Original Research

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Benchmarking the Physical Therapist Academic Environment to Understand the Student Experience

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Background. Identifying excellence in physical therapist academic environments is complicated by the lack of nationally available benchmarking data.

Objective. The objective of this study was to compare a physical therapist academic environment to another health care profession (medicine) academic environment using the Association of American Medical Colleges Graduation Questionnaire (GQ) survey.

Design. The design consisted of longitudinal benchmarking.

Methods. Between 2009 and 2017, the GQ was administered to graduates of a physical therapist education program (Department of Physical Therapy and Rehabilitation Science, Carver College of Medicine, The University of Iowa [PTRS]). Their ratings of the educational environment were compared to nationwide data for a peer health care profession (medicine) educational environment. Benchmarking to the GQ capitalizes on a large, psychometrically validated database of academic domains that may be broadly applicable to health care education. The GQ captures critical information about the student experience (eg, faculty professionalism, burnout, student mistreatment) that can be used to characterize the educational environment. This study hypothesized that the ratings provided by 9 consecutive cohorts of PTRS students (n = 316) would reveal educational environment differences from academic medical education.

Results. PTRS students reported significantly higher ratings of the educational emotional climate and student-faculty interactions than medical students. PTRS and medical students did not differ on ratings of empathy and tolerance for ambiguity. PTRS students reported significantly lower ratings of burnout than medical students. PTRS students descriptively reported observing greater faculty professionalism and experiencing less mistreatment than medical students.

Limitations. The generalizability of these findings to other physical therapist education environments has not been established.

Conclusions. Selected elements of the GQ survey revealed differences in the educational environments experienced by physical therapist students and medical students. All physical therapist academic programs should adopt a universal method to benchmark the educational environment to understand the student experience.



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o meet requirements for accreditation, physical therapist academic programs conduct self-assessment analyses to gauge the quality of their educational environment. Each program tailors its quality-assessment strategies toward its own individual student population and mission. However, without universal metrics, longitudinal benchmarking of individual program performance cannot be contextualized through comparisons to peer institutions.1 At present, only graduation rate, ultimate licensure examination pass rate, and employment rate are universally measured and reported by all physical therapist academic programs nationwide. These broad metrics provide little detail about important features of the student experience and overall program quality. While accredited programs have all met a minimum set of standards, the profession has no universally accepted mechanism to measure quality.

Leaders in the field have used the profession's most prestigious platform, the Mary McMillan lecture, to highlight this shortcoming. In 2011, Jensen noted, "In physical therapy education, we also suffer from the "Lake Wobegon effect" as we struggle to agree on any shared benchmarks of excellence, as we are all above average. In the absence of agreed-upon standards, others such as US News and World Report fill the void."2 In 2014, Gordon stated, "We desperately need an objective and comprehensive study of professional education in physical therapy. It should be conducted by an outside group and directed by a committee of educators representing our peer professions: medicine, dentistry, and pharmacy."3 Recently, the 2017 McMillan speaker (R.K.S.) proposed a strategy for physical therapist education programs to benchmark to medicine-and, ultimately, to other physical therapist academic programs-by using a modified version of the Association of American Medical Colleges (AAMC) Graduation Questionnaire (GQ) survey. Shields emphasized that physical therapist academic programs could capitalize upon the preexisting psychometric validity of the GQ and its large longitudinal database to benchmark a number of critical educational domains.4

Since 1978, the AAMC has invited graduating medical students to rate the quality of their education via the GQ.⁵ Oversight for the GQ is provided by the AAMC Student Survey Advisory Committee, a stakeholder group of educators, clinicians, and students. AAMC statisticians evaluate newly proposed survey items and oversee data aggregation. The survey is organized into many topic areas that comprehensively cover medical education. The most recent iteration of the GQ contains questions designed to "reduce content about the medical school curriculum and to increase content about the medical school learning environment."6 To this end, the GQ captures features of the student experience that may be broadly applicable to health care education, including adequacy of support systems, quality of educational experiences, faculty professionalism, student personal development, and student mistreatment. Many of these domains intersect foundational concepts such as adaptive learning and professional formation that form a "praxis of learning" for excellence in physical therapist education.7 Just as importantly, several sections of the GQ incorporate externally validated metrics that can be used for formal hypothesis testing of critical factors that relate to the student experience: the learning environment,8 student tolerance for ambiguity,9 student empathy,10 and student burnout.11 GQ survey data from all medical education programs in the United States are aggregated and made publicly available. Importantly, each school can benchmark their students' aggregated responses to their own historical performance and to the national average. Physical therapist academic programs may be able to benchmark against this large longitudinal database to gain insight into a wide variety of factors that characterize their own educational environments.

