

# BARRIERS IMPOSED BY SUPPLEMENTARY HEALTH ON SPINE SURGERY IN BRAZIL: AN ANALYSIS FROM THE PERSPECTIVE OF SURGEONS

*BARREIRAS IMPOSTAS PELA SAÚDE SUPLEMENTAR À REALIZAÇÃO DE CIRURGIAS DA COLUNA NO BRASIL: UMA ANÁLISE SOB A PERSPECTIVA DE CÍRURGIÕES*

*BARRERAS IMPUESTAS POR EL SISTEMA DE SALUD SUPLEMENTARIO A LA REALIZACIÓN DE CIRURGIAS DE COLUMNA EN BRASIL: UN ANÁLISIS DESDE LA PERSPECTIVA DE LOS CIRUJANOS*

RONALD DE LUCENA FARIAS<sup>1</sup> , TARCISIO MARCONI NOVAES TORRES FILHO<sup>2</sup> , ASDRUBAL FALAVIGNA<sup>3</sup> , LUIS EDUARDO CARELLI TEIXEIRA DA SILVA<sup>4</sup> ,  
ALEXANDRE FOGAÇA CRISTANTE<sup>5</sup> , HELTON LUIZ APARECIDO DEFINO<sup>5</sup> , MARCELO ÍTALO RISSO NETO<sup>6</sup> , SERGIO DOMINGOS PITTELLI<sup>5</sup> ,  
WANDERLEY MARQUES BERNARDO<sup>5</sup> , EDUARDO ACHAR FILHO<sup>2</sup> , JESSICA BIANCA AILY<sup>7</sup> , ROBERT MEVES<sup>2</sup> 

1. Universidade Federal da Paraíba (UFPB), João Pessoa, PB, Brazil.
2. Irmandade da Santa Casa de Misericórdia de São Paulo, São Paulo, SP, Brazil.
3. Universidade de Caxias do Sul (UCS), Caxias do Sul, RS, Brazil.
4. Instituto Nacional de Traumatologia de Ortopedia, (INTO) Rio de Janeiro, RJ, Brazil.
5. Universidade de São Paulo (USP), São Paulo, SP, Brazil.
6. Universidade Estadual de Campinas (UNICAMP), São Paulo, SP, Brazil.
7. Universidade Federal de São Paulo (UNFESP), São Paulo, SP, Brazil.

## ABSTRACT

**Objective:** To identify and analyze the main administrative, economic, and structural barriers imposed by private health insurance on the performance of spine surgeries in Brazil, from the perspective of specialist surgeons. **Methods:** A cross-sectional study was conducted using an electronic questionnaire administered to 134 spine surgeons affiliated with the Brazilian Spine Society (SBC) and the Brazilian Society of Neurosurgery (SBN). Data on demographics, professional profile, and the frequency of barriers, measured by an ordinal scale, were collected. Statistical analyses included Chi-square, Fisher's Exact, and Kruskal-Wallis tests ( $p < 0.05$ ). **Results:** The sample consisted mainly of orthopedists (80.6%), males (96.3%), with a median of 18.5 years of practice, and a majority working in the private sector (82.2%). The most prevalent barriers were approval delays exceeding 21 days (78.4%), procedure denials (71.6%), and the requirement of a second opinion by auditors (70.9%). Neurosurgeons were more vulnerable to technique modification ( $p = 0.002$ ) and emergency denials ( $p = 0.006$ ) than orthopedists. Surgeons with 11 to 20 years of experience reported more procedure denials ( $p = 0.027$ ). Patient diversion was more frequent in cases of deformities ( $p < 0.001$ ). **Conclusion:** Barriers imposed by private health insurance significantly compromise access to spine surgeries in Brazil, leading to clinical and social impacts. Greater oversight by the National Supplementary Health Agency (ANS), transparency in authorization processes, and the strengthening of consensus-based protocols among medical societies are needed to ensure equitable and efficient treatment. **Level of evidence III; cross-sectional study.**

**Keywords:** Health Services Accessibility; Socioeconomic Disparities in Health; Spine; Prepaid Health Plans; Medical Audit; Treatment Delay.

