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Clinical Study

Importance of patient-reported individualized goals when assessing outcomes for adult spinal deformity (ASD): initial experience with a Patient Generated Index (PGI)

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The disclosure key can be found on the Table of Contents and at www.TheSpineJournalOnline.com.

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Abstract

BACKGROUND CONTEXT: Current metrics to assess patients' health-related quality of life (HRQOL) may not reflect a true change in the patients' specific perception of what is most important to them.

PURPOSE: This study aimed to describe the initial experience of a Patient Generated Index (PGI) in which patients create their own outcome domains.

STUDY DESIGN: This is a single-center prospective study.

PATIENT SAMPLE: Patients with adult spinal deformity (ASD) comprise the study sample.

OUTCOME MEASURES: Oswestry Disability Index (ODI), Short Form-36 (SF-36 Physical Component Score [PCS] and Mental Component Score [MCS]), Scoliosis Research Society-22r (SRS-22r), and PGI.

METHODS: Oswestry Disability Index, SF-36, SRS-22r, and PGI were administered preoperatively and postoperatively at 6 weeks, 3 months, 6 months, and 1 and 2 years. PGI correlations with ODI, SF-36, SRS total score, free-text frequency analysis of PGI exact response with text in ODI and SRS-22r questionnaires, and the responsiveness (effect size [ES]) of the HRQOL metrics were analyzed. No funding was used for this study and there are no conflicts of interest.

RESULTS: A total of 59 patients with 209 clinical encounters produced 370 PGI written response topics that included affect or emotions, relationships, activities of daily life, personal care, work, and hobbies. Mean preoperative PGI score was 18.6±13.5 (0–71.7 out of 100 [best]), and mean scores significantly improved at every postoperative time point ($p<.05$). Preoperative PGI scores significantly correlated with preoperative ODI ($r=-0.28$, $p=.03$), MCS ($r=0.48$, $p<.01$), and SRS total ($r=0.57$, $p<.01$). Postoperative PGI scores correlated with all HRQOL measures ($p<.0001$): ODI ($r=-0.65$), PCS ($r=0.50$), MCS ($r=0.55$), and SRS total ($r=0.63$). PGI responses exactly matched ODI and SRS-22r text at 47.8% and 35.4%, respectively, and at 63.2% and 58.9%, respectively, for categories. Patient Generated Index ES at a minimum of 1-year follow-up was −2.39, indicating substantial responsiveness ($|ES|>0.8$). Effect sizes for ODI, SRS-22r total, SF-36 PCS, and SF-36 MCS were 2.16, −2.06, −2.05, and −0.80, respectively.

CONCLUSIONS: The PGI is easy to administer and offers additional information about the patients' perspective not captured in standard HRQOL metrics. Patient Generated Index scores correlated with all of the standard HRQOL scores and were more responsive than ODI, SF-36, and SRS-22r, suggesting that the PGI may be a step closer to one HRQOL measure that better encompasses concerns and goals of the individual patients. © 2017 Elsevier Inc. All rights reserved.

Keywords: Adult spinal deformity; Health-related quality of life; Patient Generated Index; Pedicle subtraction osteotomy; Sagittal malalignment; Vertebral column resection

Introduction

The term "quality of life" has been defined as "the extent to which our hopes and ambitions are matched by experience," and that the goal of health care is to "narrow the gap between a patient's hopes and expectations with what actually happens" [1]. However, current methods to assess a patient's health-related quality of life (HRQOL) tend to focus on general medical and functional outcomes, with little regard for the patient's perspective. For example, some of the common dimensions of standardized HRQOL scales include physical functioning, psychological functioning, social role functioning, spiritual well-being, and symptoms related to disease and treatment. In addition, there are numerous limitations to the data collection and direct clinical usefulness of these instruments. Although these tools are widely used and do provide valuable information, they do not allow the patients to identify the level of importance of the predetermined items of their HRQOL or add specific dimensions that they feel impact their lives. Furthermore, a change (or absence of change) in patients' HRQOL may not reflect another significant change in their life that is not represented in the standardized scale, but may have a large impact on their quality of life. Thus, current HRQOL measures are not as subjective as once believed, and a focus on HRQOL as defined by the patient is needed.

A patient-centered HRQOL measure proposed by the patient has been developed in the literature. Termed the Patient Generated Index (PGI) [1], this patient-centered measure incorporates the following components: (1) it describes the effect of a medical condition on aspects of patients' lives that are of greatest importance to them, (2) it allows the patients to rate the extent to which those aspects of life are affected by the condition, (3) it is sensitive to changes in health over time and allows patients to rate the importance of those changes, (4) it is reproducible and suitable for a wide variety of patients in different settings, and (5) it is brief and simple for patients to complete. These five components are at the core of a successful patient-centered HRQOL assessment. However, even this system could be expanded for a more comprehensive analysis.