Accordingly, the purpose of this study was to compare student experience outcomes (2009–2017) from an established physical therapist academic program to those from a peer health care profession (medicine) via a subset of items on the GQ survey. When possible, we used the AAMC response estimates of variation to facilitate formal statistical

Benchmarking Student Experience

comparisons between physical therapist and medical student responses. We hypothesized that the ratings provided by physical therapist students would reveal distinct differences between the physical therapist educational environment and the medical educational environment. This investigation highlights several educational domains that strongly affect the student experience and may provide a method to benchmark across all physical therapist academic programs in the future.

Methods Setting

The study took place in the Department of Physical Therapy and Rehabilitation Science, Carver College of Medicine, The University of Iowa (PTRS). The PTRS program offers a 3-year-equivalent doctor of physical therapy (DPT) degree in 2.6 years, a research-intensive master's degree, and a PhD in rehabilitation science. Fifteen core faculty members and 70 adjunct faculty members provide 105 credit hours of instruction in the DPT curriculum, with an additional 4 credit hours being delivered outside of the department (human anatomy). The curriculum plan blends traditional didactic instruction with many contemporary teaching and evaluation methods (eg, case-based learning, service learning, problem-based learning, interprofessional education, flipped classrooms). The curriculum plan is spiraling in nature with foundational concepts receiving reemphasis multiple times throughout the course sequence. Thirty-six to 40 students are admitted in each class. Between 2009 and 2017, the mean undergraduate grade point average for incoming students was 3.73/4.00. All 9 classes during this time had a 100% pass rate on the national physical therapist licensure examination.

Benchmarking the Physical Therapist Academic Environment

The GQ was administered to medical students from 2009 to 2017 (N = 245,852) and national aggregate data were published annually.^{5,6,12-18} The average response rate for medical students was 80.5%. Between 2009 and 2017, PTRS administered a modified GQ to 9 consecutive cohorts of graduating

DPT students (n = 316; 98% response rate). The survey was administered via a paper booklet after the completion of the course of study, typically on the same day as the departmental graduation ceremony. Students were informed that they were free to leave any items blank and that anonymous responses would be entered into a department educational benchmarking database. Use of the database for this study was determined to be human participant research exempt by the University of Iowa Human Subjects Institutional Review Board.

The PTRS survey was developed from the 2009 version of the GQ.¹² The AAMC began to revise the GQ in 2012.⁶ At that time, PTRS faculty understood that GQ items would be in flux for several years as AAMC trialed new questions and omitted others. They opted not to modify the PTRS version of the GQ to remain in sync with AAMC, instead prioritizing consistent longitudinal data collection for internal benchmarking purposes.

In 2016, AAMC introduced a selection of new GO items that used questions from 4 previously published survey instruments to capture enhanced information about the student experience.5 Importantly, AAMC provided estimates of variation for these sections. facilitating inferential comparisons to medical students' group mean values. PTRS incorporated these sections into their survey beginning in 2016. First, the Medical School Learning Environment Survey assessed students' perception of the degree to which the educational environment facilitates a sense of achievement, valuing oneself, and confidence in one's academic abilities ("never" to "always"; scale of 0-5 points; 3 questions).8 This survey also assessed students' level of agreement with statements describing faculty-student interactions: perceived distance between faculty and students, faculty helpfulness, and faculty approach to providing criticism ("never" to "always"; scale of 0-5 points; 4 questions).8 For both components of the Learning Environment Survey, higher scores indicated more positive perceptions of the learning environment.

