How do Orthopedic Surgeons Address Psychological Aspects of Illness?

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Abstract

Background: Orthopaedic surgeons have a pivotal role in transitioning the care of orthopedic patients from a biomedical to a biopsychosocial model. In an effort to foster this transition, we designed a study aimed to determine surgeons’ attitudes and practice of noticing, screening, discussing psychological illness with patients, as well as making referrals to address psychosocial issues in patients in need. Additionally, we asked surgeons to rank order potential barriers to and reasons for referrals to psychosocial treatment.

Methods: Orthopaedic surgeons members of the Science and Variation Group and Ankle Platform (N =350) completed demographics, and a 4-part survey assessing the degree to which surgeons notice, assess, screen and refer for psychological treatments, as well ranked ordered barriers to engaging in these processes.

Results: As a group surgeons were neutral to referral for psychological treatment and formal screening of psychological factors, and somewhat likely to notice and discuss psychological factors. Surgeons were more likely to refer for psychological treatment if they engaged in research, or if they reside in South America as opposed to North America. The highest ranked barriers to screening, noticing, discussing and referring for psychological treatment were lack of time, stigma and feeling uncomfortable.

Conclusion: Overall surgeons are likely to notice and discuss psychological factors, but less likely to formally screen or refer for psychological treatment. Transition to biopsychosocial models should focus on problem solving these barriers by teaching surgeons communication skills to increase comfort with discussing psychoemotional factors associated with orthopedic problems. The use of empathic communication can be very helpful in normalizing the difficulty of coping with an orthopedic condition, and may facilitate referral.

Keywords: Biopsychosocial model, Psychological treatment, Referral, Surgeons

Introduction

Orthopaedic surgeons successfully treat millions of patients yearly using operative or nonoperative techniques. However, self-reported disability and pain intensity vary widely across patients undergoing similar treatments or surgical procedures, with limited correlations between objective data from radiographs or physical exam and patient self-report (1-6). Psychological factors, such as symptoms of depression, health anxiety, or catastrophic thinking are consistently associated with disability and pain intensity in patients with a variety of musculoskeletal illness concerns (7-10).

Despite the abundant research on the importance of psychosocial factors in the care of both surgical and nonsurgical orthopaedic patients, including emerging evidence on the efficacy of psychosocial intervention in improving pain and disability in orthopedic patients (11), biopsychosocial models –where both the medical and psychosocial factors are assessed and addressed– have not yet been incorporated in most orthopaedic surgical practices. Orthopaedic surgeons have a pivotal role in this transition process, by noticing when these factors are present, discussing them with patients, and providing referrals to psychosocial treatment, when necessary. Such referrals can occur prior to orthopedic surgery, when emotional health challenges predictive of less postoperative recovery (12, 13) are identified, or post orthopedic surgery, when difficulties coping may develop. In an effort to understand potential barriers toward...
addressing psychosocial factors within orthopaedic practices, we designed a study aimed to survey surgeons' attitudes and practice of noticing, screening, discussing psychological illnesses with patients, as well as making referrals to address psychosocial issues in patients in need. Our primary null-hypothesis is that there are no associations between the degree to which surgeons refer for psychological treatment and surgeon specific factors. Our secondary null-hypotheses were that there are no associations between the degree to which surgeons notice, screen, and discuss psychological illnesses and surgeon specific factors. Additionally, we asked surgeons to rank order potential barriers to and reasons for referrals to psychosocial treatment.

**Materials and Methods**

**Study design**

After approval by our institutional review board, we invited all members of the Science of Variation Group (SOVG; 708 upper extremity surgeons) and the Ankle Platform (428 lower extremity surgeons) to participate in this cross-sectional study. Of these, three hundred-ninety (34%) surgeons responded, and 350 (31%) completed the questionnaire. This response rate is similar to that obtained in other studies using the SOVG (10,14, 15). Invitations were sent via email in March 2015, followed by a reminder after 2 weeks. The SOVG and the Ankle Platform are international collaborations of orthopaedic surgeons with upper extremity and ankle specializations, respectively. The groups are aimed at studying variations in the definition, interpretation, classification and treatment of illness. Participation is voluntary and not compensated.

We developed an online survey using Survey Monkey (Palo Alto, CA, USA)(10). The survey contained 132 questions aimed to assess how orthopaedic surgeons notice, screen, and discuss psychological illness and refer for psychological treatment. We used a similar methodology in several prior studies (16, 17).

