A novel small-group case-based learning activity for practicing interprofessional collaboration

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Context

Team learning activities have been shown to be effective modalities for interprofessional education (IPE) as they mimic the collaborative nature of interprofessional care [1]. Structured team learning activities like team-based learning (TBL) have been used successfully for IPE of large groups of health professions students [2, 3]. Des Moines University has been developing a unique small group learning activity during which students from various health professions programs (DO, DPM, MSA, MBS and PhD) work systematically through interactive simulations of patient cases to highlight the connections between basic science principles and clinical presentations. During the activity, called SKIPPs (Scientific knowledge Integrated in Patient Presentations), students combine their skills to work through low fidelity simulations of children presenting with inborn errors of metabolism (IEM), discuss a diagnostic strategy, interpret test results, present the patient to a larger group and explore the relevant evidence-based medicine (EBM) literature.

Objective

Evaluate the effectiveness of a small group case-based learning activity on interprofessional teamwork, clinical reasoning and integration of foundational and clinical sciences

Methods

SKIPPs were designed to deepen the understanding of inborn errors of metabolism and occur in four distinct phases (Fig. 1): 1. Individual preparation through directed study, 2. Small group discussion of cases and differential diagnoses, 3. Oral presentations of cases and clinical reasoning to large group and 4. Study and discussion of EBM literature to integrate basic science principles into the clinical picture. Participants were reminded that they were not expected to be knowledgeable about every aspect of the case but should instead appreciate how each profession contributes a unique perspective to the discussion. SKIPPs sessions were scheduled in first-semester Foundational Sciences courses during which participants acquired the knowledge to understand clinical presentations of metabolic disorders. In the most recent offering of the SKIPPs activity, 293 students from 5 health science programs were divided into interprofessional groups of six, with four of these groups combined into a session to explore four exemplary cases of IEM. Student learning outcomes were assessed with pre- and post-surveys of confidence in key skills as well as facilitator evaluations of group performance.

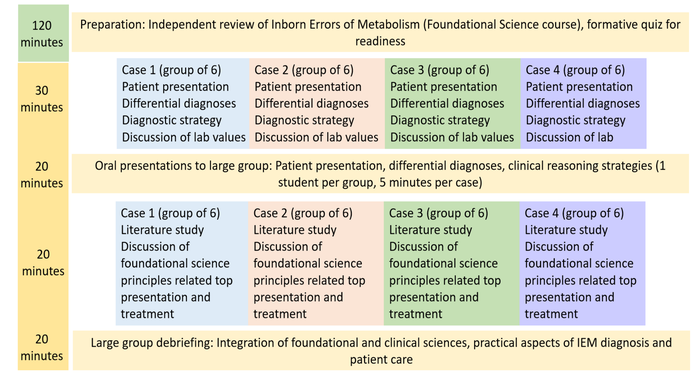

Figure 1: Organization of SKIPPs session. Following an initial individual preparation through directed study, SKIPPs participants meet for 90 minutes to explore patient cases and evidence-based literature. In small groups of 6, students complete a low fidelity simulation during which they review a patient presentation, differential diagnoses, diagnostic strategy and laboratory values. In the next phase, the groups present their reasoning strategies and findings to the large group. This stage is followed by a second small-group phase for facilitator-guided exploration of EBM literature. Finally, the large group meets for a debriefing session led by a team of clinicians and basic scientists.

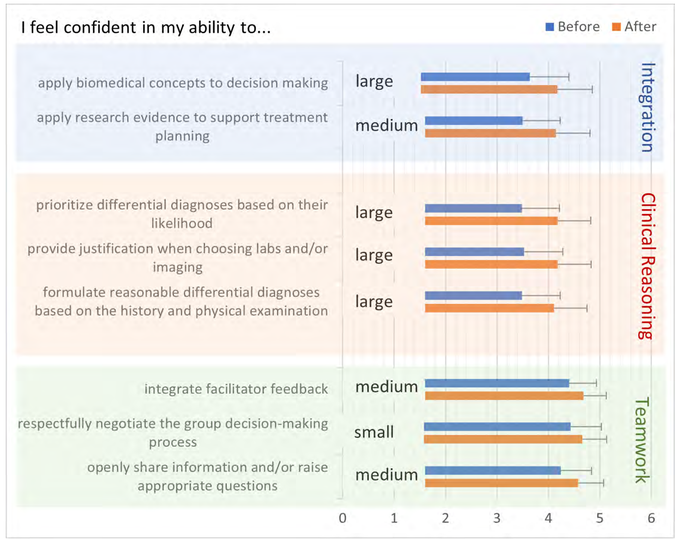

Figure 2: Student ratings of confidence in 8 science integration, clinical reasoning and teamwork tasks (N=285, rating scale 1-5, all pre/post-differences significant at p=1.4E-6 or lower, pre/post effect sizes are superimposed on the bars). Effect sizes are highest in the clinical reasoning domains, but significant gains also occur in the domains of teamwork and integrations of basic and clinical science concepts.

