Building Research Communities: An educational framework and formative evaluation tool for research mentors and trainees

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Background

- Research and scholarship are critical components of all levels of medical education, serving as a core mission of graduate medical education (GME) training programs and encompassing multiple ACGME milestones.

- The current model of research training during GME lacks a standardized educational framework, intentional learning competencies and formative evaluation tools.

- Pre-intervention surveys within the University of Wisconsin (UW) Hematology/Oncology (H/O) Fellowship Program identified large variations in the perceived level of proficiency in core research topics, variable confidence in the quality of current research teaching strategies and a lack of clearly defined metrics of research productivity.

- There remains a significant need for novel approaches to develop shared learning outcomes and formative evaluation tools to support medical research training.

Innovation: Professional Learning Community (PLC)

Building Research Communities: Professional Learning Community

Establish a community of mentors with **shared values & clear focus**

Collaborate & develop strategies for improvement

Support **reflective conversations** about intended outcomes

Enhance learning & advance academic success

- Guided by K-12 education literature[1-4], we developed a PLC within the UW H/O Fellowship Program composed of core research faculty and fellowship leadership who are dedicated to the development of research skills among trainees.

Innovation: Research Portfolio

The PLC supported reflective conversations about intended learning outcomes and effective instructional strategies to develop the following:

- Intentional **learning competencies** for research training in fellowship
- An expected **timeline** for fellows to achieve these goals
- **Didactics** to support development of these goals
- A **research training portfolio** and accompanying **assessment rubric** for formative evaluation

Research Portfolio Target Research Competencies

- Human subjects research regulations
- Basics of biostatistics
- Manuscript and grant writing skills
- Oral presentation skills
- Ask original scientific questions
- Formulate a testable, impactful hypothesis
- Critically assess existing literature and its potential relevance to research and patient care
- Demonstrate content expertise around specific disease setting or a specific research technique
- Adapt presentation format and content to a particular audience
- Understand how to work on and manage teams
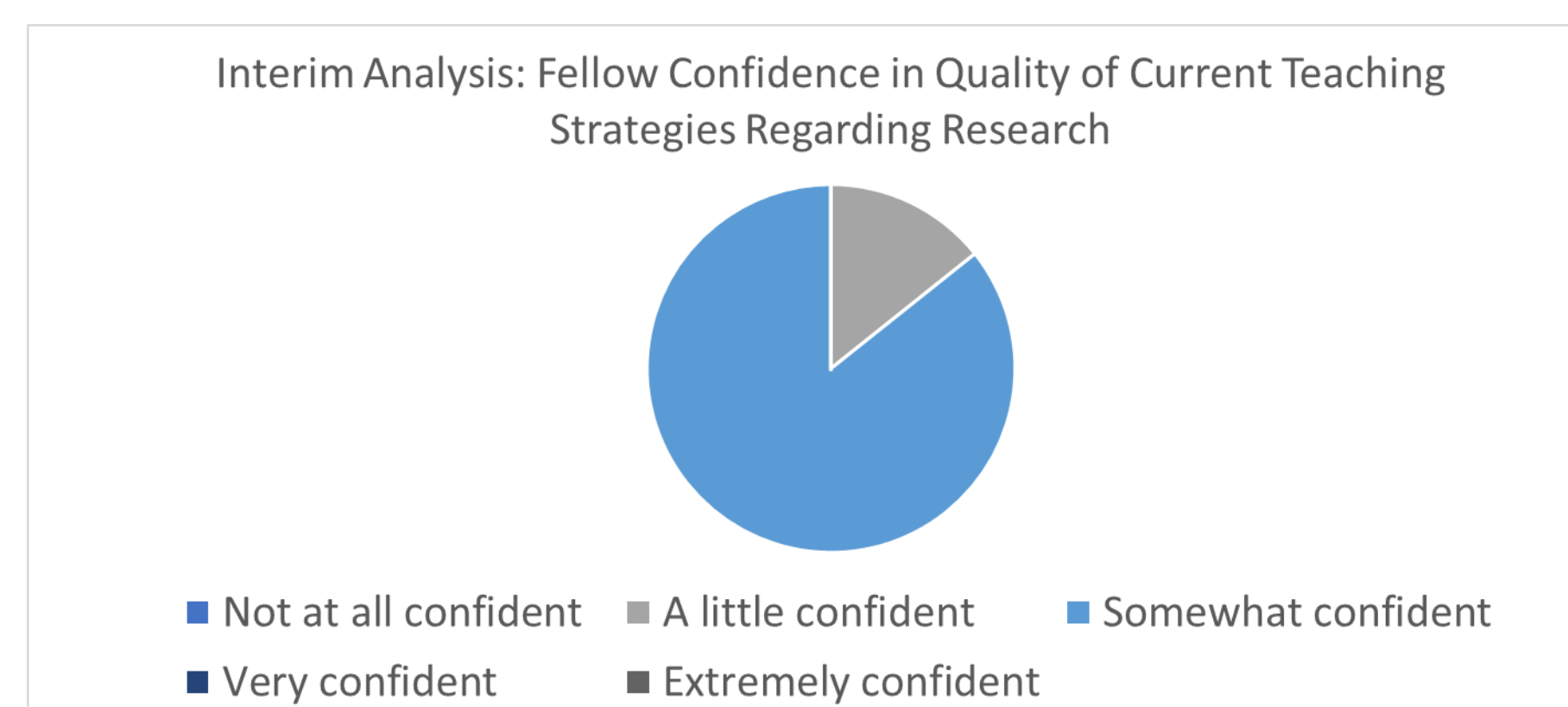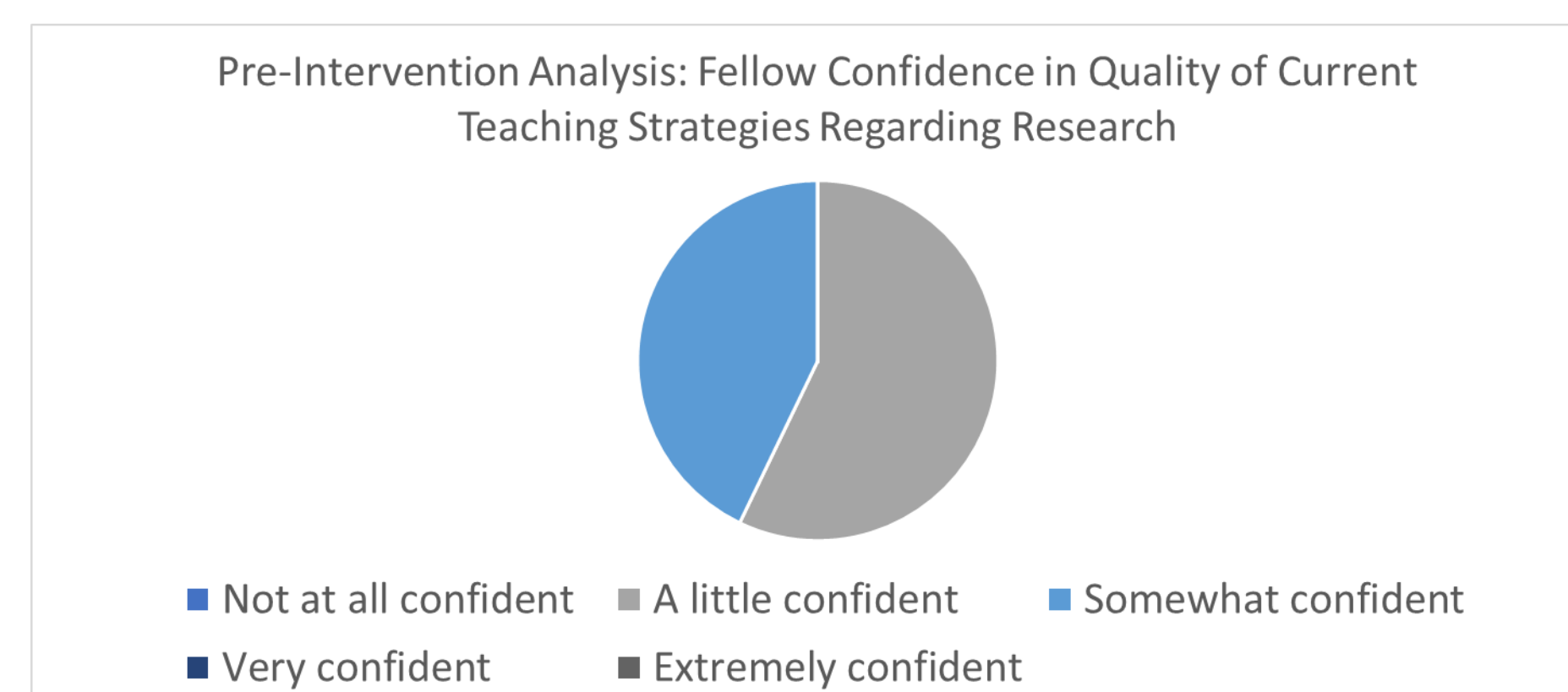- Understand how to be a leader and mentor

