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Short Communication

Resident individual interactive instruction preferences and activities

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ABSTRACT

Objective: The ACGME permits Individual Interactive Instruction (III) to fulfill twenty percent of emergency medicine (EM) residents' total education requirement. It is not known what type of curriculum or III activities residents prefer, or which forms of III activities they choose to utilize. We sought to evaluate resident preferences between the three different curricula used from 2011 and 2014 in the State University of New York (SUNY) Downstate EM program: one without III, one with III and compulsory activities, and one with III and no compulsory activities. We hypothesized that residents prefer an III curriculum without compulsory activities, and prefer online activities versus in-person activities. **Methods:** In this observational, cross-sectional study at a large, urban, EM program, residents were sampled using a structured questionnaire that collected data on III curriculum preferences and III activity preferences. All matriculating trainees were eligible for inclusion. Residents graded each curriculum and activity on Likert scales. III activity logs were retrieved from an online repository. Descriptive analyses were performed for the study population. Significant differences in performed III activities were assessed based on year of training using one-way analysis-of-variance models with Bonferroni corrections. **Results:** A convenience sample of 56 (69%) residents was obtained. Residents preferred a curriculum with III (83.9%) more frequently than one without III (8.9%). The curriculum without III was more frequently disliked (75%) compared to the curriculum with III (3.6%). Additionally, residents prefer an III curriculum without compulsory activities (75%) compared to one with compulsory activities (7.1%). With regard to types of III, 48.2% prefer online activities compared to 10.7% prefer in-person activities. The most frequently preferred activities were Evidence Based Medicine (EBM) reviews, Simulation, and Journal Club. Board review was the least liked III activity with 44.7% disliking the modality. Residents participated most frequently in the two online III opportunities despite the Online Literature Module (OLM) activity being less well liked than other, in-person options. No significant differences in performed III activities were found based on year of training. **Conclusions:** Residents prefer an III curriculum without compulsory III assignments. Importantly, residents most often complete online activities, even if they are less well-liked than in-person activities. This data provides needed information on resident preferences on incorporating III into the EM curriculum and can guide other residencies in determining their III structure and activities.

KEY WORDS: Individual interactive instruction; Asynchronous; Resident Preference

INTRODUCTION

Emergency Medicine's (EM) resident curriculum traditionally consisted entirely of synchronous learning, defined as classroom-based education. While asynchronous learning, defined as education outside the classroom, has always been a part of resident education, it was not initially included in the curriculum[1]. After the Council of Emergency Medicine Residency Directors' (CORD) recommendation in 2008, the Accreditation Council of Graduate Medical Education (ACGME) formally approved the integration of Individual Interactive Instruction (III), a type of asynchronous learning that meets certain criteria, into GME curricula[2,3,4]. To date, there is a little data to guide EM residencies creating or revamping their III curricula, nor to address EM residents' curriculum preferences.

For asynchronous learning, residents report using podcasts as often as textbooks[5]. Meanwhile program directors and faculty continue to rely on traditional resources[6]. It is unknown if faculty educators are promoting forms of III that they prefer over providing residents with self- preferred resources. As adult learning theory promotes self-directed learning, providing less preferred resources could limit residents' from fully self-directing their own education and thereby not maximizing educational gains[1]. Little is known about resident III activity preferences or which activities they complete more frequently. Such data is of the utmost importance for designing and improving III curricula and advancing GME programming. As the State University of New York (SUNY) Downstate EM residency transitioned between a traditional curriculum and two different III curricula from 2011 to 2013, it is the ideal place to investigate resident curricula preferences.

METHODS

We sought to evaluate resident preferences between three different curricula from 2011 to 2014 at the SUNY Downstate EM residency: a curriculum without III, one with III and specific, compulsory activities, and one with III

and no compulsory activities. Additionally, we investigated which activities residents preferred, as well as which activities residents actually completed. We hypothesized that residents prefer a curriculum with III in addition to preferring, and more frequently completing, online activities compared to in-person activities.

This observational, cross-sectional study at a large, urban, EM program was given exemption status by the SUNY Downstate Institutional Review Board committee (Reference number: 604674-1). All matriculating trainees were eligible for inclusion. An anonymous, structured questionnaire was created by an experienced EM resident educator. Data was gathered in person from resident during two department didactic sessions in May 2014. The same survey was also administered in digital format to all matriculating residents using email and Google Forms™.

