Neurologic provider views on patient-reported outcomes including depression screening

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Abstract

Background

We sought to assess neurologic provider satisfaction with the systematic electronic collection of patient-reported outcome measures (PROMs) for both disease-specific measures and depression screening (Patient Health Questionnaire [PHQ-9]).

Methods

A web-based survey was sent to 299 staff physicians and advanced practice providers on the staff email list of a large group neurologic practice, of whom 206 used the PROM system. The survey consisted of 11 questions with Likert response options regarding perceived usefulness of PROM collection; usefulness of PROM data for clinical care, quality, and research activities according to provider age group and type; and perceived usefulness between disease-specific information and the PHQ-9 depression screen.

Results

Of those who use the PROM system, 73.3% (151/206) responded. PROM collection was useful for patient care (strongly agree or agree 59.6%), research (strongly agree or agree 68.5%), and to a lesser extent, quality improvement (strongly agree or agree 48.6%). Providers aged 66–75 years believed PROM data were less useful for research ($p < 0.01$). PROM collection affected patient interactions or clinical management (always or usually 34.6% for disease-specific information and 31.3% for the PHQ-9). Responses were similar concerning perceived clinical usefulness (strongly agree or agree 67.3%) for center-selected disease-specific PROMs and the mandated PHQ-9 (69.8%).

Conclusions

Providers favorably viewed systematic electronic collection of PROMs in neurologic patients. A mandated depression screening was perceived as favorably as center-selected disease-specific information and should be considered when implementing PROMs in neurologic practice.

As the focus on patient-centered care increases,¹ collection of patient-reported outcome measures (PROMs) is becoming more common. Several quality measures included in the Physician Quality Reporting System involve collection of PROMs² and some have suggested that PROM assessment will become routine within 3–5 years.³ Technological advances have made electronic collection easier and now allow more streamlined integration of PROMs into the clinical workflow.

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PROMs have many potential uses, such as enhancing patient-provider communication, assessing changes in health status over time,⁴ and screening for unidentified conditions.⁵ Screening for depression is one of the more common reasons PROMs are collected in clinical practice,⁶ and has been recommended for all adults 18 years and older.⁷ Depression is particularly relevant in neurologic disorders as it is common and underrecognized.⁸ Depression screening is a recommended quality measure for patients with several neurologic conditions, including dementia,⁹ multiple sclerosis,¹⁰ stroke,¹¹ epilepsy,¹² and Parkinson disease.¹³ Provider views on PROM collection in neurologic care and in particular on depression screening are not well-known. However, provider acceptance of PROM collection is crucial to the feasibility of the process, which if poor, could limit implementation of PROMs in clinical practice.

The objective of this study was to evaluate neurologic providers' views with the systematic electronic collection of PROMs for both center-selected disease-specific measures and mandated depression screening.

Methods

Study setting

The Neurological Institute (NI) at Cleveland Clinic consists of 17 disease-based centers and includes the specialties neurology, neurosurgery, physiatry, psychiatry, and psychology. The NI implemented an information technology platform, the Knowledge Program (KP), to collect disease-specific PROMs across all ambulatory clinics.¹⁴ The goals of the patient collection are to aid clinical care, research, and quality improvement activities. Disease-specific scales were selected by consensus of the clinicians within each center. Examples of the approximately 70 different scales include the Headache Impact Scale 6 (Headache Center), Quality of Life in Epilepsy 10 (Epilepsy Center), Epworth Sleepiness Scale (Sleep Center), Toronto Western Spasmodic Torticollis Rating Scale-Disability (Movement Disorders Section), Myasthenia Gravis Activities of Daily Living Profile (Neuromuscular Center), and Pain Disability Questionnaire (Spine Center). In addition, the NI initiated depression screening using the Patient Health Questionnaire 9 (PHQ-9) across all clinics because of the potential ramifications depression has on quality of life and the potential for identification and subsequent management to positively affect it. The PHQ-9 was chosen as the depression screen because of its widespread use in primary care and other clinical specialties. The system has been technologically successful, with patient questionnaire completion rates exceeding 80% since 2010.

