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Introductory Experiential Learning in IPE Teams: Changes in Team Collaboration and Cultural Attitudes and Beliefs

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Abstract

Background: An introductory, longitudinal, authentic experiential IPE opportunity named LIFE was delivered. The objectives were to 1) compare attitudes, including cultural attitudes and beliefs, and team behaviours of learners over time, and 2) assess association between participation in LIFE and changes in team attitudes and performance.

Methods: Students (*n* = 48) from eight schools worked in eight teams. Each team was assigned to a patient/family, who was asked about health and healthcare experiences. Students completed Students' Perceptions of Interprofessional Clinical Education–Revision 2 (SPICE-R2), Cultural Attitude and Belief Scale (CABS), and Interprofessional Collaborator Assessment Rubric (ICAR). Analyses focused on differences over time for all participants and by team.

Findings: Knowledge of roles improved for four teams, and five teams showed improvements in "techniques" to interact with diverse patients. Notably, "communication," "collaborative working," and "roles" changed across three teams for ICAR. One team showed improvements in all three assessments and two teams showed little to no changes.

Conclusion: LIFE was associated with improvements in "roles" and "techniques" to help teams interact with diverse patients.

Keywords: interprofessional collaboration, interprofessional education, experiential learning

Introduction

Interprofessional education (IPE) is now widely implemented in health professional degree programs to ensure graduates are collaboration ready upon entering the healthcare workforce [1,2]. Early implementation of IPE, or introductory-level IPE, is recommended for health profession students [3]. Students exposed to IPE early in their training have positive attitudes toward interprofessional collaboration, and early exposure may also reduce students' biases toward other health professionals [4-8]. For example, Gross, Phanudulkitti, Bavireddy et al. show improved students' attitudes toward IPE, including interprofessional care, after a series of online and in-person introductory IPE lessons [7]. As well, Teodorczuk, Khoo, Morrissey, and

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Rogers suggest that offering IPE early in healthcare training may inhibit or reduce students' negative attitudes toward other professionals [8].

Introductory IPE activities have been implemented successfully in a variety of formats, often involving case studies, journal clubs, and simulation experiences [4-14]. Introductory approaches are generally classroom-based and are effective in improving attitudes toward IPE as well as improving students' skills, confidence in working in interprofessional (IP) teams, and readiness for collaboration. Critically, simulations may include authentic scenarios such as interprofessional student teams, interprofessional decision-making, and peer review [11]. Early health profession students working in simulated interprofessional teams have shown increases in knowledge and confidence for key IPE competencies, such as teamwork and communication [13-14]. Naumann, Schumacher, Stuckey et al. describe an authentic clinical experience, during which students chose to interview or shadow a team member from another profession or participate in a team meeting. Their findings show positive changes in students' attitudes toward IPE, their understanding of roles, and how they value teamwork [15]. However, this initiative focused on senior students. It is unclear how early students in interprofessional teams may benefit from exposure to authentic patients. It is anticipated that students who interact with patients in interprofessional teams early in their training may be better prepared to rotate, intern, or work in clinical settings [12]. Importantly, authentic, introductory IPE experiential learning provides low-stake opportunities for students to work together as an interprofessional healthcare team while interacting with patients.

A longitudinal, experiential IPE opportunity aimed at introductory health profession students called Longitudinal Interprofessional Family-Based Experience (LIFE) was designed and delivered [16]. In addition to evaluating students' attitudes toward IPE, students' perceptions of team functioning and their awareness of their own cultural biases was assessed. The primary objectives were to 1) compare attitudes (including cultural attitudes and beliefs) and team behaviours of all learners over time, and 2) assess the association between participation in LIFE and changes in team attitudes and performance. To become an effective member of an interprofessional team, students must develop awareness about multiple factors that are relational, process-oriented, and contextual, and consider personal and professional biases [17].

Methods
Longitudinal Interprofessional Family-Based Experience (LIFE) overview
Longitudinal Interprofessional Family-Based Experience is an 11-week experiential interprofessional learning opportunity. It was offered as an optional non-credit set of learning activities to students in 11 health-related disciplines. The program was delivered online, which enabled participation from students in three campuses. The learning activities were framed around the Socio-ecological Model (SEM) and Social Determinants of Health (SDOH) [15]. Students ($n = 48$) were recruited from eight health profession schools (Table 1) and worked in eight interprofessional teams. Students were assigned to teams by staff at the Center for Interprofessional Education to ensure that the professions were distributed across the teams. Each team was

assigned to a volunteer patient/family living with a chronic illness, such as multiple sclerosis or spina bifida. Patients ($n = 8$) were recruited from the health system's Office of Patient Experience.

