Residencies With Dual Internal Medicine and Pediatrics Programs Outperform Others on the American Board of Pediatrics Certifying Examination

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Residencies With Dual Internal Medicine and Pediatrics Programs Outperform Others on the American Board of Pediatrics Certifying Examination

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Abstract

Objective. The purpose was to evaluate American Board of Pediatrics Certifying Examination performance based on if a residency offers a dual internal medicine–pediatrics program, hypothesizing that having a dual-accreditation program is associated with higher exam performance. *Methods*. Pediatric residency programs in the United States were retrospectively evaluated from 2010 to 2012. The accreditation status was determined. Mann–Whitney *U* tests were performed for continuous variables, and χ^2 tests were performed for categorical variables, using an $\alpha = .05$. *Results*. For 190 residencies, 75 (39%) had dual Med-Peds accreditation whereas 115 (61%) did not. The median overall residency pass rate for Med-Peds accredited programs (83%; interquartile range = 74% to 91%) was higher than other programs (78%; interquartile range = 65% to 89%; $P = .02$). The pass rate for examinees from Med-Peds accredited programs (n = 4,108; 84.2%) was higher than examinees from other programs (n = 4,310; 79.6%; $P < .001$). *Conclusions*. The presence of a dual-accreditation residency program should be a consideration of future applicants.

Keywords

certification, educational measurement, internal medicine, Med-Peds, pediatrics, specialty boards

Introduction

Combined internal medicine–pediatrics residency programs have existed since 1967.[1] A few studies have shown that approximately 80% of graduates from combined internal medicine–pediatrics programs are boarded by both the American Board of Internal Medicine and the American Board of Pediatrics (ABP).[1,2] At the individual level, the pass rate for examinees on the American Board of Internal Medicine and ABP examinations were quite high, at 97% and 96%, respectively.[1] This cohort of individuals seems to have higher pass rates on the ABP Certifying Examination (CE) than the overall pass rate for individuals.[3-5]

Although the individual dually trained examinee data have been evaluated in the past, the performance of residencies based on the presence or absence of a dual internal medicine–pediatrics accredited program has not been studied. One observation of dual internal medicine–pediatrics accredited residencies is that they appear to be larger than residencies without dual internal medicine–pediatrics accreditation.[6] Previous studies have shown that larger residency programs tend to outperform smaller residency programs on the ABP CE.[3-5]

The purposes of this study were 2-fold. The first aim of this study was to evaluate residency program ABP CE performance based on the presence or absence of a dual internal medicine–pediatrics accredited program. Since dual programs appear to be larger, and because larger residency programs outperform smaller ones, the hypothesis was that residencies with dual accreditation programs will outperform residencies without a dual accreditation program. The second aim was to also evaluate performance of individual examinees, with the hypothesis that examinees trained in a residency with a dual accreditation program will outperform examinees trained in a residency without a dual accreditation program.

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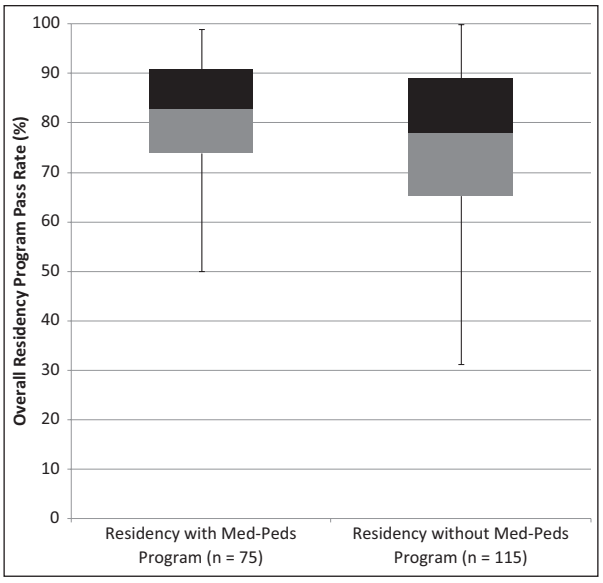

Figure 1. Residency program (n = 190) performance on the American Board of Pediatrics Certifying Examination from 2010 to 2012 based on Internal Medicine–Pediatrics (Med-Peds) Residency Dual Accreditation Program status.

Methods

In this retrospective study from 2010 to 2012, residencies with dual internal medicine–pediatrics accreditation programs were identified through the National Resident Matching Program data.[6] Pediatric residency program performance on the ABP CE was obtained from the ABP Web site.[7] Residencies were dual accreditation programs were matched by program name, city, and state. Data extrapolation was performed twice to ensure accuracy and fidelity of the study data set. Permission to use electronically published data for medical education research had been previously confirmed in the past with a personal communication with the psychometrician for the ABP.

The continuous data outcomes were not normally distributed, so nonparametric descriptive and comparative statistics were performed. To evaluate residency program outcomes, a Mann–Whitney *U* test was performed between 3 year pass rates of residencies with internal medicine–pediatrics dual accreditation programs and residencies without internal medicine–pediatrics dual accreditation programs. To see if dual accreditation residencies were larger than non–dual accredited residencies, a Mann–Whitney *U* test was also performed using the number of eligible examinees as an indicator of residency program size. To evaluate individual examinee outcomes, a χ^2 test was performed using program status (dual accreditation or no dual accreditation) with ABP CE outcome (pass or fail). In this study, all statistical comparisons and tests were performed using Stata 13 software (StataCorp, College Station, TX), using an $\alpha = .05$.

