

# Factors Influencing the Choice Between Surgical Intervention and Physiotherapy for Individuals Experiencing Lumbar Spine Issues: A Qualitative Study in Iran

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**Background:** Lumbar spine disorders are a prevalent global health issue, with surgery and physiotherapy being the most common treatment options. Although many studies have explored the clinical outcomes of these treatments, little is known about the decision-making process from the perspective of both patients and healthcare providers in Iran. This process is shaped by a range of medical, social, psychological, and systemic factors. Accurately identifying these determinants and understanding their influence is essential for guiding patients toward informed and effective treatment decisions.

**Objective:** The aim of this study was to explore the factors affecting the decision to choose between surgery and physiotherapy as treatment options by Iranian patients with lumbar spine disorders using the views of the patients, health care providers and decision-makers.

**Methods:** The study utilized semi-structured interviews to collect data from 27 stakeholders, comprising 12 patients, 9 healthcare professionals (surgeons and physiotherapists), and 6 policymakers/administrators from Tehran, East Azarbaijan, and Yazd provinces. Participants were selected through purposeful sampling with maximum variation to ensure diverse representation across age, gender, condition type, and treatment preference. Data were analyzed using thematic analysis, with research rigor maintained through member checking, peer review, and inter-coder reliability assessments.

**Results:** Four themes were identified; service provider factors (eg provider knowledge/expertise, provider preference), service recipient factors (eg trust, financial worries), health system/insurance-related issues (eg cost coverage, treatment facility distance), and societal/family influences (eg media depictions, traditional beliefs). For example, the decision for surgery of some patients was due to other health professionals promoting quicker results, whereas some opposed surgical advice because of past experiences.

**Conclusion:** The decision to use surgery or physiotherapy for lumbar spine problems in Iran is multivariate. Interventions to facilitate shared decision-making and patient education can improve concordance between clinical recommendations and patient preferences. There is a need for culturally sensitive decision aids and policy changes.

**Keywords:** lumbar spine, surgery, physiotherapy, decision-making, Iran, qualitative study

## Introduction

Lumbar spine disorders are one of the leading causes of pain and disability worldwide and have a major effect on quality of life as well as an economic impact on healthcare services. It is estimated that as many as 85% of all men and women suffer low back pain at some point during their life, second only to the common cold as a cause for visits to the doctor and the most frequent cause of activity limitation in those under 45 years of age.<sup>1-3</sup> Degenerative disc disease and herniated discs of the lumbar spine add significantly to this load, high light that complaints related to the lower back are the third-most prevalent indication for surgery.<sup>4</sup> Treatment is expensive; in the United States, yearly costs to care for low back pain have been estimated to be \$49.3 billion to \$100 billion.<sup>5</sup> The estimates for the worldwide prevalence fluctuate,

75.8% in Serbia to around 38.9% globally.<sup>6–9</sup> According to an Iranian study in 2022, more than 25.2% of the study group had back pain, which was in the same range of that observed in other populations.<sup>10</sup>

## Treatment Options

The severity of back pain can be categorized as acute, sub-acute, or chronic, and is mainly due to arthritis, infection or nerve compression. Pharmacological treatments, invasive procedures, and non-pharmacological options (ie physiotherapy) are proposed to manage back pain.<sup>11</sup> Physiotherapy is an evidence-based profession focused on the science of anatomy and principles of biology seeking to achieve enhanced function and reduce pain and is fit for the total health of patients.<sup>12</sup> Typical Physiotherapy techniques are exercises, massage and thermal modalities. On the other hand, surgery is generally indicated for patients with severe symptoms, muscle weakness or urinary incontinence, or when conservative treatments are unsuccessful.<sup>13,14</sup>

There are regional differences in surgery rates, which are impacted by differences in occupational exposure, provider beliefs, and diagnostic resources.<sup>15,16</sup>

## Rationale for Study

Although surgical and physical medicine and rehabilitation models exist for managing lumbar spine disorders, little is known about the considerations underlying choice decision-making in such situations, especially in countries like Iran where specific systemic, cultural, and economic aspects form the contents of such considerations. The primary care model of health services in Iran results in low access to physiotherapy, vast differences in insurance coverage, and significant out-of-pocket costs for rehabilitation. Moreover, cultural and family traditions as well as varied health literacy make it more complicated to make a decision. These contextual features highlight the necessity of qualitative research to capture the rich and varied views of stakeholders. Hence, the present study aims to discover and explain the factors influencing the selection to surgery or physiotherapy for lumbar spine disorders that Iranian's make, influencing this decision supported by lived experiences of patients, health care providers and decision makers. The findings seek to inform more patient-centered care strategies and evidence-based policy decisions tailored to the Iranian healthcare context.

## Context

Physiotherapy in Iran is a well-established field supported by a structured educational system. However, the country faces a significant shortage of practitioners, only about 8,000 licensed physiotherapists are currently active, far below the estimated need of 30,000 to 35,000.<sup>17,18</sup>

Physiotherapy services are primarily available at secondary and tertiary levels of care, with minimal presence in primary care settings. This lack of integration limits early intervention opportunities. Moreover, insurance coverage is limited. Of 29 physiotherapy services listed in the national Relative Value Book, only 13 are covered under basic insurance plans.<sup>19</sup> Patients often face high out-of-pocket expenses, especially for specialized services offered only in private clinics, which are not reimbursed by most basic insurance packages.<sup>20</sup> These systemic barriers constrain access and may significantly influence treatment decisions.

