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Factors influencing patients' decisions to undergo recommended spinal surgery

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Abstract

Spinal surgery is the final option recommended to individuals with spinal conditions when conservative treatment has failed in treating patients' symptoms. In this prospective study, we examined 21 patients agreeing to undergo recommended spinal fusion between August 2021 and January 2022 with a virtual questionnaire. The mean age was 61.2 years. The majority of patients were male (13 patients, 61.9%), white (19 patients, 90.5%), and privately insured (11 patients, 52.4%). Patients reported that the most important factor contributing to their interest in surgery was the severity of symptoms (14 patients, 66.7%), confidence in the neurosurgeon (4 patients, 19%), and evaluation of potential adverse outcomes (3 patients, 14.3%). Their ideal outcome in consulting with a neurosurgeon for their symptoms was surgery (16 patients, 76.2%), exercise for pain relief (2 patients, 9.5%), and being told their problem is not a neurosurgical condition (3 patients, 14.3%). There is a multitude of factors that influence patients' choices to undergo spinal surgery. These findings suggest that even though not all patients felt that surgery was their ideal outcome, all of them underwent surgery. Additional evaluations are needed to explore patients' trust in neurosurgeons' recommendations.

Keywords: patient experience, readiness assessments, surgery, surgical outcomes

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Introduction

Individuals with spinal conditions are first treated with conservative treatment methods such as medications, physical therapy, and epidural injections. Physical therapy has shifted the focus from medical management to tactics that improve the quality of life for spinal cord injuries[1]. Patients with spinal cord injuries are living longer nowadays and obtaining more functional independence due to improved medical and surgical outcomes, rehabilitation, and technological and pharmacological management. Patients are only recommended to undergo spinal surgery as the final option when conservative treatment has failed in treating patients' symptoms[2]. This is a multitude of factors influencing a patient's decision to undergo surgery. A review led by Atlas et. al evaluating the sources of information used by patients prior to elective surgery found that physician consultation was found to be the most common source of information, and it can promote the process of shared decision-making, which creates a patient-centered experience when deciding whether or not to undergo surgery beyond a passive informed consent[3]. Moreover, not all patients recommended to undergo surgery elect for the procedures due to their right to autonomy[4].

A study identifying the sociodemographic predictors of surgery refusal in patients with colon cancer postulated that surgery refusal reflects the racial and socioeconomic health disparities in the healthcare system[5]. Investigating sociodemographic trends in surgery refusal in patients with spinal disorders could reveal how gender, race, and insurance type affect these medical decisions. Furthermore, the risks associated with spinal surgery such as further spinal cord injury and nerve root injuries are also considered[6]. Advanced technology seeks to mitigate this risk. For instance, neurophysiological monitoring is a method used to continuously assess spinal cord and nerve root function throughout the surgery in order to minimize complications. Despite advances in surgical and anesthetic techniques, healthcare costs, mortality, morbidity, and adverse surgical outcomes are still concerns, especially among advanced age and frail individuals[7]. Preoperative baseline frailty measurements would allow surgeons and patients to better predict surgical outcomes.

Surgical readiness expands beyond physiological aspects and includes the patients' mental and emotional state[8]. Acknowledging anxiety associated with procedures and assessing the patient's health literacy has been shown to not only improve pre-operative readiness but also to enhance pain management and the overall surgical experience. A survey conducted by Behairy et.al explored patients' attitudes toward low back surgery among seventy patients in Saudi Arabia. The findings demonstrate that reasons for surgery refusal include age, mild symptoms, fear of paralysis, and surgical dangers[9]. These factors highlight the need for a patient-centered and customized approach to better prepare patients for surgery. The ideal surgical readiness protocol requires surgeons and support staff to provide personalized patient education so that patients can be more engaged and confident in using health information. Currently, no studies in the United States have quantified patients' interest in undergoing recommended spinal surgery. Similarly, patients' ideal outcomes in being evaluated by a neurosurgeon have also not been studied. The purpose of this study was to assess the factors influencing patients' readiness to undergo recommended spinal surgery.

Methods

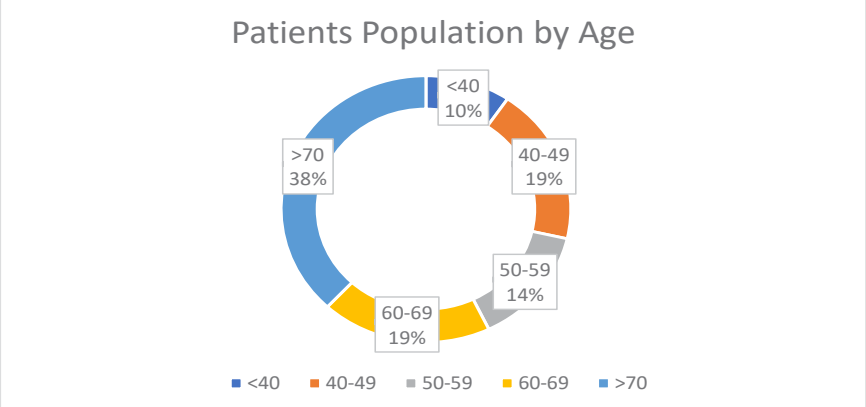
Following Institutional Review Board (IRB) approval, a prospective study of patients recommended to undergo spinal surgery at a single suburban neurosurgical clinic in Texas was conducted. Inclusion criteria included individuals recommended by a neurosurgeon between August 1, 2021 and January 1, 2022 while exclusion criteria included minors. Twenty-one patients were identified and were included in the final study group. After a thorough examination of existing literature, we formulated unique survey questions, which were disseminated to participants via a digital questionnaire using the Electronic Medical Record (EMR) portal. Demographic data such as age, gender, race, and insurance type of participants were ascertained. In terms of clinical variables, individuals' interest in surgery was categorized numerically, and descriptive data of factors contributing to their rating and their ideal