**Study surveys**

The survey consisted of 4 parts measuring the degree to which surgeons: notice (32 questions), screen (35 questions), and discuss (32 questions) psychosocial issues with their patients, and the degree to which they refer patients for psychological treatment (31 questions). All questions were answered on a 5-point Likert-scale: (1) "very unlikely", (2) "somewhat unlikely", (3) "neutral", (4) "somewhat likely" and (5) "very likely". Additionally, we asked for what reason, when, and how patients were referred for psychological treatment. Subsequently, we explored eleven barriers to referring patients for psychological treatment, including a possibility for own suggestions. Participants rated the barriers from most important to least important. We rank ordered these by assigning a score of 0 for the least important barrier and a score of 10 for the most important barrier.

**Statistical analysis**

Data was described using frequencies and percentages for dichotomous and nominal variables, and means with standard deviations for ordinal and continuous variables. In bivariate analysis, the association of surgeon characteristics with the Likert-scale score of noticing, screening, discussing, and referring psychological illnesses, was assessed using an unpaired T-test for dichotomous explanatory variables (sex, engagement in research, and engagement in teaching), one-way analysis of variance (ANOVA) with the Bonferroni correction for categorical explanatory variables (country of practice and specialization), and a Pearson’s correlation coefficient for continuous explanatory variables (age, years in practice, and number of patients treated per week). All analyses were performed with Stata 13 (StataCorp LP) and a two-tailed p value of less than 0.05 was considered significant.

**Surgeon characteristics**

The mean age of the participants was 44 years; the majority were men (325, 93%), [Table 1]. On average

| Table 1. Baseline characteristics of wsurvey respondents * |
|-----------------|-----------------|
| **Mean (± SD)** |
| Age (in years)   | 44 (8.8)         |
| Work experience (in years) | 14 (8.7)         |
| Number of patients treated per week | 72 (50) |
| Sex               | *Men* 325 (93)   |
| Location of practice | *Women* 25 (7)   |
| Europe            | 171 (49)         |
| North America     | 120 (34)         |
| South America     | 27 (7.7)         |
| Asia              | 17 (4.9)         |
| Australia         | 8 (2.3)          |
| Middle East       | 4 (1.1)          |
| Africa            | 3 (0.9)          |
| Specialization    | *Orthopaedic traumatology* 112 (32) |
| Hand and wrist    | 87 (25)          |
| General orthopaedics | 81 (23)         |
| Shoulder and elbow | 46 (13)         |
| Resident          | 21 (6)           |
| Other**           | 3 (0.9)          |
| Engage in research | *Yes* 300 (86)   |
| Engage in teaching | *No* 50 (14)     |
| * n=350 SD: Standard deviation **Other = Retired (n = 2). Radiologist (n = 1)
the participants treated 72 (standard deviation [SD] 50) patients per week and had a mean work experience of 14 years (SD 8.7). Most participants were from Europe (n = 171, 49%) and North America (n = 120, 34%). Three hundred (86%) participants engaged in research and 298 (85%) engaged in teaching, in addition to clinical practice.

Results
Refer for psychological treatment
The mean Likert-scale score for referring for psychological treatment was 3.5 (SD 1.3), suggesting that as a group, surgeons were neutral to referring for psychological treatment. However, surgeons who were somewhat (33%) and very (27%) likely to refer for psychological treatment retained a close majority [Table 2]. Bivariate analysis showed that the likelihood of referring for psychological treatment differed by continent of practice (F= 2.87, P= 0.0096). Among different continents surgeons in South America were more likely to refer for treatment compared to those in North America (Mean= 4.4. versus Mean = 3.3; P= 0.001), and Europe (Mean= 4.4. versus Mean = 3.5; P= 0.011) [Table 3].

Surgeons who engaged in research were more likely to refer patients for psychological treatment compared to those who did not engage in research (P=.05). Surgeons engaged in teaching seem more likely to refer for psychological treatment, though the effect did not reach statistical significance (P= 0.13). Neither gender (P= 0.56) nor specialization (P= 0.20) showed any difference in degree of referring for psychological treatment.

The majority of surgeons refer their patients through the primary care physician (n= 201, 57%) or provide the patients with a list of names (n= 93, 27%) [Table 4].