By exploring the contextual challenges and patient/provider perspectives in a low- to middle-income setting like Iran, this study contributes new insights into how treatment decisions are shaped and offers implications for enhancing patient-centered care and policy planning.

## Methodology

The study is qualitative in nature, and represents the perspectives of three groups: (i) patients with lumbar low back pain, (ii) professionals (eg, physicians, and physiotherapists), and (iii) Administrators and representatives of policy managers in health care, covered by several sources: insurance companies, medical centers, ministries of health.

## Participants

Using purposive sampling with maximum variation, 27 individuals were recruited to capture diverse experiences:

- **Patients (n=12)** aged 25–72 (7 women, 5 men), with lumbar spine disorders (eg, disc herniation, stenosis) treated via surgery (n=5) or physiotherapy (n=7), from clinics in Tehran, East Azarbaijan, and Yazd.
- **Healthcare providers (n=9)** included 5 physiotherapists and 4 surgeons (6 men, 3 women), with 12 years of average experience.
- **Policymakers/Administrators (n=6)** from insurance agencies, hospitals, and the Ministry of Health (4 men, 2 women), averaging 15 years of experience.

Inclusion criteria were age 18–80, diagnosis of lumbar spine condition with physical limitations, and prior or ongoing treatment. Exclusion criteria included acute non-spinal conditions, communication difficulties, or paralysis. Sampling continued until thematic saturation.

## Data Collection

Semi-structured, in-person interviews were conducted in Persian from January to June 2024, lasting 30–60 minutes. The interview guide was designed according to literature and was also validated by two qualitative research professionals. Verbal consent was obtained from participants, and audio recordings were obtained with permission. The topics of the interview guide, which was revised by qualitative research experts, were as follows:

- Initial symptoms and treatment motivations (patients)
- Decision criteria between physiotherapy and surgery (providers)
- System-level barriers/facilitators to treatment access (policymakers)
- Perceived pros/cons of each treatment (all groups)
- Influence of past experiences and social context (all groups)

Interviews were transcribed and translated into English. Bilingual experts reviewed translations for accuracy. Medical records were reviewed to confirm diagnoses and treatments.

## Data Analysis

The research used thematic analysis according to Braun and Clarke's (2006) six-phase framework.<sup>21</sup> Initial codes (eg, “cost concerns”, “pain intensity”) were grouped into broader themes such as “Patient-related factors.” Themes were reviewed, refined, and clearly defined. The final themes were supported with illustrative quotes.

## Rigor and Trustworthiness

The research team implemented multiple methods to achieve reliable findings by addressing credibility and transferability and dependability and confirmability.<sup>22</sup> Credibility was strengthened by conducting member checking with five participants and transferability supported by providing full descriptions of the study context and participants. Reliability was enhanced by having two different research members code the data with an inter-coder agreement of 85%. A reflective diary was kept by the first author during all stages of data analysis, as an ongoing record to document analytic decisions and to minimize potential bias.

Reflexivity was also actively addressed. A member of the research team is a PT, having worked for more than 10 years in clinical practice. Although this background of experience helped to inform the analysis of physiotherapy relevant data, it also raised concerns about professional bias away from surgical interventions. To minimize this, data analysis was performed by a multidisciplinary team comprising academics with no clinical associations. In addition, peer debriefing with external qualitative experts was performed to question assumptions and encourage critical thinking. Together, they contributed to balance and transparency in the interpretation of participant views.

## Ethical Considerations

This study was approved by the ethics committee at Tabriz University of Medical Sciences. All participants were informed of the study's purpose, confidentiality procedures, and their right to withdraw at any time. Verbal informed consent was obtained and documented. As part of the consent process, participants were explicitly informed that anonymized responses and direct quotes might be used in publications. This procedure was conducted in full compliance with the approved protocol by the Institutional Review Board (IRB).

## Results

This qualitative study identified four main categories and thirteen specific themes influencing individuals' decision-making when choosing between surgical procedures and physiotherapy for lumbar spine issues (Tables 1–4). The findings highlight a complex interplay of factors from the perspectives of service providers, recipients, the health and insurance systems, and family and society.

### Service Provider Factors

Analysis of the interviews revealed that the recommended and chosen treatment approach is influenced by several factors, including the nature of the condition, the patient's medical history, imaging findings, prior treatment outcomes, and the healthcare provider's clinical judgment (see Table 1 for provider-related factors). Participants cited the expertise

**Table 1** Service Provider-Related Themes and Subthemes Influencing the Choice Between Surgical Intervention and Physiotherapy

Themes	Subthemes
Knowledge and experience of the provider	<ul style="list-style-type: none"> <li>- Experience and expertise of the provider</li> <li>- Previous clinical results</li> <li>- Possible consequences of each therapeutic intervention</li> <li>- Success rate in therapeutic interventions</li> <li>- Balancing the consequences and risks of interventions</li> </ul>
Professional position and field of study	<ul style="list-style-type: none"> <li>- Provider preferences</li> <li>- Financial incentives</li> <li>- Disciplinary and occupational prejudices</li> </ul>
Use of clinical evidence	<ul style="list-style-type: none"> <li>- Quality and strength of evidence supporting therapeutic interventions</li> <li>- Efficiency and safety of interventions</li> <li>- Evidence-based clinical guidelines and recommendations</li> <li>- Professional community recommendations</li> </ul>