## RESUMO

**Objetivo:** Identificar e analisar as principais barreiras administrativas, econômicas e estruturais impostas pela saúde suplementar à realização de cirurgias de coluna no Brasil, sob a perspectiva de cirurgiões especialistas. **Métodos:** Estudo transversal com 134 cirurgiões de coluna, membros da Sociedade Brasileira de Coluna (SBC) e da Sociedade Brasileira de Neurocirurgia (SBN), por meio de questionário eletrônico. Foram coletados dados demográficos, perfil profissional e a frequência de barreiras, medida por escala ordinal. As análises estatísticas utilizaram os testes Qui-quadrado, Exato de Fisher e Kruskal-Wallis ( $p < 0,05$ ). **Resultados:** A amostra foi composta predominantemente por ortopedistas (80,6%), homens (96,3%), com mediana de 18,5 anos de prática e atuação majoritária no setor privado (82,2%). As barreiras mais prevalentes foram atraso na aprovação superior a 21 dias (78,4%), negativa de procedimentos (71,6%) e exigência de segunda opinião por auditores (70,9%). Neurocirurgiões mostraram-se mais vulneráveis à modificação da técnica ( $p = 0,002$ ) e negativa de urgências ( $p = 0,006$ ) que ortopedistas. Cirurgiões com 11 a 20 anos de experiência relataram mais negativas de procedimentos ( $p = 0,027$ ). O desvio de pacientes foi mais frequente em casos de deformidades ( $p < 0,001$ ). **Conclusão:** As barreiras impostas pela saúde suplementar comprometem o acesso a cirurgias de coluna no Brasil, gerando impacto clínico e social. É necessária maior fiscalização da Agência Nacional de Saúde Suplementar (ANS), transparência nos processos de autorização e o fortalecimento de protocolos consensuais entre sociedades médicas para assegurar um tratamento equitativo e eficiente. **Nível de evidência III; Estudo transversal.**

**Descritores:** Acessibilidade aos Serviços de Saúde; Disparidades Socioeconômicas em Saúde; Coluna Vertebral; Planos de Pré-Pagamento em Saúde; Auditoria Médica; Atraso no Tratamento.

Study conducted by the virtual environment, using a questionnaire developed in the RedCap software.

Correspondence: Robert Meves, Rua Dr. Cesário Mota Junior, 112 Vila Buarque, São Paulo, SP, Brazil. 01221-020. robert.meves@fcm.santacasasp.edu.br



## RESUMEN

**Objetivo:** Identificar y analizar las principales barreras administrativas, económicas y estructurales impuestas por el sistema de salud suplementario para la realización de cirugías de columna en Brasil, desde la perspectiva de cirujanos especialistas. **Métodos:** Estudio transversal realizado mediante un cuestionario electrónico aplicado a 134 cirujanos de columna, miembros de la Sociedad Brasileña de Columna (SBC) y la Sociedad Brasileña de Neurocirugía (SBN). Se recopilaron datos demográficos, perfil profesional y la frecuencia de las barreras, medida en una escala ordinal. Los análisis estadísticos incluyeron las pruebas de Chi-cuadrado, Exacta de Fisher y Kruskal-Wallis ( $p < 0,05$ ). **Resultados:** La muestra estuvo compuesta mayoritariamente por ortopedistas (80,6%), hombres (96,3%), con una mediana de 18,5 años de práctica y una actuación predominante en el sector privado (82,2%). Las barreras más prevalentes fueron retraso en la aprobación superior a 21 días (78,4%), denegación de procedimientos (71,6%) y la exigencia de una segunda opinión por parte de auditores (70,9%). Los neurocirujanos se mostraron más vulnerables a la modificación de la técnica ( $p = 0,002$ ) y a la denegación de urgencias ( $p = 0,006$ ) que los ortopedistas. Los cirujanos con 11 a 20 años de experiencia reportaron más denegaciones de procedimientos ( $p = 0,027$ ). El desvío de pacientes fue más frecuente en casos de deformidades ( $p < 0,001$ ). **Conclusión:** Las barreras impuestas por el sistema de salud suplementario comprometen significativamente el acceso a las cirugías de columna en Brasil, generando un impacto clínico y social. Es necesaria una mayor fiscalización por parte de la Agencia Nacional de Salud Suplementaria (ANS), transparencia en los procesos de autorización y el fortalecimiento de protocolos consensuados entre las sociedades médicas para asegurar un tratamiento equitativo y eficiente. **Nivel de evidencia III; estudio de corte transversal.**

**Descriptor:** Accesibilidad a los Servicios de Salud; Disparidades Socioeconómicas en Salud; Columna Vertebral; Planes de Salud de Prepagos; Auditoría Médica; Retraso del Tratamiento.