The PGI is unique in that it allows patients to formulate their own responses in an open-ended format. In brief, the

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PGI consists of three stages in which patients (1) self-identify the most important areas or activities of their lives affected by their condition, (2) score the degree to which each area is affected, and (3) allocate points among the items listed to represent the amount in which they would like each area improved [1]. One potential advantage of this approach over other standard HRQOL questionnaires is the effectiveness of measuring HRQOL based on each patient's own stated goals and expectations, which likely embodies a wide range of variation from patient to patient.

The PGI has already been validated and administered to patients with low back pain, menorrhagia, suspected peptic ulcers, varicose veins, atopic dermatitis, lower limb amputation, and stress urinary incontinence [1–5]. Collectively, these studies substantiate the importance and value of the PGI in accounting for the hopes and expectations of treatment for the individual patient. However, this tool has not been applied to patients with adult spinal deformity undergoing surgical correction. There is a critical need for improved health outcomes and application of these outcomes, reference data sets, and patient preferences to direct clinical use (point of care). As HRQOL measures have become standardized, most peer-reviewed literature related to the diagnosis and treatment of medical conditions now includes general health and disease-specific instruments. Therefore, the purpose of this preliminary report is to describe the initial results of administering PGI to patients with adult spinal deformity and to compare both the quantitative and the qualitative results with standard HRQOL measures.

EVIDENCE & METHODS

Context

In patients undergoing surgery for adult spinal deformity, the authors collected several patient reported outcome measures and compared these.

Contribution

They found that PGI correlated with commonly used scores (ODI, SF-36, and SRS22r) and was more responsive.

Implications

As outcomes are being more closely monitored and (potentially) tied to reimbursement, finding the "right" outcome measure is gaining greater importance. Knowing that the answers one gets depend most greatly on the questions one asks; PGI allows more flexibility and individualization of "the questions" than more commonly used measures and, thus, may better align patient-reported outcomes and satisfaction.

—*The Editors*

Methods

Patient population

This is a prospective single-center study, and all patients were enrolled following institutional review board approval from July 2013 to December 2015. Inclusion criteria were age >18 years and presence of spinal deformity, as defined by scoliosis Cobb angle≥20°, sagittal vertical axis≥5 cm, pelvic tilt≥25°, or thoracic kyphosis≥60°. Exclusion criteria included spinal deformity of a neuromuscular etiology and presence of active infection or malignancy.

Health-related quality of life

Standardized HRQOL measures included the Oswestry Disability Index (ODI), Short Form-36 (SF-36), and Scoliosis Research Society-22r (SRS-22r). Two standard summary scores were calculated based on the SF-36: the Physical Component Score (PCS) and the Mental Component Score (MCS). The SRS-22r provides a total score and multiple subdomains, including activity, pain, appearance, mental, and satisfaction domains. Scores were collected preoperatively and at the following postoperative time points: 6 weeks, 3 months, 6 months, and 1 year.

Patient Generated Index

The PGI consists of three stages addressing treatment expectations (Fig. 1). Stage 1 asks patients to reflect on different areas of their life that are affected by their spine condition, no matter how important or personal the areas may be. They then write down the five most important areas or activities of their life that are affected. If the patients have more than five areas, they can write down only the top five. If they are unable to identify five areas, a list of areas and activities from other patients with the same condition is available for reference and for choosing conditions that apply to the patient responding. The patient may also have less than five areas or activities and write "none" for the other areas.

Stage 2 asks the patients to rate from 0 to 10 how badly each of the five areas or activities is affected by their condition. A score of 0 represents the absolute worst the patient could imagine, and 10 represents the absolute best, that is, where the patient would like to be. A list of 0–10 in increments of 1 is provided to give the patient a rough idea of the meaning of each level. In addition, there is a space for a sixth score pertaining to "all other aspects of the patient's life." This last area is meant to include all aspects of the patients' life affected by their condition, which were not important enough to be listed in one of the top five. Even if the patient has less than five total areas or activities listed, this sixth space must be scored.