Secondly, the Tolerance for Ambiguity Scale assessed students' ability to cope with uncertain circumstances.⁹ Students rated their level of agreement with statements about tasks with undefined parameters and ambiguous interpersonal interactions ("strongly disagree" to "strongly agree"; scale of 1–6 points; 7 questions). Higher scores indicated a higher level of tolerance for ambiguity.

Third, the Interpersonal Reactivity Index provided an assessment of students' empathy.¹⁰ Students rated their level of agreement with statements relating to 2 empathy subdomains: perspective taking and empathic concern ("does not describe me" to "describes me well"; scale of 0–4 points; 8 questions). Higher scores indicated a higher degree of empathy.

Finally, the Oldenburg Burnout Inventory for Medical Students assessed burnout on 2 dimensions: disengagement and exhaustion.11 For the disengagement subscale, students rated their level of agreement with statements about distancing themselves from their studies and having a negative attitude about their studies ("strongly disagree" to "strongly agree"; scale of 0-3 points; 8 questions). For the exhaustion subscale, students rated their level of agreement with statements about the physical and cognitive strain of their studies ("strongly disagree" to "strongly agree"; scale of 0-3 points; 8 questions). Higher scores on both subscales indicated greater disengagement and exhaustion, respectively.

In its current form, the PTRS survey includes the following sections of the 2017 AAMC GQ: demographic data (GQ questions 1-6, 61, and 62), overall satisfaction (question 7), curricular integration (question 8), quality of curriculum (question 9), quality of clinical experiences (questions 10 and 11), preparedness for entry-level practice (question 12), experience with Veterans Affairs system (question 13), diversity (question 16), Learning Environment Survey (question 17), professionalism (questions 18-20), Tolerance for Ambiguity Scale (question 21), Interpersonal Reactivity Index (question 22), Oldenberg Burnout Inventory (question 23), career plans (questions 24-28 and 31-35), student services (question 36), student mistreatment (questions 37-48), and financing of education (questions 49-60). The current PTRS survey omits GO questions 14 and 15 (participation in electives) and questions 29 and 30 (factors in choosing a specialty) because these items do not pertain to physical therapist education. The PTRS survey retains a section of original 2009 questions that AAMC discontinued in 2012. In these items, students rate whether instructional time in various topics is adequate, inadequate, or excessive. The PTRS survey also includes questions about whether additional clinical internships should be added, whether physical therapy residency should be required, and whether off-site clinical instructors demonstrate the professional behaviors listed in GQ question 19.

Most GQ questions contain multiple components: for example, question 36 (student services) contains 26 individual response fields. In total, the PTRS survey includes 260 individual response items, representing 86.5% of the items in the 2017 version of the GQ. The present study focuses on a small select group of survey items in order to compare academic medicine with academic physical therapy and to illustrate the utility of the AAMC GQ for benchmarking purposes. Domains that differed trivially between physical therapist and medical students (demographic factors, satisfaction with student services, experiences with diversity, experiences with the Veterans Affairs system) were not considered for analysis. Because the focus of the study is the educational environment and student experience, survey items pertaining to the curriculum were omitted from this report. Although student debt may strongly affect the student experience, this portion of the dataset is extensive and will be examined in a separate study. The present report focused on the survey domains that we believe may best reflect the norms, expectations, and tenor of the educational environment: overall student satisfaction, student perception of preparedness for entry-level practice, student mistreatment, and student and

faculty professionalism. In addition, this report focused on the 4 survey metrics introduced by AAMC specifically to reveal aspects of the student experience (Learning Environment Scale, Tolerance for Ambiguity Scale, Interpersonal Reactivity Scale, and Oldenberg Burnout Scale).

Previous authors examined the psychometric properties of GQ content domains. Pugnaire et al reported that domains dealing with overall student satisfaction, student perception of preparedness for entry-level practice, and student ratings of adequacy of instructional time showed good longitudinal reliability.19 Mavis et al described the iterative process (1991-2011) of establishing content validity for questions pertaining to student mistreatment.^{20,21} This process involved consensus-based operational definitions of mistreatment by the AAMC Council of Deans and other stakeholder groups. Reliability, internal consistency, and validity have been confirmed for the 4 new (2016) GQ domains derived from previously published survey metrics.9,22-25

When developing the survey, PTRS faculty adjusted the wording of several GQ items in order to ensure the content validity of the GQ for use by physical therapy students. These changes included using "entry-level practice" instead of "residency," listing physical therapist practice areas (eg, sports physical therapy, acute care) instead of medical practice areas (eg, internal medicine, surgery), and listing the names of PTRS courses (eg, kinesiology and pathomechanics) instead of medical school courses (eg, immunology).