## INTRODUCTION

Spinal disorders represent a major global public health problem, ranking among the leading causes of chronic pain and functional disability. The World Health Organization (WHO) estimates that around 80% of the world's population will experience at least one episode of back pain during their lifetime, with substantial impacts on quality of life and high costs for healthcare systems.<sup>1</sup> In Brazil, the aging population, coupled with the increased prevalence of degenerative spinal diseases, has driven demand for surgical treatments, posing a growing challenge for both the public and private healthcare systems.

In the context of Brazilian supplementary health care, which currently covers around 50 million beneficiaries,<sup>2</sup> the implementation of these procedures faces critical obstacles. Among the main obstacles are administrative factors, such as excessive bureaucracy in authorization processes, as well as recurring conflicts between attending physicians and health insurance providers, which compromise timely access to treatment.

Current legislation seeks to mitigate these barriers. CFM Resolution No. 2,318/2022 establishes that the attending physician has autonomy in determining the characteristics of Orthotics, Prosthetics, and Special Materials (OPME), and any refusals by operators must be duly justified on technical criteria.<sup>3</sup> In addition, Normative Resolution No. 259 of the National Supplementary Health Agency (ANS) establishes a maximum period of 21 business days for the authorization of elective surgeries, in addition to immediate care in cases of urgency or emergency.<sup>4</sup>

Despite the existing regulatory framework, clinical practice remains far from what the standards prescribe. Delays in authorizations, often associated with disputes over coverage of surgical materials and techniques, can aggravate patients' clinical conditions and compromise their prognosis, as pointed out by studies that highlight the negative impacts of postponing elective surgeries.<sup>5</sup> In the specific scenario of spine surgery, the high costs of advanced technologies and Orthotics, Prosthetics, and Special Materials (OPME) intensify financial and administrative impasses. According to DePledge et al., such delays result in prolonged disability and significant distress for patients and their caregivers.<sup>6</sup>

Given this context, the central hypothesis of this study is that surgical delays in supplementary health care are largely due to barriers imposed by health insurance providers. The objective, therefore, is to identify and analyze the main structural, economic, and administrative barriers faced by spine surgeons, in order to provide input for the development of strategies that mitigate these difficulties and expand access to quality care.

## METHODS

This is a cross-sectional study conducted using an electronic questionnaire, targeting spine surgeons, orthopedists, and neurosurgeons affiliated with the Brazilian Spine Society (SBC) and the Brazilian Society of Neurosurgery (SBN). The invitation to participate was sent by email and messaging apps, and the final sample consisted of 134 surgeons who responded to the entire survey.

Data collection took place on the secure online platform REDCap and included demographic information (age, gender, location), professional profile (education, years of practice, main area of practice, and surgical volume), and the frequency of barriers encountered in clinical practice. To measure these barriers, a seven-point ordinal frequency scale ("Never," "Rarely," "Occasionally," "Sometimes," "Usually," "Frequently," "Always") was used, based on the Likert scale model.

The data underwent a cleaning and standardization process prior to analysis. Descriptive analysis was used to characterize the sample. The normality of quantitative variables was assessed using the Shapiro-Wilk test. Variables with normal distribution were described by mean and standard deviation (SD), while non-normal variables were presented by median and interquartile range (IQR). Categorical variables were described by absolute and relative frequencies (n, %). The following tests were used for inferential analysis: Pearson's chi-square test or Fisher's exact test to compare the frequencies of barriers between groups; and Kruskal-Wallis test for multiple comparisons of non-normal variables between more than two groups. The level of statistical significance was set at 5% ( $\alpha = 0.05$ ) for all tests. The analyses were performed using R software (version 4.4.1).

The study was approved by the Research Ethics Committee of the Santa Casa de Misericórdia Hospital in São Paulo under opinion No. 7,387,591, and all participants agreed to the Free and Informed Consent Form before responding to the questionnaire.