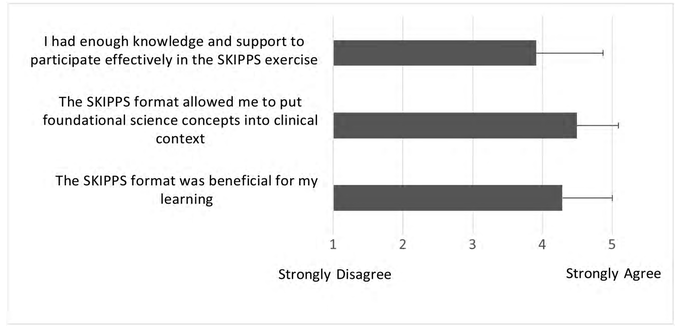

Figure 3: Student ratings of SKIPPs activity on the anonymous course evaluation survey conducted at the end of the semester (mandatory survey for 60 randomly selected students).

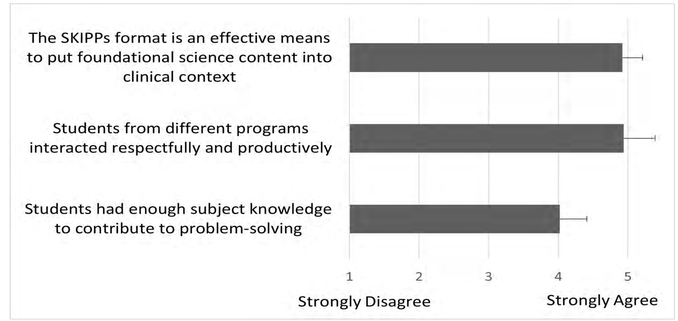

Figure 4: Facilitator responses to questions on student performance and adequacy of preparation (N=5). Faculty agreed on the suitability of SKIPPS to foster the integration of basic and clinical sciences, and noted how the format allowed for respectful and productive discussion among students from different programs. There was less agreement with the statement that students were prepared to participate in clinical problem solving.

Results and Discussion

Student confidence: Students were surveyed before and after the event for their confidence in completing 8 tasks that were grouped into “integration of basic and clinical sciences”, “clinical reasoning” and “teamworking” skills (Fig 2). Significant gains in confidence were observed in all categories, with the strongest effects occurring in the clinical reasoning domain.

Student evaluation: At the end of the course, students were asked to share their impression of the SKIPPs exercise on the course evaluation survey (mandatory for a selected group of students, N=60). Students agreed that the exercise fostered their ability to integrate the basic and clinical sciences, but were somewhat less convinced that their current knowledge enabled them to participate effectively (Fig. 3).

Facilitator evaluation of activity: Clinical and Basic Science faculty who served as facilitators and evaluators for the SKIPPs event were surveyed about their impressions on student preparedness and collaboration (Fig. 4). Faculty agreed that students from different professional programs interacted respectively and productively, and agreed that the SKIPPs format is an effective means to foster the integration of basic and clinical sciences. There was less agreement on the question of whether students had enough subject knowledge to contribute to clinical problem-solving. This observation was reaffirmed by free-text survey comments that pointed out that at this early stage of education, students do not have a good understanding of their roles on the healthcare team.

Conclusions and Future Directions

Our data show that SKIPPs exercises with their emphasis on teamwork, team-based clinical problem-solving and integration of health science disciplines are good opportunities to practice interprofessional collaboration skills. It is tempting to speculate that the inclusion of additional health professions students – particularly from the physician assistant program – can make the SKIPPs sessions an even more effective tool for interprofessional education. The investigators have obtained funding to explore this hypothesis.

References

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[3] M. Ohtsuki and T. Matsui (2014) Large-scale team-based learning for interprofessional education in medical and health sciences, Medical Teacher. 36, 452-453.