Data Analysis

The AAMC reports national aggregate mean values for many of the survey domains without providing an estimate of variation. For a subset of these domains, data are presented descriptively either in aggregate form or longitudinally between 2009 and 2017 for physical therapy and medical students.

Beginning in 2016, the AAMC provided estimates of mean and variation for the Medical School Learning Environment

Survey, the Tolerance for Ambiguity Scale, the Interpersonal Reactivity Index, and the Oldenburg Burnout Inventory. For each of these scales, we compared the 2016-2017 group mean medical student responses with mean PTRS student responses. We used the Welch unequal-variance t test, with adjustments for the number of comparisons (alpha = .05). The Hedges g provided an estimate of effect size, adjusted for unequal sample sizes. Effect size was interpreted both as a percentile standing for physical therapy versus medical student scores and according to the Cohen traditional qualitative descriptors.26,27

Results

Between 2009 and 2017, PTRS students descriptively expressed higher levels of overall satisfaction with their education and career choices than medical students (> 97% versus 83%–89%) (Fig. 1A). Students from both professions expressed comparably high perceptions of preparation in fundamental clinical skills (89%–100% favorable) (Fig. 1B).

Physical therapy and medical students expressed comparable levels of awareness of their school's policies and procedures regarding student mistreatment (Table). Between 2009 and 2011, medical students first answered a screening question ("Have you been mistreated?") to determine whether they would be presented with questions pertaining to mistreatment.²¹ Of those responding in the affirmative (17% of students each year), 84% indicated they had been "publically belittled or humiliated" (Fig. 1C). In 2012 the AAMC removed the screening question (thus presenting all students with questions about mistreatment), changed the wording to exclude mistreatment perpetrated by patients, and created separate items for "publically embarrassed" and "publically humiliated." Under this format, 19.5% to 46.3% of medical students continued to report these forms of mistreatment. PTRS continued to use the original "publicly belittled or humiliated" item until 2015. In no year did PTRS student affirmative responses for this question exceed 8.5% (Fig. 1C). No PTRS affirmative responses for other mistreatment items exceeded 7.7% in any year. Eleven categories had 0% affirmative responses in all years surveyed.

Overall, the PTRS students reported a more favorable educational emotional climate than medical students (P < .001; Hedges g = 1.53; large effect^{26,27}) (Fig. 2A). Interpreting the calculated effect size another way, the average PTRS student rated the educational emotional climate more favorably than 93.3% of medical students. Likewise, PTRS students reported more positive perceptions of faculty-student interactions (P < .001; g = 1.12; large effect) (Fig. 2A). The average PTRS student rated faculty-student interactions higher than 86% of medical students. PTRS and medical students did not differ on ratings of tolerance for ambiguity (P = .553; g = 0.049; small effect) or empathy (P = .120; g = 0.151; small effect) (Figs. 2B and 2C). PTRS students reported less disengagement than medical students (P < .001; g = 0.986; large effect) (Fig. 2D). Interpreted another way, the average PTRS student reported less disengagement than 84% of all medical students. Finally, PTRS students reported less exhaustion than medical students (P < .001; g = 0.548; medium effect) (Fig. 2D), constituting less exhaustion than 69% of all medical students.

One hundred percent of PTRS students "agreed" or "strongly agreed" that their school had done a good job of fostering their development as a person, as compared to 74% of medical students (Fig. 3A). One hundred percent of PTRS students and 92% of medical students agreed that their schools had done a good job of fostering their development as a practitioner. Medical students reported observing disconnects between curricular content about professionalism and faculty behaviors at least "sometimes" at a prevalence of 55.6% (Fig. 3B). Conversely, PTRS students reported observing these disconnects at least "sometimes" at a prevalence of 2.6%. Figure 3C depicts student ratings for individual faculty professional behaviors. Both groups of students provided the lowest faculty







Figure 1.