**Table 2** Service Recipient-Related Themes and Subthemes Influencing the Choice Between Surgical Intervention and Physiotherapy

Themes	Subthemes
Service provider and receiver relationship	<ul style="list-style-type: none"> <li>- Trust between patient and provider</li> <li>- Provider's ability to explain treatment options and answer patient questions</li> <li>- Communication skills</li> <li>- Patient decision aid</li> <li>- Patient participation in treatment decisions</li> <li>- Recommendation of the provider and explanation of risks and benefits</li> <li>- The influence of therapist recommendations on treatment choices (risk of medicalization)</li> </ul>

(Continued)

**Table 2** (Continued).

Themes	Subthemes
Patient preferences and expectations	<ul style="list-style-type: none"> <li>- Patient's beliefs and thoughts about treatment options</li> <li>- Risks and benefits of each option and its success rate</li> <li>- Long-term follow-ups and consequences</li> <li>- Job demands</li> <li>- Expectations of recovery time and preference for immediate symptom relief</li> <li>- Time commitment for treatment continuity</li> <li>- Past experience with treatment methods</li> <li>- Financial limitations</li> <li>- travel expenses</li> </ul>
Individual characteristics and patient awareness	<ul style="list-style-type: none"> <li>- Demographic characteristics of the patient (age, gender, education, etc.)</li> <li>- Job and income level</li> <li>- Level of health literacy</li> <li>- Financial limitations</li> <li>- Severity of pain and duration of symptoms</li> <li>- The degree of disability and functional impairment</li> <li>- Previous treatment history</li> <li>- Associated diseases</li> <li>- life style</li> <li>- Individual variability of the patient</li> <li>- Patient fear and psychological challenges</li> <li>Urgent treatment due to worsening symptoms</li> <li>- Patient's understanding of his condition and treatment options</li> <li>- Access to comprehensive and reliable information</li> </ul>

**Table 3** Health and Insurance System-Related Themes and Subthemes Influencing the Choice Between Surgical Intervention and Physiotherapy

Themes	Subthemes
Service availability and access	<ul style="list-style-type: none"> <li>- Geographical location and access to medical services</li> <li>- Budget restrictions and quotas</li> <li>- Resource allocation and prioritization</li> <li>- Injustice and regional inequalities in the provision of services and care</li> <li>- Waiting time for visiting and receiving services</li> <li>- medical expenses</li> </ul>
Medical expenses and insurance coverage	<ul style="list-style-type: none"> <li>- Financial resilience</li> <li>- Opportunity cost of surgical intervention and physiotherapy</li> <li>- Coverage of surgical interventions and physiotherapy</li> <li>- Co-payments and deductible</li> <li>- Pre-authorization requirements</li> <li>- Strategic purchase of health services</li> <li>- Basic insurance coverage and insurance package</li> <li>- Having supplementary insurance</li> <li>- Refund policies and structures</li> <li>- Regulations for out-of-network care</li> </ul>

*(Continued)*

**Table 3** (Continued).

Themes	Subthemes
Organizational Culture	<ul style="list-style-type: none"> <li>- Hospital or clinic policies and rules</li> <li>- Referral paths</li> <li>- Rules and clinical guidelines</li> <li>- Emphasis on surgical or conservative care</li> </ul>
Treatment capacity and resources and technological advances	<ul style="list-style-type: none"> <li>- Availability of equipment and infrastructure</li> <li>- Levels and number of service providers and workload</li> <li>- Development of new treatment techniques</li> <li>- Availability of minimally invasive surgeries</li> </ul>

**Table 4** Family and Society-Related Themes and Subthemes Influencing the Choice Between Surgical Intervention and Physiotherapy

Themes	Subthemes
Beliefs and family foundation	<ul style="list-style-type: none"> <li>- The influence of family and friends on treatment decisions</li> <li>- Psychological and social support of family and friends</li> <li>- Number and composition of family members</li> <li>- The role of family dynamics</li> <li>- The experience of those around you about treatment methods</li> </ul>
Influence of media and social networks	<ul style="list-style-type: none"> <li>- Society's attitude towards the type of therapeutic interventions</li> <li>- The role of social networks</li> <li>- Coping mechanisms and mental resilience</li> <li>- Depicting surgery and physiotherapy in the media</li> <li>- Advertising and marketing of therapeutic interventions</li> </ul>
The role of traditional medicine	<ul style="list-style-type: none"> <li>- Using traditional treatment methods instead of modern medicine</li> <li>- Beliefs about the effectiveness of traditional treatments</li> <li>- Possible conflicts with conventional treatment</li> </ul>

and preferences of surgeons and physiotherapists as significant influencers. Patients were swayed by a provider's track record or the clarity of their explanations. Providers' professional biases and economic incentives also played a role.

