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Observational Parameter of Lower Back Pain of Patients at the General Hospital UKI, Jakarta, Indonesia

Agus Yudawijaya ^{a,b*}, Patria Adri Wibhawa ^{a,b},
Christina Roseville Lasma Aritonang ^{a,b}
and Santa Theresia Nauli T. ^a

^a Faculty of Medicine, Universitas Kristen Indonesia, Jakarta, Indonesia.

^b General Hospital, Universitas Kristen Indonesia, Jakarta, Indonesia.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To find out about the characteristics of lower back pain (LBP) in patients at the UKI General Hospital's Neurology Polyclinic from January 2021–Deadline 2022.

Study Design: Retrospective descriptive research with a cross-selective design.

Place and Duration of Study: The research was carried out at the Neurology Polyclinic, Ulnmulm Ulniveirsitas Hospital, Kristeln Indonesia in March 2024.

Methodology: This research is a retrospective descriptive research using a cross-sector design. Data collection is carried out by collecting patient medical record data. This research uses a total sampling technique. The research sample consisted of 53 patients.

*Corresponding author: E-mail: agus.yudawijaya@uki.ac.id;

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Results: Analysis of the results is mostly based on age, gender, body mass index, type of work, type of pain, and LBP onset as well as treatment, namely: aged 56 - 65 years with a total of 19 patients (35.8%), a total of 41 patients, patients (77.4%), BMI 25 – 29.9 kg/m² (the weight I) totaling 17 patients (32.1%), working as entrepreneurs totaling 21 patients (39.6%), radicular pain types totaling 28 patients (52.8%), acute LBP as many as 31 patients (58.5%), and co-infective management as many as 50 patients (94.3%)

Conclusion: LBP patients are dominated by women with an age range of 56-65 years. BMI 25 – 29.9 kg/m² has the highest frequency and the type of work most frequently carried out by LBP patients is work in the private sector. Based on the type of pain and symptoms most frequently experienced are radicular pain and acute LBP. Based on the management that is most frequently obtained is conservative management.

Keywords: Lower back pain; radicular pain; onset lower back pain; acute lower back pain.

1. INTRODUCTION

Low back pain (LBP) is characterized by discomfort or acute pain in the fifth and first lumbar vertebrae (L5-S1) (Wahab, 2019). According to the Association of Indonesian Neurologist Specialist Doctors (PERDOSNI), low back pain (LBP) is pain felt in the lower back and can be local pain, radicular pain, or both. The pain can be a sensation such as burning, stabbing, dull pain, pain radiating towards the legs and feet, and muscles that feel tense. The pain will become increasingly worse with physical activity (Astuti et al., 2019). LBP can be classified according to the onset of pain and the causes that trigger the pain. Based on the onset of pain, LBP can be classified into acute, subacute, and chronic LBP. Acute LBP lasts up to 6 weeks, subacute LBP lasts from 6 to 12 weeks while chronic LBP lasts for more than 12 weeks (Kahere & Ginindza, 2021).

Based on the cause, LBP can be classified into specific LBP and non-specific LBP. Specific LBP is a disease that can cause LBP complaints such as vertebral fractures, infections, and tumors. 4 According to the National Institute for Health and Care Excellence, non-specific LBP is tension, pain, and/or stiffness of unknown etiology in the lower back area with involvement of joints, discs, and connective tissue that potentially contribute to the occurrence of LBP. 5 Approximately 85% of LBP patients are categorized as non-specific LBP (Nugraha et al., 2020). LBP is the main cause of disability in various high-income countries such as Central and Eastern Europe, North Africa, Middle East Africa, and America. LBP is the most common reason someone consults a doctor in the United States where as much as 1% of the United States population chronically experiences disability due to LBP.

These conditions affect people's ability to do various types of work both inside and outside the home and affect mobility (Nugraha et al., 2020).