All patients seen in the NI ambulatory clinics complete PROM questionnaires on an electronic tablet or at computer kiosks prior to their clinical visit on the main campus or at 1 of the 18 family health centers located throughout north-eastern Ohio. The information is immediately available for

the provider to review during the patient visit through a link in the electronic health record (Epic Systems, Verona, WI). During the visit, providers review the patient responses and complete additional questions considered critical to the interpretation of the PROM data, such as date of last stroke event or stage of multiple sclerosis. Once providers review the patient responses, the PROM information becomes part of the patient's medical record. PROM collection began in late 2007, and rollout across all NI disease-based centers was completed in 2010. The PHQ-9 depression screen is collected at least every 28 days. The disease-specific scales developed by each center vary in frequency of deployment. Currently, patient-reported information is collected through the KP for approximately 35,000 patient visits in the NI each month.

Survey design and administration

In August 2011, we performed a web-based survey as a quality improvement initiative to evaluate provider attitudes to PROM collection and optimize provider utilization of PROMs. We were interested in assessing providers' views on usefulness of PROMs for clinical care, research, and quality improvement, which are our goals for the patient data. We also wanted to specifically assess providers' views on the collection of disease-specific PROMs compared to the PHQ-9 depression screen. Because available surveys did not cover these specific items, survey items were developed based on relevant literature and consensus of the multidisciplinary KP team. The survey consisted of 3 demographics questions, 9 questions with 5-level Likert response options, and 2 questions with a yes/no response (appendix e-1, links.lww.com/CPJ/A17). An open-ended text box was included for respondents to comment on the KP and how it could be improved. The survey was pretested for its comprehensibility and comprehensiveness with 5 neurologists who used PROM data in their clinics. An email invitation was sent to all 299 staff physicians and advanced practitioners on the NI staff group email list, of whom 206 use the KP. The invitation asked providers to complete the survey if they used KP in their clinical practice. The email included an embedded link to the survey. Providers were asked to enter their NI center, provider type (MD, DO, PhD, advanced practice provider), and their age group, but the survey was otherwise anonymous. One reminder email was sent after 2 weeks.

Statistical analysis

Provider survey characteristics are presented using descriptive statistics. Data are reported as frequency count with percentage or mean with standard deviation (SD). Given the nature of Likert responses, the nonparametric Kruskal-Wallis test with Dunn test for post hoc pairwise comparisons was used to evaluate differences in provider responses across age categories and provider types. Mann-Whitney *U* test was utilized to compare perceived usefulness between the disease-specific information and the PHQ-9 depression screen data within centers. Statistical significance was established throughout at $p < 0.05$. All statistical analyses were conducted using R (Foundation for Statistical

Standard protocol approvals, registrations, and patient consents

Because this study was a quality improvement project, it received an exemption from review by the Cleveland Clinic Institutional Review Board.

Results

Survey respondents

There were 151 respondents, representing 50.5% (151/299) of providers to whom the survey was sent and 73.3% (151/206) of providers who use the KP (table 1). Most respondents answered all questions. Respondents ranged in age from 26 to 75 years (52.1% [74/142] were male). Almost two-thirds of the respondents were MD or DOs (64.2%); the remainder were advanced practice providers (nurse practitioners and physician assistants) (19.9%), PhDs (9.3%), or other providers (6.6%). Neither age nor sex differed between respondents and the NI providers overall.