Results

Through the National Resident Matching Program, there were 75 residencies identified that offered internal medicine–pediatrics dual accreditation programs in the United States.[6] There were 210 residency programs identified by the ABP.[8] Of these, 190 (90.5%) were located in the United States. Of the 20 excluded residency training programs, 17 (85%) were located in Canada and 3 (15%) were located in Puerto Rico. All 75 (100%) of the dual accreditation programs were successfully matched. Overall, there were 75 (39%) residencies that had dual internal medicine–pediatrics accreditation and 115 (61%) that did not have dual internal medicine–pediatrics accreditation.

The median 3-year pass rate on the ABP CE per program during the study period was 80.5% (interquartile range [IQR] = 69% to 90%). The median pass rate for residencies that had dual internal medicine–pediatrics accreditation was 83% (IQR= 74% to 91%). The median pass rate for residencies that did not have dual internal medicine–pediatrics accreditation was 78% (IQR = 65% to 89%). A Mann–Whitney *U* test showed that the median pass rate was higher for residencies that had dual internal medicine–pediatrics accreditation ($P = .02$). This is graphically shown in Figure 1.

The median number of eligible examinees per program during the study period was 39.5 (IQR =28-64). The median number of eligible examinees for residencies that had dual internal medicine–pediatrics accreditation was 52 (IQR = 39-76). The median number of eligible examinees for residencies that did not have dual internal medicine–pediatrics accreditation was 35 (IQR = 22-48). A Mann–Whitney *U* test showed that the median number of eligible examinees was higher for residencies that had dual internal medicine–pediatrics accreditation ($P < .001$). (Data are not shown.)

During the study period, there were 8418 individual examinees who attempted the ABP CE for the first time. The overall pass rate was 81.8% (6,889/8,418). The examinee outcomes based on the presence of a dually accredited internal medicine–pediatrics program are shown in Table 1. A χ^2 test demonstrated that examinees from residencies that had dual internal medicine–pediatrics accreditation outperformed examinees from residencies that did not have dual internal medicine–pediatrics accreditation ($P < .001$).

Table 1. Examinee Outcomes on the American Board of Pediatrics Certifying Examination From 2010 to 2012 Based on Internal Medicine–Pediatrics (Med-Peds) Residency Dual Accreditation Program Status.

	Passing Examinees, n (%)	Failing Examinees, n (%)	*P* Value[a]
Residency with Med-Peds program	3,457 (84.2)	651 (15.8)	<.001
Residency without Med-Peds program	3,432 (79.6)	878 (20.4)	

[a]Result of a 2 × 2 χ^2 test of examinee outcome by dual accreditation program status.

Discussion

There were 2 aims to this study. The first was to evaluate the nature of residency performance based on the presence of having dual internal medicine–pediatrics accreditation. The second was to evaluate the individual examinee performance based on training in a residency having dual internal medicine–pediatrics accreditation. In this study, it is clear that the presence of a dual internal medicine–pediatrics residency program is associated with higher pass rates on the ABP CE. This finding is true both at the programmatic level and at the individual level. These conclusions are consistent with both the study hypotheses.

One of the assumptions for the study hypotheses was the underlying observation that residencies with dual internal medicine–pediatrics programs were larger than other programs. This assumption was also found to be true, with substantially higher numbers of examinees in residencies with dual internal medicine–pediatrics programs than residencies without dual internal medicine–pediatrics programs. These findings relating residency size and ABP CE outcomes are consistent with the few published studies evaluating residency program size and its association with ABP CE outcomes.[3-5] However, the root cause of these examination outcomes remains largely unclear. The reasons behind examination performance are very complex, at both the program level and at the individual level. The strength of the didactic curriculum, the quality of faculty interaction and teaching, the faculty recruitment process, resident incentives, and the ability to select and draw more knowledgeable residents in the resident selection process are such confounding variables of residency program size.[3-5,7] In a similar respect, having a dual internal medicine–pediatrics program may be an indicator of residency success, experience in training, and being a more established or diverse program.

There are a few major limitations to this study. As mentioned, as this study design is retrospective, by definition, there are no cause-and-effect relationships that can be drawn; there are certainly associations that appear to be clear, but even these are associated with an array of potential confounders. Further study of programmatic and individual variables and their relationship to ABP CE performance would make for interesting future study in this educational domain. Second, it is possible that, for smaller residency programs, examinees who fail have a larger impact on the outcome metric of pass rates. However, 3-year pass rates were used, and the median numbers of eligible examinees per program were appropriately high to help minimize this potential effect. A third limitation is that the number of eligible examinees is not the most accurate measure of program size. However, it is reasonable to assume that larger residency programs will have more eligible examinees over a time period. The final major limitation of this study involves the nature of examinees who are part of a dual internal medicine–pediatrics program. From the available data, it was not possible to determine the cohort effect of dually trained examinees on overall program outcomes. It is possible that, with higher pass rates, the larger residencies outperformed the smaller ones because of a sort of selection bias and inherent differences between dually trained examinees and pediatrics-only examinees. That said, the proportion of dual trainees per program is fairly small.

There are also a few notable strengths to this study. First, all the US residency programs and examinees were included, indicating that the sample size was the same as the population size. This eliminates potential selection bias of the study. By using as many data points as possible, the study power was maximized. In studies where programs need to be sorted accurately, it is important to have reliable and valid sorting tool. The use of the National Resident Matching Program is one that is considered both reliable and valid. In addition to accurate residency sorting, the study design is very straightforward. The data used for this study are electronically available, and this study could easily be repeated. Finally, this is the first known study to critically evaluate residency program performance based on the dual internal medicine–pediatrics accreditation status. The findings are meaningful to program directors, future ABP CE examinees, and for pediatric residency applicants.

Overall, the presence of a dually accredited internal medicine–pediatrics program is associated with improved performance on the ABP CE. This association is significant, and is apparent at both the program and individual

level. The presence or absence of a dual program may be one of many considerations by future residency applicants in the interview process.

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Declaration of Conflicting Interests

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