Proceedings from the 2024 Medical College of Wisconsin Innovations in Healthcare Education Research Annual Conference

The following award-winning abstracts were presented during the 11th Annual Medical College of Wisconsin (MCW) Innovations in Healthcare Education Research (IHER) Annual Conference on September 17-19, 2024. Health care educators and researchers from MCW and other national institutions meet annually at IHER to present their research and innovative ideas and to learn from one another about the new and creative approaches to educating students and residents. The 3-day conference includes nationally recognized keynote speakers, panel sessions, workshops, roundtables, oral presentations, and posters that can be viewed at https://www.mcw.edu/IHER2024. Three hundred nineteen participants hailed from 30 states and 9 countries. The winning oral presentations and posters in the research and innovations categories are published below.

BEST ORAL PRESENTATION – INNOVATIONS

Surgical Innovation Discovery Course: Utilizing Surgical Trainee Agile Innovation and Empowerment (STAIR) Framework to Promote Innovation Amongst Surgical Residents

Candice Stegink, MA

Problem Statement: Providing quality innovation programming that is conducive to a surgeon's busy schedule is an ongoing challenge, but even more so for a surgical trainee's schedule. Numerous works have explored the design and development of learning experiences to support physician innovators. However, there is a lack of evidence supporting frameworks that contribute to innovation empowerment for surgical trainees as a complement to the demands of clinical practice. The following catalogs the systematic design and development of a novel innovation and discovery agile framework tailored to surgical residents with original innovation ideas.

Approach: Through qualitative interviews with trainees, findings supported a strong interest to participate in a structured, team-based innovation program designed to increase efficiency and maximize resources (eg, access to engineers, funding, and tangible prototypes). We crafted the Surgical Trainee Agile Innovation and empoweRment (STAIR) framework to support trainee-led innovations, applied in an 8-week team-based course. Trainees submitted applications and served as project investigator. Applications were assessed based on an unmet clinical need, including scope and frequency of problem, potential solution, prototyping feasibility, and recruitment of team members. The STAIR framework created a format to empower surgical trainees to form and lead innovation teams to explore solutions to clinical problems utilizing a team-based fast-fail approach.

Lessons Learned: Our team learned that the STAIR framework provided structure and flexibility for trainees to explore their innovations. This framework allowed participants to innovate around clinical responsibilities and demonstrate leadership and creative thinking and be empowered to ideate solutions to clinical problems. Surgical trainees can continue to utilize this lean-innovation framework throughout their training and careers to lead teams to explore early-stage innovative solutions to clinical problems. Four teams participated in the first cohort. All completed the 8-week course successfully. Three teams are continuing to work on their innovations 1 year after course completion. One team has filed a provisional patent, another is starting a clinical trial, and the other is performing animal testing. All innovations started utilizing the STAIR framework.

Significance: This course and framework provide a novel opportunity to empower trainees to explore their innovative ideas. Trainees are motivated to tackle tough clinical problems early in their career in hopes they do not have to continue facing them for 30-plus years and to better patient outcomes.

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BEST ORAL PRESENTATION – RESEARCH

Benefits and Challenges of Online and Blended Learning Perceived by Students in a Health Care Degree

Feifei Han, PhD

Background: During the COVID-19 pandemic, universities worldwide quickly shifted most courses to online delivery to minimize the impact of the lockdown. Some students were concerned about the quality of their clinical training through online learning, whereas others preferred online learning due to its flexibility. In the post-COVID-19 era, redesigning health professions education programs requires a thorough understanding of students' perceptions of online and blended learning to integrate their opinions into transformative course delivery.

Methods: The present study investigated perceptions of the benefits and bottlenecks of online and blended learning by students enrolled in a health care degree program. The study was conducted in a research-intensive metropolitan university in Australia. A total of 199 students enrolled in a health care degree program participated. They answered an anonymous open-ended questionnaire that asked students' perceptions of the benefits and bottlenecks of both online and blended deliveries. Thematic analyses were used to code the data.

Results: Benefits of online learning: (1) flexible, (2) effective, (3) improving inclusive education. Challenges of online learning: (1) problems with lecture recordings, (2) problems with online course design, and (3) technical issues. Benefits of blended learning: (1) makes learning engaging, (2) easy to handle, (3) diverse learning spaces. Challenges of blended learning: (1) limited time-tabling options for face-to-face learning; (2) large size of face-to-face lectures.

*Conclusions: I*mproving students' satisfaction with online learning can be achieved by (1) providing students with quality services to solve their technical issues, which are likely to affect students' acceptance of online learning; (2) adding elements of interaction in course design (eg, embedding collaborative learning tasks and providing timely feedback).

Significance: The study provides useful information for health professions educators in the areas of online and blended course designs.