Survey results

Survey results are shown in figure 1. Of those responding, 39.1% indicated they usually or always discussed the PROM results with their patients, and another 28.5% indicated they did so sometimes. The majority of respondents said that PROM collection was helpful for research purposes (strongly agree or agree 69.9%), patient care (59.6%), and to a lesser extent, quality improvement (48.6%). Responses varied by centers: the highest scores were in sleep and epilepsy (table e-1, links.lww.com/CPJ/A16), and the lowest scores were in pediatric neurology, cerebrovascular, and neuromuscular centers. Providers who were 66–75 years old tended to respond less favorably overall, but this difference was statistically significant only for the question on the helpfulness of KP data for research (figure 2). Responses were similar across different provider types except for providers in the other category, who believed that the data were less helpful for patient care than did other types of providers (MD/DO, advanced practice providers, and PhD) (figure 3).

Respondent views were similar for the disease-specific information and depression screen (figure 1). The frequency with which respondents indicated that PROM information substantially affected (response of always or usually) patient interactions or clinical management was 34.6% for disease-specific information and 31.3% for the PHQ-9. Likewise, responses were similar for disease-specific and depression screens for the question on perceived clinical usefulness: 67.3% responded strongly agree or agree that the disease-specific information was clinically useful and 69.8% did so for the PHQ-9 (figure 4). The disease-specific and depression data were perceived to be similarly useful within each NI center ($p > 0.05$ for each center comparison, Kruskal-Wallis test; figure 4).

Provider satisfaction is an essential component of PROM collection and shapes the extent to which the data are used to optimize care.

Almost half (44.5%; 65/146) of respondents who answered the question on modifying the questionnaire indicated they would like to change the current items. Of those desiring changes, 40.0% (26/65) indicated they had provided specific suggestions for revision to the KP.

Comments were provided by 38 respondents. Most suggestions revolved around 3 areas for improvement: (1) providing more education on what kinds of PROM data are being collected across all the centers, (2) improving access to the aggregate data, and (3) revising the questionnaires or the frequency of administration. Four comments specifically addressed the PHQ-9: the PHQ-9 responses and information obtained during the clinical encounter were occasionally discordant, the PHQ-9 usually did not add much new information to the encounter, the PHQ-9 was helpful but patients could not obtain a psychiatry appointment, and that more time is necessary to pursue depression in patients who have a higher PHQ-9 score, which indicates more severe depression.

Discussion

Provider satisfaction is an essential component of PROM collection and shapes the extent to which the data are used to optimize care. Providers viewed PROM collection favorably within our study, with over 70% of providers indicating the information affected their patient management at least some of the time. Importantly, 39% indicated they usually or always reviewed the PROM information with patients, and overall 68% reviewed the information with their patients at least some of the time. Reviewing information with the patient may improve patient satisfaction with PROM collection and offers an opportunity for improving patient–physician communication. We do not have specific information on why some providers did not discuss PROMs with their patients. It is conceivable that providers did not believe the information would be helpful to review with patients. Pediatric neurology respondents had the lowest score on this element (table e-1, links.lww.com/CPJ/A16), which provides some soft support for this potential explanation. It is also possible that providers did not have enough time to discuss this information, perhaps because other medical issues at the visit were believed to be higher priority.

Also encouraging was providers' views that the PROM data were useful for research or quality activities. The oldest provider age group, 66–75 years, found the data overall to be less useful for

Table 1 Characteristics of provider survey

Survey response	n/N (%)
Completed provider surveys	151/299 (50.5)
Completed provider surveys in those who use KP	151/206 (73.3)
Male	74/142 (52.1)
Age range, y	
26–35	18/140 (12.9)
36–45	39 (27.9)
46–55	43 (30.7)
56–65	30 (21.4)
66–75	10 (7.1)
Provider role	
MD/DO	97/151 (64.2)
Advanced practice providers	30 (19.9)
PhD	14 (9.3)
Other	10 (6.6)
Survey questions	Mean ± SD
Discuss PROM results with patients	3.1 ± 1.3 ^a
Frequency disease-specific PROMs affected patient interactions or clinical management	3.0 ± 1.0 ^a
Frequency depression screen (PHQ-9) affected patient interactions or clinical management	3.0 ± 1.1 ^a
PROMs helpful for research	3.8 ± 1.1 ^b
PROMs helpful for quality improvement	3.4 ± 1.1 ^b
PROMs helpful in patient care	3.6 ± 1.1 ^b
Want to use PROMs data for research or quality	3.8 ± 1.0 ^b
Disease-specific questions clinically useful	3.7 ± 1.0 ^b
Depression screen (PHQ-9) clinically useful	3.8 ± 1.1 ^b