Table 1: Description of teams participating in LIFE

Demographic variables		Team 1	Team 2	Team 3	Team 4	Team 5	Team 6	Team 7	Team 8	Total
Gender	Female (%)	5 (83.3%)	3 (50%)	5 (83.3%)	5 (83.3%)	5 (83.3%)	5 (83.3%)	5 (83.3%)	5 (83.3%)	38
	Male	1	3	1	1	1	1	1	1	10
Race	White (%)	5 (83.3%)	4 (66.7%)	4 (66.7%)	4 (66.7%)	4 (66.7%)	5 (83.3%)	5 (83.3%)	6 (100%)	37
	Asian	1	1	1	–	2	1	1	–	7
	Black	–	1	–	1	–	–	–	–	2
	Other	–	–	1	1	–	–	–	–	2
Ethnicity	Any Latino/Latina member	NO	NO	YES	NO	NO	NO	YES	NO	2 / Age
Age range (mean age)		18-25 (22.5)	19-28 (23)	19-35 (23.33)	18-30 (22.83)	19-24 (21.67)	18-30 (23)	18-28 (22.83)	18-29 (23.33)	22.8 (3.64)	School
Years in school (mean)		1-6 (4.5)	0.5-8 (4.5)	2-8 (4.67)	0.5-8 (4.75)	1-7 (4.25)	1-7 (4.33)	1-7 (4.5)	1-10 (5)	4.6 (2.23)	Some
IPE experience		5	4	3	5	5	4	2	2	30	Lots
		1	1	2	0	1	0	4	3	12	None
	(%)	0 (0%)	1 (16.7%)	1 (16.7%)	1 (16.7%)	0 (0%)	2 (33.3%)	0 (0%)	1 (16.7%)	6
University level	Graduate (%)	5 (83.3%)	5 (83.3%)	4 (66.7%)	4 (66.7%)	5 (83.3%)	4 (66.7%)	3 (50%)	5 (83.3%)	35
	Undergraduate	1	1	2	2	1	2	3	1	13
Team composition		Dentistry, Kinesiology, Medicine, Pharmacy, Social Work, Public Health	Dentistry, Health Sciences, Medicine, Pharmacy, Social Work, Nursing	Dentistry, Kinesiology, Medicine, Pharmacy, Nursing, Public Health	Dentistry, Kinesiology, Pharmacy, Nursing, Social Work, Public Health	Dentistry, Health Sciences, Pharmacy, Nursing, Public Health, Social Work	Dentistry, Kinesiology, Pharmacy, Nursing, Social Work, Public Health	Dentistry, Kinesiology, Medicine, Nursing, Social Work, Health Sciences	Dentistry, Medicine, Health Sciences, Pharmacy, Nursing, Social Work	

Students engaged in the following learning activities: 1) individual readings about teamwork, 2) a kick-off session, which consisted of a lecture, a discussion, and a workshop on team norms and the application of SEM and SDOH, 3) team preparation for interview #1, which included readings, team role assignments, and the formulation of interview questions with feedback from faculty, 4) patient/family interview #1, which focused on illness experience, 5) team debrief #1, which included students' reflections on roles and team functioning, 6) team preparation #2, 7) patient/family interview #2, which focused on experiences with healthcare teams and systems and community resources, 8) team debrief #2, and 9) a closing session to reinforce the application of SDOH and SEM, team reflections, and next

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steps for interprofessional education [16]. During the two patient/family interviews, which occurred approximately weeks 4 and 8, the student interprofessional teams met virtually with patient/family units to interview them about their health and healthcare experiences, interactions with the healthcare system, and use of community resources and services. A Canvas Learning Management System site was used to compartmentalize each of the nine activities into modules. Resources such as readings and surveys were housed within the modules. Students who completed all modules received a participant certificate and guidance on how to include the experience on their resume or curriculum vitae.

