Indonesian Journal of Medicine (2025), 10(02): 133-141
Masters Program in Public Health, Universitas Sebelas Maret

Research
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# From Pain to Preference: What Drives Patients to Choose Acupuncture for Low Back Pain?

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*Received: November 05, 2024; Accepted: January 18, 2025; Available online: April 10, 2025*

## ABSTRACT

**Background:** Low back pain (LBP) affects 50–80% of adults and impacts various aspects of an individual's life, including physical, social, and psychological well-being. Effective management of LBP requires a comprehensive treatment approach. This study aims to assess patients' perceptions regarding their choice of LBP therapy based on the Health Belief Model.

**Subjects and Method:** A cross-sectional study was conducted in Surakarta, Central Java, Indonesia, from September to October 2024. A total of 200 patients was selected using fixed disease sampling. The dependent The independent variables were vulnerability perception, severity perception, benefit perception, obstacle perception, cues to action perception, and self-efficacy. The bound variable is the choice of therapy. The data using questionnaires were analyzed using multiple logistic regression.

**Results:** Perceived susceptibility was less likely to use acupuncture therapy (OR= 0.51; 95% CI= 0.14 to 1.79; p=0.293). Perceived severity was more likely to use acupuncture therapy (OR=3.99; 95% CI=1.17 to 13.54; p=0.027). Perceived benefits were more likely to use acupuncture therapy (OR=43.90; 95% CI=9.45 to 203.99; p<0.001). Perceived barriers were less likely to use acupuncture therapy (OR=0.03; 95% CI p< 0.01 to 0.20; p< 0.001). Cues to action were more likely to use acupuncture therapy (OR=7.10; 95% CI p= 2.20 to 22.91; p< 0.001). High self-efficacy has a greater likelihood of using acupuncture therapy (OR=142.49; 95% CI=14.17 to 1432.86; p<0.001).

**Conclusion:** The selection of acupuncture therapy was positively associated with perceived severity, perceived benefits, cues to action, and self-efficacy. Conversely, a high perception of barriers was associated with a decreased likelihood of choosing acupuncture therapy. Perceived susceptibility was not statistically significantly related to therapy selection.

**Keywords:** Health belief model, acupuncture, low back pain

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**Cite this as:**
Ningrum AL, Prasetya H, Murti B, Demartoto A (2025). From Pain to Preference: What Drives Patients to Choose Acupuncture for Low Back Pain. Indones J Med. 10(02): 133-141. https://doi.org/10.26911/theijmed.-2025.10.02.05.



## BACKGROUND

Low Back Pain (LBP) is a major public health concern and one of the leading causes of disability worldwide, particularly in both high- and middle-income countries (Nieminen et al., 2021). A similar increasing trend has also been observed in low-income countries, where LBP continues

to present significant challenges. Although many individuals with acute LBP show rapid improvement, approximately 4% to 25% of cases progress into chronic conditions, contributing to long-term morbidity and reduced quality of life (Nieminen et al., 2021). LBP can severely affect various aspects of an individual's life, including physical functioning, psychological well-being, and social interactions (Bento et al., 2020).

The etiology of LBP is multifactorial, often associated with poor physical activity, prolonged static postures, and improper ergonomics during daily activities (Hendrick et al., 2010). Occupational factors, especially those involving repetitive movements or long hours in a seated position, are frequently implicated in the development of musculoskeletal disorders, particularly LBP.

The management of low back pain (LBP) necessitates a comprehensive and individualized approach. Current clinical guidelines recommend a combination of self-care strategies, pharmacologic treatments, and non-pharmacologic therapies, including physical therapy, patient education, and complementary approaches such as acupuncture (Knezevic et al., 2021). Acupuncture, rooted in traditional Chinese medicine, has gained increasing recognition for its role in pain management. Numerous clinical trials have demonstrated its effectiveness in reducing the intensity of LBP and enhancing functional outcomes, particularly in cases of chronic pain (Vickers et al., 2018; Yuan et al., 2026).