Abbreviations: KP = Knowledge Program; PROM = patient-reported outcome measure; PHQ-9 = Patient Health Questionnaire 9.
^a Scored from 5 = always to 1 = never.
^b Scored from 5 = strongly agree to 1 = strongly disagree.

research than other age groups ($p < 0.01$). The older providers within the NI are less active in clinical research and quality initiatives and so also might be less likely to be interested in using data from any source for these uses.

Studies of provider response to PROM collection done as part of a research study have also suggested that providers are amenable to the use of PROMs in clinical practice. In a randomized trial of the effect of health-related quality of life (HRQOL) questionnaire on patient–physician communication in 214 patients, all 10 participating physicians reported that the information provided

The survey indicated that every center believed the depression screen was as clinically useful as the collected disease-specific information.

a useful overall impression of patient symptoms and facilitated communication.¹⁵ A randomized trial of HRQOL in 175 patients with asthma that involved 14 general practitioners and used the 55-item Quality-of-Life for Respiratory Illness Questionnaire found that the providers welcomed the information about physical limitations, and 79% found information about physical complaints useful.¹⁶

The few studies that involved clinicians outside of a clinical trial have been less favorable. A survey administered to clinical teams at a cancer center that implemented a patient-reported cancer symptom screen found that only half of oncology physicians found it enhanced patient care, although the percentage was higher (84.6%) in nurses.¹⁷ Reasons for differences in findings from our survey may have been due to differences in survey questions, PROM content, or the electronic clinical workflow. A qualitative study that included 39 providers in a health maintenance organization found that providers had mixed feelings regarding the use of functional health assessment. Providers believed PROMs collected at the point of care have several potential benefits, including improving efficiency, assisting “in understanding what is going on more holistically in patients’ lives,” and providing useful feedback to the practicing clinician or the health care organization. They also cited concerns, including the need for adequate resources to implement the PROM collection, a potential detrimental effect on their relationship with patients, ability to interpret results, and lack of proof of benefit.¹⁸ The concerns expressed in these studies highlight the need for provider support on interpretation of PRO data and education regarding the evidence on the benefit of using PROM clinically to facilitate patient–provider interaction and improve outcomes of care. PROM collection has been consistently demonstrated to improve communication between patients and providers^{15,19} and has been shown to improve outcomes in patients with cancer.²⁰

The written suggestions from our study give insight on additional items to consider when implementing patient-reported data collection systems in neurologic clinics: provide extensive education about what data are being collected throughout all clinical areas using the system, provide instruction on how to access the data for analyses, and work continuously to improve the efficiency of the process to minimize burden to the providers. Processes were in place for each of these, but the comments suggested that at least a few providers believed that more attention to these would be beneficial. In addition, one provider commented that although the PHQ-9 was helpful, psychiatric care could not be

Figure 1 Distribution of provider responses to survey questions

Distribution of provider response (%) to each of the 9 survey questions on satisfaction with collection of patient-reported outcome measures. KP = Knowledge Program; PHQ-9 = Patient Health Questionnaire 9.

accessed. This points to the need to have adequate clinical support to assist in the management of patients identified through screening as having significant depressive symptoms.