Evaluation tools and timepoints

Student self-reports were used in this evaluation. Patient/family interviews were not video recorded for privacy reasons, although team interview preparation and debrief sessions were recorded. Coding and analysis of these data is beyond the scope of this article.

Table 2: Descriptive statistics for Cultural and Attitudes Belief Scale (CABS) over time by all LIFE participants (n = 48)

CABS items (1 = strongly disagree, 5 = strongly agree)*	Baseline mean (SD)	Post mean (SD)	p value**
1. A particular **lifestyle** or culture is irrelevant when it comes to good medical care (reverse)	3.77 (1.21)	3.23 (1.65)	**0.045**
2. I am an **unbiased** individual	3.29 (0.97)	2.93 (0.99)	**0.012**
3. I am likely to **behave** in a culturally competent manner when seeing patients	4.17 (0.66)	4.32 (0.64)	**0.027**
4. I believe am **aware** of my biases	3.98 (0.67)	3.98 (0.6)	**0.844**
5. I believe that race, religion and culture should play little or **no part** in the assessment and treatment of patients (reverse)	3.33 (1.53)	3.07 (1.44)	**0.175**
6. I have a variety of **techniques** that can use to help treat patients from diverse backgrounds	3.27 (1.14)	3.91 (0.84)	**<0.001**
7. I **relate** to patients differently depending on their race, religion, and culture	3.33 (0.95)	3.28 (1.05)	**0.755**
8. My **professional behavior** is influenced by subtle and obvious biases	2.27 (0.84)	2.7 (1.1)	**0.009**
9. There are some patients towards whom am likely to show a **negative bias**	2.04 (1.05)	2.07 (1.06)	**0.761**
10. At least initially, **cultural competency** is more important than technical competency	3.33 (0.81)	3.51 (0.88)	**0.417**
11. Culture is only important to consider in **nonemergent** situations (reverse)	4 (0.77)	4 (1.02)	**0.892**

Notes: *Bolded name is tag for this item in text and Table 4, **p value from mixed effects linear models

Students completed a baseline survey during the first module (individual readings) and a post-learning survey after the final module (closing session) that included two assessment scales. Students' Perceptions of Interprofessional Clinical Education – Revision 2 (SPICE-R2) was used to assess students' attitudes toward IPE. The assessment contains 10 items rated on a Likert scale, where 1 = strongly disagree and 5 = strongly agree. It captures three factors representing attitudes toward interprofessional teamwork, roles and responsibilities, and patient outcomes. The 10-item SPICE-R2 model was developed from previous, longer versions and showed strong construct validity using exploratory factor analysis and acceptable fit indices, where the comparative fit index was 0.98 and the root mean square error of approximation was 0.06. The 3-factor exploratory factor analysis showed strong loadings. The SPICE-R2 model had Cronbach reliabilities of interprofessional teamwork and team-based practice (0.85), roles/responsibilities for collaborative practice (0.68), and patient outcomes from collaborative practice (0.74). The SPICE-R2 model is reliable and valid according to confirmatory factor analysis and construct validity testing [18], and was included in this work for consistency with previous IPE evaluations.

Students also completed the Cultural Beliefs and Attitudes Scale (CABS) (see Table 2), which included items on awareness of cultural biases within IPE and practice. The assessment contains 11 items rated on a Likert scale, where 1 = disagree and 5 = strongly agree. Three items require reverse scoring (1,5,10). Factor analysis showed three internally consistent factors, although the Cronbach alpha ranged from 0.59 to 0.61 for each factor [19]. The low response burden and factor analyses provided support for its use. However, the results in factor analysis and Cronbach reliability did not support three factors and the results are therefore presented as 11 items.