Stage 3 consists of another scoring system to be completed by the patients. They are asked to imagine that any area of their life can be improved, including areas that are not related to their condition. The patients are then given 60 points, which they can "spend" on any of the six areas listed to improve their original score. They may add 10 points to each of the six areas or

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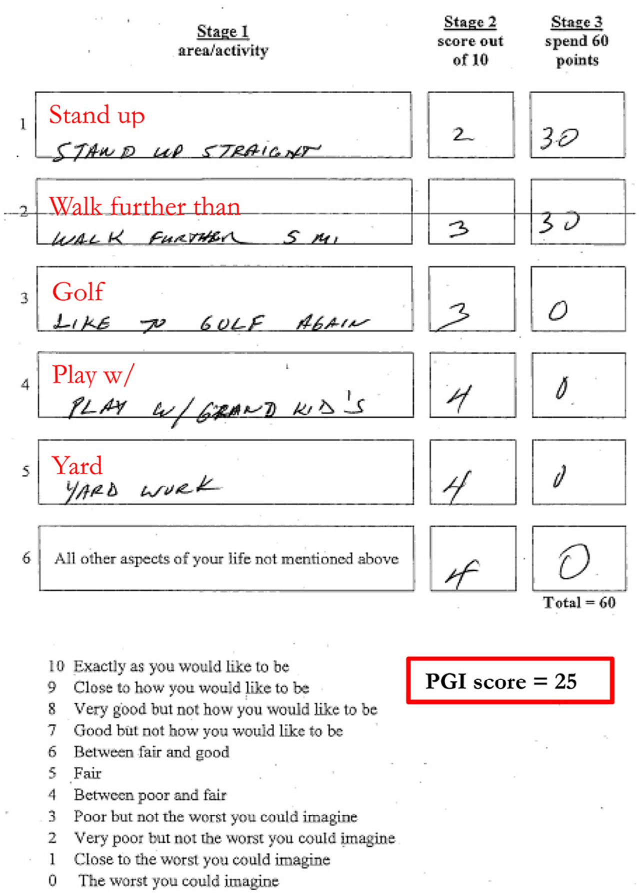

Fig. 1. The Patient Generated Index (PGI) used in the present study with a patient example (red text was added for clarity of the patient's handwriting). Stage 1 asks patients to write down the five most important areas or activities of their life that are affected by their spine condition. Stage 2 asks the patients to rate, in a scale from 0 to 10, how badly each of the five areas or activities is affected by their condition. A score of 0 represents the absolute worst the patients could image themselves and 10 represents the absolute best, that is, where they would like to be. Stage 3 asks the patients to imagine that any area of their life can be improved, including areas that are not related to their condition. The patients are then given 60 points, which they can "spend" on any of the six areas listed to improve their original score. Once the patients have allocated the points, each area is multiplied by the proportion of total points allowed for both Stage 2 and Stage 3 independently. Then, each area's proportion for Stage 2 is multiplied to its corresponding proportion in Stage 3. Finally, the products of Stage 2 and Stage 3 areas are summed with the total multiplied by 10 to provide a number out of 100. Higher scores represent where patients would like to be in terms of their treatment goals and where they actually are in achieving those goals. Lower scores represent a large disconnect between their treatment goals and their current health status. In the above example, the scoring is as follows: PGI=[2*(30/60)+3*(30/60)+3*(0/60)+4*(0/60)+4*(0/60)+4*(0/60)]*10=[2*(1/2)+3*(1/2)+0+0+0+0]*10=[1+1.5]*10=2.5*10=25.

spend all 60 on one area. It is completely up to the patient. If the patients do not give any points to a given area, they need to understand that this implies that the area will remain the same. Once the patient has allocated the points, each area is multiplied by the proportion of total points allowed for both Stage 2 and Stage 3 independently. Then, each area's proportion for Stage 2 is multiplied by its corresponding proportion in Stage 3. Finally, the products of Stage 2 and Stage 3 areas are summed, with the total multiplied by 10 to provide a number out of 100. Thus, the scores are a summation of proportions based on how the patients spent their points. The minimum score would be 0 (worst) to a maximum of 100 (best). Higher scores represent where patients would like to be in terms of their treatment goals and where they actually are in achieving those goals. Lower scores represent a large disconnect between their treatment goals and their current health status. Therefore, a very high score (eg, 90–100) would potentially suggest two things: they completed the survey incorrectly or maybe they do not need surgery (of course, other things were considered as well). Postoperatively, patients were given the option to list and score up to four additional areas on the PGI form (for a maximum of 10 as opposed to 6 preoperatively) to capture any new areas of their life affected by their condition following the surgery. The PGI was scored the same way as preoperatively, and because the scoring involves a summation of proportions, the scale is the same.