An especially noteworthy finding was the similarity between responses to questions concerning the depression screening and the disease-specific questions. The disease-specific questions

Figure 2 Mean provider response by age group

Mean provider response for questions on the perception of the usefulness of disease-specific patient-reported outcome measures (PROMs) and the Patient Health Questionnaire 9 as well as usefulness for research purposes, quality improvement, and patient care according to provider age. Mean scores range from 1 = strongly disagree to 5 = strongly agree. There were no differences with the exception of PROMs helpful for research (overall $p < 0.01$, Kruskal-Wallis test). Providers in the oldest age category, 66–75 years, tended to believe the data were less helpful for research as compared to other age groups (age 66–75 lower compared to all age groups except 46–55, $p = 0.21$, Dunn test).

Figure 3 Mean provider response by provider type

Mean provider response for questions on the perception of usefulness of collecting disease-specific and Patient Health Questionnaire 9 data and usefulness of research purposes, quality improvement, and patient care according to type of provider. Mean scores range from 1 = strongly disagree to 5 = strongly agree. Provider responses were similar, except for patient-reported outcome measures (PROMs) helpful for patient care ($p = 0.04$, Kruskal-Wallis test). Those in the other category were significantly less likely to find the PROMs helpful for patient care compared to all other provider types ($p < 0.05$ for all pairwise comparisons).

and scales were chosen by each center based on their usefulness for clinical management and research. The PHQ-9 depression screen, in contrast, was mandated. Numerous providers within

the NI had initially expressed displeasure with the implementation of depression screening, feeling that it was outside the scope of their practice. However, the survey indicated that every

Figure 4 Clinical usefulness of disease-specific vs depression screen information by center

For each center, the upper bar shows provider responses on the clinical usefulness of the disease-specific measures and the lower bar shows the responses for the Patient Health Questionnaire 9 (PHQ-9). Responses did not differ between the disease-specific measures and PHQ-9 for any center (Mann-Whitney U test $p > 0.05$ for all within-center comparisons). *Centers with fewer than 5 respondents or that did not specify their center are also included in the overall total. Mellen Center treats patients with demyelinating disease; Center for Brain Health treats patients with cognitive disorders.

center believed the depression screen was as clinically useful as the collected disease-specific information. Perception of the clinical utility of the PHQ-9 was similar across the age categories. These data suggest that, regardless of age, those who treat patients with neurologic disease find screening for depression to be clinically useful.

Depression screening has been applied mainly in primary care.^{7,21,22} The NI chose to implement the PHQ-9 across all neurologic patient populations because of the high overall burden of depression in neurologic disease.²³ The accurate identification and appropriate management of depression may improve HRQOL, apart from management of other medical conditions a patient may have. In addition, depression likely has an important role in the patient's response to treatment and adherence to the treatment regimen for his or her medical illness.²⁴ Our survey results demonstrate that screening for depression in neurologic clinics can be viewed favorably and considered helpful by providers.

Our study has limitations. We used an internally developed survey because available surveys did not address our questions of interest. In addition, the survey was administered to all providers in the NI rather than only to the providers who use the KP. Response rate was 51% of all NI providers, but 73% in the target group of NI providers that use the KP. Survey response rates are generally considered to be adequate if they are at least 50%. Finally, the survey results were anonymous so we were unable to assess nonresponse bias. Of the providers who did respond, however, age and type of provider were representative of those in the NI, and the survey results reflect the attitudes of the providers who work with our PROM data.

Conclusion

Neurologic providers had a favorable view of systematic electronic collection of PROMs, with over half indicating it had a positive effect on their clinical management and that it was useful for research. Mandated depression screening was viewed as favorably as center-selected disease-specific information, an encouraging finding for others contemplating depression screening in neurologic populations.

Author contributions

I. Katzan: study concept and design, drafting of manuscript, study supervision. N.R. Thompson: analysis and interpretation of data, critical revision of manuscript for intellectual content. C. Dunphy and J. Urchek: study concept and design, acquisition of data. B. Lapin: analysis and interpretation of data, critical revision of manuscript for intellectual content.

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