In addition to the two assessment scales, students self-evaluated their team behaviour skills and team functioning following each patient/family interview with selected items from the Interprofessional Collaborator Assessment Rubric (ICAR) inventory [20]. The rubric includes 31 items for 19 dimensions in six competency categories including: communication, collaboration, roles/responsibilities, collaborative patient/family-centered approach, and team functioning, and conflict management/resolution. It was validated through a typological analysis of competency frameworks, a Delphi survey of experts, and interprofessional focus groups with students and faculty. Internal consistency, inter-rater reliability, inter-group differences, and the relationship between rater characteristics following multi-source feedback indicate ICAR to be feasible and reliable. Items within each dimension are rated as 0 = not observable, 1 = minimal, 2 = developing, 3 = competent, or 4 = mastery. Six items (Table 3) from ICAR representing the first five competency categories were selected to reduce response burden. For example, each student was asked, "Which of the following statements best reflects your ability to communicate effectively in a respectful manner with others ('others' includes team members, patient/client, and health providers outside the team)?" Responses included 1) communicates with others in a disrespectful manner, 2) occasionally communicates in a confident, assertive, and respectful manner, 3) frequently communicates in a confi-

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dent, assertive, and respectful manner, 4) consistently communicates with others in a confident, assertive, and respectful manner.

This evaluation was exempt for review by the institutional review board.

Table 3: Descriptive statistics for Interprofessional Collaborator Assessment Rubric (ICAR) after visits 1 and 2 for all participants (*n* = 45)

ICAR items (1 = Minimal, 4 = Mastery)*	Interview 1 mean (SD)	Interview 2 mean (SD)	*p* value**
1. **Communicates** effectively in a respectful manner with others (i.e., team members, patient/client, and health providers outside the team)	3.49 (0.59)	3.67 (0.56)	0.058
2. Establishes/maintains **collaborative working** relationships with other providers, patients/clients, and families	3.38 (0.65)	3.64 (0.48)	**0.009**
3. Shares **information** sharing with other providers/students in your team	3.47 (0.59)	3.40 (0.62)	0.497
4. Integrates **roles** and responsibilities of all health providers/students to optimize patient/client care	3.22 (0.6)	3.44 (0.55)	**0.017**
5. Integrates **patient**/client/family circumstances, beliefs, and values into your team's considerations/discussions	3.58 (0.58)	3.62 (0.49)	0.623
6. Recognizes strategies that will improve **team functioning**	3.24 (0.65)	3.49 (0.55)	**0.026**

Notes: *Bolded name is tag for this item in text and Table 4, **p value from mixed effects linear models

Data analysis

Each student completed the baseline and post-learning surveys. For data completeness, missing data were mirrored from one of the available time points. For example, if data were not available at interview #2, then values from interview #1 were used. This approach increased the number of completed responses, but it did not affect data on changes in students' or teams' attitudes and behaviours. Students without any data at either time point (baseline or post-learning) were excluded from this analysis.

Student demographics, including school, discipline, and graduate/undergraduate status, were categorized (Table 1). Students were asked about their previous IPE experience, which was coded into "lots," "some," or "none." Previous IPE experience for students who work in an interprofessional healthcare setting on a day-to-day basis was coded as "lots," and if the experience was exclusively through coursework or if the IPE experience was less than one year, the experience was coded "some."

Analyses focused on differences over time for all participants and by team. The results for all participants are presented first for each assessment. Baseline and post-learning scores for all participants for SPICE-R2 and CABS were compared for the 48 participants. The ICAR ratings from interview #1 and interview #2 were compared for the 45 participants with complete data. To compare the difference in out-