## RESULTS

The sample consisted of 134 spine surgeons, predominantly male (96.3%;  $n = 129$ ), with a mean age of  $48.65 \pm 13.27$  years. Most participants worked in the Southeast Region (62.7%), followed by the South (20.9%) and Northeast (14.9%) regions. Regarding training, 80.6% were orthopedists ( $n = 108$ ) and 19.4% were neurosurgeons ( $n = 26$ ). The median number of years of practice in spine surgery was 18.5 years [IQR: 10.0–29.0], with a median volume of 9.5 procedures per month [IQR: 5.0 – 15.0]. The private sector represented the main area of activity, with an average of  $82.16\% \pm 25.17$ , while the public sector accounted for  $21.74\% \pm 29.64$ . The main focus of surgical practice was on degenerative diseases (79.1%), followed by pediatric deformities (12.7%) and adult deformities (3.7%). (Tables 1 and 2)

**Table 1.** Demographic characteristics and geographic distribution of spine surgeons participating in the study (n=134).

Variable	N (%) Or Statistics
<b>Age (Years)</b>	
Mean ± SD	48.65 ± 13.27
<b>Gender</b>	
Male	129 (96.3)
Female	5 (3.7)
<b>Region</b>	<b>N (%)</b>
Southeastern region	84 (62.7)
Southern region	28 (20.9)
Northeast region	20 (14.9)
Midwest region	7 (5.2)
Northern region	3 (2.2)

Caption: SD = Standard deviation.

**Table 2.** Professional characteristics of spine surgeons in Brazil (n= 134).

Variable	N (%) Or Statistics
<b>Training</b>	
Orthopedist	108 (80.6)
Neurosurgeon	26 (19.4)
<b>Years of experience in spine surgery</b>	
Median [IQR]	18.50 [10.00 - 29.00]
<b>Primary area of expertise</b>	
Degenerative disease	106 (79.1)
Pediatric deformity	17 (12.7)
Adult deformity	5 (3.7)
Trauma	5 (3.7)
Tumor	1 (0.7)

Caption: SD = Standard deviation; IQ = Interquartile range (Q1-Q3).

With regard to the barriers encountered, delays in approval exceeding 21 days were the most prevalent, being reported as “always,” “frequently,” or “normally” by 78.4% of surgeons. Next, the refusal of procedures (71.6%) and the requirement for a second opinion by auditors (70.9%) stood out. Other relevant barriers included the mandatory use of specific OPME materials (56.7%), the need to modify surgical techniques (47.0%), refusal of urgent cases lasting more than 24 hours (44.8%), and patient diversion (36.6%). (Table 3)

The analysis of the use of recommendations from SBOT, SBC, and SBN manuals revealed high adherence: 64.2% of surgeons reported using them “always,” 16.4% “usually,” and 11.9% “frequently,” totaling 92.5% regular adherence. (Table 4)

Comparing barriers according to the predominant sector of activity, a significant difference was observed only for the need for modified technique (p = 0.023), which was more frequent among professionals with mixed activities (Table 5). When stratified by specialty, significant differences were identified for four barriers: modified technique (p = 0.002), emergency denied for more than 24 hours (p = 0.006), refusal of procedures (p = 0.007), and patient diversion (p = 0.026), all of which were more prevalent among neurosurgeons. (Table 6)

In the analysis by length of experience, barriers such as modified technique (p = 0.023), urgency denied for more than 24 hours (p = 0.009), refusal of procedures (p = 0.027), and requirement of a second opinion by auditors (p = 0.027) showed significant

**Table 3.** Overall frequency of barriers faced by spine surgeons (n=134).

Barrier	Always	Often	Usually	High Impact*	Ranking
Delay in approval >21 business days	24 (17.9)	44 (32.8)	37 (27.6)	105 (78.4)	1st
Negative procedures	32 (23.9)	43 (32.1)	21 (15.7)	96 (71.6)	2nd
Second opinion auditors	46 (34.3)	28 (20.9)	21 (15.7)	95 (70.9)	3rd
Mandatory OPME material	5 (3.7)	54 (40.3)	17 (12.7)	76 (56.7)	4th
Modified technique	15 (11.2)	37 (27.6)	11 (8.2)	63 (47.0)	5th
Emergency denied >24 hours	17 (12.7)	30 (22.4)	13 (9.7)	60 (44.8)	6th
Patient diversion	2 (1.5)	32 (23.9)	15 (11.2)	49 (36.6)	7th

\* High impact = Always + Often + Usually; \*\*\* Desirable behavior; OPME = Orthotics, prosthetics, and special materials.