Residents reported their preference for each curriculum on Likert scales and reported their preference for each III activity on a 1-5 ordinal scale (Appendix 1). As scores on the extremes of scaling were similar in representation of resident preferences, scores of 1 and 2 were combined to indicate a lack of agreement or dislike, and scores of 4 and 5 were combined to indicate agreement or like. Residents III logs were extracted from an online repository (newinnovations com) in July 2014 for the first year no longer influenced by compulsory activities (2013-2014). The one exception was board review, which, though offered to all participants, was compulsory for first year residents and residents who scored lower than the national mean on the EM in-service exam during the prior academic year.

Online III include an activity from the evidence-based review articles at EB Medicine (EBM) and a SUNY developed III activity involving an online journal article discussion and quiz titled Online Literature Modules (OLMs). There were 20 EBM and 17 OLMs available. In-person activities included attending the monthly New York Poison Control conference (NYPCC), weekly pediatric EM conference, weekly simulation session, monthly trauma simulation session, or biweekly board review session. Other in-person activities include the yearly slit lamp workshop, monthly journal club meeting, weekly medical student education session (MSEd), or various mini-fellowship meetings. SUNY Downstate EM residency offers mini-fellowships in critical-care medicine, wilderness, health policy, education, simulation, ultrasound, geriatrics, clinical informatics, international, palliative care, and pediatrics.

Descriptive analyses were undertaken for the study population using frequencies with corresponding percentages for categorical variables. Means are reported for continuous variables such as hours completed. Significant differences in performed III activities were assessed based on year of training using one-way analysis-of-variance (ANOVA) models. Models were analyzed for III modalities for which all years of trainees participated. A Bonferroni correction for multiple testing was used with a significance level of $p < 0.004$ used in the ANOVA models. All analyses were completed using STATA version 11.0 (College Station, USA).

RESULTS

A convenience sample of 56 (69%) residents provided data for this study with 37 (66%) in-person and 19 (34%) online. Residents prefer a curriculum with III (83.9% desired) versus a curriculum without III (8.9% desired). Similarly, the curriculum with III was rated undesirable less frequently compared to the curriculum without III (3.6% and 75% respectively). Residents more frequently rate an III curriculum without compulsory activities as desirable (75%) compared to one with compulsory activities (7.1%). With regard to categories of III, 48.2% prefer online activities versus 10.7% for in-person activities. [Table 1]

The III option most frequently liked was EBM (92.9%), followed by simulation (80.3%), and then journal club (74.5%). Board review is the least liked III activity with 44.7% disliking the modality and only 21.4% liking it. In terms of which activities residents complete, the most frequent was the EBM activity, followed by the OLMs and then board review. This trend was consistent when activities were examined by year in training except for first years, who, as they were required to attend board review, participated in that activity second most frequently. No statically significant differences were found in preformed III activities based on year of post-graduate medical training [Table 2].

DISCUSSION

The SUNY EM residency transitioned through three different curricula in three years, which resulted in a pseudoexperimental venue to evaluate curriculum preference. This study demonstrates that residents prefer a curriculum with III and prefer an III curriculum without compulsory requirements. Asynchronous learning and III more congruently follow contemporary adult learning theories where andragogy is preferred over pedagogy[7]. As andragogy encourages learner involvement in instruction planning, focuses on problem centered education, and facilitates immediate relevance to the learners' work [1]. This last point correlates the evidence that resident prefer instruction based on recent patient encounters[1]. The present study supports these theories as trainees prefer an III curriculum in which they direct their own learning and can choose the content most relevant to their work. This data is consistent with adult learning theory and should be used to inform graduate medical educational programming.

For asynchronous learning, trainees report using online resources such as podcasts (35%) as often as textbooks (33.6%) and even rate podcasts as the most helpful

Table 1. Resident Curriculum Preference

	Dislike	Neutral	Like
5 hour didactic with no III	42 (75.0%)	9 (16.1%)	5 (8.9%)
4 hour didactic with III	2 (3.6%)	7 (12.5%)	47(83.9%)
4 hour didactic with III not predefined	4(7.1%)	10 (17.9%)	42 (75%)
Desire online III	6 (10.7%)	23 (41.1%)	27 (48.2%)