LBP not only causes problems with work effectiveness but also has a significant impact on the quality of life in the form of increasing health care costs, reducing working hours, decreasing productivity, and increasing numbers. disability (Suryawijaya et al., 2021). According to the World Health Organization (WHO), working-age individuals with low back pain not only lose their productivity at work but can also spend an estimated \$50 billion per year on LBP treatment (Cahya & Yulda, 2020). In Brazil, each worker is absent from their workplace on average 100 days per year due to LBP, while in the United States, 15.4% of the workforce reports an average of 10.5 days of work lost per year due to chronic LBP. Apart from the absence of workers from their workplace, LBP can cause workers to retire prematurely (GBD 2021 Low Back Pain Collaborators, 2023). According to the Global Burden of Disease Study, the incidence of LBP sufferers in 2020 was 619 million people and is estimated to increase by 36.4% to 843 million people in 2050, especially in Asia and Africa (GBD 2021 Low Back Pain Collaborators, 2023). The incidence of LBP in Indonesia varies, it is estimated that around 7.6% to 37% of the Indonesian population experiences LBP complaints (Astuti et al., 2019). LBP is a multifactorial problem. Factors that can trigger the occurrence of LBP include age, gender, body mass index, stress, long periods of sitting, and body posture when doing work (Hutasuhut et al., 2021). A study conducted at the Sanglah Denpasar Central General Hospital in the 2014–2015 period found that 20 people (58.8%) in the 41-60 year age group were the age group that

experienced the most LBP (Cahya & Yulda, 2020). LBP occurs more frequently in women than men, the reason is that women's muscles are physiological weaker, so the risk of musculoskeletal disorders increases (Nugraha et al., 2020). In 2021, research was conducted on students from the 2019 and 2020 classes of the Faculty of Medicine, Sam Ratulangi University, it was found that 89 female students (55%) had complaints of lower back pain and 25 female students (16%) did not complain of lower back pain, while the remaining 34 male students (21%) complained of lower back pain and 13 male students did not complain of lower back pain. (8%) (Hutasuhut et al., 2021). Individuals with an excessive body mass index are twice as likely to experience LBP complaints as individuals with a normal body mass index (Wahab, 2019).

Lower back injuries that lead to LBP are associated with occupational risk factors, with 11% to 80% of them caused by ergonomic factors such as prolonged sitting, lifting, bending, and twisting (Dialo et al., 2019). Medical personnel are a type of work that is prone to experiencing lower back pain, especially due to repetitive activities (moving patients and medical equipment), unergonomic working positions, relatively heavy workloads, and changing work schedules. Research conducted on medical personnel at Siloam Hospitals Lippo Village in the period October - December 2017 found that 80 nurses (70.8%) complained about LBP, the remaining 33 nurses (29.2%) did not complain about LBP. Apart from that, there were also 29 non-nurse medical personnel (50%) who complained about LBP. Activities that interact with loads such as pulling, lifting, pushing, bending, and rotation influence the incidence of LBP in medical personnel, especially nurses. This activity causes repetitive trauma, especially in the lumbar area, which can ultimately lead to LBP (Suryawijaya et al., 2021). Based on the background described above, more in-depth knowledge is needed about the characteristics of low back pain patients at the Neurology Polyclinic at UKI General Hospital in the January 2021-December 2022 period.

2. MATERIALS AND METHODS

2.1 Types of Research

The research carried out was a retrospective descriptive study with a cross-sectional design. This research was carried out by collecting and

analyzing medical record data of LBP patients who came to the Neurology Polyclinic RSU UKI for the period January 2021–December 2022.

2.2 Location and Time of Research

The research was carried out at the Neurology Polyclinic at the General Hospital of the Indonesian Christian University in March 2024.

2.3 Research Subjects

2.3.1 Population

The population in this study were all patients who experienced Lower Back Pain at the Neurology Polyclinic at UKI General Hospital for the period January 2021–December 2022.

2.3.2 Sample Size

The sample for this research total sampling. that is, There were 53 samples that met the inclusion and exclusion criteria.

2.3.3 Inclusion criteria

1. Patients at the Neurology Polyclinic at RSU UKI who had the main complaint of lower back pain.
2. Patients who have complete medical record

2.3.4 Exclusion criteria

1. Patients from the Neurology Polyclinic at the Indonesian Christian University RSU who do not have complaints of lower back pain.
2. incomplete medical record

2.4 Research Instruments

The research instrument used in this study was medical records of LBP patients at the Neurology Polyclinic at the Indonesian Christian University General Hospital for the period January 2021–December 2022.