**Table 4.** Frequency of use of SBOT/SBC/SBN manual recommendations by spine surgeons (n=134).

Frequency of use of society recommendations	N (%)
Always	86 (64.2)
Often	16 (11.9)
Usually	22 (16.4)
Sometimes	5 (3.7)
Occasionally	2 (1.5)
Rarely	1 (0.7)
Never	2 (1.5)

Caption: SBOT = Brazilian Society of Orthopedics and Traumatology; SBC = Brazilian Spine Society; SBN = Brazilian Society of Neurosurgery.

**Table 5.** Comparison of barriers faced by predominant sector of activity (n=134).

Barrier	Frequency	Mixed (n= 26)	Private (n= 94)	Audience (n= 14)
Modified technique	Always	8 (30.8)	6 (6.4)	1 (7.1)
	Often	5 (19.2)	26 (27.7)	6 (42.9)
	Sometimes	4 (15.4)	31 (33.0)	4 (28.6)
	Occasionally	5 (19.2)	13 (13.8)	0 (0.0)
	Rarely	3 (11.5)	5 (5.3)	2 (14.3)
	Usually	1 (3.8)	10 (10.6)	0 (0.0)
	Never	0 (0.0)	3 (3.2)	1 (7.1)

Caption: \*\*\* p < 0.05; Other barriers did not show significant differences (p > 0.05).

**Table 6.** Comparison of barriers faced by medical specialty (n=134).

Barrier	Frequency	Neurosurgeon (n= 26)	Orthopedist (n= 108)	P-value
Modified technique	Always	8 (30.8)	7 (6.5)	0.002*
	Often	3 (11.5)	34 (31.5)	
	Usually	5 (19.2)	6 (5.6)	
	Sometimes	6 (23.1)	33 (30.6)	
	Occasionally	3 (11.5)	15 (13.9)	
	Rarely	1 (3.8)	9 (8.3)	
	Never	0 (0.0)	4 (3.7)	
Emergency denied >24 hours	Always	9 (34.6)	8 (7.4)	0.006*
	Often	3 (11.5)	27 (25.0)	
	Sometimes	6 (23.1)	16 (14.8)	
	Occasionally	1 (3.8)	16 (14.8)	
	Rarely	4 (15.4)	16 (14.8)	
	Usually	1 (3.8)	12 (11.1)	
	Never	2 (7.7)	13 (12.0)	
Negative procedures	Always	14 (53.8)	18 (16.7)	0.007*
	Often	6 (23.1)	37 (34.3)	
	Usually	3 (11.5)	18 (16.7)	
	Sometimes	3 (11.5)	17 (15.7)	
	Occasionally	0 (0.0)	8 (7.4)	
	Rarely	0 (0.0)	8 (7.4)	
	Never	0 (0.0)	2 (1.9)	
Patient diversion	Usually	8 (30.8)	7 (6.5)	0.026*
	Sometimes	9 (34.6)	39 (36.1)	
	Often	5 (19.2)	27 (25.0)	
	Occasionally	3 (11.5)	16 (14.8)	
	Rarely	1 (3.8)	11 (10.2)	
	Never	0 (0.0)	6 (5.6)	
	Always	0 (0.0)	2 (1.9)	

Caption: \*\*\* p < 0.05; Neurosurgeons: 26.62 ± 11.84 years of experience vs. Orthopedists: 17.95 ± 11.13 years (p = 0.001).

differences between the groups, with greater vulnerability observed among surgeons with 11 to 20 years of practice. (Table 7)

Finally, stratification according to the main area of practice revealed a significant difference only for patient referral ( $p < 0.001$ ). This problem was more frequently reported by surgeons working with pediatric deformities (41.2%) and adult deformities (40.0%), compared to those working with degenerative diseases (22.6%). In the areas of trauma and tumor, although extreme values (0% and 100%, respectively) have emerged, interpretation should be cautious due to the small number of cases. (Table 8)