Notice, screen, and discuss psychological illnesses
The mean Likert-scale scores for noticing and discussing psychological illness were 4.3 (SD 0.75) and 3.9 (SD 1.1), respectively, suggesting that as a group surgeons were somewhat likely to notice and discuss psychological illnesses. The majority of surgeons were somewhat likely (46%), and very likely (44%) to notice psychological illness. Similarly, the majority of surgeons were also somewhat likely (41%) and very likely (33%) to discuss psychological illness with their patients. Women were more likely than men to discuss psychological factors (P= 0.03). Screening for psychological illness scored a 3.2 (SD 1.3), meaning that as a group surgeons were neutral with regards to formal screening for psychological illnesses. The majority of surgeons were somewhat likely (33%) and somewhat unlikely (21%) to formally screen for psychological illness. Bivariate analysis showed a difference in country of practice and likelihood of screening for psychological illnesses (ap= 0.013), and was highest for surgeons from South America (Mean= 3.9, SD 1.2) and lowest for surgeons from the Middle East (Mean = 2.8, SD 0.96) [Table 3].

Among different continents surgeons in South America were more likely to screen for treatment compared to those in North America (Mean= 3.9. versus Mean= 3.0; P= 0.017) [Table 3].

Other surgeon characteristics showed no difference in degree of noticing, screening and discussing of psychological illness [Table 3]. The majority of participants reported that they use the interview (n = 282, 81%) and the medical record (n = 201, 57%) rather than questionnaires (n = 85, 24%) to screen for psychological illnesses [Table 5].

Barriers to referral for psychological treatment
Of all the explored barriers lack of time (8.9, SD 2.0) is the most important barrier to referring for psychological treatment [Table 6]. The stigma associated with psychological factors (7.8, SD 1.6) and to be unsure how to refer (7.7, SD 2.3) are other important barriers. Not wanting to hurt reputation (2.4, SD 1.4) and not want to get in trouble with

Table 2. Percentage of participants per category noticing, screening, discussing and referring for psychological illness *

<table>
<thead>
<tr>
<th>Notice</th>
<th>Screen</th>
<th>Discuss</th>
<th>Refer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
<td>Mean (SD)</td>
</tr>
<tr>
<td>Notice</td>
<td>Screen</td>
<td>Discuss</td>
<td>Refer</td>
</tr>
<tr>
<td>Very unlikely</td>
<td>1 (0.3)</td>
<td>41 (12)</td>
<td>10 (2.9)</td>
</tr>
<tr>
<td>Somewhat unlikely</td>
<td>8 (2.3)</td>
<td>73 (21)</td>
<td>35 (10)</td>
</tr>
<tr>
<td>Neutral</td>
<td>27 (7.7)</td>
<td>67 (19)</td>
<td>49 (14)</td>
</tr>
<tr>
<td>Somewhat likely</td>
<td>160 (46)</td>
<td>116 (33)</td>
<td>142 (41)</td>
</tr>
<tr>
<td>Very likely</td>
<td>154 (44)</td>
<td>53 (15)</td>
<td>114 (33)</td>
</tr>
</tbody>
</table>

*n=350*
### Table 3. Bivariate analysis of baseline characteristics and likelihood of noticing, screening, discussing and referring psychological illnesses *