A physiotherapist emphasized the role of symptom severity in decision-making:

The primary concern is the patient's symptoms. Urgent conditions, such as those involving urinary control issues or muscle impairment, often necessitate surgical intervention unless the patient prefers physiotherapy. For older patients, physiotherapy may be more appropriate. In cases requiring close monitoring, we typically start with physiotherapy, resorting to surgery only if it proves ineffective. (Physiotherapist A)

Similarly, a surgeon highlighted the importance of patient preferences and informed discussions:

When surgery is not a viable option, I assess the patient's preference for either physiotherapy or surgery and provide a detailed discussion of the benefits, risks, and costs of each. If the patient is hesitant, I recommend starting with physiotherapy. (Surgeon A)

Physical abilities, functional status, and comorbidities significantly influenced providers' decisions. For example, healthcare professionals managing elderly patients with reduced mobility or frailty often favored non-surgical options like physiotherapy, particularly when patients were actively engaged in such regimens. A surgeon noted:

Functional limitations and their impact on daily activities play a key role in decision-making. Patients with significant limitations are more likely to opt for surgery to improve their quality of life, whereas those with manageable limitations are advised to pursue physiotherapy for gradual mobility restoration. (Surgeon B)

Trust in healthcare providers emerged as a critical factor in treatment decisions, with many patients relying on the expertise of their doctors and physiotherapists to guide their choices. An insurance employee elaborated:

Patients who trust their surgeons or primary care physicians are more likely to follow their surgical recommendations. However, concerns about potential surgical complications may discourage adherence. The quality of advice provided by healthcare professionals also significantly shapes patients' decisions. (Insurance Employee B)

## Service Recipient Factors

Table 2 presents the themes and subthemes related to service recipient factors that influence patients' decision-making between surgical intervention and physiotherapy. Trust, beliefs, prior experiences, financial status, and lifestyle constraints shaped decisions. Some patients chose physiotherapy to avoid surgical risks, while others viewed surgery as a quicker fix. Limited health literacy and pain severity were also key.

Pain intensity emerged as a primary factor in choosing between surgery and physiotherapy for lower back conditions, significantly impacting patients' quality of life. Individuals experiencing severe, debilitating pain often opted for surgery due to its potential for quicker recovery compared to physiotherapy programs. Patients frequently cited chronic pain, reduced functionality, and lack of relief from non-invasive treatments as reasons for choosing surgery, alongside a perceived need for immediate relief and the belief that surgery offers a more definitive solution. One patient explained:

I prefer treatments that are swift and efficient. I knew physiotherapy would require lengthy visits, which I wanted to avoid. (Patient A)

Conversely, patients who selected physiotherapy often aimed to avoid surgery, citing concerns about potential complications and a preference for a gradual, comprehensive approach to managing their condition. Key motivations for choosing physiotherapy included functional improvements, pain reduction, and the empowerment derived from actively participating in their treatment.

The time required for each treatment to yield results was another critical factor highlighted in the interviews. Physiotherapy typically demands prolonged engagement before significant improvements are observed, posing challenges for patients balancing work or other responsibilities. In contrast, surgery offers faster relief but involves a shorter post-operative recovery period. A patient reflected:

The two-month recovery period after surgery worried me, as it threatened my job security and my family's livelihood. For this reason, I leaned toward physiotherapy sessions. (Patient B)

Participants frequently expressed preferences for either invasive (surgical) or non-invasive (physiotherapy) treatments, with many favoring the latter to avoid surgery whenever possible. Patients opting for physiotherapy often cited fears of surgical risks and uncertain outcomes, making them more inclined to pursue physiotherapy as their primary treatment despite the lack of guaranteed symptom resolution. One patient noted:

The thought of surgery causes me significant anxiety, particularly the anesthesia, procedures, and potential negative outcomes. I have a strong aversion to surgery. (Patient K)

Past experiences also played a significant role in shaping patients' decisions. Positive prior experiences with physiotherapy often encouraged patients to choose it again, while negative experiences prompted consideration of surgery. Additionally, participants' educational background and health literacy influenced their ability to comprehend complex medical information about lumbar spine conditions and treatment options. Patients with lower education levels were more likely to rely on healthcare professionals' advice rather than independently evaluating treatment options, highlighting the role of health information disparities in decision-making. A patient shared:

My doctor recommended surgery, and I agreed because I wasn't aware of other treatment strategies. However, after seeing others, I now believe physiotherapy might be the better solution. (Patient D)

Geographic location further influenced treatment choices by affecting access to high-quality physiotherapy centers or specialized spine clinics offering advanced minimally invasive surgeries. Limited availability of these resources often led to logistical challenges and increased costs, steering some patients toward specific treatments. A health policymaker emphasized the need for equitable resource distribution:

Access to healthcare services is a critical factor. Patients in rural areas often face difficulties attending regular physiotherapy sessions, making surgery a more practical option due to fewer follow-up appointments. (Health Policymaker C)

To address disparities arising from regional differences, policymakers and healthcare administrators must collaborate to ensure equitable access to resources for all individuals with lumbar spine disorders, regardless of location.

## Health System and Insurance System Factors

The study revealed that financial factors significantly influenced patients' decisions regarding treatment options for lumbar spine conditions (*see Table 3 for Health and Insurance System-Related factors*). Availability of services, insurance coverage, treatment costs, and referral systems heavily influenced access and choice. Some patients reported long waiting lists or insufficient insurance for physiotherapy.

Participants frequently cited the lower cost of physiotherapy compared to surgical procedures as a key reason for opting for non-surgical treatments. However, the role of insurance in enhancing treatment affordability was also highlighted, as varying levels of coverage could alter the perceived cost-effectiveness of physiotherapy.