**Table 7.** Comparison of barriers faced by category of professional experience (n=134).

Barrier	Frequency	> 20 years (n = 56)	≤ 10 years (n = 37)	11–20 years (n = 41)	P-value
Modified technique	Always	8 (14.3)	2 (5.4)	5 (12.2)	0.023*
	Often	11 (19.6)	11 (29.7)	15 (36.6)	
	Sometimes	21 (37.5)	10 (27.0)	8 (19.5)	
	Occasionally	5 (8.9)	10 (27.0)	3 (7.3)	
	Rarely	6 (10.7)	3 (8.1)	1 (2.4)	
	Usually	4 (7.1)	1 (2.7)	6 (14.6)	
Emergency denied >24 hours	Never	1 (1.8)	0 (0.0)	3 (7.3)	0.009*
	Always	9 (16.1)	2 (5.4)	6 (14.6)	
	Often	10 (17.9)	8 (21.6)	12 (29.3)	
	Sometimes	9 (16.1)	10 (27.0)	3 (7.3)	
	Occasionally	6 (10.7)	5 (13.5)	6 (14.6)	
	Rarely	11 (19.6)	4 (10.8)	5 (12.2)	
Negative procedures	Usually	0 (0.0)	5 (13.5)	8 (19.5)	0.027*
	Never	11 (19.6)	3 (8.1)	1 (2.4)	
	Always	11 (19.6)	8 (21.6)	13 (31.7)	
	Often	20 (35.7)	11 (29.7)	12 (29.3)	
	Sometimes	11 (19.6)	7 (18.9)	2 (4.9)	
	Usually	7 (12.5)	3 (8.1)	11 (26.8)	
Second opinion auditors	Occasionally	3 (5.4)	5 (13.5)	0 (0.0)	0.027*
	Rarely	4 (7.1)	1 (2.7)	3 (7.3)	
	Never	0 (0.0)	2 (5.4)	0 (0.0)	
	Always	13 (23.2)	16 (43.2)	17 (41.5)	
	Often	10 (17.9)	4 (10.8)	14 (34.1)	
	Usually	10 (17.9)	8 (21.6)	3 (7.3)	
Second opinion auditors	Sometimes	11 (19.6)	2 (5.4)	5 (12.2)	0.027*
	Occasionally	6 (10.7)	3 (8.1)	0 (0.0)	
	Rarely	4 (7.1)	4 (10.8)	2 (4.9)	
	Never	2 (3.6)	0 (0.0)	0 (0.0)	

Caption: \*\*\*  $p < 0.05$ ; Group aged 11–20 years more vulnerable to administrative barriers; young people ( $\leq 10$  years) undergo more audits.

**Table 8.** Comparison of barriers faced by main area of activity (n=134).

Barrier	p-value	Main finding
Patient diversion	<0.001*	The only significant difference
	Adult deformity (n=5)	2 (40.0) frequently/always
	Pediatric deformity (n=17)	7 (41.2) frequently/always
	Degenerative disease (n=106)	24 (22.6) frequently/always
	Trauma (n=5)	0 (0.0) frequency/always
Tumor (n=1)	1 (100.0) frequently/always	
<b>Other barriers</b>		
Modified technique	0.07	No significant difference
Approval delay	0.998	No significant difference
Emergency denied	0.835	No significant difference
Material OPME	0.668	No significant difference
Recommendations for use	0.164	No significant difference
Negative procedures	0.315	No significant difference
Second opinion	0.958	No significant difference

Caption: \*\*\*  $p < 0.001$ ; Areas of deformity suffer more deviation from patients than degenerative disease. Limitation: Small groups ( $n \leq 5$ ) require careful interpretation.

