

2021

Preparing Internal Medicine Trainees for Independent Practice: A Pilot Simulation Program on Emotional Intelligence

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Recommended Citation

Maier D, Jadhav N, Goodermote C, Alweis R. Preparing Internal Medicine Trainees for Independent Practice: A Pilot Simulation Program on Emotional Intelligence. *Advances in Clinical Medical Research and Healthcare Delivery*. 2021; 1(2). doi: 10.53785/2769-2779.1013.

ISSN: 2769-2779

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Preparing Internal Medicine Trainees for Independent Practice: A Pilot Simulation Program on Emotional Intelligence

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Abstract

Introduction: Emotional intelligence (EI) is the ability to monitor emotions and use this knowledge to guide one's thinking and actions. EI shapes the physician's bedside manner and leads to a better doctor-patient relationship. Higher physician EI is inversely proportional to feelings of burnout and increases resiliency to the stresses of the profession. Given the increasing levels of physician burnout, there has been a call to incorporate the development of emotional intelligence into medical education. However, little guidance exists on best practices in incorporating EI training into graduate medical education.

Purpose/Aim: Utilization of EI simulation as a pedagogical instrument to increase physician skillset in four key areas of EI: self-awareness, self-management, social awareness, and relationship management.

Methods: Post-Graduate Year 3 residents from two internal medicine residencies were divided by residency and first year Cardiology fellows received either a pre-posttest utilizing the Emotional Intelligence Appraisal Tool (EIAT) © separated by 5 months with no educational intervention or an EI-focused simulation curriculum between the pre and post-tests. EIAT data was collated and compared across the study groups.

Results: There were a total of 33 participants in the study (32 residents, 1 fellow) between September, 2019 – February, 2020. Participants in the control group were younger (mean 29.4 years, $P=0.011$) and less experienced than the participants in the intervention group (mean 4.25 years, $P=0.026$). Of the participants, there were more males (54.5%). The intervention group had significantly better overall social competence and awareness, ($P=0.004$), and relationship management ($P=0.005$) scores. There was a trend towards significance for the overall emotional quotient score in the interventional group.

Conclusions: Simulation was a useful pedagogical instrument to enhance EI acumen in resident education. Time and experience alone offered no benefit.

Keywords

simulation, emotional intelligence, graduate medical education

Cover Page Footnote

We'd like to acknowledge Rochester General Hospital and Unity Hospital's internal medicine residencies and cardiac fellowship programs, as well as Dr. Deborah Stamps, Dr. Valerie Grapensteter, and the staff of the Nursing Institute for their participation in and support of this study.

Introduction

Medicine is a rapidly evolving entity with complex challenges related to technological advancement and diverse cultural backgrounds. Patients have become consumers having choices and preferences of where they will have their healthcare needs met, having an effect on millions in healthcare dollars. Emotional intelligence (EI), which is qualified and evaluated using four key personal and social competence markers (self-awareness, self-management, social awareness, and relationship management), has been defined as “the ability to monitor and regulate one’s own and other’s emotions, to discriminate among them, and to use the information to guide and prioritize actions.”¹ Interpersonal communication skills and emotional intelligence are vital to the development of the practitioner as they facilitate healthy work environments, increased productivity, and superior patient outcomes.²⁻⁴

Physician burnout and depression rates have increased over the last 10 years, particularly at the level of graduate medical education, where recent studies have found more than 50% of all residents have screened positive for depression and up to 10% admitting to suicidal ideation.⁵⁻⁸ Studies conducted in the primary care setting reported that difficult patients accounted for about 15% of all outpatients, require more time and emotional energy, all whilst significantly derailing the setting and achieving of realistic patient goals.⁹⁻¹¹ Low EI has been associated with a broad range of provider health outcomes including emotional exhaustion, depersonalization, anxiety and depression.¹²⁻¹⁴ Improving EI and building resilience to these stressors is therefore one approach to mitigating the increasing burnout rates. However, development of integrated educational modalities to increase EI aimed at reducing burnout and depression in residents have been met with mixed results.¹⁵⁻²³

Purpose/Aim

Many EI skills are learned experientially, with the potential for significant misstep as there is limited opportunity for residents to develop these skills, especially in challenging situations.²⁴⁻²⁹ Simulation training provides a safe environment for learning and developing both practical and behavioral skills, where mistakes will not have mortal consequence. There are few studies on how applying simulation to the professional development of emotional intelligence in healthcare is an effective method for instruction.³⁰⁻³²

The objective of this study was to provide emotional intelligence tools to assist the physician in addressing difficult patient interaction through simulation, to review and apply therapeutic communication and harassment prevention strategies as outlined by the RRH online education modules and the practice of managing aggressive techniques. The authors sought to cultivate an increase of Emotional Intelligence acumen as defined by the Emotional Intelligence Appraisal Tool© and to evaluate the use of simulation as a pedagogy to advance EI in medical resident curriculum use through simulation.