Despite its growing popularity, the decision-making process behind a patient's choice to undergo acupuncture therapy is complex and shaped by multiple psychosocial determinants. These include individual beliefs about disease severity, perceived benefits and barriers of treatment, social influences, and self-confidence in health management. Understanding these psychological constructs is crucial to tailoring effective health interventions.

The Health Belief Model (HBM) offers a robust framework for analyzing and predicting health behaviors based on individual perceptions and motivations. It posits that a person's likelihood to engage in a health-related action—such as choosing acupuncture therapy—is influenced by perceived susceptibility, severity, benefit, barrier, cues to action, and self-efficacy (Champion & Skinner, 2008). Previous studies have applied the HBM successfully in various health contexts, including vaccination uptake, chronic disease management, and preventive behaviors (Jones et al., 2015; Rosenstock et al., 1988).

With the increasing use of complementary therapies for musculoskeletal conditions, there is a rising need to examine the cognitive and perceptual factors that influence patients' preferences. This study aims to explore the application of the Health Belief Model to understand the determinants that influence the selection of acupuncture therapy among patients with low back pain (LBP). The findings are expected to enhance the understanding of patient behavior, providing insights that can inform the development of more personalized and effective therapeutic strategies.

## SUBJECTS METHOD

### 1. Study Design

The type of data used in this study was carried out with a quantitative approach, with a cross-sectional design. This research was carried out from September to October 2024. The location of this research was carried out in Surakarta, Central Java, Indonesia.

**2. Population and Sample**

A total of 200 acupuncture patients and physiotherapy patients were selected using fixed disease sampling.

**3. Study Variables**

This dependent variable includes therapy selection, while the independent variables are vulnerability perception, severity perception, benefit perception, obstacle perception, action cue, and self-efficacy.

**4. Operational Definition of Variables**

**Perceived susceptibility** is defined as a patient's perception of how likely they are to suffer from LBP and whether they believe acupuncture could be an effective treatment for managing or preventing this condition.

**Perceived severity** refers to an individual's belief about the seriousness of a health condition and its potential consequences. In the context of acupuncture utilization for low back pain (LBP), perceived severity reflects how strongly a person believes that their LBP could lead to significant physical discomfort, functional limitations, or negative impacts on their quality of life if left untreated.

**Perceived barrier** is defined as the individual's beliefs regarding the obstacles or challenges that may hinder the use of acupuncture therapy for low back pain (LBP). These barriers may include concerns about the safety and effectiveness of acupuncture, fear of needles or pain during the procedure, financial constraints, lack of access to qualified practitioners, time limitations, and cultural or personal beliefs.

**Perceived benefit** is defined as the individual's belief in the positive outcomes or advantages of using acupuncture therapy to manage LBP. This includes perceptions that acupuncture can effectively reduce pain, improve physical function, and serve as a safe and natural alternative or complement to conventional treatments.

**Cues to action** refers to external or internal triggers that motivate an individual to take action.

**Self-efficacy** pertains to a patient's confidence in their ability to manage their LBP through acupuncture.

**5. Study Instruments**

The research instrument used for data collection is a questionnaire. The questionnaire was tested using a reliability test, which is the level of confidence in a measurement by looking at the results of being relatively the same, and having a constant consistency.

**6. Data Analysis**

The univariate analysis of this study resulted in the distribution of frequency and percentage of each variable. The variables that were analyzed univariably in this study were threat perception, benefit perception, vulnerability perception, severity perception, cues to action, self-efficacy. Bivariate analysis in this study is to determine the relationship between the Health Belief Model (HBM) and therapy selection. Statistical testing using a chi-square test with a confidence level of 95%. The multivariate analysis in this study uses multiple linear regression. This multiple linear regression analysis is to determine the influence of the independent variable on the dependent variable. The double linear regression test in this study uses Stata 14 software.

**7. Research Ethics**

Research ethics issues, including informed consent, anonymity, and confidentiality, are carefully addressed during the research process. The approval letter for the research ethics permit was obtained from the Research Ethics Committee at Dr. Moewardi Hospital, Surakarta, Indonesia, No. 2.415/-X/HREC/2024, on October 10, 2024.

