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Assessment of Presurgical Psychological Screening in Patients undergoing Spine Surgery: Use and Clinical Impact

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Abstract

Study Design—Prospective survey.

Objective—To determine the prevalence of use of presurgical psychological screening (PPS) among spine surgeons in the United States, identify factors associated with PPS use, evaluate surgeons' opinions of PPS, and investigate how PPS is applied in clinical practice.

Summary of Background Data—The United States Preventive Services Task Force recommends PPS for patients undergoing back surgery. The prevalence of PPS is unknown. Thus, it may be difficult to improve preoperative care for such patients with psychological conditions.

Methods—An online survey invitation was emailed to 340 spine surgeons. Questions addressed surgeon characteristics (eg, number of years in practice), practice characteristics (eg, practice type), inclusion of integrated rehabilitation and psychological services, and use of PPS. Impact of psychological factors on rehabilitation and recovery was assessed using an 11-point Likert scale (0, no impact; 10, highest impact). We analyzed the 110 (32%) responses with a chi-square test (significance, $P < 0.05$).

Results—PPS was used by 37% (41) to screen for depression (100%) or anxiety (85%). PPS use was highest among surgeons with more experience, higher annual volume, and no university affiliation. Among those screening for fear avoidance, use was highest among surgeons more recently entering the field. Surgeons reported a strong belief regarding the impact of psychological factors on pain relief, adherence to therapy, and return to work (mean impact rating, >7.0); however, impact on return for follow-up was only moderate (mean rating 5.8).

Conclusions—A minority of surgeons reported using PPS. Surgeons were less likely to use PPS if they had completed residency or begun practice within 14 years, had fewer than 200 cases annually, or were university-affiliated. This study highlights the need to advocate for the use of North American Spine Society guidelines regarding the use of PPS.

Keywords

psychological screening; spine surgery; depression; referral; rehabilitation

INTRODUCTION

The United States Preventive Services Task Force recommends presurgical psychological screening (PPS) in clinical practices.¹ For patients undergoing back surgery, PPS can be

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used to assure correct diagnosis, to identify those at risk for poor outcomes, and to provide effective treatment and follow-up services.² PPS involves the referral of a patient, particularly one with chronic pain for whom spine surgery is being considered, to a health psychologist for further evaluation, which typically involves a semistructured interview and psychometric testing using valid and reliable assessment instruments. This recommendation is born from the statistics regarding untreated psychological disorders, such as depressive illness³ or anxiety disorders,⁴ in the United States. Although depression and anxiety are common problems among all adults, a recent study has suggested that only a small percentage of affected individuals -- especially among those also suffering back or neck pain -- seek appropriate healthcare.⁵ Psychological conditions may play a role as a precursor to disabling back pain⁶ and as a contributor to poor health outcomes.⁷ However, these concomitant psychological illnesses tend to be overlooked, an oversight that could pose serious risks of increasing disability and overall health deterioration, especially in the elderly with low back pain and untreated anxiety disorder and depression.⁸

PPS serves 2 purposes: it can be used to 1) determine a patient's outcome prognosis,⁹ and 2) develop a customized treatment plan.⁹ There is a well-developed guideline for PPS,^{1,10} but the prevalence of its use among spine surgeons is unknown, as are the factors that may affect its use. The *rationale* for our study was that, once we understand the factors contributing to the implementation of PPS, it will become possible to improve the quality of patient care by, for example, providing information to the spine surgeon as treatment options are being weighed, thus facilitating a customized treatment plan for each patient. We pursued the following *specific aims*: 1) to estimate the prevalence of use of PPS among spine surgeons in the United States, 2) to identify factors associated with the use of PPS, and 3) to evaluate spine surgeons' opinion of PPS. We hypothesized that only a minority of surgeons use this screening tool to identify individuals at risk for poor surgical outcomes.

MATERIALS AND METHODS

This study was reviewed and approved by our Institutional Review Board.

The survey was sent to spine surgeons in the United States. Individual surgeons were identified through an online search of hospital, university, and professional practice web sites. This search identified 340 spine surgeons. To each surgeon, we sent an email explaining the objectives of our study and requesting that he/she participate in the study by completing an online survey accessible through the provided link. Emails were sent during a 2-month period from December 2010 through January 2011. To protect the privacy of the surgeons and their patients, the responses were made anonymously, and there was no question that required patient-specific information.

The first part of the survey asked for the surgeon's demographic information (age, gender, race and ethnicity), education background (years since completing residency, years since completing fellowship), and current practice details (type of practice, years in practice, number of surgical cases performed annually, number of physicians in the practice, whether the practice included integrated rehabilitation service and psychological services). Responses for education background and years in practice were given in 5-year ranges: 0–4, 5–9, 10–14, etc. For number of annual cases and number of physicians in practice, we simply requested an approximate number.

The second part of the survey addressed PPS. We asked the surgeons if they used PPS. For more specific information about the implementation of PPS, we then asked if they routinely screened, or referred patients for screening, for depression or anxiety. We also asked if there

was a particular subset of patients whom they screened or referred for screening for psychological risk factors.