With the focus on improvement of both clinical outcome and provider wellness, the use of EI simulation as a pedagogical instrument offers a safe, standardized and interactive environment to enrich traditional didactic education that addresses interpersonal challenges that can otherwise negatively impact provider relationships and associated outcome. Therefore, the authors designed an EI simulation experience to facilitate awareness of these interpersonal challenges that providers

may encounter and to provide them with skills to apply in an effort to promote more effective results in the four key areas of EI; self-awareness, self-management, social awareness, and relationship management.

Methods

This pilot study utilized a non-randomized, quasi-experimental, descriptive, non-blinded, correlational design aimed to assess EI acumen of senior internal medicine residents (program year 3, or PGY-3) and first year cardiology fellow (PGY-4) physicians with the use of the Emotional Intelligence Appraisal tool (EIAT)© pre and post simulation experience.

Secondarily, the authors sought to determine if gender and/or years of experience alone, without simulation, had impact on resident EI capabilities. For purposes of this study, *experienced* is defined as years of experience in medicine. Some of these residents may have already been practicing physicians in their home countries. It was important to account for that experience within the concept of EI. Participants were chosen via convenience sampling from the Internal Medicine (IM) programs sited at Rochester General Hospital and Unity Hospital both in Rochester, N.Y. who match 19 and 15 international residents annually (respectively). The newly developed Rochester General Hospital cardiology fellowship program was also used, which was comprised of two fellows. Low fidelity simulations utilizing standardized patients (SP) were performed at the system-based RRH Health Simulation Lab located independently from any specific RRH care facility. The study period was conducted from September 2019 through February 2020. The Rochester Regional Health Institutional Review Board approved the study.

The participant requirements were that the resident was a Program Year 3 resident in either of the Internal Medicine residency programs at the time of the study, or a Program Year 4 fellow in the cardiology program at the time of the study. The internal medicine residents participating in the study were divided by residency program. The residents received a letter defining the project and requesting their participation in this study.

The EIAT© is proprietary, and is included with the purchase of the Emotional Intelligence 2.0© book.³³⁻³⁴ This 28-point Likert scale evaluated personal and social competence in four categories defining self and social recognition and regulation competencies defined as: self-awareness, self-management, social awareness and relationship management. Scores were tabulated within the program on a scale from 0-100, where scores of greater than 80 are rated as having a higher EI acumen as defined by the EIAT ©.

The control (RGH) and study (UH) resident groups were e-mailed the EIAT© online passcode within their enrollment letter. They self-administered their appraisal test on individual computers and returned their inventory to the primary investigator. The control group received notification to retake the test 30 days later, and return their repeated inventory scores to the primary investigator. However, those who participated in the simulation participated in a session of three persons, which lasted over five months for the total group to complete all the sessions.

The study residents received the simulation curriculum 30 days following completion of the pre-test, included three difficult independent patient encounters, each lasting up to 15 minutes. Simulations focused on the resident's individual ability to address three challenging patient's each with aggressive tendencies, but demanded different strategies to assist the patient to comply with appropriate treatment modalities through use of therapeutic communication, understanding

transference and counter-transference, application of harassment prevention strategies, and utilizing techniques to manage aggressive behavior.

Simulation 1 involved a bigoted and racist patient who is being treated for sepsis and heroine-induced endocarditis and withdrawal symptoms. The patient is refusing to be treated by the resident related to their gender or ethnicity. Simulation 2 involved a sexually inappropriate and forward patient who inappropriately makes appointments to see the provider to proposition and harass them. Simulation 3 utilizes an older adult pain clinic patient. She has broken her pain contract and requires dismissal from the practice.

Simulations were followed by a guided debrief session lasting 20-30 minutes led by a qualified facilitator. Post-simulation, the study participants were placed in a computer lab within the simulation center and asked to complete the second EIAT© and return the results electronically to the principle investigator. An institutionally created data collection tool monitored variable data including demographic information: resident name, program name location, year of residency, physician age, gender, and years of clinical experience along with EIAT© pre-post results. All participants were provided Emotional Intelligence 2.0© at the close of the study.