Responses of physical therapists (Department of Physical Therapy and Rehabilitation Science, Carver College of Medicine, The University of Iowa [PTRS]) and medical students (Association of American Medical Colleges [AAMC]) to selected Graduation Questionnaire survey items. Unless otherwise indicated, values are means from 2009 to 2017.^{5,6,12–17} «New question in 2010; the means shown are from 2010 to 2017. In the AAMC survey from 2009 to 2011, only medical students responding "yes" to a screening question ("Did you experience mistreatment?") were presented with the mistreatment section of the survey. The screening question was discontinued in 2012, and all students answered mistreatment questions; new mistreatment terms were also used beginning in 2012. The AAMC did not report "publically embarrassed" for 2012. All students at the PTRS completed the mistreatment section of the survey in all years. In 2016, the PTRS adopted the newer AAMC mistreatment terms.

Table.

Survey Items Pertaining to Mistreatment of Students^a

Question About Student Mistreatment	Physical Therapist Education Program ^b	Association of American Medical Colleges (AAMC)
Are you aware that your school has policies regarding the mistreatment of students? ^c	87.8	88.8
Do you know the procedures for reporting mistreatment at your school? ^{c,d}	70.1	77.8
Have you been publicly belittled or humiliated? ^e	3.2	84.0
Have you been publically embarrassed? ^{d,f}	1.7	41.3
Have you been publically humiliated?d,f	0.3	23.8
Have you been threatened with physical harm or been physically punished (eg, hit, slapped, kicked)? ^e	1.9	8.4
Have you been threatened with physical harm? ^{d,f}	0.0	1.6
Have you been physically harmed? ^{d,f}	0.0	2.1
Have you been required to perform personal services (eg, shopping, babysitting)?	0.0	12.2
Have you been subjected to unwanted sexual advances by school personnel?	0.4	6.0
Have you been asked to exchange sexual favors for grades or other awards?	0.0	0.5
Have you been subjected to offensive sexist remarks/names?	0.6	16.5
Have you been denied opportunities for training or rewards based on your gender?	0.0	9.0
Have you received lower evaluations or grades because of your gender rather than performance?	1.3	10.9
Have you been denied opportunities for training or rewards based on race or ethnicity? ^d	0.0	4.6
Have you been subjected to racially or ethnically offensive remarks/names?d	0.0	8.7
Have you received lower evaluations or grades solely because of race or ethnicity rather than performance? ^d	0.0	4.4
Have you been denied opportunities for training or rewards based on sexual orienta- tion?	0.0	0.9
Have you been subjected to offensive remarks/names related to sexual orientation?d	1.3	2.5
Have you received lower evaluations or grades solely because of sexual orientation rather than performance? ^d	0.0	0.9
Have you been subjected to negative or offensive behavior(s) based on your personal beliefs or personal characteristics other than your gender, race/ethnicity, or sexual orientation? ⁹	0.0	8.0

^aStudents were asked to indicate the frequency with which they personally experienced each type of mistreatment. Unless otherwise indicated, answers were given as percent "once," "occasionally," or "frequently." Unless otherwise indicated, values are means from 2009 to 2017.5,6,12-17 ^bDepartment of Physical Therapy and Řehabilitation Science, Carver College of Medicine, The University of Iowa (PTRS).

^cAnswers were given as percent "yes." ^dAdded by PTRS in 2016.

^eAltered by AAMC in 2012; the means shown are from 2009 to 2011. ^fIntroduced by AAMC in 2012; the means shown are from 2012 to 2017. ^gNew for both AAMC and PTRS in 2016.

ratings for "providing direction and constructive feedback." PTRS students indicated they observed this behavior "very often" or "always" an average of 93.4% of the time, compared to 60.2% of the time for medical students. Across all professional behaviors, the mean professional behavior rating for PTRS faculty was 97.9%, compared to 76.9% for medical school faculty.