To evaluate the surgeons' attitudes toward PPS, we asked each responder to rate the impact, on a scale from 0 (none) to 10 (high), of psychological factors on the following parameters: rehabilitation adherence, return for follow-up, relief from pain, and ability to return to work/normal activity. We considered a score of 7 or higher as meaning a strong belief.

We received responses from 110 spine surgeons (mean age, 45.5 ± 7.8 y). This 32% response rate is within the range of response rates in several similar recently published reports of physician behavior.¹¹⁻¹³ Most responders were white (89%) men (93%) with 14 or fewer years since residency and fellowship (Table 1). Most surgeons were in practice for 20 or fewer years. The average number of annual surgical cases was 196 ± 79 . Regarding the type of practice, 12 (10.9%) were affiliated with a private community hospital, 16 (14.5%) were independent, and 76 (69.1%) were affiliated with a university. Most respondents reported having access to integrated rehabilitation, but less than half reported having an on-staff rehabilitation psychologist.

To estimate the prevalence of PPS use, we divided the number of spine surgeons endorsing the use of PPS by the total number of responders. To examine the association between individual surgeon and practice characteristics and PPS use, we used a chi-square test. To evaluate the spine surgeons' opinion of PPS, we divided the number of spine surgeons endorsing 7 or higher on each attitudinal question by the total number of responders. The level of significance was set at $P < 0.05$.

RESULTS

Of the 110 responders, a minority (41, 37%) reported using PPS, that is, routine referral of patients for PPS (Table 2). Of those 41, all (100%) routinely screened for depression, 35 (85%) routinely screened for anxiety, and more than half referred a subset of patients for PPS. Among the spine surgeons referring a subset of patients for PPS, 33.5% referred individuals with a history of a psychological disorder, 22.3% referred individuals who showed psychological distress or reported changes in social status and family stressors, 19.4% referred individuals who had low back pain without radiculopathy or claudication, and 8% referred individuals who presented with a work injury.

We found significant relationships between PPS use and education background (Table 3). Spine surgeons who had completed their residency or had been in practice within the last 14 years were less likely to use PPS than those who had completed their residency or had been in practice 15 or more years (residence, $P = 0.034$ and practice, $P = 0.022$). Similarly, those who had fewer than 200 surgical cases annually or were university-affiliated also had a greater tendency not to use PPS than those who performed more than 200 surgeries annually ($P = 0.022$) or who were hospital-affiliated or independent ($P = 0.044$).

Significance was also found between practice characteristic and access to integrated rehabilitation and between practice characteristics and access to a staff rehabilitation psychologist. Access to integrated rehabilitation services was reported by 51 of 59 spine surgeons who have 3 to 20 surgeons in their practice. Access to a rehabilitation psychologist was reported by 10 of 12 hospital-affiliated spine surgeons, 2 of 16 independent spine surgeons (88%, $P = 0.025$), and 28 of 88 nonhospital-affiliated spine surgeons.

Finally, a significant association was found between the number of surgeons in practice and presurgical psychological referral for a subset of patients. Of the 56 surgeons with 3 to 20 partners in their practice (3 abstained from answering), 37 responded that they referred a

subset of patients (66%, $P = 0.037$). In contrast, of the 15 surgeons with 25 to 80 surgeons in their group, 10 responded that they did not refer a subset of patients (67%, $P = 0.037$).

In certain categories, there were large discrepancies in the proportion of those who did and did not use PPS. Among older spine surgeons, the proportions were approximately equal, but among younger spine surgeons, there was at least a 1:2 ratio for those using and not using PPS. Among university-affiliated spine surgeons, there was also a large 1:2 ratio for users and nonusers. Furthermore, only 11 of 103 responders reported routinely referring their patients for PPS.

Among those who routinely use PPS, all respondents reported screening for depression and anxiety. Most responders (71.8%) reported having integrated rehabilitation services in their practice, but less than half indicated they had access to a rehabilitation psychologist. All surgeons who responded as being hospital-affiliated reported having rehabilitation services, and most of the nonhospital-affiliated surgeons (68.3%) reported having access to such services, but a large minority (28.2%) still reported having no such service available. Hospital-affiliated surgeons were also the only group to indicate a clear majority of having a rehabilitation service (10:2).

Most respondents reported that they strongly believed psychological risk factors affect physical therapy compliance (65 of 101 or 64.4%), pain relief (82 of 101 or 81.2%), and return to work (84 of 101 or 83.2%). Only approximately half (50 of 101, 49.5%) strongly believed that psychological risk factors affect follow-up.

DISCUSSION

Our results indicate that, despite the recommendation by the United States Preventive Services Task Force, most spine surgeon respondents did not use PPS routinely, even though they rated strongly the impact of psychological factors on a patient's physical health and recovery (except for return to routine follow-up). This finding, however, is in contrast to studies that have shown the beneficial effects of PPS.¹⁴⁻¹⁶ Furthermore, although most reported having integrated rehabilitation services, most respondents indicated that they did not have an on-staff rehabilitation psychologist. Although most of our sample does not routinely use PPS, more than half reported that they refer a subset of patients for psychological screening. This finding runs counter to the recommendation of the Task Force, so additional work must be done to define potential subsets of patient for whom PPS is most useful.