Statistical Analysis

Our study (sample size of 33) was adequate to detect an effect size of 1.05 (Cohen's *d*) with a power of 0.80, alpha error of 0.05, and allocation ratio of 0.65. We used G*Power version 3.1.9.6 for the sample size for sample size and effect size calculations. Data was analyzed using IBM SPSS statistics version 27.0.0.0 (International Business Machines, Armonk, NY, USA). Mann Whitney U test and Wilcoxon signed-rank test were used for non-normally distributed data and Student T-test for normally distributed data. Pearson's correlation coefficient was used to evaluate for associations.

Results

A total of 32 residents and one fellow participated in the study. Of them, 20 (60.6%) were represented in the control group and 13 (39.4%) in the intervention group. The mean age was 30.8 years and the mean clinical experience was 5.57 years. Of the participants 18(54.5 %) were males and 15 (45.5%) were females. Most of the participants were PGY3s (94%).

In terms of gender, PGY level, overall personal competence, self-awareness, self-management, overall social competence, social awareness, relationship management, and overall emotional quotient scores, both groups were similar (Table 1). Participants in the control group were younger (median 29 years vs 33 years, $p=0.011$) and less experienced than the participants in the intervention group (median 4 years vs 6 years, $p=0.026$). However, there was no significant correlation between age and experience with the overall personal competence, self-awareness, self-management, overall social competence, social awareness, relationship management, and overall emotional quotient scores.

Table 1: Comparisons between the control group and the intervention group before the simulation program

N=33	Control Group – RGH (Median)(IQR)(n=20)	Intervention Group – UH (Median)(IQR) (n=13)	p value
Age in years	29(28-30)	33(29-35)	0.011
Experience in years	4(3-5)	6(3.5-10)	0.026
Gender (female)	45%	46%	NS
PGY level (IM3)	95%	100%	NS
Overall Personal Competence Score	76.5(69-83)	75(68.5-80)	NS
Self-Awareness Score	75(69-84.25)	78(69-83.5)	NS
Self-Management Score	78(65.5-83)	69(67-78)	NS
Overall Social Competence Score	74(64.5-86.75)	78(72.5-83)	NS
Social Awareness Score	70(64-83)	80(70.5-81.5)	NS
Relationship Management Score	76(65.5-86.5)	79(73-81)	NS
Emotional Quotient Score	75(67-83.7)	77(73-80)	NS

IQR=Inter Quartile Range, NS=Not significant

The intervention group had significantly better overall social competence, social awareness, and relationship management scores with a large effect size. There was no difference between the two groups in terms of overall personal competence, self-awareness and self-management scores. There was a trend towards significance for the overall emotional quotient score in the interventional group (Table 2).

Table 2: Comparison between the Control Group and the Intervention Group after the simulation program

EI Skills	Control Group mean(SD) (n=20)	Intervention Group mean(SD) (n=13)	P value	Effect size (Cohen's d)
Overall Personal Competence Score	77.1(11.25)	80.3(9.9)	NS	NA
Self-Awareness Score	76.9(11.91)	79.2(8.55)	NS	NA
Self-Management Score	76.7(11.91)	80.7(11.88)	NS	NA
Overall Social Competence Score	75.9(9.53)	85.7(7.69)	0.004	1.13
Social Awareness Score	75.4(11.11)	84.2(8.87)	0.022	0.87
Relationship Management Score	76(9.23)	87(8)	0.001	1.27
Emotional Quotient Score	76.4(9.86)	82.9(8.09)	0.058*	0.72

*NS=Not significant, * trend towards significance, NA=not applicable*

There was a significant improvement in all scores except for self-awareness scores after receiving the simulation curriculum (Table 3).

Table 3: Comparison of Intervention group before and after the simulation program

EI Skills	Median (IQR)	Z score	P-Value
Pre intervention Overall Personal Competence Score	75(68.5-80)	-2.3600	0.018
Post intervention Overall Personal Competence Score	83(72.5-88)		
Pre intervention Self-Awareness Score	78(69-83.5)	-1.2900	NS
Post Intervention Self-Awareness Score	82(73.5-85)		
Pre Intervention Self-Management Score	69(67-78)	-2.48	0.013
Post Intervention Self-Management Score	81(70-91)		
Pre Intervention Overall Social Competence Score	78(72.5-83)	-2.8600	0.004
Post-intervention Overall Social Competence Score	87(82-90.5)		
Pre Intervention Social Awareness Score	80(70.5-81.5)	-2.8700	0.004
Post-Intervention Social Awareness Score	83(81.5-88.5)		
Pre intervention Relationship Management Score	79(73-81)	-2.8300	0.005
Post Intervention Relationship Management Score	87(82-95)		
Pre Intervention Overall Emotional quotient score	77(73-80)	-2.9700	0.003
Post Intervention Overall Emotional quotient score	84(78.5-89)		