2.5 Data Collection Methods

Data collection was carried out using a cross-sectional design, namely analyzing variable data collected at a certain point in time across the sample population. The data used is secondary data, namely medical records of patients at the Neurology Polyclinic at the RSU Christian

University of Indonesia. The data that will be collected are: age, gender, body mass index, type of work, type and onset of LBP, as well as the treatment obtained.

2.6 Data Analysis Methods

After that, all of the collected data will undergo some data management procedures, such as data input, grouping, editing, and computer storage, in addition to the use of a data processing application tool called SPSS (Statistical Package for The Social Science) v.24. The frequency and percentage distribution of each variable will next be obtained by univariate analysis. Age, gender, BMI, kind of work, type, and onset of LBP, as well as the type of treatment received, are all considered univariate variables in this study and will be displayed as numbers (n) and percentages (%).

3. RESULTS AND DISCUSSION

3.1 Results

Based on the results of retrospective research regarding the characteristics of low back pain patients in the neurology clinic at the Indonesian Christian University Hospital for the period January 2021–December 2022, a total of 92 LBP patients were found, but only 53 patients met the research criteria. Research data regarding the characteristics of LBP patients at the Neurology Polyclinic at the Indonesian Christian University General Hospital are presented in tabular form.

3.1.1 LBP characteristics based on age

LBP patients are grouped based on age with distribution as in the following Table 1:

Table 1. Distribution of LBP Patient Based on Age

Age (year)	Frequency (n)	Percentage (%)
17–25	4	7.5
26–35	3	5.7
36–45	1	1.9
46–55	10	18.9
56–65	19	35.8
>65	16	30.2
Total	53	100.0

The results of the study showed that the largest age group in the 56-65 year range was 19 patients (35.8%), followed by the >65 year age

group totaling 16 patients (30.2%), the 46-55 year age group totaling 10 patients (18.9%), the 17-25 year age group totaling 4 patients (7.5%), the 26-35 year age group totaling 3 patients (5.7%), the 36-45 year age group totaling 1 patient (1.9%)

3.1.2 Characteristics of LBP based on gender

LBP patients are grouped by gender with the following distribution as in Table 2:

Table 2. Distribution of patient based on gender

Gender	Frequency (n)	Percentage (%)
Male	12	22.6
Female	41	77.4
Total	53	100.0

This research shows that women experience LBP more often, namely 41 patients (77.4%) compared to men, namely 12 patients (22.6%).

3.1.3 Characteristics of LBP Based on Body Mass Index (BMI)

LBP patients are grouped based on BMI with the distribution as in Table 3 below:

Table 3. Distribution of Patient LBP Based on Body Mass Index (BMI)

BMI	Frequency (n)	Percentage (%)
<18,5	3	5.7
18,5–22,9	9	17.0
23–24,9	11	20.8
25–29,9	17	32.1
≥ 30	13	24.5
Total	53	100.0

In this study, it was found that most LBP patients were in the BMI 25–29.9 kg/m² (obesity I) category totaling 17 patients (32.1%), followed by the BMI ≥ 30 kg/m² (obesity II) category totaling 13 patients (24.5%), the BMI 23–24.9 kg/m² category (overweight/overweight with risk) totaling 11 patients (20.8%), the BMI category. 18.5–22.9 kg/m² (normal) amounted to 9 patients (17.0%), and the BMI category <18.5 kg/m² (underweight) amounted to 3 patients (5.7%).

3.1.4 Characteristics of LBP patient based on type of job

LBP patients are grouped based on type of work with the following distribution:

Table 4. Distribution of LBP Patient Based on Type of Job

Type of Job	Frequency (n)	Percentage (%)
Student/Students	3	5.7
Housewife	17	32.1
Self-employed	21	39.6
Retired	4	7.5
Teacher	1	1.9
Civil servants	3	5.7
Architect	1	1.9
Doesn't work	1	1.9
Etc	2	3.8
Total	53	100.0

The research results showed that the type of work most frequently carried out by LBP patients was working as an entrepreneur, amounting to 21 patients (39.6%).

