Summary of ACOP (American College of Osteopathic Pediatricians) Program Directors' Annual Reports for First-Year Residents and Relationships between Resident Competency Performance Ratings and COMLEX-USA Test Scores.

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Abstract

Context: The Accreditation Council for Graduate Medical Education (ACGME) and American

Osteopathic Association (AOA) endorsed the use of competency-based assessment, with the

intention to improve health care administration [1, 2]. High-stakes licensing exams, such as the Comprehensive Osteopathic Medical Licensing Examination – USA (COMLEX-USA), are used for such assessments. Residency programs, like those certified by the American College of Osteopathic Pediatricians (ACOP), have also developed competency-based assessment tools. The purpose of this study is to summarize ACOP Program Directors' Annual Reports of First-Year Osteopathic Graduate Medical Education (OGME-1) pediatric residents from 2005 to 2009, and to investigate the relationship between the competency ratings of residents as reported on the ACOP Program Director's Annual Report and COMLEX-USA scores.

Methods: Data sets from the ACOP Program Directors' Annual Reports and National Board of Osteopathic Medical Examiner's (NBOME) COMLEX-USA series were merged and analyzed for relationships. COMLEX-USA Levels 1, 2-CE, 2-PE, and 3 scores for first-time test takers were used for analysis.

Results: Program directors rated OGME-1 pediatric residents' performance on competency measures favorably. Competency ratings from the ACOP Program Directors' Annual Reports were strongly correlated with each other ($r = 0.86$). Pediatric OGME-1 residents performed better on COMLEX-USA Level 2-PE overall, and on the Humanistic Domain of COMLEX-USA Level 2-PE ($t = 4.17$, $p <.001$), but not as well on COMLEX-USA Levels 1, 2-CE and 3 ($t = -5.89, -2.53$ and -3.21) compared to all medical students who took the COMLEX-USA exam. ACOP's Program Directors' Annual Reports overall average competency ratings correlated with COMLEX-USA 1, 2-CE, 3 scores ($r = 0.33$) and Biomedical/Biomechanical Domain scores of COMLEX-USA Level 2-PE ($r = 0.29$).

Conclusions: For pediatric OGME-1 residents, competency ratings drawn from the ACOP's

Program Director's Annual Report are statistically related to COMLEX-USA examination

scores.

Terms: COMLEX-USA, Competency Assessment, Pediatric Residents, ACOP

Introduction

As of January 2007, all American Osteopathic Association (AOA)-sponsored residency

programs are required to assess each of the seven core osteopathic competencies for each

resident[1]. These competencies include osteopathic philosophy and osteopathic manipulative

medicine, medical knowledge, patient care, interpersonal and communication skills,

professionalism, practice-based learning and improvement, and systems-based practice.

Pediatric residency program directors from the Accreditation Council on Graduate Medical

Education (ACGME) and AOA residency programs are therefore now required to administer

competency-based assessments for each resident during training[2].

Using the seven competencies as a framework, various tools have been utilized for assessing

resident performance: board certification examination performance[3], in-training examination

performance[3-4], overall clinical performance[5], residency supervisor ratings[6], portfolio

analysis[7], Objective Structured Clinical Examination (OSCE)[8-11], program director ratings

[12-14], and program director annual evaluations[15-16]. To monitor residents' progress

throughout their graduate medical education, the American Osteopathic Association (AOA) requires that program directors complete an annual report for each osteopathic resident[16]. Starting in 2005, osteopathic pediatric residency program directors have been using the American College of Osteopathic Pediatricians (ACOP) Program Directors' Annual Report. This competency-based assessment is used to evaluate resident progress throughout his or her training.

In previous studies resident performance, as rated by program director or residency supervisors, was positively correlated with class rank[6], third year grade point average (GPA)[12], overall GPA[13], undergraduate OSCE performance[6], USMLE Step 1 scores[12], USMLE Step 2 scores[13], and USMLE Step 2 CS Prototype scores[13]. In comparison, *Balentine et al* reported no precise correlations between performance in medical school and emergency medicine residency training[14].

