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Performance of Family Medicine Residents on Difficult Test Questions

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Abstract

Introduction: As part of the University of Toronto's Department of Family and Community Medicine's training program, residents write four assessments throughout their training each assessment comprising of 100+ questions, of scenario-based with single best responses.

Methods: We conducted a statistical review of a recent progress test completed in November 2023.

Results: We found that residents who performed better on the test likewise performed better on clinical scenarios where patients had personality comorbidity. As well, we found that residents who performed better on the test were no better with respect to clinical scenarios where patients present with undifferentiated presentations.

Discussion: Given the complexity of personality comorbidities, there can be a greater need for education and support for our residents in this domain.

Keywords: Primary care, medical education, residency program, assessment

Introduction

The University of Toronto's Department of Family and Community Medicine is the largest academic department of family and community medicine in the world. At any given point in time, there are over 300 residents in the 2-year residency program.

As part of the training program, residents are required to complete four assessments throughout their training – two in year 1, and two in year 2 (Fok-Han *et al.,* 2016, Iglar *et al.,* 2017).

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This formative assessment, named a progress test, involves 110 questions across various disciplines, including:

- Care of children and adolescents
- Care of the elderly
- Emergency medicine
- End-of-life care
- Family medicine
- In-hospital care
- Maternity care
- Mental health
- Musculoskeletal medicine
- Surgical skills
- Women's health

Each question is designed to assess a resident's performance in different, often multiple, scenarios. The test is written in a single site, conducted online, and there is one correct answer for each question. For example, some questions assess a resident's knowledge with respect to inpatient vs

outpatient care, others for urban vs rural care. The overall performance of the test and performance by scenarios provides valuable information for residents and faculty alike, to tailor training and provide support to help residents master different presentations.

As expected, performance across residents can vary widely; some may perform very well on the progress test compared to peers, and others may perform poorly compared to peers. Anecdotally and from the literature, of greatest challenge and interest are commonly (i) questions evaluating scenarios where patient has personality comorbidity, and (ii) questions evaluating scenarios where patients present with undifferentiated presentations. As noted in the College of Family Physicians of Canada's four key principles (Rosser, 2006), these are critical tenants that define a family physician's ability to succeed as a community-based practitioner and to provide appropriate support for their practice population. Given this, we wondered: do residents who struggle more with the progress test encounter greater difficulties with these two types of questions? To explore, we conducted a statistical review of a recent progress test completed in November 2023.

Though based in one Canadian program, these challenges are common across residency training internationally.

Methods

The performance of each 332 residents currently in the family medicine residency program from the most recent progress test in November 2023 was reviewed. Residents were categorized into three cohorts based on their overall score: average, 1+ standard deviation below average, and 1+ standard deviation above average. The relative performance of the three cohorts across the various aforementioned disciplines and scenario types (i.e., inpatient vs outpatient; urban vs. rural) was compared using Fisher exact test, to observe for any substantial differences in relative performance as a function of the overall performance. As this was an exploratory analysis, type I error was set at a relaxed 0.10.

All statistical analyses were conducted on R. This review was conducted to evaluate a training program and not to produce research for generalizable knowledge, and therefore not requiring REB. However, this research was conducted in accordance with best practices, and to HElsinki declaration.

Results

In total, 236 residents were categorized as average, 50 as having low performance, and 46 as having high performance. The accuracy of each 110 questions was compared between groups.

In 86% of questions presenting scenarios of patients with personality comorbidity, residents who had overall low performance likewise had poorer performance in these settings. In 65% of questions presenting scenarios of patients with undifferentiated presentations, residents who had overall low performance had poorer performance in these settings. When comparing to the proportion of questions overall for which there was difference in performance by cohorts, residents with poorer performance struggled with cases of personality comorbidity (one-tailed p=0.06), but performed similarly to peers with respect to patients with undifferentiated presentations (p=0.26).

Residents across the three cohorts performed similarly with respect to patient scenarios where patients were inpatients vs outpatients, acute vs non-acute, emergency management, practicing preventative medicine and managing common acute conditions.

Discussion

It is fascinating that residents perform similarly across disciplines, contrary to some previously-published data (Svystun and Ross, 2018). In fact, residents seem to also perform similarly with respect to undifferentiated presentations.

There are limitations to this analysis. This was an exploratory analysis, with a type I error set at 0.10. These results should therefore only be interpreted in the context of hypothesis-generating. Furthermore, this analysis is based on one progress test at one institution in one country (Canada) rather than multiple test cycles/longitudinal data across multiple institutions across multiple regions; it is unclear whether this one specific cross-section may be robustly generalized.

Nevertheless, it is fascinating that residents perform similarly across disciplines and with respect to undifferentiated presentations, regardless of overall competency. While drawn from one institution, these findings may inform residency education in other contexts.

References

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