Statistical analysis

Continuous variables were described with the mean and standard deviation. Normality of data was determined using the Shapiro-Wilk test. Pairwise Pearson correlation coefficients were determined between PGI and ODI, SF-36, and SRS total score for preoperative and postoperative values. In addition, univariable linear regression was also performed to assess the relationship between PGI and standard HRQOL metrics, both preoperatively and postoperatively. Frequency text analysis was conducted to assess the overlap between the wording of patients' PGI written responses and the wording within the ODI, SF-36, and SRS-22r questionnaires. Each of the listed PGI responses for all the patients was tabulated and determined manually if it appeared exactly with the same wording in the questions of each of the HRQOL measures. A "1" was assigned for matching and "0" for not matching. The percent of matching was calculated from the total number of responses. In addition, each written response was categorized as being related to an idea or focus of ODI or SRS, and the response was expanded if there were multiple ideas in a given response. A measure of change over time, termed the effect size (ES; or responsiveness index), was calculated to determine if the PGI was sensitive enough to detect changes in patients' responses [6,7]. This was calculated based on methodology established by Cohen, and corrected for over- or underestimation using methodology established by Middel and van Sonderen [6,7]. All statistical analyses were conducted using commercially available software (SPSS Statistics v22; IBM, Armonk, NY, USA), and the level of significance was set at $p<.05$ for all tests.

Results

Patient population

Fifty-nine patients with 209 total patient encounters (ie, preoperative or postoperative clinic visits) were available for analysis (male: 17, female: 42, average age: 62.1±12.9 years,

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Table 1
Mean±1 standard deviation for Patient Generated Index and all other HRQOL measures

	Sample size	PGI	ODI	PCS	MCS	SRS activity	SRS pain	SRS appearance	SRS mental	SRS satisfaction	SRS total
Preop	59	18.6±13.5	52.5±13.9	27.4±6.7	40.9±14.3	2.4±0.8	2±0.8	2.2±0.8	3.2±1	2.7±1.1	2.5±0.7
6 weeks	54	36.7±23.1	48.7±19.4	30.1±6.7	44.2±12.7	2.5±0.7	2.6±0.8	3.2±0.9	3.5±0.8	4.3±0.6	3.1±0.6
3 months	27	49.8±24.4	35.9±21.2	32.4±8.2	49.5±14.9	2.8±0.9	3.1±0.8	3.4±0.9	3.9±0.8	4.3±0.7	3.4±0.7
6 months	35	52.7±26.7	35.1±22.9	36.5±9.8	46±15.4	3±0.9	3.3±1	3.5±0.9	3.6±0.9	4.2±0.8	3.4±0.8
Min. 1 year	34	61.1±29.3	25.1±20.7	40.3±9	49±14.4	3.2±1	3.6±1.2	3.4±1	3.8±0.9	4±0.9	3.6±0.9

MCS, Mental Component Summary from the Medical Outcomes Short Form-36; ODI, Oswestry Disability Index; PCS, Physical Component Summary from the Medical Outcomes Short Form-36; PGI, Patient Generated Index; preop, preoperative; SRS, Scoliosis Research Society; HRQOL, health-related quality of life.

range: 18–84 years). Thirty patients were undergoing a primary surgery, whereas 29 were undergoing a revision of prior fusion. Thirty patients underwent a three-column osteotomy (25 pedicle subtraction osteotomy and 5 vertebral column resection), and 29 patients did not. Seven patients underwent a postoperative reoperation.

HRQOL analysis, PGI numerical scores, and correlations or regressions

All postoperative comparisons with preoperative values were conducted only for the patients who had the corresponding follow-up (Table 1). At 6 weeks postoperatively, the 54 patients significantly improved in PCS, SRS pain domain, SRS appearance domain, SRS satisfaction domain, and SRS total score compared with their respective baseline scores ($p<.05$ for all). At 3 months postoperatively, the 27 patients improved in ODI, PCS, SRS pain domain, SRS appearance domain, SRS satisfaction domain, and SRS total score ($p<.05$ for all). Similarly, at 6 months postoperatively, the 35 patients significantly improved in ODI, PCS, SRS activity domain, SRS pain domain, SRS appearance domain, SRS satisfaction domain, and SRS total score ($p<.05$ for all). Lastly, the 34 patients with a minimum of 1-year follow-up significantly improved in all mean HRQOL measures ($p<.0001$ for all).