Although a few studies have addressed relationships between medical school-based performance measures and the Comprehensive Osteopathic Medical Licensing Examination (COMLEX-USA) [17-20], we know of only two studies that have investigated the relationship between COMLEX-USA and residency performance. *Cavalieri et al* reported positive correlations between all COMLEX-USA cognitive examination scores (Levels 1, 2-CE and 3) and the American Osteopathic Board of Internal Medicine (AOBIM) examination scores (in-service examinations and board certification exam)[21]. *Sevensma et al* reported positive correlations between COMLEX-USA cognitive examination scores and in-service examination scores across five different residencies[22]. To our knowledge, no studies have investigated the relationship

between COMLEX-USA Level 2- Performance Evaluation (COMLEX-USA-USA Level 2-PE)

and resident performance. Furthermore, no studies have investigated the relationship between

COMLEX-USA examinations Level 1, 2, 3-CE and clinical performance measures of pediatric

osteopathic residents. In our study, we will present a summary of the ACOP Program Directors'

Annual Reports from 2005 to 2009, and investigate correlations between program director

ratings of residents for each of the seven competencies and COMLEX-USA examination scores

(Levels 1, 2-CE, 2-PE, and 3).

Methods

Measures:

COMLEX-USA Examinations:

COMLEX-USA Level 1, 2-CE and 3 Computer-based Cognitive Examinations

COMLEX-USA computer-based examinations are designed to assess the osteopathic

medical knowledge of osteopathic physicians to practice medicine without

supervision[23]. COMLEX-USA is constructed in the context of medical problem-

solving which involves clinical presentations and physician tasks. COMLEX-USA

cognitive exams are computer-based, administering items in machine format. Items are

knowledge-based, written by content experts at the various levels of medical education.

Raw scores are simply the number of items answered correctly which are then placed on

a 3-digit or 2-digit standard score scale for reporting purposes. Scale cut-scores determine

pass-fail decisions. A 3-digit standard score of 400 or a 2-digit standard score of 75 on

COMLEX-USA Level 1 or COMLEX-USA Level 2-CE is required to pass the

examination. A 3-digit standard score of 350 or a 2-digit standard score of 75 on

COMLEX-USA Level 3 is required to pass the examination.

COMLEX-USA Level 2-PE Clinical Skills Examination

COMLEX-USA Level 2-PE is a Standardized Patient (SP)-based clinical skills

examination, where candidates pass through 12-stations, interviewing SPs who are

trained to simulate different medical complaints[24-25]. Each station includes a 14

minute doctor-patient encounter followed by 9 minutes to complete a written patient note

(SOAP note). Based on blueprint content specifications, cases vary according to

presenting symptoms (respiratory, cardiovascular, neuromusculoskeletal, gastrointestinal,

and other symptoms), age, gender, and race/ethnicity. Cases also vary in clinical

complaints that could be acute, chronic, or provide opportunities for health promotion or

disease prevention.

Candidates must pass two domains (Humanistic Domain and Biomedical/Biomechanical

Domain) to pass the examination. Failure in either domain results in failure of the entire

examination. Using criterion-referenced cut scores, a pass/fail decision is made for each

domain. These pass/fail conclusions are based on standards defined by minimal

competency for entry into graduate medical education. Several measures are used to

score individual candidate performance in each of the domains (Table 1).

Table 1. COMLEX-USA Level 2 PE Domains

Domain	Humanistic Domain	Biomedical / Biomechanical Domain

Component Scores	Global Patient Assessment Tool	Data Gathering (History and Physical)	OMT	Patient Note (SOAP Note)

The Humanistic Domain is comprised of the Global Patient Assessment Tool[©] to assess the candidate's listening skills, respectfulness, empathy, professionalism, ability to elicit information, and ability to provide information.