Another factor for our low rate of PPS implementation may be a lack in the belief of its effectiveness. Although generally the spine surgeons in our sample believed that psychological factors can affect patients' postoperative recovery, a substantial minority still believed that psychological factors have little or no effect. In addition, some spine surgeons may believe PPS could have detrimental effects. In one study, DeBerard et al.¹⁷ reported negative effects of PPS, including longer recovery times, lower return to work rates, and greater risk for postsurgical permanent disability. Although they acknowledged the literature supporting the relationship between psychological conditions and surgical outcomes, and they indicated they believed that psychologists have the necessary tools to predict surgical outcomes, they proposed that the results might have been the result of improper application of empirically established evaluation methods.¹⁷ Therefore, psychologists may be making inaccurate evaluations of prospective surgical patients, with the result that some patients who should avoid surgery instead undergo a procedure. From this assessment, it may be possible that, even with the current protocol, PPS cannot always be implemented accurately, which may discourage spine surgeons to use it and to refer their patients.

A more recent study by Maratos et al.¹⁸ also indicates that PPS may be detrimental or misleading. Although acknowledging the previous studies on psychological factors of poor surgical outcome, the authors believed that attempting to identify at-risk patients could deny individuals the surgery that might actually benefit them. Maratos et al.¹⁸ concluded that spine surgery improves both physical and psychological condition and that psychological factors have no independent effect on surgical outcome. Based on their conclusion, surgery that improves physical health might cause psychological conditions to improve as a result of pain relief and other benefits.

To explain why our younger spine surgeons are not routinely using PPS, perhaps new research like the that of Maratos et al.¹⁸ or DeBerard et al.¹⁷ is suggesting a different mindset from the previous belief that psychological factors detrimentally affected outcomes of spine surgery. One could speculate that spine surgeons who have more recently entered practice or those who are affiliated with a university may have more exposure to, or be more influenced by, recent research. However, we did not address this point in our study.

Our study has a few limitations. First, although we attempted to obtain a geographically representative sample of spine surgeons in the United States, our sample size limits the extent to which we can generalize to all spine surgeons. Second, most of the responders were from university-affiliated groups. This predominance was the result of university-affiliated surgeons being more readily accessible via email than independent and hospital-affiliated surgeons. Third, our study also reveals only what factors may result in less likely use of PPS; it does not reveal what factors encourage it.

However, despite these limitations, our study does include a broad sample of surgeons representing all geographic regions in the United States, and we established clear relationships between the identified factors and the use of PPS. It should be emphasized that our study is a preliminary analysis of the use of PPS among United States spine surgeons. We cannot explain the reasons why surgeons who have more recently finished their residencies and entered practice are less likely to use PPS than more experienced surgeons, but it is anticipated that such demographics will engender future studies that will provide further insight and more detail on factors that may prevent, discourage, or encourage the use of PPS in spine surgeons' practices.

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TABLE 1

Length of Time since Training and in Practice of 110 Participating Surgeons

Parameter	No. (%) of Responders
Years since residency (105 responses)	
<5	16 (15)
5–9	15 (14)
10–14	35 (33)
15–20	28 (27)
>20	11 (10)
Years since fellowship (105 responses)	
No fellowship	5 (5)
<5	20 (19)
5–9	23 (22)
10–14	23 (22)
15–20	24 (23)
>20	10 (10)
Years in practice (104 responders)	
<5	18 (17)
5–9	20 (19)
10–14	28 (27)
15–20	27 (26)
>20	11 (11)

TABLE 2

Responses of 110 Surgeons to Questions about Use of PPS

Question (No. Respondents)	Response		
	Yes	No	Don't Know/Refuse to Answer
Use PPS? (104)	41	63	6
Screen for depression? (41)	41	0	0
Screen for anxiety? (41)	35	6	0
Screen for subset of patients? (95)	35	60	15
Have integrated rehabilitation? (103)	79	24	7
Have rehabilitation psychologist? (83)	38	45	27
Routinely refer patients? (107)	11	92	7
Refer subset of patients? (97)	55	42	13

PPS, presurgical psychological screening.

TABLE 3

Relationship of Surgeon Background to Use of PPS

Background (No. of Respondents)	No. of Responses	
	No	Yes
Years since residency* (104)		
0 to 14	45 [†]	20
15	18	21
Years in practice* (104)		
0 to 14	46 [†]	20
15	17	21
Annual number of cases* (73)		
40 to 200	22 [†]	10
>200	16	25
Type of practice [§] (104)		
University-affiliated	51 [†]	25
Non-university-affiliated	12	16

* Numeric responses were collapsed for ease of reporting.

[†] $P < 0.05$.

[§] Responses were stratified for ease of reporting.

PPS, presurgical psychological screening.