued to occur in the 81 to 90-year age group. This result is in line with the study of Wong et al. regarding LBP in older people, which found an increase in the prevalence of LBP starting from adolescents to the age of 60, then followed by a decrease at the age of more than 60 years. According to the study, this occurred due to excessive occupational exposure among working-age adults or changes in perception and pain threshold in older people.[9]

A study conducted by Bento et al. regarding LBP in São Paulo, Brazil, showed that the prevalence of LBP was higher in women (60,9%) than men. It is in line with the results of this study, with a higher incidence of LBP in women (59,2%) compared to men (40,8%). Existing studies have shown that ergonomic and occupational factors significantly correlate with the incidence of LBP in women. This is because women have more responsibilities at work and at home. Women spend more time doing bigger housework than men, even though working as a housewife gives a high risk of being exposed to inadequate static posture. The result is in accordance with our study that patients who work as housewives contributed to the highest incidence of LBP, as many as 250 patients (35,5%).[10]

Our study results also showed that the incidence of LBP was mainly experienced in the group of patients with obesity (54,5%). Still, the number of patients with overweight alone was less than those with an average body mass index (BMI). This study concurs with research conducted by Febriyanti et al. that the most significant number of LBP patients were those with overweight and/or obesity compared to those with normal BMI. Additionally, a study conducted by Peng et al. showed a relationship between obesity and overweight and LBP in America. It is related to changes in the anatomy of the body. Increasing body weight will cause excessive load on the lumbar spine, resulting in damage and disturbances to joints, muscles, or nerves, which in turn causes LBP.[11,12]

Various etiologies can cause LBP. The guidelines made by the North American Spine Society regarding the diagnosis and treatment of LBP show that pain in the lower back can be classified based on the associated structures, including the vertebral body, intervertebral disc, zygapophyseal joint, posterior elements, sacroiliac joint, muscle or tendon, and central sensitization. It is related to the presence of trigger points in the area. LBP has several causes, such as infection, degenerative, neoplasm, trauma, congenital abnormalities, metabolic diseases, and autoimmune conditions.[2,13]

In this study, we found 14 diagnoses as etiologies of LBP. Piriformis syndrome was the most common diagnosis, with 358 cases (50,9%). The second highest etiology was sacroiliac joint arthropathy (18,5%), followed by lumbar radiculopathy (14,8%) and lumbar facet joint arthropathy (4,5%). To date, various studies have shown the prevalence of different etiologies of LBP. Research conducted by Chang et al. showed that piriformis syndrome occurred in 0,3% to 6% of all existing LBP cases. Another study by Chen et al. showed a higher prevalence of piriformis syndrome, ranging from 6% to 36%. However, Allegri et al. showed different results, where the prevalence of lumbar discogenic pain (39%) and lumbar facet joint arthropathy (30%) was higher compared to our study.[14-16]

LBP can be managed with various modalities, both pharmacological and non-pharmacological treatments. Based on North American Spine Society guidelines, treatments of LBP include physical agents such as heat or cold, ultrasound, transcutaneous electrical nerve stimulation (TENS), traction, dry needling, bracing, acupuncture, and exercise. Interventional pain management (IPM) is another novel modality, although not all health centers employ this technique. IPM is believed to help deal with pain, improving the patient's functional quality.[13,17,18]

Whichever etiology causes LBP, VAS is one of the measuring scales that can be used as a reference for determining the choice of therapy and its improvement. Our study found that as long as the treatment was in accordance with the etiology and the pain intensity, the post-treatment VAS score would significantly improve ($p < 0,001$). A study by Suzuki et al. in 2016 categorized LBP into specific LBP (78%) and non-specific LBP (22%). In these two groups, they found that the mean VAS score of LBP patients was $5,8 \pm 0,18$. This pain limited the patient's physical abilities and daily activities, which affected the patient's social, emotional, and mental health functions. All of these series led to a worsening of the patient's quality of life.[19,20]

The results of this study are expected to be a reference for further research. The distribution of prevalence, demographic data, and the success of LBP treatment can also guide treating LBP patients in daily clinical practice.

CONCLUSION

Our research showed that low back pain (LBP) is most common at the age of 51-60 years, in females, with a body mass index classified as obese, and in patients working as a housewife. Of all the causes of LBP, our study found piriformis syndrome as the most prevalent condition. However, despite the etiology, if appropriate and accurate treatment is carried out, either with interventional pain management

(IPM) or non-IPM, the patient's pain will improve, as indicated by the VAS score.

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