IQR=Inter Quartile Range, NS=not significant

There was not a significant improvement in any scores in the control group with time. (Table 4)

Table 4: Comparison of Intervention group with time

EI Skills	Median (IQR)	Z score	P-Value
Pre intervention Overall Personal Competence Score	76.5(69-83)	-1.4000	NS
Post intervention Overall Personal Competence Score	77(69-88)		
Pre intervention Self-Awareness Score	75(69-84.25)	-1.3000	NS
Post Intervention Self-Awareness Score	78(66.75-88.75)		
Pre Intervention Self-Management Score	78(65.5-83)	-1.2100	NS
Post Intervention Self-Management Score	78(68-87)		
Pre Intervention Overall Social Competence Score	74(64.5-86.75)	-0.8260	NS
Post-intervention Overall Social Competence Score	77.5(66.25-83.75)		
Pre Intervention Social Awareness Score	70(64-83)	-1.4700	NS
Post-Intervention Social Awareness Score	75.5(67-83)		
Pre intervention Relationship Management Score	76(65.5-86.5)	-0.1750	NS
Post Intervention Relationship Management Score	78(65.5-84.5)		
Pre Intervention Overall Emotional quotient score	75(67-83.7)	-1.0480	NS
Post Intervention Overall Emotional quotient score	77(67.25-87)		

IQR=Inter Quartile Range, NS=not significant

Discussion

This pilot project sought to determine whether the utilization of independently performed, low-fidelity simulation of emotionally challenging interactions had an influence on individual practitioner's emotional intelligence in PGY-3 and 4 residents and fellows in internal medicine. The process focused on experiential learning and reinforcement via debrief of the use of therapeutic communication, understanding transference and counter-transference, application of

harassment prevention strategies, and techniques to manage aggressive behavior. The EIAT© is scored on a 100-point scale. EI scores of 85-100 have been used to define high-level leadership competence.³⁵⁻³⁸ This study's intervention group posted a 5-10 point growth in acumen across the subcategories whereas our control group maintained scores in the mid 70's with a two to three positive growth point movement in their scores. The small increase in EI for the control group is attributed to the experiential learning from day to day clinical exposure.

This study highlights that learning through trial and error in the clinical environment through actual patient encounters can be ineffectual. The variable experience of a resident and fellow over the course of time, with some residents experiencing little in the way of difficult encounters, while others experiencing a robust number of such encounters is too random to guarantee competency in the management of these situations. A structured approach via simulation and subsequent debrief can be effective, as it guarantees that all learners will experience these encounters and have the ability to hone their skillset and advance their EI in a safe environment.

Limitations

This pilot study has several limitations explained herein. The sample size was small. It did not encompass any physicians outside internal medicine, or non-physician clinicians, therefore the results may not be generalizable across disciplines or service lines. Conducting the retest immediately after the simulations may not have allowed for the participants to assimilate and apply the new skills to real life scenarios, which may hinder significant increased EI results. There is limited research surrounding EI and simulation outside of an academic simulation setting. RRH has a robust resident simulation curriculum, but a small number of simulation faculty, which is also not connected to a university simulation department. The characters portrayed in the study were performed by the faculty that have become known to our residents throughout their residency training. Although the pilot scenarios were difficult and elicited significant emotional turmoil, some of the realism of the experience, i.e., how the participant interacted with the standardized patient, may have been buffered or lost in that the residents knew the faculty and considered them safe.

Conclusion

Higher EI has been linked to more empathetic and efficient provider-patient relationships. It promotes resilience and adaptation to traumatic or stress events, partially mitigating burnout and depression, and allowing for a more sustainable practice. This EI simulation intended to promote provider awareness of interpersonal challenges in an effort to increase EI in the four key areas of self-awareness, self-management, social awareness, and relationship management. The data from this pilot project indicates that low fidelity simulation with a small faculty may be a pedagogically successful modality to increase EI in the non-university setting.

Conflict of Interest Statement

The authors report no financial or other conflict of interest.

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