The Biomedical/Biomechanical Domain is comprised of three weighted component scores: (1) data gathering, which reflects the examinee's ability to obtain a medical history and perform a physical exam; (2) written patient note, which reflects the examinee's written communication and ability to synthesize information, develop a differential diagnosis, and formulate a diagnostic and treatment plan; and (3) osteopathic manipulative treatment (OMT), which reflects the examinee's ability to integrate osteopathic principles and utilize OMT. The OMT component is specifically scored in 25% to 40% of the encounters.

ACOP Program Director's Annual Report

For each resident, the ACOP Program Director's Annual Report is used by the program director to answer questions related to resident contact information, scholarly and research activity, continuity panel size, overall progress, and resident competency ratings. The program director assigns a competency rating to each of his/her residents on each of the seven osteopathic medical competencies using a Likert type scale ranging from 1

(lowest) to 9 (highest). The specific questions for each of the seven osteopathic medical competencies are presented in Table 2.

Table 2. Competency-based questions on the ACOP Program Director's Annual Report

OSTEOPATHIC PHILOSOPHY AND OMT

 1. Demonstrates competency in the understanding and application of OMT where appropriate.
 2. Integrates osteopathic concepts into the medical care provided to patients as appropriate.

MEDICAL KNOWLEDGE

 1. Demonstrates competency in the application of clinical medicine to patient care.
 2. Knows and applies the foundations of clinical and behavioral medicine.
 3. Demonstrates knowledge of accepted standards of care.
 4. Remains current with new developments in medicine.
 5. Participates in life-long learning activities.

PATIENT CARE

 1. Gathers accurate, essential information from all sources.
 2. Demonstrates competency in the performance of diagnostic and treatment procedures.
 3. Provides health care services that includes preventative medicine and health promotion.

INTERPERSONAL / COMMUNICATION SKILLS

 1. Demonstrates effectiveness in developing appropriate doctor-patient relationships.
 2. Exhibits effective listening, written and oral communication skills.

PROFESSIONALISM

 1. Demonstrates respect for patients / families and acts as their advocate.
 2. Adheres to ethical principles in the practice of medicine.
 3. Is sensitive to cultural diversity i.e. religion, age, gender, sexual orientation, and disabilities.
 4. Is cognizant of their own physical and mental health in order to effectively care for patients.

PRACTICE-BASED LEARNING

 1. Treats patients in a manner consistent with current and evidence based information.
 2. Performs self-evaluations of clinical practice.
 3. Understands research methods, medical informatics, and the application of technology.

SYSTEMS-BASED PRACTICE

 1. Understands national and local health care delivery systems.
 2. Advocates for quality health care on behalf of patients.
 3. Practices cost effective medicine.

After being reviewed by the ACOP Graduate Medical Education Committee, the reports are forwarded to the AOA. Recognition for completing an osteopathic pediatric residency program requires an annual report from both the resident and program director for each training year.

Design:

The data were drawn from and combined from several sources. First, a list of all pediatric OGME-1 residents that were reviewed by the ACOP Graduate Medical Education Committee between 2005 and 2009 was compiled from the ACOP Program Directors' Annual Reports. For our analysis purposes, the list was condensed to include training institution, medical school graduation year, and competency ratings assigned by the residency program directors.   The competency ratings (1 for lowest; 9 for highest) are applied to several items within each of the following competency-based categories: Osteopathic Philosophy and OMT, Medical Knowledge, Patient Care, Interpersonal/Communication Skills, Professionalism, Practice-Based Learning, and Systems-Based Practice.

Second, a linking variable was created and matched to the NBOME database to extract all COMLEX-USA scores, using SAS version 9.1. Reported information is provided only for aggregate groups, and confidentiality was assured by creating a linking variable with arbitrary values without personal identifiers. Institutional Review Board approval was received to analyze these data.

The PROC FREQ and PROC MEANS commands in SAS were used to derive candidate scores (now OGME-1 Pediatric Residents) on COMLEX-USA Levels 1, 2-CE,

2-PE (including domain scores), and 3. For each cohort, mean scores were computed for

statistical comparisons.