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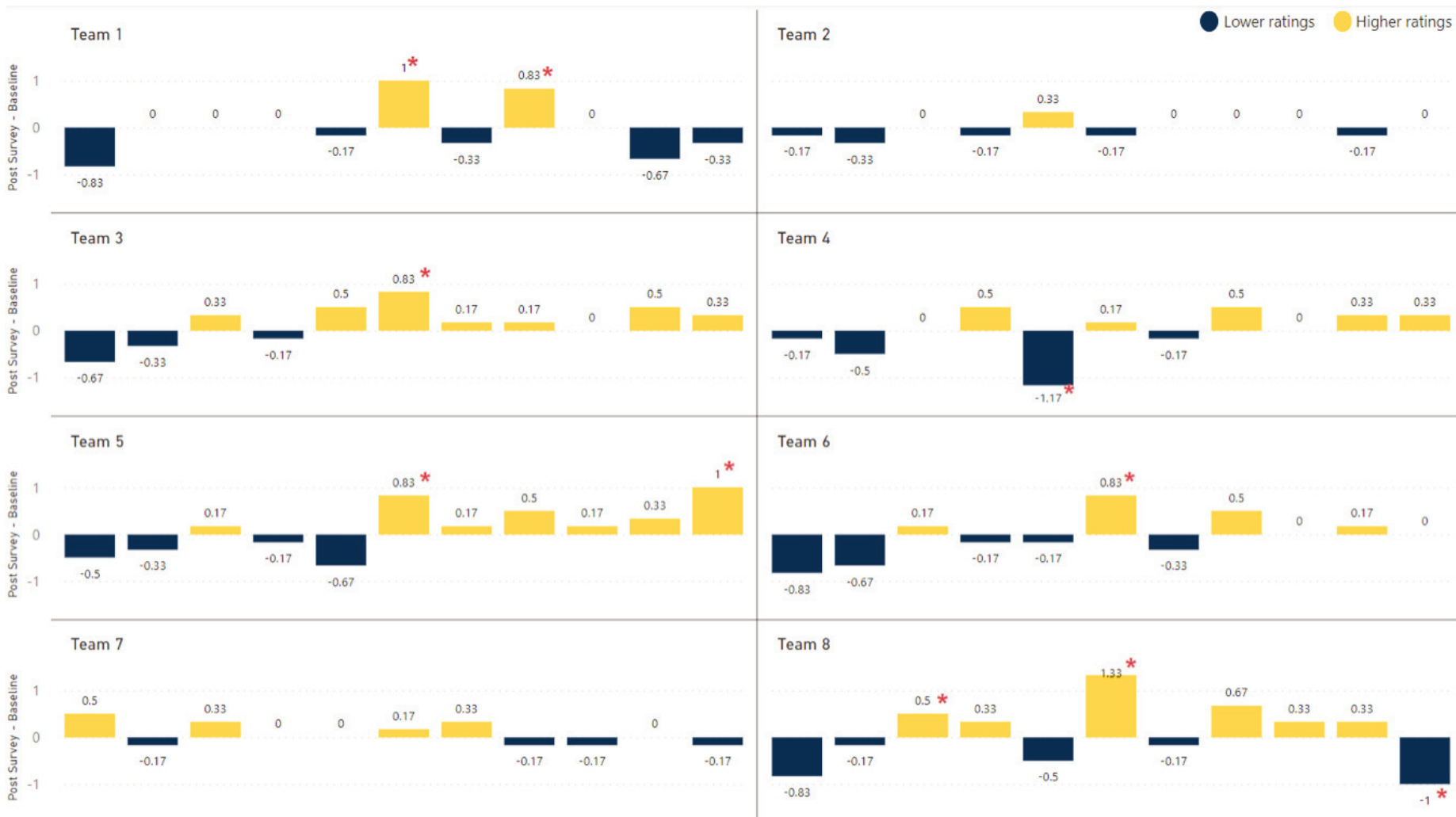Farris, Bavireddy, Bishop,
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Figure 1: Differences in expected marginal means of Cultural and Attitude Belief Scale (CABS) ratings by team (* designates $p<0.05$)
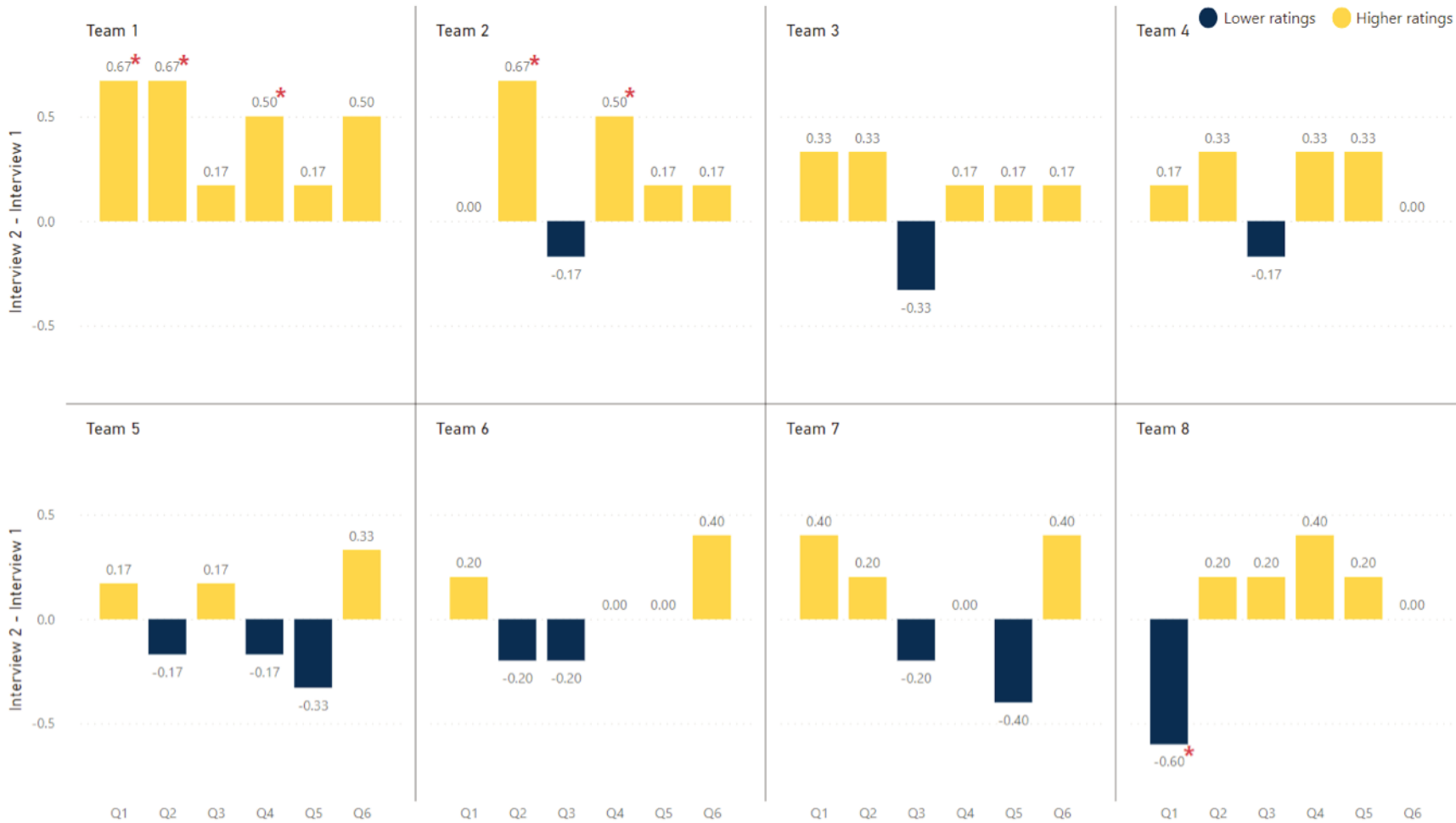
Figure 2: Differences in expected marginal means of Interview 2 and Interview 1 for Interprofessional Collaborator Assessment Rubric (ICAR) by team (* designates $p<0.05$)