The mean preoperative PGI score was 18.6±13.5 (Table 1), with a range of 0–71.7. The mean postoperative PGI scores were significantly larger than preoperatively for every time point ($p<.05$ for all) when comparing only the patients with those scores (ie, the 54 postoperative patients with 6-month scores, not all 59, were compared with only their respective preoperative scores, Table 1). Preoperative PGI scores significantly correlated with preoperative ODI ($r=-0.28$, $p=.03$), MCS ($r=0.48$, $p<.01$), and SRS total ($r=0.57$, $p<.01$), but they did not correlate with PCS ($r=0.10$, $p=.44$, Figs. 2–5). Postoperative PGI scores correlated with all the HRQOL measures ($p<.0001$ for all): ODI ($r=-0.65$), PCS ($r=0.50$), MCS ($r=0.55$), and SRS total ($r=0.63$, Figs. 6–9). The regression analyses were all statistically significant ($p<.0001$ for all), with the following corresponding R^2 values: ODI ($R^2=0.4146$), PCS ($R^2=0.2621$), MCS ($R^2=0.2955$), and ODI ($R^2=0.4086$, Figs. 6–9).

PGI text analysis and comparison with ODI and SRS-22r

The PGI written response topics included a wide variety, touching on aspects such as affect or emotions, relationships, activities of daily life, personal care, work, and hobbies. We collected a total of 370 written responses that were expanded to 465 unique ideas being represented. Thirty patients over the course of the study added other areas of their life to the list postoperatively, beyond the original five listed. These included all the areas listed above, but also some examples include "surgical pain," "getting off pain medication," "feeling rods in the back," "pain caused by hardware," and "loose

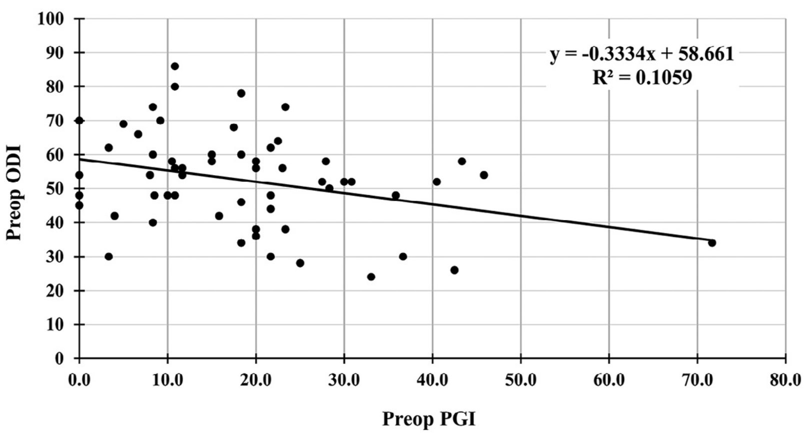

Fig. 2. Correlation between preoperative PGI and preoperative ODI. R=−0.28, p=.03. PGI, Patient Generated Index; ODI, Oswestry Disability Index.

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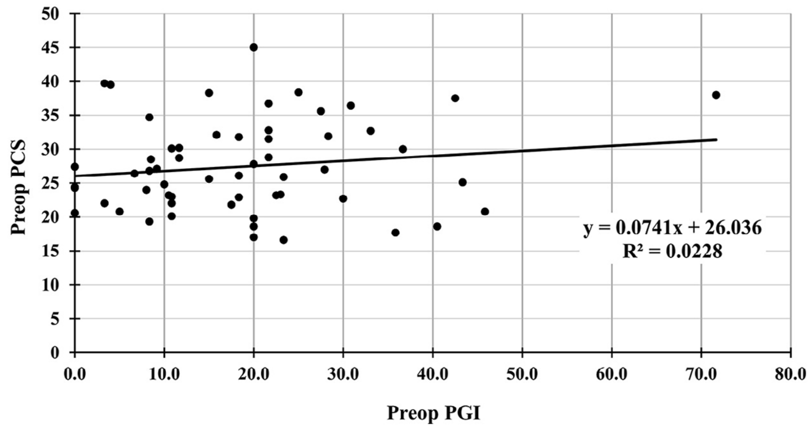

Fig. 3. Correlation between preoperative PGI and preoperative PCS. R=0.10, p=.44. PGI, Patient Generated Index; PCS, Physical Component Score.

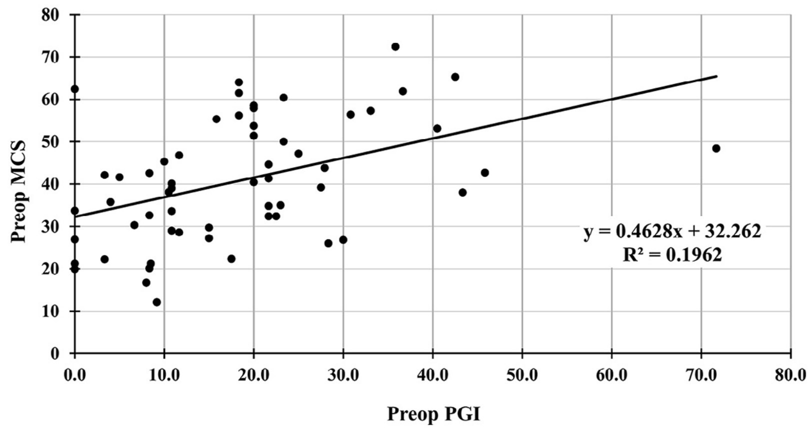

Fig. 4. Correlation between preoperative PGI and preoperative MCS. R=0.48, p<.01. PGI, Patient Generated Index; MCS, Mental Component Score.