Sample:

The sample consists of 134 OGME-1 pediatric residents. This sample represents

all OGME-1 pediatric residents with ACOP Program Directors' Annual Reports that

were submitted to the ACOP Graduate Medical Education Committee for review between

2005 and 2009. The sample includes residents from 19 pediatric training institutions

across the United States. Table 3 lists the number of residents per training program.

Table 3. Number of ACOP Program Directors' Annual Reports of Pediatric OGME-1
Residents, by institution (N=134)

Training Institution	Residents	%
Maimonides Medical Center, NY	24	17.9
Doctors Hospital, OH	16	11.9
Oklahoma State Univ Med Center, OK	16	11.9
Geisinger Health System, PA	14	10.5
Good Samaritan Hospital, NY	13	10.5
Henry Ford Hospital, MI	13	10.5
Palms West Hospital, FL	9	6.7
Richmond Medical Center, OH	8	6.0
Newark Beth Israel, NJ	5	3.7
Sparrow Hospital, MI	4	3.0
Charleston Area Medical Center, WV	2	1.5
St. John Health, MI	2	1.5
Miami Children's Hospital, FL	1	<1
Children's Regional, NJ	1	<1
Orlando Health, FL*	2	1.5
Tampa General Hospital, FL*	1	<1
Medical Center of Central Georgia, GA*	1	<1
Walter Reed Medical Center, DC*	1	<1
San Antonio Uniformed Services, TX*	1	<1

*Not AOA-accredited

Of the total OGME-1 residents, all but 2 students completed all three levels of the

COMLEX-USA cognitive examination (Levels 1, 2, 3-CE), and 94 residents (69%) took

the COMLEX-USA Level 2-PE examination. A minority of OGME-1 pediatric residents

entered a training program prior to the requirement to take COMLEX-USA Level 2-PE.

Figure 1 is a description of the various sample sizes used in the analysis.

Figure 1. OGME-1 Sample Sizes from the ACOP Program Directors' Annual Reports
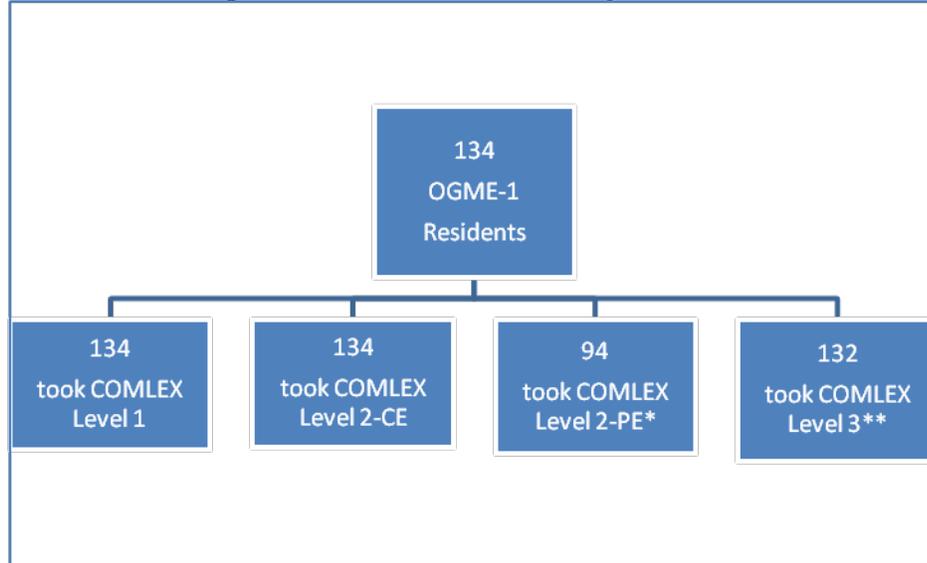
*40 OGME-1 Pediatric Residents entered residency prior to the requirement to take COMLEX-USA Level 2-PE

**2 OGME-1 Pediatric Residents had not taken COMLEX-USA Level 3 at the time of study analysis

Results

The average rating for each item is shown in Table 4. There is little variability in competency ratings, and average scores are typically 7.5. Score distributions are normally distributed for interpersonal skills, professionalism, practice-based learning, and systems-based practice. In comparison, competency scores for osteopathic philosophy and OMT, medical knowledge, and patient care tend to show more positive ratings.   Adequate reliability is shown for the program directors' competency ratings, consisting of 22 items (0.98).