3.1.5 Characteristics of LBP patients based on pain type

LBP patients are grouped based on Pain type with the following distribution:

Table 5. Distribution of LBP patient based on pain type

Pain Type	Frequency (n)	Percentage (%)
Local Pain	24	45.3
Radicular Pain	28	52.8
Referred Pain	1	1.9
Total	53	100.0

This research shows that the type of pain most frequently experienced by LBP patients is radicular pain, 28 patients (52.8%), followed by local pain, 24 patients (45.3%), and the type of pain least experienced by LBP patients is referred pain, 1 patient (1.9%).

3.1.6 Characteristics of LBP patients based on LBP onset

LBP patients are grouped based on the onset of NPB with the following distribution:

Table 6. Distribution of LBP patient based on LBP onset

LBP Onset	Frequency (n)	Percentage (%)
Acute	31	58.5
Subacute	8	15.1
Chronic	14	26.4
Total	53	100.0

The results of the study showed that the length of time patients experienced complaints of LBP, it was found that most LBP patients experienced complaints of acute LBP (pain for <6 weeks) as many as 31 patients (58.5%), followed by chronic LBP (pain for >12 weeks) as many as 14 patients (26.4%), and subacute LBP (pain for 6-12 weeks) as many as 8 patients (15.1%).

3.1.7 Characteristics of LBP based on management

LBP patients are grouped based on the treatment received by LBP patients with the following distribution:

Table 7. Distribution of LBP patient based on management

Governance	Frequency (n)	Percentage (%)
Conservative	50	94.3
Operative	3	5.7
Total	53	100.0

This research shows that as many as 50 patients (94.3%) received conservative treatment, namely medical treatment and physiotherapy and as many as 3 patients (5.7%) received treatment in the form of surgery.

3.2 Discussion

19 patients, or 35.8% of the 53 research samples, were determined to be the largest group of older persons with LBP who were between the ages of 56 and 65. The findings of this study are consistent with research done at Sangah General Hospital in Denpasar in 2014–2015, which indicated that 20 out of 34 patients (58.8%) with LBP were between the ages of 41 and 60. There were 14 patients (41.2%) with ages ranging from 61 to 70 (Goin et al., 2019).

The reason for this is that as we age, the intervertebral discs degenerate and their structure thickens and shifts, reducing the vertebrae's flexibility. When the intervertebral discs are compressed over an extended time, they thin. LBP symptoms may result from this condition's protrusion of the nucleus pulposus and rupture of the comparatively weak posterior ligament, which can exert pressure on the spinal nerves (Knezevic et al., 2017; Alegri et al., 2016). Furthermore, as people age, degenerative processes take place that increase the likelihood of developing disorders affecting the vertebral region, including spinal stenosis, facet

hypertrophy, spondylosis, and spondylolisthesis, which can result in LBP symptoms (Santoso et al., 2021).

In this study, it was found that the female gender, 41 patients (77.4%) more often experienced LBP compared to the male gender, which was only 12 patients (22.6%). This research is in line with research conducted at the Bandung City Hospital Neurology Clinic for the period January–December 2018 where the number of male patients was only 27 people (35.5%) while there were 49 female patients (64.5%) (Islami et al., 2020). Women have a higher risk of developing LBP due to hormonal imbalance. The hormonal imbalance that occurs during pregnancy causes the spinal ligaments to relax, thereby reducing the strength of the lower back muscles and increasing the risk of LBP. Women tend to have a lower pain threshold than men, therefore they report LBP symptoms more often than men. Apart from that, menopausal osteoporosis also causes LBP in women (Makkiyah et al., 2023).

Based on BMI, it was found that 17 LBP patients (32.1%) had a BMI in obesity category I or MBI 25–29.9 kg/m². This is in line with research conducted at the Bandung City Hospital Neurology Clinic for the January–December 2018 period where the highest number of LBP patients were in the BMI \geq 25.0 or overweight category (56.6%) (Islami et al., 2020). The mechanism of the relationship between obesity and LBP is two-way. Obesity can cause LBP or vice versa LBP can cause obesity (Patrianingrum et al., 2015).