outcome of seeing a neurosurgeon was also asked. All statistical analyses were performed using Excel.

Results

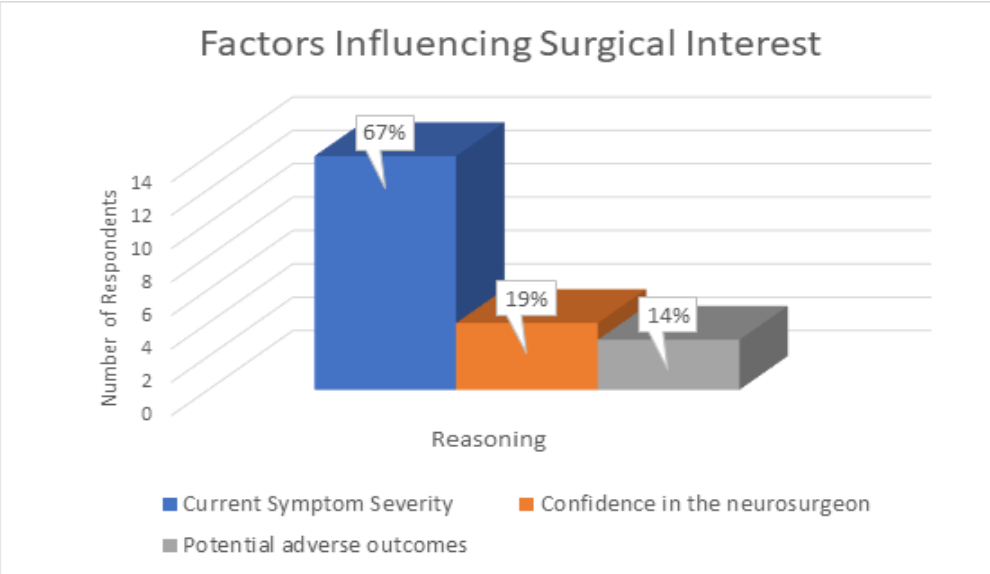
A total of 21 patients who elected to undergo recommended spinal surgeries completed the digital questionnaire. The mean age of respondents was 61.2 years (*Figure 1*). With respect to sex, the majority of the patient population was male (61.9%, 13 participants). 90.5% of respondents (19 participants) were white with only 2 black individuals (9.5%). Most patients were privately insured (52.4%, 11 participants), and 10 patients (47.6%) were covered by Medicare or Medicaid.

Figure 1. Patient Population by Age



All 21 patients decided to undergo recommended spinal fusions. The average numerical rating assigned to their interest in surgery was 9.38 on a scale of 1 to 10. An analysis of factors contributing to their rating revealed that the majority of patients (66.7%, 14 participants) felt their symptom severity was the most important factor in their decision to undergo surgery (*Figure 2*). Confidence in the neurosurgeon was reported as the greatest factor in 4 participants (19%) while three patients (14.3%) valued potential adverse outcomes the most.