Table 4. Descriptive statistics of competency rating scores for Pediatric OGME1 Residents (N=134)

Component	Question	Mean	SD
Osteopathic Philosophy and OMT	1	7.44	1.174
	2	7.45	1.161
Medical Knowledge	1	7.16	1.138
	2	7.13	1.093
	3	7.23	1.156
	4	7.21	1.164
	5	7.34	1.164
Patient Care	1	7.42	1.119
	2	7.34	1.070
	3	7.49	.948
Interpersonal / Comm. Skills	1	7.75	.961
	2	7.72	.923
Professionalism	1	7.91	.977
	2	7.99	.965
	3	7.89	.955
	4	7.75	.963
Practice-Based Learning	1	7.37	1.001
	2	7.40	.982
	3	7.21	.997
Systems-Based Practice	1	7.10	.920
	2	7.50	.987
	3	7.10	.900

The scatter plot in Figure 2 depicts the relationship between training institution and average competency ratings. Program directors tend to rate residents narrowly, in the direction toward the high end of the scale.

Figure 2. Plot of final competency score by training institution
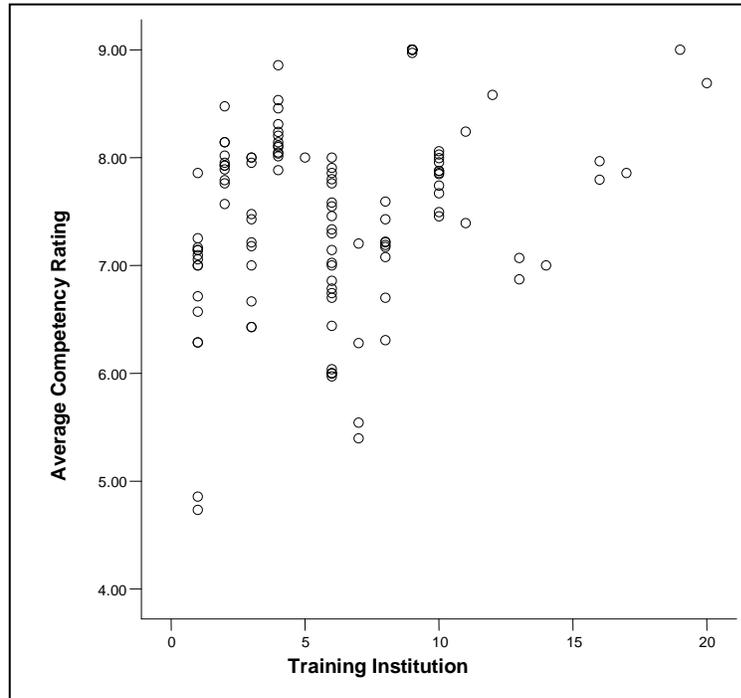
Competency rating scores did not vary significantly based on academic year or whether or not the resident took the COMLEX-USA Level 2-PE. Although there are statistical differences ($p<.001$ for F-tests of ANOVA) in competency ratings as a function of training institution, the groups were not homogenous, so the robustness of the ANOVA is weakened and the analysis between training institution and competency score is limited. Correlational analysis indicates statistically significant relationships between competency scores and training program, but the correlations are weak and may lack practical significance.