## RESULTS

### 1. Sample Characteristics

Table 1 shows the age characteristics of the research subjects, the youngest at the age of 18 years and the oldest at the age of 85 years. Of the 200 respondents studied, the education level of the research subjects in this study was the highest, namely, the last high school education of 70 research subjects (35.00%). The highest type of work is self-employed as many as 76 research subjects (38.00%). Based on Table 1, it can be known that most women suffer from low back pain, as many as 103 study subjects (51.60%).

**Table 1. Characteristics of data samples acupuncture patients and physiotherapy patients (N=200)**

| Variable | Frequency (N) | Percentage (%) |
|---|---|---|
| **Gender** | | |
| Male | 97 | 48.50 |
| Female | 103 | 51.50 |
| **Education** | | |
| Primary school | 4 | 2.00 |
| Junior high school | 29 | 14.50 |
| Senior high school | 70 | 35.00 |
| Diploma 1-3 | 43 | 21.50 |
| Bachelor degree | 53 | 26.50 |
| Master's and Doctoral Programs | 1 | 0.50 |
| **Marital Status** | | |
| Single | 23 | 11.50 |
| Married | 165 | 82.50 |
| Widow/widower | 12 | 6.00 |
| **Occupation** | | |
| Not working | 30 | 15.00 |
| Private employee | 60 | 30.00 |
| Entrepreneur | 76 | 38.00 |
| Civil Servant | 31 | 15.50 |
| Policemen/Soldiers | 3 | 1.50 |

### 2. Bivariate Analysis

The results of the bivariate analysis test in this study were carried out to find out whether there was a difference in the score of therapy selection with the perception of vulnerability, perception of severity, perception of benefit, perception of obstacles, cues to act, and self-efficacy. showed that of the 200 research subjects showed a perception of vulnerability with an average of 1.59, a standard deviation of 2.29, with a minimum of 0 and a maximum of 6. The perception of severity showed an average of 0.95, a standard deviation of 1.72, with a minimum of 0 and a maximum of 6. The perception of benefits showed an average of 2.03, a standard deviation of 0.49, with a minimum of 0 and a maximum of 6. The perception of resistance shows an average of 2.19, a standard deviation of 3.13, with a minimum of 0 and a maximum of 8. The action cue has an average of 1.65, a standard deviation of 2.37, with a minimum of 0 and a maximum of 8. Self-efficacy with an average of 0.65, standard deviation of 0.89 with a minimum of 0 and a maximum of 2.

**Table 2. The description of the Health Belief Model construct score**

| Construct | n | Mean | SD | Min. | Max. |
|---|---|---|---|---|---|
| Perception of Vulnerability | 200 | 1.59 | 2.29 | 0 | 6 |
| Perception of Severity | 200 | 0.95 | 1.72 | 0 | 6 |
| Perception of benefits | 200 | 2.03 | 0.49 | 0 | 6 |
| Perception of obstacles | 200 | 2.19 | 3.13 | 0 | 8 |
| Acting cues | 200 | 1.65 | 2.37 | 0 | 8 |
| Self-efficacy | 200 | 0.65 | 0.89 | 0 | 2 |

### 3. Multivariate Analysis

Table 3 shows the results of multivariate analysis of vulnerability perception, severity perception, benefit perception, action cue, and self-efficacy with the selection of therapy type. This double logistic regression analysis model has a Pseudo R Square= 68.69%. This means that all independent variables contained in the model together can explain the variation in therapy selection (i.e., acupuncture therapy vs physiotherapy) by 68.69%.

**Perceived susceptibility and selection of Acupuncture Therapy**

Table 3 shows a statistically insignificant relationship between perception of vulnerability and acupuncture therapy. Patients with low back pain who felt more susceptible to low back pain were less likely to use acupuncture therapy than physiotherapy, but the difference was not statistically significant (OR= 0.51; CI 95%= 0.14 to 1.79; p=0.293).