Discussion

The overall purpose of this report is to compare 2 academic health care

environments (physical therapy and medicine) using ratings provided by graduating students. This strategy highlighted several educational domains that strongly affect the student experience and differ between medical students and physical therapy students. These domains may be useful in the future to compare the educational environment among peer physical therapy programs. This report does not aim to prescribe an "optimal" physical therapy environment, but rather provides an example of an approach for quality assessment that could be incorporated into national physical therapist educational benchmarking databases. These assessments could be used both to compare programs within our profession and to compare academic physical therapy with other academic health care professions.

Assessing the learning environment via the GO enabled our faculty to interpret our educational culture within the broader context of health care



Figure 2.

Student experience survey items introduced in 2016 by the Association of American Medical Colleges (AAMC) and the Department of Physical Therapy and Rehabilitation Science, Carver College of Medicine, The University of Iowa (PTRS). Values are means from 2016 to 2017. *P < .001. In panel A, a higher score indicates a more favorable rating of the emotional climate and faculty-student interactions. In panels B–D, a higher score indicates a higher degree of the trait being studied.

education. We believe this comparison to peer professions is of vital importance in modern interprofessional health care. It is also of strategic importance for recruitment efforts within physical therapist education as we compete with other professions for highly qualified students. We recommend that elements of the GQ survey be used in future nationally administered outcome measures for academic physical therapy, and that centralized benchmarking databases incorporate these selected data elements.

Revealing the Education Culture

Physical therapy is one of the few health care professions that has historically lacked nationally administered benchmarking surveys for entry-level graduates. GQ-style graduation surveys are conducted by the American Association of Colleges of Pharmacy,²⁸ the American Dental Education Association,²⁹ the Association of Schools and Colleges of Optometry,³⁰ and the Physician Assistant Education Association.³¹ In these professions, schools can benchmark to their own historical performance and to peer institutions nationwide.

Many GQ survey elements are well-suited for the internal self-assessment activities that all physical therapist education programs undertake in order to meet and, ideally, exceed accreditation requirements. In the present study, GQ survey items were responsive to longitudinal change (Fig. 1C). More importantly, the real utility of the GQ lies in its ability to reveal features of the educational environment and student



"My school has done a good job of fostering and nurturing my development as a...:"







С

Faculty Professional Behaviors

B



Figure 3.

Educational environment survey items introduced in 2016 by the Association of American Medical Colleges (AAMC) and the Department of Physical Therapy and Rehabilitation Science, Carver College of Medicine, The University of Iowa (PTRS). Values are means from 2016 to 2017. In panel C, students indicated the frequency with which they observed each faculty professional behavior, ranging from "Never" to "Always."

experience. PTRS students expressed higher satisfaction with their educational experiences and career choice than medical students. The 2 student cohorts expressed comparable levels of confidence in their fundamental clinical skills and in the performance of their schools in preparing them for clinical practice. However, ~25% more PTRS students than medical students indicated that their program did a good job nurturing their "development as a person."

In general, PTRS student responses painted a picture of a less-hostile, more supportive educational environment than may be experienced by the average medical student. The 2 groups of students reported comparable levels of empathy and tolerance for ambiguity, but diverged strongly when rating the emotional climate of the educational environment and the quality of faculty-student interactions. PTRS students rated these factors more positively than a substantial majority (>86%) of medical students. A previous report indicates that medical student ratings of the educational environment decline sharply during year 3, when students begin clinical clerkships.32 PTRS students reported significantly less exhaustion and disengagement than medical students, suggesting that they experience less burnout than their medical student peers. Burnout symptoms have been reported to increase over time during medical school,^{33,34} eventually reaching a prevalence of 49% to 56%.35,36 Burnout in medical students negatively influences quality of life34 and is significantly associated with depression.37 Although the medical students in the present study reported comparable empathy to PTRS students, previous studies indicate that empathy declines during medical residency^{38,39} and burnout intensifies.^{39,40} The tension between personal empathy/compassion and burnout has been noted as a key theme in qualitative studies of resident physicians.41 No previous studies have examined whether newly licensed physical therapists experience comparable changes in empathy and burnout after beginning entrylevel clinical practice.