## DISCUSSION

This study quantified, from the perspective of 134 surgeons, the prevalence and nature of barriers to performing spine surgeries in Brazilian private healthcare. The results confirm the hypothesis that obstacles imposed by health insurance companies, such as denial of procedures and delays in authorization, are frequent phenomena and represent the main obstacle in the care process. More than half of the surgeons reported facing delays exceeding the legal deadline of 21 days (78.4%) and refusals based on manuals (71.6%), highlighting a systemic failure to comply with ANS standards. (Table 3)

The findings of this study directly correspond with the study by Adry et al.<sup>7</sup>, which analyzed flaws in the audit process itself. Adry et al.<sup>7</sup> found alarming rates of material refusal (89.09%) and procedure refusal (83.63%) in the audits analyzed. Although our percentages are lower, it should be noted that our study measures the general perception of frequency, while Adry et al. analyzed a specific set of cases already undergoing audit. The convergence of findings is undeniable: surgeons' perception of barriers (our study) seems to be a direct reflection of procedural flaws and vetoes identified in audits.<sup>7</sup>

A critical point of overlap is the modification of surgical technique. In our study, 47% of surgeons reported having the indicated technique modified due to imposed barriers (Table 3). This corroborates the conclusion of Adry et al.<sup>7</sup> that auditors, by denying materials or codes, directly interfere with the conduct of attending physicians, which violates CFM resolutions. The justification for such refusals is another point of concern. Adry et al.<sup>7</sup> reported that 100% of the audits analyzed did not have adequate technical and scientific grounds for denial. This fact may explain why surgeons in the study, even when following the manuals of medical societies (SBOT, SBC, SBN (64.2% "always"), still face high denial rates (71.6%), suggesting that insurers' decisions are often arbitrary. (Tables 3 and 4)

Comparing barriers according to the predominant sector of activity, a statistically significant difference was identified only for the need for modified techniques ( $p = 0.023$ ), which was most frequently reported by professionals with mixed activities, followed by those predominantly working in the private sector. This finding reinforces the study hypothesis, suggesting that the diversity of links and greater exposure to health insurance companies increase the likelihood of administrative interference in surgical practice. (Table 5)

When stratified by specialty, significant differences were observed in four barriers: modified technique ( $p = 0.002$ ), emergency denied for more than 24 hours ( $p = 0.006$ ), refusal of procedures ( $p = 0.007$ ), and patient diversion ( $p = 0.026$ ), all of which were more prevalent among neurosurgeons (Table 6). This finding may be related to the greater technical complexity and higher average cost of neurosurgical procedures, which make them preferred targets for financial containment strategies by health insurance companies, in line with what has already been pointed out by Adry et al.<sup>7</sup> when highlighting the potential harm of these practices to patients.

Furthermore, the greater vulnerability observed among surgeons with 11 to 20 years of experience suggests an intermediate situation, in which these professionals, despite performing a high surgical volume, still do not have the same institutional authority or prestige as colleagues with more than 20 years of practice, which may hinder effective contestation of administrative impositions. (Table 7)

The issue of impartiality raised by Adry et al.<sup>7</sup> in showing that a single company conducted 74.54% of audits and that many auditors operated without registration with the local CRM provides the backdrop for the sense of injustice perceived by surgeons. The high frequency of "second opinions requested only by auditors" (55.2%) in our study embodies this conflict of interest, in which the final decision is controlled by a professional linked to the paying source itself, compromising the impartiality of the process. (Table 7)

In the analysis by main area of practice, the only significant difference observed was in relation to patient diversion ( $p < 0.001$ ), more frequently reported by surgeons who deal with pediatric (41.2%) and adult (40.0%) deformities compared to those who work predominantly with degenerative diseases (22.6%). This finding may reflect both the high cost and technical complexity of these procedures and

the scarcity of specialists available in these subareas, factors that increase these patients' vulnerability to administrative interference from health insurance providers. Although the trauma and tumor groups presented extreme values (0% and 100%, respectively), interpretation should be done with caution due to the small number of cases. In any case, the concentration of patient referrals in areas of deformity reinforces the need for differentiated regulatory attention, since delays or refusals in these contexts can lead to irreversible progression of the deformity and significant functional impacts. (Table 8)

The limitations of the study should be acknowledged. The sample was convenience-based, drawn from members of medical societies, which may introduce selection bias. The data were based on self-reports and were subject to memory bias. In addition, some subgroups (such as trauma and tumor) had a reduced number of participants, limiting generalizability. Nevertheless, the overall sample size and national representativeness lend solidity to the conclusions.