Service accessibility and availability were critical in shaping treatment choices, particularly for patients. One participant noted:

The distance between my home and the clinic was a major barrier. Commuting by bus or car for daily physiotherapy sessions was highly inconvenient. (Patient E)

A health policymaker also emphasized the impact of uneven distribution of services:

Our biggest challenge is the geographic disparity in service availability. In urban centers, patients have more choices. In remote areas, people might resort to surgery simply because it requires fewer visits and follow-ups. (Health Policymaker F)

Another policymaker drew attention to policy fragmentation and the role of insurance schemes:

There's little coordination between public and private insurance in supporting long-term physiotherapy. That's why many patients abandon conservative treatments even if they prefer them. (Health Policymaker E)

Interviewees further emphasized the importance of treatment capacity, resources, and technological advancements in decision-making. The availability of experienced physiotherapists, adequate resources for physiotherapy services, and the adoption of evidence-based practices were identified as pivotal factors influencing treatment preferences. A surgeon remarked:

Innovations like minimally invasive endoscopic surgery can reduce the need for prolonged physiotherapy by offering greater ease and effectiveness. (Surgeon D)

A physiotherapist, however, offered a complementary perspective:

Advanced physiotherapy techniques, when applied consistently and early, can significantly improve function and delay or even prevent the need for surgical intervention. (Physiotherapist C)

## Society and Family Factors

Cultural norms, media representation, traditional medicine, and family pressure were frequently cited. For instance, a few patients deferred to relatives' prior experiences or were swayed by TV advertisements.

Incorporating diverse viewpoints appeared to bolster confidence, facilitating the decision-making process for these treatment options. Additionally, the skills and reputation of practitioners were identified as influential factors in selecting between these medical interventions (*see Table 4 for Family and Society-Related factors*).

Numerous respondents highlighted the critical role of family support and social networks. The personal experiences of family members and friends, whether positive or negative, significantly influenced treatment preferences. A patient shared:

My husband encouraged me to try physiotherapy first since his sister recovered well that way. His support really helped me stick with it. (Patient G)

Family members were often directly involved in evaluating treatment options. One participant noted:

My daughter did a lot of online research for me and even consulted her doctor friends. She helped me weigh the risks of surgery more realistically. (Patient L)

A spouse added insight into their family's decision-making:

We knew surgery could speed up recovery, but I was worried about complications. We discussed it with our relatives, and together we decided to try physiotherapy first. (Family Member E)

Some participants reported experiencing mental distress during decision-making, expressing concerns about making erroneous choices, which underscores the need to address psychological factors and provide adequate emotional support. A family member said: My mother was extremely anxious about making the wrong decision. She kept asking, 'What if I choose surgery and something goes wrong? What if I waste time with physiotherapy and it doesn't work?' She needed constant reassurance from us and her doctors. (*Family Member H*)

Ease of access to healthcare providers also played a significant role in the decision-making process for surgical or physiotherapeutic treatments. One interviewee noted:

A relative of mine is a surgeon, and we have a good relationship. After seeking their advice, they recommended surgery, which aligned with my own inclination. (Patient I)

An unexpected yet important finding that emerged from the interviews was the influence of traditional medicine on patients' treatment decisions. While not initially a focal point, several respondents raised the role of traditional healing methods in shaping their preferences, either as an alternative to or in combination with conventional treatments. Many recognized the cultural significance and perceived benefits of traditional practices, but also acknowledged their limitations when used alone. As a result, participants often advocated for a complementary approach, integrating traditional medicine with physiotherapy or surgical interventions when necessary. A surgeon commented:

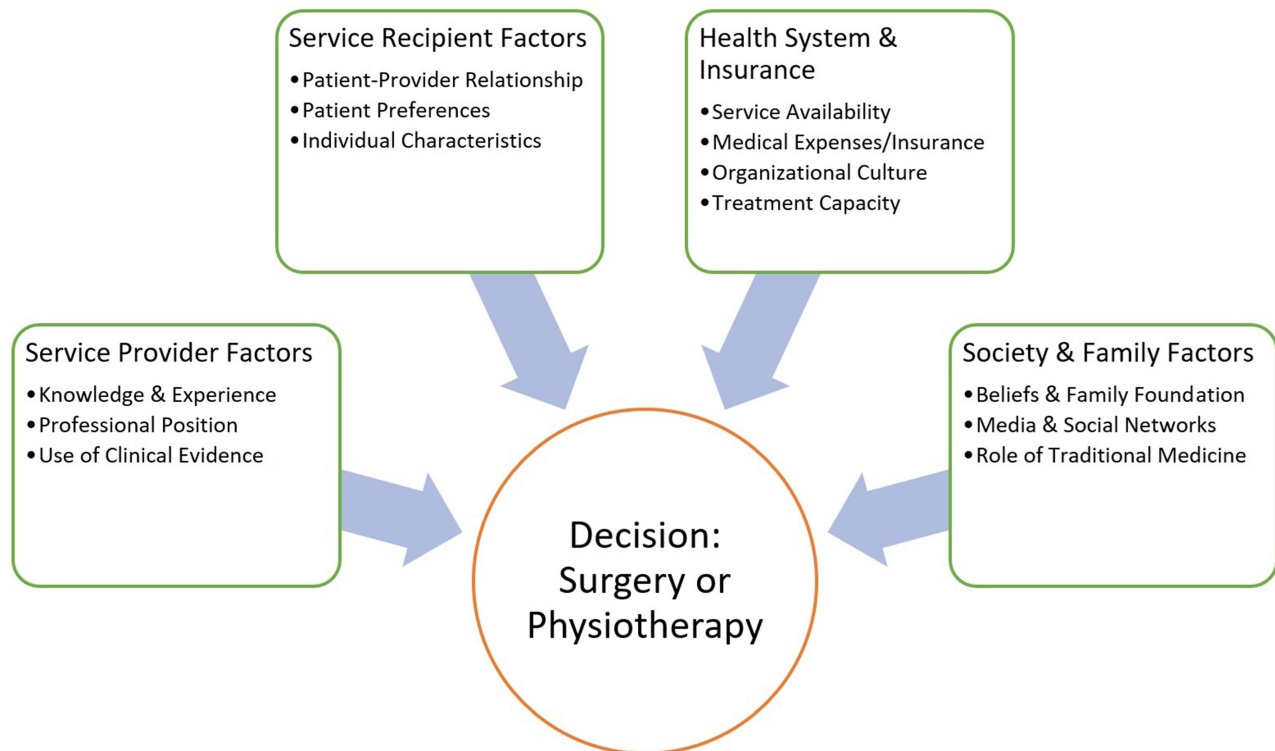
Some patients resist contemporary treatments, preferring to rely exclusively on traditional practices. (Surgeon D)