<table>
<thead>
<tr>
<th>Notice</th>
<th>Screen</th>
<th>Discuss</th>
<th>Refer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficient</td>
<td>$P$ value</td>
<td>Coefficient</td>
<td>$P$ value</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>0.068</td>
<td>0.20</td>
<td>0.016</td>
</tr>
<tr>
<td>Work experience (in years)</td>
<td>0.055</td>
<td>0.31</td>
<td>0.062</td>
</tr>
<tr>
<td>Number of patients treated per week</td>
<td>-0.083</td>
<td>0.12</td>
<td>0.051</td>
</tr>
<tr>
<td>Mean (± SD)</td>
<td>$P$ value</td>
<td>Mean (± SD)</td>
<td>$P$ value</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Men</td>
<td>4.3 (0.75)</td>
<td>3.2 (1.3)</td>
<td>3.9 (1.1)</td>
</tr>
<tr>
<td>Women</td>
<td>4.4 (0.51)</td>
<td>3.4 (1.1)</td>
<td>4.3 (0.56)</td>
</tr>
<tr>
<td>Location of practice</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>4.3 (0.72)</td>
<td>3.2 (1.2)</td>
<td>3.9 (0.97)</td>
</tr>
<tr>
<td>North America</td>
<td>4.3 (0.75)</td>
<td>3.0 (1.3)*</td>
<td>3.8 (1.2)</td>
</tr>
<tr>
<td>South America</td>
<td>4.4 (0.64)</td>
<td>3.9 (1.2)*</td>
<td>4.3 (0.92)</td>
</tr>
<tr>
<td>Asia</td>
<td>4.2 (1.0)</td>
<td>3.7 (0.99)</td>
<td>3.9 (1.2)</td>
</tr>
<tr>
<td>Australia</td>
<td>4.3 (0.71)</td>
<td>2.8 (1.5)</td>
<td>3.8 (0.89)</td>
</tr>
<tr>
<td>Middle East</td>
<td>4.5 (0.58)</td>
<td>2.8 (0.96)</td>
<td>3.8 (0.96)</td>
</tr>
<tr>
<td>Africa</td>
<td>4.3 (0.58)</td>
<td>3.7 (0.58)</td>
<td>4.0 (1.0)</td>
</tr>
<tr>
<td>Specialization</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orthopaedic traumatology</td>
<td>4.2 (0.76)</td>
<td>3.2 (1.2)</td>
<td>3.9 (1.0)</td>
</tr>
<tr>
<td>Hand and wrist</td>
<td>4.5 (0.61)</td>
<td>3.2 (1.4)</td>
<td>3.8 (1.2)</td>
</tr>
<tr>
<td>General orthopaedics</td>
<td>4.3 (0.69)</td>
<td>3.0 (1.3)</td>
<td>4.1 (1.0)</td>
</tr>
<tr>
<td>Shoulder and elbow</td>
<td>4.4 (0.80)</td>
<td>3.6 (1.2)</td>
<td>4.1 (1.1)</td>
</tr>
<tr>
<td>Resident</td>
<td>4.1 (0.96)</td>
<td>3.0 (1.2)</td>
<td>3.8 (0.94)</td>
</tr>
<tr>
<td>Other*</td>
<td>4.0 (1.0)</td>
<td>4.3 (1.2)</td>
<td>4.3 (2.1)</td>
</tr>
<tr>
<td>Engage in research</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4.3 (0.69)</td>
<td>3.2 (1.2)</td>
<td>3.9 (1.0)</td>
</tr>
<tr>
<td>No</td>
<td>4.2 (0.96)</td>
<td>3.0 (1.3)</td>
<td>3.7 (1.2)</td>
</tr>
<tr>
<td>Engage in teaching</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4.3 (0.75)</td>
<td>3.2 (1.3)</td>
<td>3.9 (1.1)</td>
</tr>
<tr>
<td>No</td>
<td>4.4 (0.66)</td>
<td>3.1 (1.2)</td>
<td>3.9 (0.93)</td>
</tr>
</tbody>
</table>

* n=350
**Significant groups after ANOVA bonferroni statistical test
SD = Standard Deviation

### Table 4. How do you refer for psychological illnesses *

<table>
<thead>
<tr>
<th>Refer</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through the primary care physician</td>
<td>201 (57)</td>
</tr>
<tr>
<td>Provide the patient with a list of names</td>
<td>93 (27)</td>
</tr>
<tr>
<td>Give main number for psychiatry department</td>
<td>63 (18)</td>
</tr>
<tr>
<td>I do not refer</td>
<td>31 (9)</td>
</tr>
<tr>
<td>Other</td>
<td>68 (19)</td>
</tr>
</tbody>
</table>

* n=350

### Table 5. How do you notice & screen for psychological illnesses *

<table>
<thead>
<tr>
<th>Notice (%) n</th>
<th>Screen (%) n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical record</td>
<td>61 (212)</td>
</tr>
<tr>
<td>Questionnaire</td>
<td>17 (58)</td>
</tr>
<tr>
<td>Interview</td>
<td>89 (313)</td>
</tr>
<tr>
<td>I do not notice/screen</td>
<td>3 (4)</td>
</tr>
<tr>
<td>Other</td>
<td>3 (7)</td>
</tr>
</tbody>
</table>

* n=350
colleagues/superiors (2.2, SD 2.3) were the least important barriers for referring for psychological treatment. Other common suggested barriers by the participants were lack of psychological education/training, language barrier, non-cooperating patient, and lack of medical record.

**Psychological illnesses**

Surgeons are more likely to refer patients for psychological treatment for depression (295, 84%) and anxiety (254, 73%), and least likely for problems with lack of social support (136, 39%) and drug use (222, 63%) [Table 7]. The majority of surgeons refer through the primary care physician (201, 57%). Of all respondents 31 people (9%) say not to refer at all. Other suggested psychological illnesses addressed by the participants were secondary gain and pain catastrophizing.