**Perceived Severity and Selection of Acupuncture Therapy**

Table 3 shows that there is a positive relationship between patients' perception of the severity of back pain and the choice of acupuncture therapy. Patients with low back pain who had the perception that low back pain could have severe consequences were more likely to use acupuncture therapy than physiotherapy, and the difference was statistically significant (OR=3.99; CI 95%= 1.17 to 13.54; p= 0.027).

**Perceived Benefit and Selection of Acupuncture Therapy**

Table 3 shows that there is a positive relationship between patients' perception of the benefits of acupuncture therapy for back pain and the choice of acupuncture therapy. Patients with low back pain who had the perception that acupuncture therapy was beneficial for low back pain were more likely to use acupuncture therapy than physiotherapy, and the difference was statistically significant (OR=43.90; CI95%= 9.45 to 203.99; p< 0.001).

**Perceived Barrier and Selection of Acupuncture Therapy**

Table 3 shows that there is a negative relationship between patients' perception of acupuncture therapy barriers for back pain and acupuncture therapy selection. Patients with low back pain who had the perception that acupuncture therapy for low back pain had multiple obstacles were less likely to use acupuncture therapy than physiotherapy, and the difference was statistically significant (OR=0.03; CI95%= 0.01 to 0.20; p< 0.001).

**Cues to Action and Selection of Acupuncture Therapy**

Table 3 shows that there is a positive relationship between the action cues for acupuncture therapy and the selection of acupuncture therapy. Patients with low back pain who received action cues for acupuncture therapy were more likely to use acupuncture therapy than physiotherapy, and the difference was statistically significant (OR=7.10; CI95%= 2.20 to 22.91; p< 0.001).

**Self-Efficacy and Selection of Acupuncture Therapy**

Table 3 shows that there is a positive relationship between self-efficacy to undergo acupuncture therapy and acupuncture therapy selection. Patients with low back pain who had high self-efficacy were more likely to use acupuncture therapy than physiotherapy, and the difference was statistically significant (OR=142.49; CI95%= 14.17 to 1432.86; p< 0.001).

**Table 3. Results of multiple logistic regression analysis of the relationship between constructs in the Health Belief Model and the selection of Acupuncture versus Physiotherapy**

| Variable | OR | CI 95% | | p |
|---|---|---|---|---|
| | | Lower Limit | Upper Limit | |
| Perception of Vulnerability | 0.51 | 0.14 | 1.79 | 0.293 |
| Perception of Severity | 3.99 | 1.17 | 13.54 | 0.027 |
| Perception of benefits | 43.90 | 9.45 | 203.99 | <0.001 |
| Perception of obstacles | 0.03 | 0.01 | 0.20 | <0.001 |
| Acting cues | 7.10 | 2.20 | 22.91 | <0.001 |
| Self-efficacy | 142.49 | 14.17 | 1431.86 | <0.001 |
| n observation = 200<br>Pseudo R Square= 0.68<br>p<0.001 | | | | |

## DISCUSSION

The results showed that the perception of vulnerability was statistically insignificant, patients with low back pain who felt vulnerable to experiencing back pain had an influence on therapy selection. Patients with low back pain who felt vulnerable to experiencing the consequences of low back pain were less likely to use acupuncture therapy compared to physiotherapy. The Mirotznik study (1998) explained that the perception of vulnerability can be influenced by several factors such as education, employment, income, age, race, and the incidence of serious diseases.

When a person believes that they are susceptible to health-related disease conditions, they tend to take measures to prevent them. However, if vulnerability decreases, one is convinced that prevention efforts can use protective behaviors to prevent it (Lee et al., 2014). In this study, the choice of acupuncture therapy may not be an option when experiencing low back pain, influenced by several factors, including knowledge, confidence in choosing therapy, distance traveled, and other factors that are obstacles.

The perceived severity is a fear-inducing factor in predicting or explaining behavior when people believe that they are getting worse at the threat of disease or engaging in unhealthy behaviors. The severity of side effects of self-medication is a mediator to increase the effectiveness of treatment in therapy selection (Aghdash et al., 2015). The results of this study showed that there was an influence between patients' perception of severity on therapy selection patients with low back pain who had the perception that low back pain could provide severity were more likely to use acupuncture therapy. This is because a person who feels Low Back Pain is a serious disease will have the possibility to take Acupuncture treatment because feeling Low Back Pain is very disruptive to activities, and the consequences that may cause disability can occur.