A policymaker echoed this perspective: Traditional practices are deeply rooted in some communities. Our policies should not ignore this reality but rather integrate evidence-based elements of traditional care where appropriate. (*Health Policymaker E*)

Generally, the decision-making process between surgery and physiotherapy is multifaceted, influenced by intertwined clinical, personal, systemic, and socio-cultural factors. Addressing these dimensions holistically can enhance shared decision-making and improve patient outcomes.

## Discussion

Decision making for patients considering surgery or physiotherapy for common forms of lumbar spinal conditions is multidimensional and complex and is informed by a variety of factors that in combination inform the preference for treatment. At the close of the paper, a concept model (Figure 1) is provided to help visualize the factors across service provider, service recipient, health system and societal which come into play in decision-making around treatment. The decision process for the care system is crucial, since it defines treatment pathways and deals with the patient's quality of life. This research offers an opportunity to understand the interplay between patient-, provider-, health systems, and societal factors in determining treatment decisions and outcomes and quality of life for patients. The findings align with existing literature while offering context-specific insights relevant to Iran, addressing previously underexplored aspects of this decision-making process.



**Figure 1** Conceptual model of patient decision-making between surgery and physiotherapy for lumbar spine issues. The model outlines four key domains influencing treatment choices: Service Recipient Factors – including patient–provider relationships, patient preferences, and individual characteristics; Service Provider Factors – such as clinical knowledge, experience, professional stance, and use of clinical evidence; Health System and Insurance Factors – including service availability, cost and insurance coverage, organizational culture, and treatment capacity; and Society and Family Factors – encompassing cultural beliefs, family influence, media exposure, and the role of traditional medicine. These interconnected domains shape how patients ultimately decide between physiotherapy and surgical intervention.

## Patient-Related Factors

Patients' choice was heavily influenced by features at the individual level (severity of symptoms, attitude, previous experience with a physician). For instance, Smuck et al<sup>23</sup> reported that the severity of pain greatly impacts the therapeutic options selected by clinical operators and patients, when the individual complains of pain. Carpenter et al (2010) also stress the importance of patient comprehension of the potential benefits, risks, and uncertainties associated with each of the treatment options for optimal outcomes.<sup>24</sup>

Data from this study revealed that individuals who opted for surgery typically experienced more severe and persistent symptoms; such as chronic pain, muscle weakness, and limited mobility. These patients often viewed surgery as a more definitive and time-efficient solution and were generally more willing to accept the inherent risks of invasive procedures. In contrast, patients with milder symptoms tended to choose physiotherapy due to its conservative, non-invasive nature. This pattern aligns with findings by Hess et al,<sup>25</sup> who reported that individual perceptions and treatment attitudes significantly shape therapeutic preferences.

Interestingly, many participants initially preferred physiotherapy but later shifted to surgery when symptoms either worsened or did not improve, demonstrating the dynamic and evolving nature of decision-making in response to disease progression. In the Iranian context, cultural values that emphasize rapid symptom relief often further influenced preferences for surgical intervention, especially among those with severe impairments—offering a novel cultural insight that expands on existing global literature.

Participants reflected diverse emotions regarding their choices. Some patients who underwent surgery expressed regret or dissatisfaction due to unmet expectations, while others reported substantial symptom relief and improved quality of life. Likewise, those who pursued physiotherapy acknowledged the longer recovery time and need for sustained effort but appreciated the reduced risks and perceived long-term benefits of a conservative approach.

Indeed, given the complexity of lumbar spine conditions, there is no universal recommendation in favor of either surgery or physiotherapy. Treatment decisions must be individualized based on symptom severity, patient preferences, and clinical assessment. This is supported by Jung et al,<sup>26</sup> who found only modest improvements in quality of life and back pain among non-operative patients after 12 months. Similarly, Delitto et al<sup>27</sup> reported comparable outcomes between surgical decompression and supervised physiotherapy (with an equal number of treatment sessions) in patients with lumbar spinal stenosis who were eligible for surgery.