Individual competency item ratings were computed as a single mean score for each competency area (medical knowledge, patient care, OMT, interpersonal skills and communication, professionalism, systems-based practice, and practice-based learning). In addition, an overall "average" score was computed, as the mean across all competency dimensions. The mean competency area scores are all significantly correlated within the ACOP Program Director's Annual Report (see Table 5). In addition, individual competency scores within the categories also significantly correlate within the program directors' ratings for all comparisons. For instance, data not shown indicates a strong correlation between Professionalism Question 1 and Interpersonal/ Communication Skills Question 1 (.86). The same item of Professionalism is also moderately correlated to Systems-based Practice Question 2 (.76). Furthermore, the variable of training institution is correlated with the overall average of all competency areas within the reports, but it is not correlated with all individual components; although statistically significant, correlations are weak and may lack practical significance.

Table 5. Correlation matrix for component scores within the ACOP Program Director's Annual Report

	OMT	MK	PC	IC	P	PBL	SBP	AVG	TRAIN
OMT	1.00**								
Medical Knowledge (MK)	.792**	1.00**							
Patient Care (PC)	.677**	.829**	1.00**						
Interpersonal/Communication (IC)	.599**	.681**	.813**	1.00**					
Professionalism (P)	.637**	.683**	.766**	.881**	1.00**				
Practice-Based Learning (PBL)	.668**	.847**	.851**	.737**	.759**	1.00**			
Systems-Based Practice (SBP)	.656**	.782**	.794**	.693**	.709**	.883**	1.00**		
Final average score (AVG)	.823**	.914**	.823**	.865**	.873**	.923**	.886**	1.00**	.
Training Institution (TRAIN)	.271	.207*	.138	.169**	.162	.147	.196*	.180*	1.00**

**Correlations significant at the .01 level
*Correlations significant at the .05 level

For all comparisons, scores on the cognitive exam scores of the COMLEX-USA series (Levels 1, 2-CE, and 3) significantly correlate with resident competency ratings, except for the correlation between Professionalism and Level 3 exam scores (Table 6). The strongest correlations are between Level 2 scores and program director ratings of medical knowledge (.38) and practice-based learning (.38).

Table 6. Correlations between COMLEX-USA cognitive exam performance and ACOP Program Director's Annual Report average competency scores

	Level 1	Level 2	Level 3
OMT	.215*	.266**	.196*
Medical Knowledge	.273**	.375**	.310**
Patient Care	.233*	.316**	.292**
Interpersonal/Communication	.174*	.268**	.244**
Professionalism	.177*	.235**	.155
Practice-Based Learning	.271**	.375**	.342**
Systems-Based Practice	.261**	.345**	.289**
Final Score	.262**	.351**	.295**

**Correlations significant at the .01 level
*Correlations significant at the .05 level

For the COMLEX-USA Level 2-PE, pediatric OGME-1 residents' scores show no difference in comparison to everyone who took the exam on measures within the Biomedical/Biomechanical Domain ($t = 1.56$). However, pediatric OGME-1 residents score significantly higher than the cohort on Humanistic Domain of COMLEX-USA Level 2-PE ($t = 4.17$). Examining average scores on Levels 1, 2-CE, and 3 of the cognitive exams, pediatric OGME-1 residents have slightly lower scores when compared to the cohort. Compared to the cohort, pediatric OGME-1 residents score lower on Level 1($t= -5.89$) with the greatest disparity and slightly lower on the Level 2-CE ($t=-2.53$) and Level 3 ($t= -3.21$).

As shown in Table 7, average competency ratings are significantly correlated with the

Biomedical/Biomechanical Domain and average scores on Levels 1, 2-CE, and 3. The Level 2-

PE Humanistic Domain score is not correlated with program director competency ratings.