Identified Habits of Mind

- Inquisitiveness
- Persistence
- Effective communication
- Willingness to ask for help
- Self-honesty and self-reflection
- Ability to collaborate and seek out others

PLC defined target research competencies, progress indicators and habits of mind were used to develop a research portfolio and assessment rubric.

Innovation Evaluation

- Comparison of H/O fellow pre-intervention and interim analysis surveys completed 6 months into a planned 3-year research portfolio experience (n=7 each) demonstrated improved trainee confidence in the quality of current research-related teaching strategies used during fellowship.

- Comparison of the highest Likert scale obtained in either survey demonstrated that at interim analysis, 86% (6/7) of fellows were 'somewhat confident' in the teaching strategies as compared with only 43% (3/7) of fellows being 'somewhat confident' pre-intervention.

Pre-Intervention Analysis: Fellow Confidence in Quality of Current Teaching Strategies Regarding Research

Not at all confident · A little confident · Somewhat confident
Very confident · Extremely confident

Interim Analysis: Fellow Confidence in Quality of Current Teaching Strategies Regarding Research

Not at all confident · A little confident · Somewhat confident
Very confident · Extremely confident

- Fellows also noted increased preparedness regarding clinical trial design, assembly of grant components, contract negotiation and manuscript preparation at interim analysis.

Discussion

- This innovation led to the realization of the power of portfolio use in medical education as a method of formative evaluation. A portfolio requires trainees to document, critically evaluate and reflect upon their knowledge, skills, and productivity.

- Research training portfolio use during GME has many potential benefits including:
    1. A discrete metric to evaluate trainee and mentor academic progress and success
    2. A tool for more holistic view of applicants
    3. A discrete representation of success to support marketability of trainees and assist with bargaining for protected research time as they pursue post-training career plans
    4. A data-collection tool for formative program evaluation and improvement

- We aim to create a new paradigm for research training that can be disseminated across departments, institutions and multiple training levels.

- Additional post-intervention data will guide our efforts in adapting our research training approach to best meet the needs of our trainees.

- Further research is needed to help develop best practices for GME training programs that can be easily adapted into the current educational framework.

References

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