## CONCLUSION

Taken together, the findings of this study demonstrate that spine surgeons in Brazil face significant and frequent barriers

imposed by private health insurance, particularly delays in authorizations, denials of procedures, and biased audit processes. These barriers, which disproportionately affect neurosurgeons and professionals in the middle stages of their careers, reflect systemic flaws in regulatory mechanisms, marked by conflicts of interest and a lack of uniform technical criteria. The results reinforce that administrative, economic, and structural barriers compromise patients' timely access to spine surgery, leading to significant clinical and social impacts. Overcoming these limitations will require greater oversight by the ANS (National Health Agency) regarding deadlines and audit criteria, transparency in authorization processes, and strengthening the role of medical societies in developing consensus protocols capable of ensuring predictability, speed, and equity in treatment. In this way, the protection of professional autonomy and, above all, patient access to quality and timely care can be effectively guaranteed.

## ACKNOWLEDGEMENTS

Education, Promotion and Innovation Committee of the Brazilian Spine Society (COPEFI - SBC).

### CONFLICT OF INTEREST

All authors declare no potential conflict of interest related to this article.

### CONTRIBUTIONS OF THE AUTHORS

Each author contributed individually and significantly to the development of this article. Falavigna A.: Contextualization and writing - revision and editing; Bernardo WM.: Software and formal analysis; Cristante AF.: Supervision and writing – revision and editing; Pittelli SD.: Methodology and formal analysis; Meves R.: Supervision, writing – revision and editing and project management; Silva LECT.: Validation, writing – revision and editing and formal analysis; Aily JB.: Software; Torres Filho TMN.: Visualization, writing – original draft and investigation; Achar Filho E.: Writing – original draft and investigation; Farias RL.: Project management and methodology; Defino HLA.: Data curation and formal analysis; Risso Neto MI.: Data curation and validation.

### DATA AVAILABILITY DECLARATION

The content underlying the research is available in the manuscript.

## REFERENCES

1. World Health Organization. Low back pain. Geneva: WHO. [Internet]. 2023 [access in 2025 Ago 11]. Available at: <https://www.who.int/news-room/fact-sheets/detail/low-back-pain>.
2. Agência Nacional de Saúde Suplementar (ANS). Caderno de Informação da Saúde Suplementar: Beneficiários, Operadoras e Planos [Internet]. 2023 [access in 2025 Ago 11]. Available at: <https://www.gov.br/ans/pt-br/acao-a-informacao/perfil-do-setor/dados-e-indicadores-do-setor>.
3. Conselho Federal de Medicina (CFM). Resolução CFM N° 2.318/2022. Regulamenta a prescrição, o uso e a indicação de órteses, próteses e materiais especiais implantáveis (OPME) e dá outras providências [Internet]. 2022 [access in 2025 Ago 11]. Available at: [https://sistemas.cfm.org.br/normas/arquivos/resolucoes/BR/2022/2318\\_2022.pdf](https://sistemas.cfm.org.br/normas/arquivos/resolucoes/BR/2022/2318_2022.pdf).
4. Agência Nacional de Saúde Suplementar (ANS). Resolução Normativa N° 259, de 17 de junho de 2011. Dispõe sobre a garantia de atendimento dos beneficiários de plano privado de assistência à saúde [Internet]. 2011 [access in 2025 Ago 11]. Available at: [https://bvsms.saude.gov.br/bvs/saudelegis/ans/2011/res0259\\_17\\_06\\_2011.html](https://bvsms.saude.gov.br/bvs/saudelegis/ans/2011/res0259_17_06_2011.html).
5. Sommer JL, Jacobsohn E, El-Gabalawy R. Impacts of elective surgical cancellations and postponements in Canada. *Can J Anaesth*. 2021;68(3):315-323. doi: 10.1007/s12630-020-01824-z.
6. DePledge L, Louie PK, Drolet CE, Shen J, Nemani VM, Leveque JA, et al. Incidence, etiology and time course of delays to adult spinal deformity surgery: a single-center experience. *Spine Deform*. 2023;11(4):1019-1026. doi: 10.1007/s43390-023-00658-1.
7. Adry RARC. FAILURES IN AUDITS AND MEDICAL BOARDS IN THE EVALUATION FOR SPINE SURGERY AUTHORIZATION IN BRAZIL. *Coluna/Columna*. 2025;24(2):e295067. doi: 10.1590/S1808-185120252402295067.