Ultimately, patients' choices were shaped by a combination of personal beliefs, past experiences, symptom burden, and the perceived trade-offs of each intervention. While these patterns are consistent with international evidence, the findings also underscore context-specific elements—such as reliance on informal social networks—that shape decision-making in the Iranian healthcare setting.

## Provider-Related Factors

Healthcare providers—such as surgeons and physiotherapists—significantly influenced patients' treatment choices through their clinical expertise, judgment, and communication skills. Patients treated by experienced physiotherapists often reported better outcomes, particularly in cases of mild to moderate lumbar spinal stenosis. This supports the findings of Terai et al (2020), who recommended physiotherapy as an appropriate first-line treatment for such cases based on its effectiveness and non-invasive nature.<sup>28</sup>

On the other hand, patients with more severe symptoms or those who did not respond to physiotherapy generally had greater trust in surgeons and their recommendation for operative management, which was reinforced by clear and empathetic communication about potential benefits, risks, and uncertainties of both surgical and non-surgical options.<sup>29</sup>

Interpersonal trust in healthcare providers was found to be a cultural motivator in Iran, with many patients relying on physician recommendations, especially for complex or uncertain treatment pathways. In addition to professional expertise and communication quality, the effect of provider bias and financial incentives (particularly for surgical referrals) were also mentioned as context-specific insights that are not well-documented in international literature.

The provider's competence remained central throughout this process. While some patients with severe symptoms benefited from conservative care when guided by skilled physiotherapists, others with milder symptoms eventually opted for surgery due to inadequate response to physiotherapy.

Existing research supports these findings. Studies have shown that, under appropriate conditions, supervised physiotherapy can achieve outcomes comparable to surgery, particularly in early-stage or moderate cases of lumbar spinal stenosis, making it a valuable initial approach.<sup>30,31</sup>

## Health System and Insurance System Factors

Treatment decisions were also influenced by health system characteristics such as insurance coverage, cost considerations, and availability of healthcare resources. Patients with full insurance coverage were more likely to pursue surgical options, whereas those with limited or inconsistent coverage often opted for physiotherapy due to its lower cost. This pattern is consistent with broader evidence-based recommendations that have emphasized the cost-effectiveness of physiotherapy in the management of low back conditions and its potential to reduce unnecessary surgical costs and overall healthcare costs.<sup>32,33</sup>

In addition to its role as a standalone treatment for spinal conditions, postoperative physiotherapy programs have been demonstrated to reduce pain and improve patient satisfaction more effectively than traditional approaches.<sup>34</sup> These findings highlight the importance of integrating physiotherapy not only for direct treatment but also as part of surgical recovery to optimize outcomes and cost-effectiveness. In Iran, fragmented insurance policies with variable access to specialized care, such as skilled physiotherapists or advanced surgical centers, complicated decision-making; many participants said that coverage did not always match evidence-based recommendations, leading to overuse of invasive procedures or delays in necessary treatment. The findings suggest that healthcare cost savings could be optimized by prioritizing non-invasive treatments like physiotherapy in clinically appropriate cases—helping avoid unnecessary surgeries and preserving limited resources such as hospital beds, surgical staff, and postoperative care facilities.

Strategic procurement by insurance providers emerged as a key mechanism to improve care efficiency. Insurers can use their market leverage to negotiate fair pricing for both physiotherapy and surgical services, promote adherence to clinical guidelines, and incentivize providers to deliver high-quality, cost-effective care.<sup>35</sup> Such approaches are not intended to deny necessary surgical care but should ensure proper evaluation, accurate diagnosis, and clear communication between patients, providers, and payers. Interviews with experts also highlighted the importance of shared decision-making processes; Patients must be provided with all relevant information about the benefits and harms of both surgical and non-surgical treatments, and healthcare providers must involve patients in planning treatment so that clinical decisions align with patient values and preferences. Ultimately, a coordinated strategy involving healthcare providers, insurance companies, and policymakers is essential to establish clear protocols for selecting treatments based on clinical appropriateness. Such a holistic approach not only improves patient care but also enhances resource efficiency, paving the way for a more sustainable and equitable healthcare system.

## Societal and Family Factors

Societal and family influences played a significant role in shaping patients' treatment decisions. Family support often encouraged individuals to pursue physiotherapy, particularly when relatives emphasized long-term benefits and the avoidance of surgical risks. In contrast, societal expectations for rapid recovery—especially prevalent in urban Iranian settings—frequently pushed patients toward surgery, where access to operative facilities is more immediate. This cultural preference for quick fixes emerged as a context-specific insight that contrasts with international trends increasingly favoring conservative, non-invasive treatments.<sup>36,37</sup>

Furthermore, access and quality of health information (via traditional media, social media, community networks), including how it is communicated about through these mediums, influenced patient perception of their condition and treatment options, which sometimes resulted in medicalization: framing lumbar spine conditions as problems that needed immediate medical or surgical intervention.<sup>38</sup> The results underscore the importance of providing accurate, accessible, and culturally relevant health education to combat misinformation and promote informed decision-making.

Family input, cultural beliefs, and the influence of traditional medicine added further complexity to the decision-making process. These factors emphasize the need for culturally tailored decision support tools that integrate social and familial dynamics into treatment planning.