Table 7. Correlations between competency and COMLEX-USA Scores

	ACOP Program Director's Annual Report Competency Scores (ACOP)	COMLEX Average Cognitive Scores (CBT)	COMLEX Level 2-PE Biomedical/Biomechanical Domain Score (Level 2-PE BM/BM)	COMLEX- Level 2-PE Humanistic Domain Scores (Level 2-PE Hum)
ACOP Program Director's Annual Report Competency Scores (ACOP)	1			
COMLEX- Average Cognitive Scores (CBT)	.325**	1		
COMLEX-Level 2-PE Biomedical/Biomechanical Domain Scores (Level 2-PE BM/BM)	.291**	.277**	1	
COMLEX- Level 2-PE Humanistic Domain Scores (Level 2-PE Hum)	.143	.073	.311**	1

**correlations significant at the .01 level (two-tailed)
CBT: Computerized-based testing composite score (COMLEX-USA Levels 1, 2-CE, and 3)

Examining group differences, the first-time pass rates of pediatric OGME-1 residents are

higher than the cohort on the COMLEX-USA Level 2-PE overall, and for both the

Biomedical/Biomechanical and Humanistic Domains. Pediatric OGME-1 pass rates are lower for

Levels 1 and 3 of the cognitive exam series, and identical for the Level 2-CE. Comparisons of

pass rates are presented in Table 8.

Table 8. COMLEX-USA pass rates for pediatric OGME-1 residents and cohort

Measure	Pass rate Pediatrics	Pass rate Cohort
Cognitive Exam		
Level 1	85.1	91.1
Level 2	89.6	89.6
Level 3	82.6	91.0
PE Exam		
Humanistic Domain	98.9	97.3
Biomedical/Biomechanical Domain	98.9	96.3
Overall PE	98.9	94.1

Note: pass rates based on first-time test takers

Comments

The ACOP Program Director's Annual Report is used to evaluate competency-based resident performance, providing a framework for giving constructive summative feedback to residents and satisfying the AOA requirement for monitoring resident progress. As shown by positive residency competency ratings, low variability, and sufficient reliability, a large number of program directors judged the majority of pediatric OGME-1 residents as performing quite well. Although results from this study suggest that pediatric residents are indeed performing well, program directors may not fully understand how to use the tool properly. In addition, the rating scale may not adequately distinguish the full range of resident ability. It is also likely that residents beginning a residency program enter with a high level of ability. Perhaps the rating form could be enhanced with providing training materials for completing the forms, descriptors for each of the ratings, or anchors for each of the questions for increased distinction between residents on abilities at this level of graduate medical education. Assuring that the program directors understand the rating scale and are not acquiescent in their scoring is warranted. Regardless, the tool seems to assess a range of competencies for resident performance.

Individual competency scores and aggregated mean competency scores for each category were significantly correlated with each of the seven competencies. For instance, a strong relationship was shown between Medical Knowledge 3 (Demonstrates knowledge of accepted standards of

care) and Patient Care 1 (Gathers accurate, essential information from all sources). This finding indicates a resident who gathers accurate and essential information from all sources demonstrates knowledge of accepted standards of care. Because there is moderate to large portions of shared variance between individual items, individual items may not be assessing unique skills, and there may be some redundancy between the individual questions.

Pediatric OGME-1 residents scored significantly higher on the COMLEX-USA Level 2-PE Humanistic Domain, as compared to osteopathic cohorts. Conversely, OGME-1 residents scored slightly lower on the COMLEX-USA cognitive examinations (COMLEX-USA 1, 2-CE and 3) compared to osteopathic cohorts. It is possible physicians who exceed in interpersonal and communication skills pursue a career like pediatrics, where communication is valued as an essential component. More research is needed to investigate this possibility.

COMLEX-USA 1, 2-CE and 3 scores were all significantly correlated with residency competency ratings. For all three examinations, the highest correlations were between Medical Knowledge, Practice-Based Learning and Improvement, and Systems-Based Practice. Multiple choice cognitive examinations like COMLEX-USA 1, 2-CE, and 3, have been shown to be useful in measuring medical knowledge and clinical reasoning but not necessarily for patient care or verbal communication[26]. Because these three competencies share a strong knowledge component, it would be reasonable to assume that each of these is positively correlated with multiple-choice cognitive examinations, as our data suggests.