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BEST POSTER PRESENTATION – INNOVATIONS

Skin Savvy: Student-Led Community Service Learning and Public Education on Skin Cancer in Freeport, Bahamas

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Problem Statement: Community service learning enables medical students to develop professional skills while synthesizing content learned. However, such opportunities are rare in the pre-clerkship years, causing a lack of knowledge transfer to community health settings. Moreover, public health concerns, such as skin cancer, are not sufficiently taught to the Bahamian public. Given the predominantly African descent of the Bahamian population, there is a recognized need to raise skin cancer awareness. Therefore, a team-taught skin cancer awareness session at a local community center was initiated and presented. The session empowered students to apply and enhance their classroom knowledge by teaching the public, thus easing rising anxieties about skin cancers and related conditions.

Approach: Skin cancer is the most common cancer in the United States, and 1 in 5 people will develop skin cancer in their lifetime. We explored the need for skin cancer awareness in the Bahamas and expanded on a basic science session to serve the Bahamian community in the vicinity of the medical school. To provide comprehensive public education, an interactive and team-taught presentation titled "Skin Savvy: Sun Safety Against Skin Cancer" was implemented. The public learning session covered the etiology, pathophysiology, diagnostics, treatments, and prevention of skin cancer in accessible language while being ready to address participants' concerns. Taken together, this demonstrated the students' proficiency in the foundational, clinical, and diagnostic knowledge they have accrued, while also building the skills necessary for patient interaction in the future.

Lessons Learned: Medical education community service provides a formative experience and transfer of preclinical knowledge. Several benefits for both students and the audience emerged, including the following. (1) Creating a teaching opportunity enabled students to educate the public and themselves, while also identifying learning gaps. In particular, the effective time of sunscreen or prevalence of acral lentiginous melanoma in people of color were addressed, thus highlighting the importance of this educational session for the Bahamas community. (2) The experience enabled the development of presentational skills and translated clinical terminology into patient-centered language. (3) Classroom concepts and information were synthesized and transferred to practical public health contexts providing the first skin cancer awareness session as a collaborative educational experience.

Significance: Medical education community service enables students to apply knowledge to real-life settings to integrate basic and clinical sciences. This is the first report of a student-led skin cancer awareness session for the Bahamian public, accomplished by the application of a foundational science session.

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BEST POSTER PRESENTATION – RESEARCH

ChatGPT Validation of an Anti-Racism in Medical Education Questionnaire

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Background: Surveys are vital in clinical education to evaluate learner knowledge and prompt self-reflection, but creating valid, unbiased surveys is a complex process. Validation involves literature review, interviews, and expert opinions, focusing on item-specific clarity. The rise of artificial intelligence (AI) offers new avenues for medical education survey development, provoking debate on its benefits and limitations in education. This study aims to address questions about the usefulness of ChatGPT in the creation of surveys. Can it help examine content validity and optimize the wording of individual survey items? How does ChatGPT compare with target group opinions? In other words, what is the "value added" of ChatGPT?

Methods: As part of a Josiah Macy Jr grant, a committee of experts developed an 11-item survey to evaluate bias and allyship in the learning environment. After undergoing several committee reviews and revisions, the survey underwent a ChatGPT validation and item review. Both the free (3.5) and paid (4.0) versions of the software were used. The survey was entered in its entirety, and then one prompt after the other was asked of ChatGPT. Each prompt served either to validate and/or optimize the instrument as a whole or the individual items. The authors then convened a 1-hour focus group of 9 medical students (years 2-4) who were given the same prompts that were used for the ChatGPT analysis.

Results: ChatGPT provided quick and extensive output, with both versions correctly identifying the survey's goals and suggesting clarity improvements. Differences in the quality of the versions of ChatGPT were noted, with the paid version offering better formatting. ChatGPT identified ambiguous phrasing in the survey, as well as ways to improve each survey item. As a final output, the AI model integrated its suggestions into new survey questions. However, ChatGPT lacked contextual information, making some unnecessary suggestions given the target group population. This emphasized the value of focus groups in addition to AI models in survey development.

Conclusions: While this is an exploratory study of a new tool, we can conclude that although ChatGPT can offer extensive explanations and valuable suggestions in optimizing a survey, it does lack some contextual understanding. It can provide specific suggestions for a developing survey that focus groups cannot always provide. However, also inviting target audiences to review survey drafts (eg, committee inclusion, focus groups) will result in valuable feedback because they can supply contextual information. By utilizing both together, one has the best chance to optimize survey creation. Using templates and experimenting with prompts and future software iterations will help move the field forward.

Significance: As there are pros and cons to using AI, we don't advocate for ChatGPT as a replacement of human input, but rather as a helpful tool that should be part of every survey developer's toolbox.

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