## New Insights and Context-Specific Findings

These results provide new insights, especially in the Iranian context where cultural, social, and systemic factors strongly influence treatment decisions. Patients with severe symptoms often prefer surgery, not only because it is perceived to provide faster relief (a cultural preference), but also because of the widespread social expectation that surgery is “more definitive.” Furthermore, patients rely heavily on prior experiences and informal recommendations from friends and family members when choosing between treatment options, highlighting the role of social networks in shaping health behaviors. Unequal geographical access to specialized physiotherapy services further limits options for some patients, leading them to default to surgery. Addressing these inequalities and improving access to conservative care options could reduce reliance on more expensive surgical interventions. Furthermore, trust in physicians' advice is particularly strong in Iran, often leading patients to follow clinical recommendations without seeking a second opinion, underscoring the need for shared decision-making tools adapted to local cultural dynamics.

## The Role of Medicalization and Evidence-Based Decision-Making in Treatment Choices for Lumbar Spine Conditions

When choosing between physiotherapy and surgical intervention for lumbar spine conditions, it is critical to consider the process of medicalization, which involves framing human conditions as medical problems, thereby increasing demand for therapeutic interventions.<sup>39</sup> Medicalization significantly shapes patients' perceptions of health issues and treatment options, underscoring the need for a comprehensive understanding of the decision-making process to enhance patient-centered care.

Evidence-based medicine (EBM) plays a pivotal role in deliberating between back surgery and physiotherapy. EBM integrates high-quality research evidence with clinical expertise and patient values to guide informed healthcare decisions.<sup>40</sup> It accounts for the risks and complications associated with each treatment option, supporting healthcare providers and patients in making evidence-informed choices. By evaluating rehabilitation costs and potential future healthcare needs, EBM can substantially influence healthcare expenditures, including initial treatment costs.<sup>1</sup>

Collaborative decision-making between patients and healthcare providers is essential, incorporating a range of influencing factors. Patients should be encouraged to engage in open communication with their providers about symptoms, progress, and concerns to ensure treatment aligns with their goals and expectations.

## Implications for Policy and Practice

This study provides several actionable recommendations to enhance shared decision-making and optimize treatment outcomes: healthcare providers should provide thorough patient education, clear evidence-based information about the benefits, risks, and long-term outcomes of surgery and physiotherapy, including decision-making tools that allow patients to align treatments with their preferences and values; insurance companies should implement strategic procurement strategies to promote evidence-based protocols by prioritizing non-invasive treatments such as physiotherapy for appropriate cases while negotiating rates for both surgical and physiotherapy services to make care more affordable and maintain quality of care. Expand access to physiotherapy services, especially in rural Iran, to ensure equitable care and reduce unnecessary surgeries; provide regular training for providers on shared decision-making and develop individualized treatment plans through interdisciplinary collaboration among surgeons, physiotherapists, and pain management specialists. Public health campaigns should work to counteract medicalization by raising awareness of the availability of more conservative treatments and their long-term effects, especially in urban areas where surgery is preferred.

## Study Limitations

It is important to note that several limitations exist in this study: The majority of participants were from urban areas, which may limit the generalizability of results to rural populations or sociocultural contexts in Iran; Reliance on self-reported data introduces potential biases as patients' perceptions of symptom severity or treatment outcomes do not always align with clinical assessments. Future research should include diverse populations and objective outcome measures to enhance applicability.

## Conclusion

This study emphasizes that the decision-making process for patients with lumbar spine conditions is multifactorial and influenced by a combination of clinical factors, socioeconomic factors, cultural influences, and systemic issues, and their choice between surgery or physiotherapy can be influenced by symptom severity, personal preference, recommendations from healthcare providers, insurance coverage, and social influences. The results highlight the need to incorporate patient values with clinical guidelines to inform patient-centered decisions that promote treatment adherence, avoid unnecessary interventions, and improve care quality.

The results highlight how important it is for treatment decisions to be made holistically, considering the patient as a whole, with values, expectations, and lived realities; open communication between patients and healthcare providers fosters shared decision-making that leads to better treatment satisfaction, adherence, and outcomes. Health care professionals and policymakers should work toward creating collaborative frameworks that bring together patients, interdisciplinary teams, and evidence-based protocols to optimize outcomes. A main action point would be to develop patient decision aids and clinical guidelines specific to the Iranian context by taking into account cultural preferences, socioeconomic challenges, and access to specialized health services such as physiotherapy in rural areas. These tools can empower patients to make shared decisions aligned with their values, promote equitable access to care, and enhance cost-effectiveness, ultimately improving patient outcomes and healthcare system efficiency.

## AI Usage Statement

In the preparation of this manuscript, I have utilized Generative AI tools to enhance the English language quality. Specifically, I employed Grok (version 3), developed by xAI, to revise and refine the text for clarity, conciseness, and adherence to academic standards. The tool was used to edit and improve sentence structure, grammar, and overall readability, ensuring the manuscript meets the linguistic expectations of a reputable journal. This assistance was sought to ensure professional presentation while preserving the original content and intent of the research.

## Data Sharing Statement

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

## Ethics Approval and Consent to Participate

This study was approved by the ethics committee at Tabriz University of Medical Sciences (Approval No: IR.TBZMED.REC.1402.839). All authors confirm and declare that this study was conducted in compliance with the Declaration of Helsinki. Prior to data collection, informed consent was obtained from all participants, and measures were taken to uphold confidentiality and anonymize personal information. Participants provided informed consent for the study, including permission to publish anonymized responses and direct quotations.

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## Disclosure

The authors declare that there is no conflict of interest regarding the publication of this study.

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