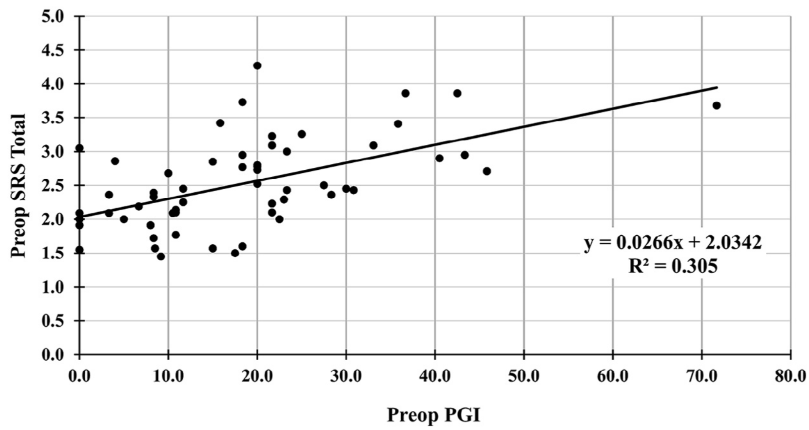

Fig. 5. Correlation between preoperative PGI and preoperative SRS total. R=0.57, p<.01. PGI, Patient Generated Index; SRS, Scoliosis Research Society.

screws." The 465 unique responses were categorized into the following: activities, bending, caregiving, cooking, driving, energy, exercise or sport, gardening, housework, lifting objects, mental, movement, pain, personal care, posture sitting and standing, relationships, sex, sleeping, social life, traveling, walking, weakness, working, and other (Table 2). From the 370 PGI written patient goals, the rates of exact matching of the responses with ODI and SRS-22r text were 47.8% and 35.4%, respectively, and for the ODI and SRS-22r domains, they were 63.2% and 58.9%, respectively.

Responsiveness of the PGI

The ES, measured by the adjusted Cohen d of the PGI at a minimum of 1-year follow up, was −2.39, indicating substantial responsiveness (|ES|>0.8; ie, the PGI is very sensitive

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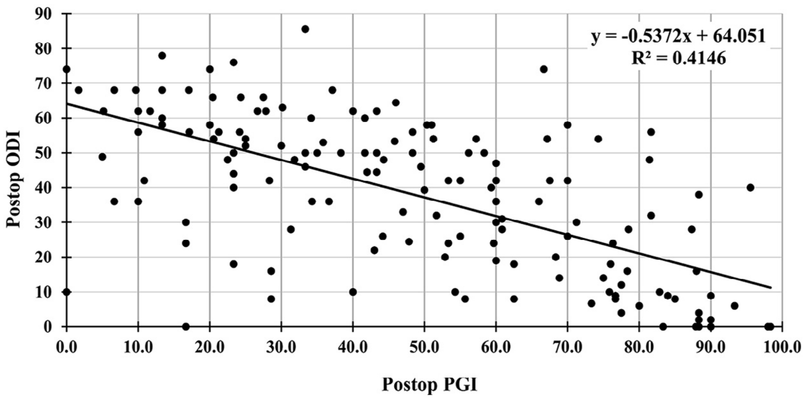

Fig. 6. Correlation between postoperative PGI and postoperative ODI. R=−0.65, p<.0001. PGI, Patient Generated Index; ODI, Oswestry Disability Index.

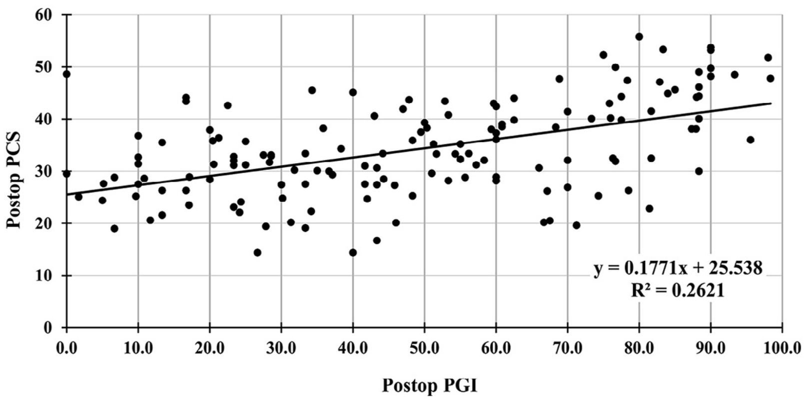

Fig. 7. Correlation between postoperative PGI and postoperative PCS. R=0.50, p<.0001. PGI, Patient Generated Index; PCS, Physical Component Score.