comes across all participants, mixed effects linear models, with random intercepts for the teams to account for the effect of their correlation, were used.

Then, differences in SPICE-R2, CABS, and ICAR scores by team were calculated using post minus baseline values. To compare these differences at the team level, fixed effects regression analyses of the teams' expected marginal means were used (Figures 1 and 2). Using the difference scores as outcomes allowed the inclusion of the joint distribution between paired values of individual responses. A 95 percent *t*-statistic confidence interval was computed for the slopes, and the type I error rate was set at 0.05. All testing was done with R Statistical Software and the lmerTest package (v. 4.1.1) [21,22], and team analysis was done using the R emmeans package [23].

Results

There were eight IPE student teams each with six members; Table 1 shows the demographics and academic and interprofessional experience of the teams. Each team had one male, except Team 2, which had three males. While most participants were white, Team 8 was exclusively white. The average age of participants was 22.8 years (SD = 3.6) and participants had attended college for an average of 4.6 years (SD = 2.2). Most teams included members with some previous IPE experience, but Teams 7 and 8 had the most members with advanced IPE experience compared with other teams. Most participants were graduate or professional students, while four teams had two or three undergraduate students.

Regarding SPICE-R2 for all participants, the average ratings for "teamwork" and "outcomes" were 4.7 (SD = 0.68) and 4.5 (SD = 0.76), respectively, and no changes between baseline and post ratings were found. The average rating for "roles" was 3.4 (SD = 0.8) at baseline and 3.9 (SD = 1.0) at post, and this reflected a statistically significant difference (p = 0.001). In examining changes in SPICE-R2 over time by team, Teams 1, 3, and 6 showed statistically significant differences in "roles," with these ratings increasing from baseline to post (results not shown in table).