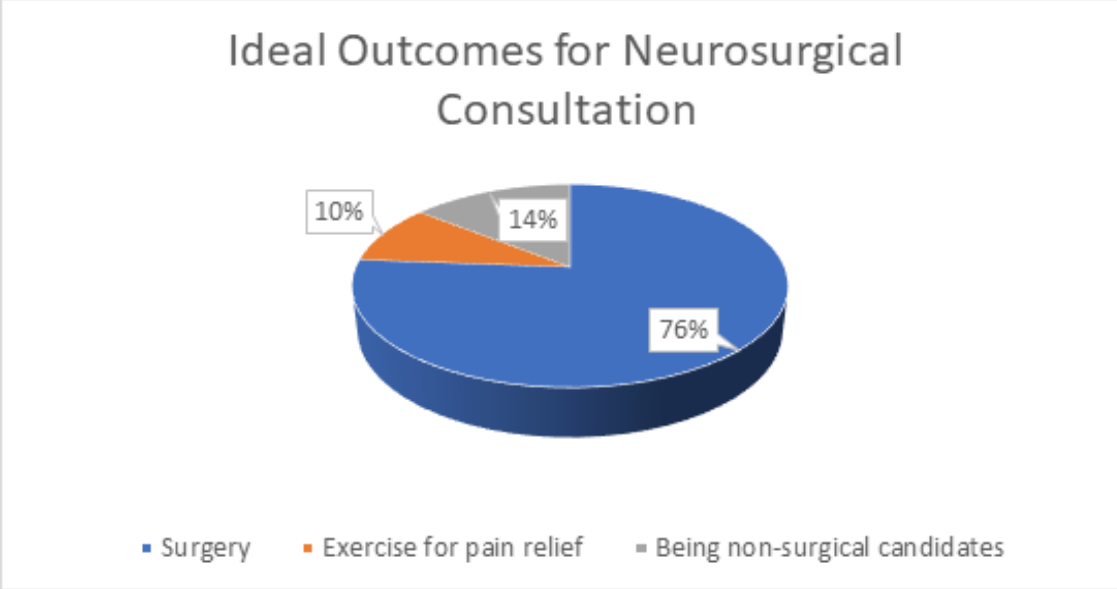
Figure 2. Factors Influencing Surgical Interest



An examination of ideal outcomes for patients consulting with a neurosurgeon disclosed that 16 patients (76.2%) preferred surgery, 3 patients (14.3%) hoped they were not candidates for surgery, and 2 patients (9.5%) favored exercise for pain relief (*Figure 3*).

76% stated that their ideal outcome for seeking a neurosurgical consult was surgery, followed by 14% stating their problem was not a neurosurgical condition as depicted below in Table 3.

Figure 3. Ideal Outcomes for Neurosurgical Consultation



Discussion

Our analysis of patients' readiness to undergo recommended spinal surgery revealed that patients heavily weigh several key characteristics in their decision-making process. In terms of demographic variables, our findings demonstrate outcomes consistent with current patterns in the literature. Our mean age of 61.2 years reflects the aging surgical population, which is aging faster than the general population[11]. The majority of our patients were male, which exposes the underrepresentation of women that surgical fields constantly face[13]. Previous studies have posited that men are more likely to elect surgery earlier in their disease process. Possible reasons for women to delay their care include increased fear of surgery, aversion to surgical interventions, roles as caregivers, and available technology[14]. Similarly, our patients were overwhelmingly white, which sheds light on racial disparities pervasive in medicine for years. The United States population is continuously evolving and becoming more diverse[15]. However, the race-adjusted incidence for every surgical procedure is higher for whites than for blacks with black patients undergoing surgery at half the rate as White patients for every procedure analyzed by Medicare, Medicaid, and private insurance, which indicates that race is a greater influencer than payer status[16]. A study examining the seasonality in demand for spinal surgery found that posterior lumbar fusions were the highest during quarter four at the end of the year in relation to the first three quarters, particularly among patients with private insurance, which is likely due to the deductibles that have been met to lower out-of-pocket costs[18]. This is consistent with over half of our patients being privately insured and with our data being collected between quarters three and four.

In terms of clinical outcomes, our numerical quantification revealed that patients on average rated their readiness to undergo surgery as a 9.3 on a scale of 1 to 10. Since no previous studies have quantified patients' readiness on a numerical scale, our work fills a gap in the literature. Although around 25% of patients reported that undergoing spinal surgery was not their ideal outcome, all twenty-one patients still

underwent recommended surgery due to considering the severity of their symptoms, their confidence in the neurosurgeon, and reflecting on potential adverse outcomes. The majority of patients felt the severity of symptoms was the most important factor to consider for surgery. Because these patients have already unsuccessfully tried less invasive measures, it is possible that this population was already prepared to undergo surgery upon initial consultation with the surgeon. Almost one-fifth of individuals reported confidence in the neurosurgeon as a critical consideration. It is likely that patients found it difficult to decline recommended surgery because they trust that the provider "knows best", they fear losing their status as "good patients", or they lack the knowledge to justify refusing the surgery[20]. Since multiple factors dictate an individual's decision to undergo the procedure, it is imperative for neurosurgeons to clearly explain the risks and benefits of the procedure. Surgeons who provide additional sources of information about their diagnosis and surgery make patients feel more positive and in control of their medical journey.

There are a couple of limitations to this study. A small sample size of twenty-one individuals was selected since the patients were pulled from a single neurosurgeon's surgeries over a five-month period. Several additional factors outside of the scope of this study such as monetary limitations and social support could have affected surgical readiness. As a result, future work should examine BMI, financial limitations, and postoperative support symptoms such as family, rehabilitation programs, and skilled nursing facilities. All assessed factors were self-reported and could be reflecting a social desirability bias.

Conclusion and Recommendations

In conclusion, patients weigh numerous aspects when considering to undergo recommended spinal surgery. Additional research is needed to explore patients' trust in neurosurgeons' recommendations. Clinical and hospitals should also design specific programs to recognize and treat diseases in both women and minorities in order to mitigate health disparities.

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