**Discussion**

There is substantial variation in reports of pain intensity and disability in orthopaedic patients with similar objective pathology or who undergo similar medical procedures including surgeries. Psychosocial factors, in particular depression, catastrophic thinking, and health anxiety have been found to explain a larger part of this variation (7, 8, 18-21). Biopsychosocial models, where psychosocial factors are assessed and treated along with medical care have become standard of care in the treatment of many medical conditions including cancer, diabetes, cardiovascular conditions, and chronic pain (22-25), but have not yet been
incorporated in most orthopaedic practices.

Orthopaedic surgeons have a pivotal role in fostering the transition from a biomedical to an evidence based biopsychosocial model of care. We found that as a group upper extremity and ankle orthopaedic surgeons are generally neutral to referring patients for psychological treatment, with a little over half of the surgeons surveyed reporting that they would refer patients for such treatment. Surgeons engaged in research were more likely to refer patients for psychological care, perhaps due to more exposure and familiarity with the research on psychosocial factors in orthopaedic conditions, including strategies to facilitate referrals. Surgeons in South America were significantly more likely to refer patients for psychological treatment compared to those in North America and Europe. Depression, anxiety and health anxiety were the most likely referrals, and referrals were made most likely through the primary care physician.

Interestingly, as a group, surgeons were somewhat likely to notice and discuss psychosocial factors with their patients, with 90% and 74% reporting that they were somewhat or very likely to notice and discuss psychosocial factors. These high rates are in contrast with the much lower rates of referring for psychological treatment, suggesting that surgeons are aware of psychosocial factors, notice and discuss them, but often refrain from making referrals for treatment.

With regard to formal screening for psychological factors, surgeons were overall neutral, with about 45% surgeons reporting that they are somewhat or very likely to formally screen patients. The interview and medical record were the preferred methods for screening, while standardized questionnaires were the least preferred. This finding is interesting, as standardized questionnaires are quick, easy to administer while patients wait for their visit, much more time efficient compared to the interview, and more accurate than the medical record, which is often outdated or incomplete.

Among the barriers to screening, noticing, discussing psychosocial factors and referring for psychological treatment, lack of time, stigma and feeling uncomfortable were the top reasons, while lack of belief in the importance of psychosocial factors and beliefs that a biomedical treatment alone is sufficient were ranked very low. This clearly shows that surgeons value the role of psychological factors, suggesting that transition toward a biopsychosocial model should focus on problem solving the aforementioned barriers. Further, it is likely that the higher referral likelihood in South America versus North America and Europe is due to a less likelihood of interference from these barriers. Indeed, the South American culture is communal, with a focus on warm interpersonal interactions, and a more lax sense of time compared to North America and Europe. While lack of time is a significant barrier in the fast paced, insurance driven North American medical system, it is important to mention that more time spent is not necessarily associated with patient satisfaction (26), and a discussion of psychosocial factors does not need to be lengthy.

The use of empathy and communication skills, rather than time spent, is key in discussing psychosocial factors, making referrals, and maintaining patient satisfaction (27). Although mental health stigma continues to be a problem across patients including those in orthopaedic practices, there is an increased understanding that the physical and emotional aspects of illness cannot be separated, that distress and stress are to be expected and should not be considered shameful, and that psychosocial treatments can significantly improve pain and disability and increase health and wellbeing. Orthopaedic surgeons have the opportunity to help decrease rather than proliferate such stigma through empathic explanations of the role of psychological factors, as well as referrals; patients need to feel cared for, and approached as a person rather than a disease. Unfortunately, until recently surgeons have not been formally taught communications skills and the importance of the patient-doctor relationship, including the use of empathy. Recent research emphasized the need of teaching such skills in medical schools within North America and abroad (28, 29). An innovative drama training technique called “Being-in-role” has been found to increase both reported empathy and competence in consultation in medical students within a randomized controlled trial (30). For those currently in practice, several papers have been published on this topic (31-33), which can be very helpful in increasing confidence in the ability to communicate psychosocial issues with patients. Educational pamphlets written in lay, easy to understand language can also be helpful in starting conversations with patients about the role of psychosocial factors and psychosocial treatment for orthopaedic conditions.

This study has some limitation. The SOVG and the Ankle Platform are a subgroup within the community of orthopaedic surgeons resulting in a selection bias and limiting generalizability of results. In particular, the group of surgeons that are neither American nor European was small, and the observed differences might be spurious.

Orthopaedic surgeons are likely to notice psychological illness, however, because of several identified barriers surgeons are neutral when it comes to referral for psychological treatment. Among the barriers to referral for psychological treatment stigma and feeling uncomfortable are the most highly ranked. To foster the transition of the biomedical model to the biopsychosocial model and bypass barriers to referring, surgeons will have to focus on empathy and communication skills.
References