For CABS (Table 2), there were statistically significant differences in the score of five items for baseline to post across all students, with decreases in "lifestyle" (question 1 [Q1]) and "unbiased" (Q2), and increases in the items "behave" (Q3), "techniques" (Q6), and "professional behaviour" (Q8). The average difference in each CAB item for teams was determined (Figure 1). Five teams showed statistically significant improvements in "techniques" (Q6). Team 8 showed changes in three items, with statistically significant differences in "behave" (Q3), "techniques" (Q6), and "non-emergent" (Q11). Teams 2 and 7 showed no changes in CABS items.

For ICAR (Table 3), the items "collaborative working" (Q2), "roles" (Q4), and "team functioning" (Q6) showed statistically significant changes from interview #1 to interview #2 across all students (Table 3). The differences in each ICAR rating between interview #2 and interview #1 was quantified by team (Figure 2), and few statistically significant changes occurred. Team 1 showed improvement on three items: "communication" (Q1), "collaborative working" (Q2), and "roles" (Q4). Team 2 showed improvements in "collaborative working" (Q2). and "roles" (Q4). Team 8 showed a statistically significant decrease in "communication" (Q1). Notably, "communication"

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(Q1), "collaborative working" (Q2), and "roles" (Q4) were the items that changed across these three teams. Teams 3, 4, 5, 6, and 7 showed no changes in ICAR ratings.

Taken together (Table 4), Team 1 was the only team that showed statistically significant improvements in SPICE-R2, CABS, and ICAR ratings and that team also had the most statistically significant improvements. Team 8 showed four statistically significant changes, although two of them were negative. Teams 4 and 7 showed little to no changes in the three assessments. With this small sample size, it is not possible to quantify associations between team characteristics and these assessments.

Table 4: Summary of team characteristics and statistically significant differences by team (all teams, $n = 6$)

	Team characteristics	SPICE-R2	CABS	ICAR
Team 1	1 undergraduate All IPE experience	↑Roles	↑Techniques ↑Professional behavior	↑Communicates ↑Collaborative working ↑Roles
Team 2	50/50 gender 1 undergraduate 1 Black			↑Collaborative working ↑Roles
Team 3	1 Latina 1 Other race Oldest average age	↑Roles	↑Techniques	
Team 4	1 Black 1 Other race		↓No part	
Team 5	1 undergraduate All IPE experience		↑Techniques ↑Nonemergent	
Team 6	Least IPE experience	↑Roles	↑Techniques	
Team 7	1 Latina 50/50 undergraduate All IPE experience, with 4 "lots"			
Team 8	All white Oldest average age Highest average years school 1 undergrad 2nd most "lots" IPE experience		↑Behave ↑Techniques ↓Nonemergent	↓Communicates

Discussion

The strengths of LIFE and this evaluation include patient participation, curricular content on diversity and social determinants, and assessments of cultural beliefs and team performance. The program provided early health profession students with an authentic, longitudinal, and experiential IPE learning opportunity by interacting with patients. The interviews immersed interprofessional student teams in real-life experiences that patients and their families face while managing chronic diseases. The patient/family interview preparation, interviews, and debriefs allowed students

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to deeply reflect on their own biases or cultural beliefs as well as how their team interacted with a real patient.

In relation to students' cultural attitude and beliefs, participation in LIFE was associated with decreased ratings for all students in "lifestyle" and "unbiased." This finding suggests that students may gain more self-awareness as they interact with patients managing chronic disease and learn how different disciplines or professions learn about individual patients. In another study that used CABS to measure cultural competence pre- and post-training, ratings for unbiased also showed a decrease [18]. Ratings for all participants' professional behaviour and techniques increased, which supports the effectiveness of LIFE's training on how to organize and run team meetings.