Interventions to support patients for treatment therapy in long-term conditions by increasing risk estimation and involve-

ment in decision-making. Better knowledge and greater involvement in decision-making, while the provision of pre-consultation interventions was associated with less decision-making (Mathijssen et al., 2020).

The results of this study showed that the perception of benefits increased the choice of type of therapy, patients with low back pain who had the perception that acupuncture therapy was beneficial for low back pain had a greater likelihood of using Acupuncture therapy. The perception of high benefits will encourage patients to take action in choosing therapy because they have felt the benefits and received the best treatment, one of which is with Acupuncture therapy.

Explain that factors that can affect the perception of benefits in the selection of therapy, namely age, knowledge, level of education, and involvement in health-related professions, affect the decision to take therapeutic action. The knowledge and involvement of health workers affects the perception of benefits of low back pain treatment to get treatment that is appropriate for the disease they suffer from (Loke et al., 2015).

Obstacle perception is a construct in the Health Belief Model theory. The obstacles felt will be directly related to the therapy selection process, many obstacles will be overcome to carry out therapeutic actions. The results of this study showed that the perception of obstacles lowered the likelihood of choosing therapy. Patients with low back pain who had the perception that acupuncture therapy for low back pain had many obstacles had a smaller likelihood of using Acupuncture therapy. This is likely to be influenced by many other factors, such as factors that affect the perception of barriers, including income, access to services, experience, and knowledge.

This research is in line with the research of Arye et al (2024) that challenges in health care can be caused by language-related barriers, as well as different health beliefs and concepts regarding the healing process. Access to healthcare services may be limited for elderly patients due to language, cultural, religious, knowledge barriers, distance, and finances.

Action cues are a person's attempt to make therapeutic decision-making actions due to encouragement from others. Acting cues positively correlate with therapy selection, family and environmental roles, emphasizing the benefits of understanding how parental and patient perceptions of disease, treatment, and prognosis affect each other. benefit from looking at the dynamic interactions between family perceptions influencing therapy selection (Dempster et al., 2018).

In this study, low back pain patients who get action cues for acupuncture therapy are more likely to use acupuncture therapy. This is likely the result of other people's encouragement and motivation. Motivation encourages healthcare workers to address patient ambivalence as the key to change, as ambivalence is often an obstacle to action. Patients can interpret the barriers that arise due to the effects of treatment and other social problems and are optimistic that they can undergo treatment, as well as being able to understand that the treatment process requires support from within and the social environment, as well as the intention and readiness to change, which fosters long-term self-efficacy to choose the therapy that the patient finds comfortable (Parwati et al., 2021). In this study, low back pain patients who have high self-efficacy are more likely to use acupuncture therapy. This is likely because the perception of quality, satisfaction, and trust in staff and clinics has a relationship that influences the intention to visit the clinic, and satisfaction and trust act as mediators. The perceived benefits can be

a concept similar to the impact of quality and trust in the clinic.

Health services are a health system involving various service providers, from primary health care clinics that handle various phases of disease development. Which health beliefs influence the intention to show that healthcare providers should specifically focus on emphasizing to their patients about the risk of disease and that the therapy is effective. Healthcare providers can do this by providing information that indicates a high prevalence of low back pain (MacArthur, 2017). In addition, the patient's decision to continue therapy until recovery lies in a comprehensive experience through satisfaction in therapy services and the support of health workers in providing education, so that patients gain in-depth insight into the factors that affect the success of therapy (Zhang, 2018).

## AUTHORS CONTRIBUTIONS

All authors contributed equally

## FINANCIAL SUPPORT AND SPONSORSHIP

This study is self-funded.

## ACKNOWLEDGEMENT

We would like to thank the research subjects who have been willing to take their time, and those who have helped in the preparation of this article.

## CONFLICT OF INTEREST

There is no conflict of interest in this study.

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