While competency ratings were positively correlated with COMLEX-USA cognitive

examinations, only the Biomedical/ Biomechanical Domain of the clinical skills examination

was significantly correlated with the program directors' competency ratings. Performance in the

Humanistic Domain of the COMLEX-USA Level 2-PE did not correlate with program director's

ratings. It is possible that correlations could not be demonstrated because the skills measured by

the Humanistic Domain score are too general. For instance, the Humanistic Domain has six

subcomponents—one being "eliciting information" which may prove to correlate with

Interpersonal/Communication competency ratings on the program directors' report. Further

analysis would be required to investigate the relationships between program director ratings and

subcomponent scores of the COMLEX-USA Level 2-PE. Alternatively, perhaps the Humanistic

Domain and competency scores did not correlate because each is measuring something

inherently different. Several studies acknowledge the complexity of making correlations

between medical student and resident performance given the heterogeneity of assessment tools

being used[5-6], and there seems to be a great need for a more consistent approach to the use of

assessment tools for assessing predictive validity.

The competency of professionalism deserves special attention. Although significantly correlated

with COMLEX-USA Level 1 and 2-CE scores, professionalism competency ratings showed only

weak relationships with Level 2-PE scores. Multiple-choice cognitive examinations may not be

well-suited or structured to assess professionalism, but why then was the clinical skills

examination not strongly related to the program directors' ratings of professionalism? Three

explanations are plausible and deserve further attention. First, overall and domain scores are not

sensitive enough to detect relationships between exam scores and competency ratings, and further research could involve analysis of component and subcomponent COMLEX-USA Level 2-PE scores. Second, perhaps all pediatric residents function at an extremely high level for professionalism, restricting the range of ratings and lowering correlations between scores. Third, perhaps an additional tool needs to be developed—a standardized tool that evaluates the clinical and professional competence of post graduate pediatric residents, not undergraduate medical students. For instance, professionalism may be better measured by ongoing assessment tools in clinical practice, such as portfolios.

For this study, these one hundred and thirty four osteopathic pediatric interns represent all pediatric OGME-1 residents who have been reviewed by the ACOP Graduate Medical Education Committee between 2005 and 2009; therefore, results are limited to this population and should not be generalized to other residents or specialties. A limitation of this study is excluding many D.O. pediatricians who train in traditionally allopathic programs, where program directors for this group of residents did not complete the ACOP Program Director's Annual Report. As the American Academy of Pediatrics (AAP) or American Board of Pediatrics (ABP) has not reported the number of osteopathic pediatricians in the workforce, three statistics have been reported: over 400 pediatricians are now members of the AAP's Section on Osteopathic Pediatricians [27], 656 D.O.s were enrolled in ACGME-approved residency programs in 2008-2009 (representing 8.1% of all pediatric residents in allopathic training programs)[28], and 190 allopathic pediatric residency spots were filled through the National Resident Matching Program (NRMP) match in 2009 [29]. This suggests that a large number of osteopathic pediatric interns, who are board certified by the American Board of Pediatrics (ABP) and not the American Board

of Osteopathic Pediatricians (ABOP), were excluded from this study. Another limitation of this study is that there are no inter-rater reliability measures between program directors.

Conclusions

Combining information provided by ACOP and NBOME allows for valuable, informative and insightful analysis—analysis of external measures to help investigate the relationship between scores of each organization's tools for assessment. Data support four major study outcomes: first, program directors typically rate pediatric OGME-1 residents positively; second, independent competency ratings of the ACOP Annual Program Director's Report are strongly related to each other; third, compared to cohorts, pediatric OGME-1 residents perform better on COMLEX-USA Level 2-PE and the Humanistic Domain of COMLEX-USA Level 2-PE and slightly worse on COMLEX-USA Levels 1, 2-CE and 3; fourth, program director report ratings correlate with COMLEX-USA 1, 2-CE, 3 and Biomedical/Biomechanical Domain scores of COMLEX-USA Level 2-PE.

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