A key descriptive difference in student experience between PTRS and medicine related to mistreatment of students. PTRS students reported low rates of mistreatment, with most forms of mistreatment absent altogether. Medical students appear to face higher rates of all forms of mistreatment,21,42 with serious potential consequences for psychological health,43,44 professional outcomes,45 and patient safety.46 The practice of mistreating medical students has been described as a cultural feature of medical education⁴⁶ and a number of medical schools have instituted programs to combat it, with varving degrees of success.47-50

Although PTRS students descriptively reported low rates of mistreatment, no previous study has examined whether this is typical for academic physical therapy. Cultural differences between physical therapy and medicine may lead to a presumption that student mistreatment is unlikely to be a concern in physical therapist education. We strongly caution against this presumption, as unequal power dynamics between students and faculty create the possibility for mistreatment to occur.49 Physical therapist education programs have an obligation to ask comprehensive questions to their students about mistreatment, including mistreatment that may occur while students are at external clinical sites. Specific policies to prevent mistreatment and to protect students from retaliation should be a requirement of accreditation for physical therapy programs.⁴ The addition of GO-derived mistreatment questions to a national physical therapy benchmarking system would enable the physical therapist educational enterprise to deal conclusively with this issue.

Excellence in Physical Therapist Education

The recently completed National Study of Excellence and Innovation in Physical Therapist Education issued a call for reform in physical therapist education, recommending 30 action items for adoption by stakeholders in the field.⁷ Physical therapist academic programs that embrace this new vision will first need to examine the congruence of their operations with the action items to facilitate strategic planning and prioritization of effort. A number of domains of the GQ survey correspond directly to the Study of Excellence action items; as such, the GQ may assist programs to take steps toward engagement with the Study's vision. For example, the faculty professionalism section of the GQ aligns with Study Recommendation 1: "cultivate shared values of excellence, trust, respect, and collaboration." PTRS students rated their instructors highly on such behaviors as "resolving conflicts in ways that respect the dignity of all involved," "showing empathy and compassion," and "being respectful of other health professions." PTRS students rarely (2.6%) observed disconnects between curricular content about professionalism and behaviors demonstrated by faculty. Such disconnects are reported by the majority (55.6%) of medical students. Benchmarking to medical education helped the PTRS department contextualize the student ratings, supporting that our faculty demonstrate exemplary professionalism within the milieu of health care professions. Our department's other benchmarking activities, such as our annual 360-degree proprofessionalism assessment,⁵¹ vide additional sources of insight into whether our operations and culture align with the Study of Excellence recommendation for shared professional values. Other physical therapist academic programs may glean similar insights by assembling the viewpoints of diverse stakeholders, with particular emphasis on student perception.

National Benchmarking: An Urgent Need

The American Physical Therapy Association convened the "Excellence in Physical Therapist Education Task Force" to take up a number of challenges facing physical therapist education programs, including the lack of nationwide metrics for program performance and curricular content. The task force recommended "that a comprehensive and progressive data management system for physical therapist education that is accessible to stakeholders ... be established."52 The task force called for this system to include tracking of outcomes for core competencies, standardized performance-based outcomes,

and integration of new and existing data sources. Such a centralized data repository would be a critical resource for the benchmarking and quality-assessment activities of physical therapist academic programs. With universal adoption and reporting of outcomes, a valid comparison could be made among physical therapy programs across a wide array of institutions, organizational structures, geographic regions, and at various cost tiers. With aggregation of sufficient data, statistical inferences would be possible regarding minimally important change in various educational performance metrics. With student debt becoming a more urgent concern, the concept of "value" in physical therapist education could finally be studied, in terms of cost-efficiency for a variety of student and clinical outcomes.