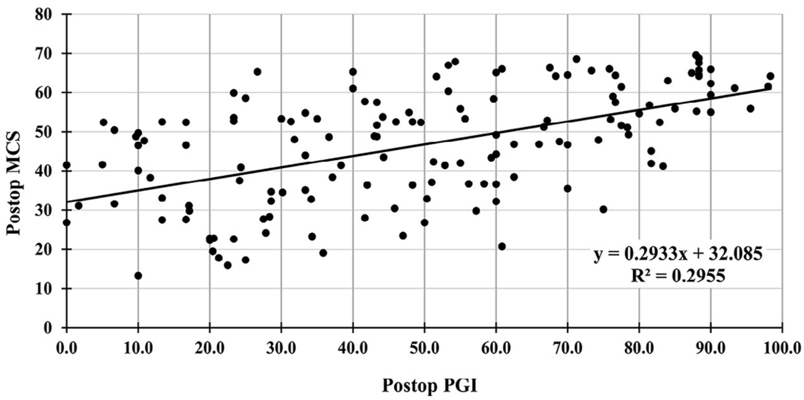

Fig. 8. Correlation between postoperative PGI and postoperative MCS. R=0.55, p<.0001. PGI, Patient Generated Index; MCS, Mental Component Score.

to detect changes in the patients' responses over time). For the ODI, SRS-22r total, SF-36 PCS, and SF-36 MCS, the adjusted Cohen d was 2.16, −2.06, −2.05, and −0.80, respectively. These results indicate substantial responsiveness of the ODI, SRS-22r, and SF-36 PCS, and moderate responsiveness of the SF-36 MCS (0.6<|ES|≤0.80).

Discussion

There are a number of current metrics to assess a patient's "quality of life" within the spine community. These are often employed both clinically and for research purposes; however, they are potentially used at the risk of not understanding the meaning of "quality of life" for the patient. This definition varies by each individual, and it is the goal of health care to improve each patient's quality of life. This becomes a very difficult task when a practitioner is not aware of the patients' expectations for improving their quality of life. The current methods being used have little regard for the patients' perspective and do not allow the patients to identify the level of importance of the predetermined items of their HRQOL survey or add dimensions that they feel impact their

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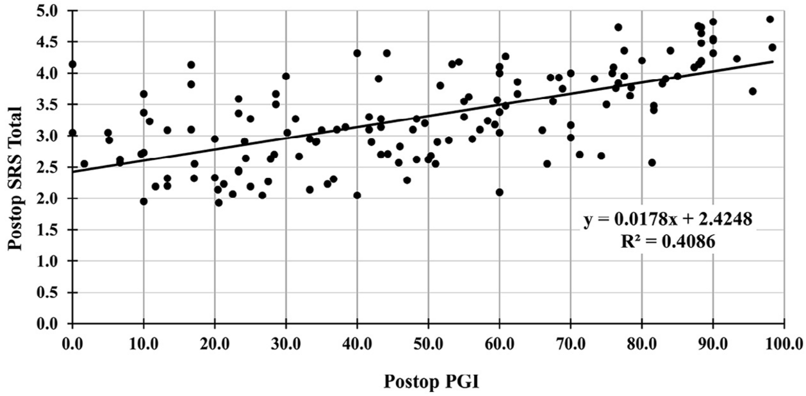

Fig. 9. Correlation between postoperative PGI and postoperative SRS total. R=0.63, p<.0001. PGI, Patient Generated Index; SRS, Scoliosis Research Society.

lives. Therefore, we have applied the PGI, a patient-centered tool, to patients undergoing adult spinal deformity surgery to compare both the quantitative and the qualitative results with standard HRQOL measures.

