Scholar 12: Beta trial of an osteopathic research cultural development computer application

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Introduction

- The Accreditation Council for Graduate Medical Education (ACGME) Osteopathic Recognition (OR) criteria emphasizes research as a critical component of integrating Osteopathic Principles & Practices into clinical decision making.
- Despite this objective, there remains a deficit of osteopathic contributions to the literature.
- Peppers et al. described the first published improvement of a regional community hospital’s scholastic environment through Scholar 7, a series of professional lecture videos and interactive sessions on hypothesis, introduction, specific aims, preliminary data, materials and methods, conclusion, and Institutional Review Board protocol development.
- The Scholar Series has since expanded from Scholar 7 to include Scholar 4, Scholar Specific, Scholar Teacher, Scholar: Pilot and Validation Studies journal, and, most recently, Scholar 12.
- Scholar 12 combines the discrete Scholar Series research development tools into an interactive application and blog forum that guides students from research team formation with an agreed-upon query to a scholarly product and presentations.
- This report describes an unblinded prospective cohort “beta” trial by osteopathic medical students that self-assessed research skill knowledge before and after completing (Table 1) Scholar 12 and provided feedback for improvement measures (Table 2).

Objective

Scholar 12 aims to enhance the development of a scholarly culture within medical education by reducing students’ apprehensiveness in learning and succeeding with the research process.

Methods

- Scholar 12 was developed as a culmination of the Scholar Series, as well as the thesis proposal for the LECOM Masters of Medical Education program, into an interactive course through a web-based application.
- The scholarly development process is comprehensively covered by 12 units.
- Each unit is comprised of a learning question, objectives, and activities, which involves reading journal articles, writing reflections and blog posts, and watching instructional videos.
- The associated blog forum is indefinitely accessible to facilitate group discussion under institutional forums that are moderated by their attendings and research coordinators.
- The “alpha” trial was previously conducted by the editorial team and website developer revised and improved the Scholar 12 application.

Results

- The “Beta” trial was pursued during the 2019-2020 academic year by an Ohio University Heritage College of Osteopathic Medicine team:
  - Six (6) medical students mentored by 3 faculty.
  - Completed Scholar 12 Units on an accelerated time frame.
  - Communicated assigned reflections and any suggestions for technical and/or formatting improvement via the Scholar 12 Blog Forum (Table 2).
- Each student also completed a self-assessment of their research skills understanding in the beginning and once more at the conclusion of the units (Table 1).
- Evaluated 12 skills based on learning objectives for each Scholar 12 unit.
- Pre- and post-Scholar 12 responses to items graded on 5-point Likert scale ranging from 1 (very unfamiliar) to 5 (very familiar) and totaled per skill and competency level (Fig. 1.a-c).

Discussion

- Scholarly work has been a ubiquitous goal of teaching institutions with varied implementation.
- Previously AOA-accredited programs mandated to demonstrate research competence by 2020.
- Balance between clinical obligations and research, limited interest in scholarly activity, and lack of protected time, research skills, and adequate mentorship and funding commonly contribute to disparity between osteopathic and other health professions’ high activity research.
- Scholar 12 has been designed as a culmination of the Scholar Series and website-based app to instigate cultural change in the osteopathic profession.
- Students not only independently learn each step of the research process but, further, participate in this research project with a team approach.
- Addresses barriers to accommodate millennial and future generations.
- Provides a free, time-table resource, all in one place, online with feedback and assessments, while team members simultaneously learn.
- Will be a valuable tool to advance osteopathic scholarly culture nationally.
- This beta trial demonstrates variable skill improvement per student but an encouraging trend of increased competency.
- General feedback helps target opportunities to enhance the learning experience and user feasibility.

Conclusion

- The osteopathic profession has opportunity to advance clinical practice and fulfill ACGME OR initiatives with evidence-based medical research.
- Scholar 12 is a foundational educational tool and is necessary to engage clinical and trainees with scholarly work, regardless of experience level.
- The present survey provides a preliminary measure of the efficacy of Scholar 12 in improving medical students’ knowledge of creating new scholarly work.
- General feedback has been communicated to the app developer and editorial staff for improvement measures before the 2020 nationwide launch. Other beta trial groups may contribute further feedback.
- Scholar 12 accommodates students’ academic obligations with a convenient, virtual tool to learn the research process on a flexible schedule, in order to meet generational needs.

Table 1. Pre-/Post-Scholar 12 Self-Assessment: The Research Competency Scale for Osteopathic Medical Students.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Competency</th>
<th>Pre-Assessment</th>
<th>Post-Assessment</th>
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<tbody>
<tr>
<td>1</td>
<td>Engagement in a task-oriented mentoring culture.</td>
<td>Very unfamiliar</td>
<td>Familiar</td>
</tr>
<tr>
<td>2</td>
<td>Protection of study data.</td>
<td>Very familiar</td>
<td>Familiar</td>
</tr>
<tr>
<td>3</td>
<td>Research question and hypothesis formulation.</td>
<td>Very familiar</td>
<td>Familiar</td>
</tr>
<tr>
<td>4</td>
<td>Collaborative Institutional Review Board protocol development.</td>
<td>Very unfamiliar</td>
<td>Familiar</td>
</tr>
<tr>
<td>5</td>
<td>Institutional Review Board application.</td>
<td>Very unfamiliar</td>
<td>Familiar</td>
</tr>
<tr>
<td>6</td>
<td>Grant development.</td>
<td>Very familiar</td>
<td>Familiar</td>
</tr>
<tr>
<td>7</td>
<td>Data collection systems and statistical analysis.</td>
<td>Very familiar</td>
<td>Familiar</td>
</tr>
<tr>
<td>8</td>
<td>Abstract development.</td>
<td>Very familiar</td>
<td>Familiar</td>
</tr>
<tr>
<td>9</td>
<td>Poster development.</td>
<td>Very familiar</td>
<td>Familiar</td>
</tr>
<tr>
<td>10</td>
<td>Manuscript development.</td>
<td>Very familiar</td>
<td>Familiar</td>
</tr>
<tr>
<td>11</td>
<td>Group presentations at meetings/conferences.</td>
<td>Very familiar</td>
<td>Familiar</td>
</tr>
<tr>
<td>12</td>
<td>Total</td>
<td>83</td>
<td>100</td>
</tr>
</tbody>
</table>

Figure 1. Pre- vs. Post Scholar 12 Self-Assessed Research Competency. a. Averaged per research skill competency. b. Scored as a difference of improvement per student. c. Totaled per competency level.

References

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Table 2. General Suggestions for Improvement: Measurement

<table>
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<tr>
<th>Tension</th>
<th>Content</th>
<th>Instructions</th>
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<tbody>
<tr>
<td>Improve organization process</td>
<td>Decrease steps</td>
<td>Add visual prompts of upcoming utility</td>
</tr>
<tr>
<td>Add guided and abstract options for videos</td>
<td>Increase size of capacity for blog annotations</td>
<td>Add journal articles to how manuals can reconcile generations</td>
</tr>
<tr>
<td>Student guide aided and feedback from any contributor</td>
<td>Improve clarity of clinical outcomes</td>
<td>Add list of finding measures</td>
</tr>
</tbody>
</table>

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Note: This document has been proofread and edited for clarity and coherence. Any formatting issues have been resolved.