The first mechanism, when someone experiences weight gain, the part of the body that first experiences an increase in volume is the abdomen, then the femur, gluteus, and other parts of the body. Fat in obese people will be distributed to the abdominal area and accumulation can occur which causes the lumbar work to increase to support the load. In addition, increasing the load on the spine will cause an increase in compression pressure which increases the risk of tears in the spinal structure (Islami et al., 2020; Patrianingrum et al., 2015). The second mechanism, obesity can cause LBP through a chronic systemic inflammatory process. When a person is obese, the number of adipocyte cells increases. Adipocyte cells are cells that function as storage of energy reserves in the form of fat. The increase in cell number is associated with increased production of adipokines (leptin, resistin, TNF α , and IL-6).

Sensitization of free nerve endings, matrix degradation, and chondrocyte apoptosis can occur due to the release of compounds such as IL-8, matrix metalloproteinase (MMP), and NO by chondrocytes due to stimulation of these adipokines. A third mechanism, metabolic syndrome may be involved in the pathology of low back pain, especially abdominal obesity involving hypertension and dyslipidemia. The fourth mechanism, obesity is closely related to the degenerative process of the intervertebral disc and to changes in the spinal endoplasm. In addition, as body weight increases, spinal mobility decreases (Patrianingrum et al., 2015).

In this study, the type of work most frequently carried out by LBP patients was as self-employed, totaling 21 patients (39.6%), however, it could not be explained in detail the type of self-employment carried out due to the limitations of recording medical records. This is in line with research conducted at Sangah General Hospital Denpasar in 2014-2015 which found that the occupation with the largest proportion was self-employment with 11 patients with a percentage of 32.4%. LBP is a condition closely related to occupation, which can be caused or triggered by certain jobs. Physical work, operating manual machines, repetitive body rotation, vibrations that expose the entire body, or sitting for long periods can increase the incidence of lower back pain (Cahya & Yulida, 2020).

Based on the type of LBP pain, it was found that the most frequently experienced type of pain was radicular pain in 28 patients (52.8%). Radicular pain is closely related to the distribution of spinal nerve roots, and is exacerbated in positions that cause tension, such as bending; and decreases with rest. Pain that radiates to the legs indicates nerve root involvement (Winata, 2014). One of the causes of radicular pain is a spinal cord tumor which is characterized by pain that does not subside after rest or gets worse, especially at night. Other features that may be observed are neurological changes such as paresthesia and numbness which may be accompanied by motor weakness (Wullandari, 2020).

The results of the study showed that the length of time patients experienced LBP complaints was that most LBP patients experienced acute LBP complaints (pain for <6 weeks) as many as 31 patients (58.5%). Acute LBP is the most common form. Acute LBP can generally heal on its own. However, many also later become chronic and cause disability (Winata, 2014). The recurrence

of acute LBP can be prevented by avoiding excessive muscle use (Tanderi et al., 2017).

Based on the treatment carried out by LBP patients, 50 patients (94.3%) received conservative treatment in the form of education, medical therapy and physiotherapy and 3 patients (5.7%) received treatment in the form of surgery. The results of research conducted at the medical rehabilitation installation of RSUP Dr. Mohammad Hoesin Palembang regarding the relationship between SWD and TENS therapy on the incidence of kinesiophobia and pain catastrophizing in 25 low back pain patients, it was found that there was an influence from short-wave diathermy (SWD) and transcutaneous electrical nerve stimulation (TENS) therapy undergone by low back pain patients, which means there was an improvement in the level of function or an improvement in pain scores in these patients. Physiotherapy can help relieve pain, overcome functional disorders and activity limitations, and enable patients to return to their activities. There are several physical therapy modalities most commonly used to reduce pain, including Short Wave Diathermy (SWD) and Transcutaneous Electrical Nerve Stimulation (TENS) (Wardana et al., 2018).

4. CONCLUSION

Lower back pain (LBP) in Neurology Polyclinic patients at UKI General Hospital (Jan 2021–Dec 2022) was most common in the 56–65 age group (35.8%) and least common in the 36–45 age group (1.9%). Women (77.4%) experienced more LBP than men (22.6%). The majority of patients had a BMI of 25–29.9 kg/m² (32.1%). Most were private-sector workers (39.6%). Radicular pain was the most frequent type (52.8%), and acute LBP was the most common onset (58.5%). Conservative therapy was the primary treatment (94.3%).

CONSENT AND ETHICAL APPROVAL

It is not applicable.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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