Design, Implementation, and Evaluation of an Education Program for Medical and Undergraduate Students to Advocate Diversity, Equity, and Inclusion in Radiology

Divya Meher Surabhi, MPH¹, Daniel Blake Heller, MD², Karen Lin Xie, DO³

¹ University of Illinois College of Medicine
² Loyola University Medical Center, Department of Surgery
³ University of Illinois Hospital, Department of Radiology

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Background

• Diagnostic radiology = 9th largest residency program
  • 17th for female representation
  • 20th for underrepresented minorities (URM) representation ¹

• Why?
  • Lack of preclinical exposure → misconceptions and less interest in radiology ²
  • Women: lack mentorship ³ and perceive radiology as too competitive ⁴
  • URM: lack of understanding of the field ⁵

• The 5C’s of Radiology Framework ⁶ has been introduced as a model to structure educational programming in radiology for students.
Purpose and Objectives

• Purpose
  • Apply the 5C’s to create a **longitudinal educational program** in radiology for students

• Objectives
  • Primary: increase **knowledge** and **interest** in radiology
  • Secondary: increase the **diversity** of students applying to radiology residency
Methods

- 15 virtual & in-person events in 2022
- Medical & undergraduate students
- Two post-session questionnaires
  - Demographics
  - Knowledge: misconceptions, work-life balance, quality of program, future interest in radiology
- Two-tailed t-test comparison
  - Session modalities
  - Gender: Male v. female
  - Race: URM (African American, Hispanic/Latino, 2/2+ races) v. non-URM
Demographics

163 attendees with 47% survey completion rate (76 responses)

**Gender**
- Male (38) - 50%
- Female (38) - 50%

**Race**
- Asian - 21%
- Caucasian - 30%
- Two or more - 9%
- Hispanic or Latino - 3%
- African American - 5%
- Others - 1%

**Education Level**
- M1 - 21%
- M2 - 49%
- M3 - 24%
- M4 - 5%
- Undergraduate - 1%
Results

• Session Modality
  • **Quality**: Procedure workshop rated highest quality modality (statistically significant*)
  • **Interest**: Undergrad sessions significantly* peaked radiology interest more than graduate sessions
  • **Misconceptions**: Procedure workshop significantly* less effective than other modalities for addressing misconceptions

### Effectiveness of eliciting interest in radiology by session modality

<table>
<thead>
<tr>
<th></th>
<th>Undergrad</th>
<th>Skills</th>
<th>Procedure</th>
<th>Career</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>5</td>
<td>4.61</td>
<td>4.70</td>
<td>4.60</td>
</tr>
<tr>
<td><strong>Variance</strong></td>
<td>0</td>
<td>0.31</td>
<td>0.35</td>
<td>0.43</td>
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<tr>
<td><strong>N</strong></td>
<td>8</td>
<td>33</td>
<td>46</td>
<td>88</td>
</tr>
<tr>
<td><strong>P (two-tail) vs. Undergrad</strong></td>
<td>0.00029*</td>
<td>0.0011*</td>
<td>0.00000015*</td>
<td></td>
</tr>
</tbody>
</table>

### Effectiveness of addressing misconception by session modality

<table>
<thead>
<tr>
<th></th>
<th>Procedure</th>
<th>Shadowing</th>
<th>Career</th>
<th>Undergrad</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
<td>3.73</td>
<td>4.00</td>
<td>4.33</td>
<td>4.75</td>
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<tr>
<td><strong>Variance</strong></td>
<td>1.14</td>
<td>0.86</td>
<td>0.66</td>
<td>0.20</td>
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<td><strong>N</strong></td>
<td>48</td>
<td>15</td>
<td>70</td>
<td>12</td>
</tr>
<tr>
<td><strong>P (two-tail) vs. procedure</strong></td>
<td>0.35</td>
<td>0.0015*</td>
<td>0.00000084*</td>
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</tr>
</tbody>
</table>
Results

• Women
  • No statistical difference of sessions on interest, work-life balance, or addressing misconceptions between male vs female
  • Trend: greater positive impact on increasing interest in radiology and promoting the work-life balance in women than men

• Underrepresented minorities (URM)
  • No statistical difference of sessions on interest, work-life balance, or addressing misconceptions between URM vs. non URM
  • Trend: greater positive impact on increasing interest in radiology in URM vs non-URM

- Male vs. Female: Effectiveness in increasing interest in Radiology
- Male vs. Female: Effectiveness in promoting work-life of Radiology
- Non-URM vs. URM: Effectiveness in increasing interest in Radiology
Discussion

• Our program: **equally effective** in **increasing the interest of all students**, regardless of race or gender.

• Students **value hands-on, interactive** sessions > non-interactive sessions.
  • However, **career advising sessions** made a more **positive impact** on addressing misconceptions compared to interactive procedure workshops.

• **Undergraduate outreach events** significantly **increase students’ interest** compared to graduate outreach events.
  • Undergraduate outreach = **key pipeline**
Future projects: **explore targeted strategies** for underrepresented groups
- Ex: Hosting one event **showcasing women radiologists** significantly impacts female students’ misconceptions.
- Consider previously identified barriers:
  - Preconceived notions of priorities for **women**:
    - Highlighting the family-friendly lifestyle of radiology = patronizing
  - Hidden curriculum for **URM**:
    - Encouraged to pursue primary care

Future directions
- Amplifying diagnostic radiology shadowing
- Faculty-led career advising session
- M4 Post Match Panels in diagnostic and interventional radiology
- Radiology skills and procedure workshops
- Undergraduate outreach
Thank you!

References