Since 2011, the American Council of Academic Physical Therapy Benchmarks for Excellence Task Force has been working to develop a consensus definition of "excellence" in physical therapist education, to develop an instrument to assess excellence, and to coordinate a central data repository for program data. Administrator, faculty, and student surveys provide a comprehensive view of 11 "engagement elements"53 that serve as markers of educational quality. The assessment emphasizes the student experience and highlights student, faculty, and administrator engagement as indicators of excellence in teaching and learning. Engagement has strong links to student outcomes⁵⁴⁻⁵⁶ and is likely to offer physical therapy programs a powerful new way to benchmark among peer institutions. However, at the present time, the assessment and associated database have 2 important limitations. First, no comparisons are possible with medicine or other professions, limiting the inferences that can be made about the performance of physical therapy programs among comparable academic departments. The Physician Assistant Education Association already administers several GQ sections in its End-of-Program Survey for graduating students.³¹ Adoption of these GQ elements into a nationally administered survey would permit physical therapy to benchmark to not 1 but 2 peer professions. Physical therapy program directors often must advocate for their programs within academic administrative hierarchies, both for resources and for personnel. GQ-derived data on faculty professionalism, the educational environment, and student mistreatment could facilitate direct performance comparisons with other health care educational departments. This could be especially valuable for physical therapist programs that are not associated with a medical center, lack a strong research enterprise, and cannot highlight extramural funding as a metric of program performance.

A second potential limitation of the recently developed American Council of Academic Physical Therapy benchmarking database is that it does not appear to capture certain features of the educational environment that may powerfully affect the student experience. The results of the present study suggest that faculty professionalism, student mistreatment, student perception of the learning environment, and student burnout vary widely among health care education programs. These factors have all been shown to affect student mental health and patient outcomes.42,46,57 We believe it is possible that these factors may differ among high-performing and low-performing physical therapist academic programs. Program performance metrics such as these could be used to characterize the educational environment of physical therapy programs in a national benchmarking system. Correlations between student outcome measures (eg, graduation rates, licensure pass rates) and these program performance metrics could reveal important relationships between program educational environments and student success.

Methodological Considerations

The goal of this study is not to feature a single physical therapy program, but to demonstrate a novel strategy for benchmarking the physical therapist education environment using a suite of survey metrics with a proven track record for utility in health care education. The study provides the first rigorous statistical comparison of physical therapist versus medical student ratings of the educational environment using 4 externally validated subscales. This analysis was limited to 1 institution and further collaboration

and aggregation of additional years of data will help refine the conclusions of this study. Future work is needed to establish the generalizability of PTRS student responses to other physical therapist academic environments.

We only show a small subset of the rich database generated using the PTRS version of the GO. In addition to the educational domains presented in this report, our GQ database also includes longitudinal data on basic and clinical science curricular quality, career plans and interests, student affairs and school services, and financing of graduate education. While it is beyond the scope of this research paper to present all 260 data responses from the GO survey, it is reasonable that these items could assist in revealing a program's relative performance among health care education programs nationwide. We believe that collaborating with other physical therapist academic programs that similarly desire to understand the student academic experience will lead to important progress in educational research. Understanding how the academic environment relates to clinical excellence will be the ultimate goal of our future research.

Conclusion

Our 9-year testing experience indicates that benchmarking provides critical insights into our educational culture and our relative position within a broader health care educational context. GQ domains pertaining to faculty professionalism, student perception of the educational environment, student mistreatment, and student burnout revealed important differences between the PTRS learning environment and the experience of medical students. These GQ domains may likewise be useful for examining differences in the educational environments of peer physical therapist education programs. We recommend that selected fields from the GQ survey be considered for inclusion in national benchmarking databases for physical therapist education.

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Concept/idea/research design: R.K. Shields Writing: R.K. Shields, S. Dudley-Javoroski

Data collection: R.K. Shields, S. Dudley-Javoroski, K.J. Sass, M. Becker Data analysis: R.K. Shields, S. Dudley-Javoroski

Project management: R.K. Shields Fund procurement: R.K. Shields Providing participants: R.K. Shields Providing facilities/equipment: R.K. Shields Providing institutional liaisons: R.K. Shields Clerical/secretarial support: R.K. Shields Consultation (including review of manuscript before submitting): R.K. Shields

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Ethics Approval

Use of the database for this study was determined to be human participant research exempt by The University of Iowa Human Subjects Institutional Review Board.

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Disclosure

The authors completed the ICJME Form for Disclosure of Potential Conflicts of Interest. They reported no conflicts of interest.

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