Table 2. Resident III Preference and Activity

	Resident Preference*			Average Resident III Hours Completed by Year in Training					
	Dislike	Neutral	Like	Overall	1st	2nd	3rd	4th	P
EBM	0 (0%)	4 (7.1%)	51 (92.9%)	15.9	15.9	14.6	14.3	18.7	0.935
OLMs	17 (34.7%)	20 (40.8%)	12 (24.5%)	7.6	2.6	9.1	7.2	11.3	0.274
Journal Club	0 (0%)	14 (25.5%)	41 (74.5%)	1.2	0.3	1.5	2.5	0.4	0.263
Simulation	1 (1.8%)	10 (17.9%)	35 (80.3%)	2.9	2.5	2.3	3	3.6	0.536
Trauma Sim	2 (3.7%)	13 (24.1%)	39 (72.2%)	0.4	0.2	0.8	0.7	0	0.375
Board Review	25 (44.7%)	19 (33.9%)	12 (21.4%)	6.4	8.2	6.8	6.5	3.9	0.319
Pediatric EM Conference	5 (9.4%)	39 (73.6%)	9 (17%)	0.1	0	0	0	0.2	-
NYPCC	0 (0%)	17 (33.3%)	34 (66.6%)	0.4	0	0	1.2	0.3	-
Slit Lamp	0 (0%)	14 (26.9%)	38 (73.1%)	0.2	0.1	0	0.2	0.3	-
MSEd	2 (3.6%)	23 (41.8%)	30 (54.6%)	0.6	0.6	0.4	0.7	0.5	0.896
Mini-Fellowship	0 (0%)	15 (27.8%)	39 (72.2%)	2.2	1	2.3	4.1	1.3	0.248

*56 total residents participated, but variability in totals reflct incomplete responses.
EBM -Evidence Based Medicine Review, OLM – Online Literature Modules, NYPCC – New York City Poison Control Conference, MSEd – Medical Student Educational Activity

resource[5].

The effectiveness of online asynchronous activities has been demonstrated, albeit in smaller studies with narrow topics[8-13]. These studies, while providing valuable insight into asynchronous effectiveness and resident preferences, do not include III activities. Nonetheless, it is reasonable to infer that residents would prefer online III activities. The results of our study support this hypothesis.

In the present study, EM trainees preferred online over in-person activities. Yet, multiple in-person activities were more frequently liked than an online option, OLM. Interestingly, participation did not reflect this preference. For example, highly liked in-person activities such as weekly simulation and monthly journal club averaged only 2.9 hours/year/resident and 1.2 hours/year/resident respectively. Despite rating the second most frequently disliked activity, OLM was the second most completed activity with an average of 7.6 hours/resident/year. This difference indicates that resident preferences may not be consistent with the activities they complete.

This discrepancy may stem from online III's increased availability. These activities can be completed at any time and at any location with internet access. Meanwhile, inperson participation may be limited by residents' work schedules. The available data from this work, though, does not allow for exploration of this hypothesis. Designers of III curricula should recognize that online III options may be beneficial compared to in-person activities in improving III participation and acceptance among residents. Further studies investigating this are warranted.

This study has limitations. The single center design may limit the generalizability of the findings to other graduate medical education programs. However, given the curriculum changes in the program studied, the single center design served as an appropriate academic setting to address the research question posed. Further work in alternative settings

would be warranted. Although the data collection tool utilized was designed by experienced educators in graduate medical education, this work is the first implementation of the instrument, and the lack of validation must be considered in interpreting the results. As EM programs each create their own III curricula, it is not possible to evaluate specific III activities across multiple programs. We believe residents' busy schedule and a lack of monetary reward may have contributed to decreased participation. Lastly, the data collected did not facilitate a comparison group such as an alternative graduate medical education program and as such assessing for statistical significance of reported preferences was not possible.

EM trainees in the program studied prefer a curriculum that includes III without compulsory III activities. Online activities were more frequently completed despite a reported preference for in-person activities, which suggests that barriers may exist in current graduate medical education programming. This study provides valuable data to support transitioning to III curricula and determining what III activities to offer trainees. Further studies in alternative settings to validate the findings along with long-term evaluation of the effectiveness of III curricula and activities are needed.

CONFLICT OF INTEREST STATEMENT

None of the authors has any conflicts of interest. All authors had full access to all the study data and had final responsibility for the decision to submit for publication.

REPRINTS

Reprints are not available from the authors.

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