Outcomes of student–driven, faculty–mentored research and impact on postgraduate training and career selection

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Disclosures
- Neither I, nor my co–investigators, have a vested interest in or affiliation with any corporate organization offering financial support or grant monies for this continuing education activity, or any affiliation with an organization whose philosophy could potentially bias my presentation

Background
- Benefits of student–led research
  - Communication
  - Inquiry
  - Collaboration
  - Self–motivation
- Lack of literature assessing impact of research
- Growth of independent research studies and push for residency preparation
- South Carolina College of Pharmacy, University of South Carolina campus (SCCP-USC) / University of South Carolina College of Pharmacy (USC COP)

Unanswered Questions
- What are the outcomes associated with student–driven research projects?
  - Are they completed? Are they presented as abstracts (posters)? Are they published?
- How does this impact students going forward?
  - Do they have advantage in residency applications? Do they choose a career related to research?

Primary Objectives
- Determine the outcomes of pharmacy student independent research studies
  - Successful abstract submission(s)
  - Platform presentation(s)
  - Research grant(s)
  - Publication(s)
- Evaluate career paths and postgraduate training among SCCP–USC / USC COP graduates
- Identify continued involvement in scholarly activities after graduation through publications in peer–reviewed journals

Secondary Objectives
- Assess the impact of independent student research
  - postgraduate training placement rates
  - rates of graduates entering academic pharmacy careers
  - post–graduate publication rates
Methods
- Retrospective, non-interventional study
- SCCP-USC/USC COP graduates between 2002 and 2015

Endpoint Collection
- Faculty records and registrar used to identify students
  - Participated in independent research
  - Received academic credit
- Outcomes of projects were collected
  - Faculty Curriculum Vitaes (CVs)
  - National and local pharmacy organizations
  - Public Records

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Analysis
- Descriptive statistics
- Odds ratio
- Logistic regression

Flowchart of Participants
Total # of study participants/students:
- n=1229

Attempted research?
- 315 students participated in research

Independent Study?
- 267 students enrolled in an independent study course

Abstract?
- 118 students resulted with an abstract
- 93 students did not result in such an abstract

Research by Graduation Year

Abstract Category
- Oncology 35%
- Infectious Disease 3%
- Pediatrics 8%
- Critical Care 8%
- Primary Care 15%
- Education 8%
- Geriatrics 11%
- Internal Medicine 5%
- Other 8%

Postgraduate Metrics
- Any postgraduate training
- Specialized postgraduate training (PGY2 or Fellowship)
- Faculty appointment
- Graduates with a peer-reviewed publication
What impacts postgraduate training?

Consider: Participated in independent study, enrolled for academic credit, successful abstract submission, grant funding, national or international presentation, platform presentation, student publication

<table>
<thead>
<tr>
<th>Effect</th>
<th>Point Estimate (OR)</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participated independent study</td>
<td>9.30</td>
<td>5.08 – 17.03</td>
</tr>
<tr>
<td>Enrolled for credit</td>
<td>0.40</td>
<td>0.23 – 0.72</td>
</tr>
<tr>
<td>Abstract submission</td>
<td>2.64</td>
<td>1.14 – 6.11</td>
</tr>
</tbody>
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What impacts specialization?

Consider: Participated in independent study, enrolled for academic credit, successful abstract submission, grant funding, national or international abstract, platform presentation, student publication

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<tr>
<td>Participated independent study</td>
<td>6.19</td>
<td>2.50 – 15.34</td>
</tr>
<tr>
<td>Natl/intl abstract</td>
<td>4.18</td>
<td>1.26 – 13.91</td>
</tr>
<tr>
<td>Grant funding</td>
<td>4.06</td>
<td>1.54 – 10.68</td>
</tr>
</tbody>
</table>

What impacts faculty appointment?

Consider: Participated in independent study, successful abstract submission, grant funding, student publication, any post-graduation training, post-graduation specialization, lifetime publication

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<tr>
<td>Participated independent study</td>
<td>4.00</td>
<td>1.19 – 13.42</td>
</tr>
<tr>
<td>Postgrad. training</td>
<td>7.90</td>
<td>2.07 – 30.18</td>
</tr>
<tr>
<td>Student publication</td>
<td>0.25</td>
<td>0.08 – 0.76</td>
</tr>
<tr>
<td>Lifetime publication</td>
<td>12.14</td>
<td>3.97 – 37.08</td>
</tr>
</tbody>
</table>

What impacts lifetime publication?

Consider: Participated in independent study, enrolled for credit, successful abstract submission, grant funding, national/international presentation, platform presentation, student publication, any post-graduation training, post-graduation specialization

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<tr>
<td>Specialization</td>
<td>5.37</td>
<td>2.16 – 13.35</td>
</tr>
<tr>
<td>Postgrad. training</td>
<td>11.30</td>
<td>3.92 – 32.56</td>
</tr>
<tr>
<td>Faculty appointment</td>
<td>24.05</td>
<td>6.99 – 82.78</td>
</tr>
</tbody>
</table>

Limitations

- Data omissions
- Temporal issues
  - Growth in class size
  - Natural change in residency growth
Conclusions

- Research involvement has grown over time
- Majority of SCCP-USC / USC COP students who participate in research successfully submit an abstract
- Students who engaged in independent research benefit from the project as evidenced by their propensity for postgraduate training and research-oriented careers

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