The PGI was easy to administer, did not require a large amount of time, and the patients actually enjoyed it. They felt they were being heard and enjoyed the task of "spending" points to identify their most important treatment goals. With only 59 patients, there were 370 unique ideas represented from all aspects of life. The mean preoperative PGI was low (mean 18.6±13.5), representing a large gap between what the patients desired or hoped about their spine condition and what their current health state was. This is lower than other studies

Table 2
Categories of responses from the Patient Generated Index and the number of patients who mentioned them

Categories	Number of patients
Activities	53
Bending	5
Caregiving	6
Cooking	13
Driving	14
Energy	7
Exercise or sport	37
Gardening	16
Housework	33
Lifting object	6
Mental	10
Movement	9
Pain	43
Personal care	11
Posture sitting, standing	49
Relationships	21
Sex	12
Sleeping	15
Social life	11
Traveling	15
Walk	60
Weakness	3
Working	13
Other	3
Total	465

for patients with rectal cancer (4.8±1.32 out of 10) [8], head and neck cancer (4.27±2.26 out of 10) [9], and chronic heart failure (39.6±25.3 out of 100) [10]. Postoperatively, these scores significantly increased, representing a narrowing of that gap and, more importantly, an improvement in their quality of life based on metrics that they themselves determined as important. Furthermore, these scores significantly correlated with standard ODI, SF-36, and SRS-22r, which possibly suggests that PGI may cover the aspects of these metrics in one survey. Despite the significant correlations, there was only a 47.8% overlap of the exact text of the PGI with the ODI and 35.4% with the SRS; whereas PGI categories overlapped with 63.2% of ODI domains and 58.9% of SRS domains. This is strongly suggestive of the PGI capturing aspects of life not accounted for in the ODI and SRS instruments. Lastly, the PGI, with an ES of −2.39, was found to be the most responsive HRQOL measurement tool over ODI, SF-36, and SRS-22r, suggesting that it is a strong indicator of change over time. As patients develop their own goals, the changes in scores over time are more sensitive than the standard HRQOL metrics with predetermined questions.

The PGI or PGI-like surveys with open-ended questions have been successfully studied in the oncology community [8,11–13]. Llewellyn et al. [12] suggest that coping strategies and responses to cancer play a large role in contributing to a patient's perception of quality of life, which, in turn, influences outcome measures. One could argue that this also applies to patients with spinal pathology. Thus, patients' answers to open-ended questions are important because cultural, religious, or personal beliefs about illness may ultimately shape patient outcomes, a phenomenon that is not accurately captured by many contemporary surveys [11,12]. In addition, more often than not, patients will report satisfaction despite existing concerns if not prompted to elaborate [14]. Therefore, the strength of the PGI lies in its ability to both give patient freedom to dictate their responses and extract quality of life measures that may not lie entirely within the constraints of physical functioning and wellness assed by standard HRQOL metrics. The value of free-form responses cannot be understated, as studies implementing interviewing or focus groups [15–17] were able to glean

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insights into patient perspective that would have otherwise escaped detection in traditional HRQOL surveys. These types of responses offer an extra dimension of dynamism to our understanding of patient values. Furthermore, these types of questionnaires can help health-care providers address patient understanding of their care plan, which can have ramifications on overall patient outcome.

Aside from their ability to bring awareness to the shortcomings of individualized patient care, the PGI and patient-centered surveys identify emerging themes among patient responses that satisfactorily complemented the more formal patient-reported outcome measures and provided understanding of quality of life issues in cancer patients [18]. The studies that validated their novel patient-generated measure found positive correlations with currently implemented quality of life assessments and were even sensitive enough to detect changes in quality of life over time [8,11,13,19]. Similarly, in the present study, we found correlations with existing HRQOL metrics, and as we collect more data over a longer period of time, we may also be able to detect more subtle changes not appreciated on standard HRQOL metrics.

The strengths of the current study include its prospective design and the novelty of using a patient-centered outcome metric. The PGI has been validated in a number of different medical disciplines but has never been applied to patients with spinal deformity. Of course, this study is not without limitations, with the primary limitation being the smaller sample size and 1-year follow-up. We aim to report our initial experience with the PGI and will continue to prospectively enroll patients. We also feel that 1-year follow-up is sufficient to analyze the use of the PGI instrument. This initial report sets the groundwork for patient-centered outcomes research in spinal deformity care and allows for the potential of a new metric that may surpass the current metrics at truly identifying the treatment goals of the patients.

Conclusion

The PGI is easy to administer, enjoyed by patients, is the most responsive, and offers additional information about the patients' individual perspective not captured in standard HRQOL metrics. The PGI free-text responses overlapped with SRS-22r only 35.4% of the time. Patient Generated Index scores correlated with all the standard HRQOL metrics, and the PGI was more responsive than ODI, SF-36, and SRS-22r based on patients' self-reported goals, suggesting that the PGI may be a step closer to one HRQOL measure that encompasses all of the patients' concerns in one place.

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