Overall, CABS was responsive, as changes were found between baseline and post-learning data with only 48 participants. However, the analysis of this data was limited to the 11 individual CABS survey items, as no domains were apparent in the data. A survey that is multi-dimensional (affective-, cognitive-, and skill-based) and that has strong psychometric properties could be beneficial in future work. Other assessments such as the Cultural Intelligence Scale [24] or the 14 instruments cited in Shen's review of instruments to assess cultural competence should be considered [25]. While these instruments include more than 11 items, ranging from 20 to 83 items, their psychometric properties generally show improved validity and reliability compared to CABS. As well, their multi-dimensional approach may be needed to understand how the cognitive, metacognitive, motivational, and behavioural aspects of students' cultural competence can be affected [24,25]. One IPE competency at the university where this study was completed is intercultural humility, defined as "acquire self-awareness and recognition of one's own beliefs, biases, and behaviours that impact all aspects of team-based patient-centered care and population health, resulting in the ability to customize services when working with diverse individuals or populations" [26], and these results provide some preliminary evidence to support this competency.

Students rated their behaviours in their teams, and some positive findings were noted even with this small sample size. "Collaborative working" and "roles" showed changes across all students, which was expected because students worked together in the LIFE program to develop a series of questions to interview patients/families. This experience likely illustrated to students that different disciplines ask a variety of questions. The ICAR ratings by team showed changes in "communicate" as well. Notably, one team showed a decrease in "communicate" even though all the other ICAR ratings for that team were positive. This finding suggests that students can discern different aspects of their teams and team functioning. It is critical to continue to incorporate students' ratings of their team behaviours and performance. Future work should also consider how to incorporate professional or instructor ratings of the students' behaviours and performance within teams. Such an analysis is not possible at this time because the patient/family interviews were not recorded, and preceptors did not attend the interviews. It is possible that measures that lack context in healthcare and that assess general team behaviours without reference to healthcare teams could also be explored [27].

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Health profession students will work with clients from diverse social backgrounds once they are in practice. Experiential learning engages teams of health profession students with various populations to help students develop awareness regarding their own biases toward patients and enable the students to work toward cultural competency [28]. Immersing interprofessional health profession student teams in experiential learning has shown to result in positive attitudes toward marginalized populations and increase effective collaboration [29]. Collectively, participation in LIFE was associated with changes in cultural attitudes and beliefs and team performance that demonstrates that the students learned techniques to interact with patients from diverse backgrounds and improved some measures of collaboration and communication.

This study represents a first step in implementing and evaluating the impact of an introductory experiential interprofessional set of activities. In this case, LIFE was not a required course and did not provide credits to students who completed it. Thus, it is likely that participants had a strong interest in IPE, which could contribute to the positive findings. As well, the results have limited generalizability because this work was done in one university with a small number of students and faculty. Our inclusion of cultural beliefs is positive but a survey with stronger psychometrics is needed in the future, yet survey response burden is likely to increase. Using self-rated items in ICAR to assess team performance is a good first step, but there are limitations in only using self-report versus observation. Future work should use both approaches.

Longitudinal Interprofessional Family-Based Experience will be scaled to include greater numbers of students, and thus, student teams. By increasing the sample size, it may be possible to explore associations between team characteristics and the teams' overall attitudes or self-rated team performance. To capture different dimensions of cultural bias and humility, additional validated evaluation tools will be explored. Having IPE faculty and patient participants rate the students with ICAR would provide additional insights into student performance.

Conclusion
Introductory experiential learning involving two visits with patients/families was offered to 48 students from eight different health disciplines, and the students worked as interprofessional teams. Across all students, participation in LIFE was associated with changes in "roles" in SPICE-R2 and selected CABS items, and "techniques" to help them interact with diverse patients improved in five teams. When team ratings were examined, changes in ICAR for three teams included improvements in the items "communicate," "collaborative working," and "roles."

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Author contributions

O. Anderson: conceptualization, data curation, methodology, project administration, drafting, writing, reviewing, and editing

V. Bavireddy: data curation, formal analysis, project administration, visualization, drafting, writing, reviewing, and editing

T. Bishop: conceptualization, project administration, writing, reviewing, and editing

V.D. Marshall: data curation, formal analysis, drafting, writing, reviewing, and editing

K.B. Farris: conceptualization, data curation, formal analysis, methodology, drafting, writing, reviewing, and editing

Competing interests

K.B. Farris has a grant from AstraZeneca focused on medication management for patients with cancer and multiple chronic diseases.

Supporting information

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