Clinical Teaching of Interprofessional Child Development Assessment Skills in a Large Group Setting

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Executive Summary

Context

Continuous advances in health care and technology are contributing to a longer life expectancy. Institute of Medicine (IOM) (2001). One major downside of this situation is that chronic conditions are now becoming the leading cause of illness, disability and mortality. Globally, many health care ministries are realizing the advantages of having health care professionals from different professions working together to provide interprofessional care as the most efficient and effective means of supporting patients with chronic or complex needs (Russell et al. 2009). Our project focused on the needs of children with developmental disabilities, specifically Down syndrome and autism. Both of these chronic conditions benefit from teams of health professionals working collaboratively to provide integrated, efficient care for families. Although there is a wealth of clinical expertise in this specialty, educating large groups of undergraduate health sciences students to provide interprofessional care in a busy pediatric setting is not feasible, nor is it feasible to train a two year-old child to simulate such a patient. In this research report, we have considered the feasibility of teaching large groups of interprofessional health sciences students in a pediatric setting, while concurrently evaluating students' understanding of how interprofessional teams function. Our study compared a series of facilitated and non-facilitated video vignettes demonstrating a well-functioning interprofessional pediatric team while it assessed one child with Down syndrome and one child with autism.

Research Questions and Hypotheses

Five years ago, we began with a pilot study to evaluate small groups of health sciences students' perceptions of interprofessional team functioning, using an actual neurodevelopmental assessment clinic with videotaped versions of the same encounters. We found that in both groups, students seemed to value the opportunity to discuss their experiences with a facilitator who was knowledgeable about the functioning of interprofessional teams and the clinical manifestation. We used these findings to inform our current study, which aimed to answer the following research questions:

a) Can key components of interprofessional practice be taught to health science students in a large group classroom format?
b) When learning about the assessment of children with Down syndrome and autism in the context of interprofessional practice, how effective is an Interprofessional Education (IPE) facilitated videotaped assessment when compared to a non-facilitated assessment?

Based on our experience with the pilot study, we formulated the following hypotheses:

a) It will be possible to teach key components of interprofessional practice to health science students in a large group classroom format.
b) When learning about the assessment of children with Down syndrome and autism in the context of interprofessional practice, the IPE facilitated videotaped assessment will be more effective than a non- facilitated assessment.

Methods

Students in our study were recruited from five undergraduate health sciences programs at McMaster University: medicine, nursing, rehabilitation sciences, midwifery, and physician assistant. Each program received electronic recruitment posters and participating students were encouraged to suggest attending the session to other students. The study was conducted using a qualitative descriptive research method that was described by Sandelowski (2000) as being "especially amenable to obtaining straight and largely unadorned … answers to questions of special relevance to practitioners and policy makers" (p. 337). Our

interprofessional research team included individuals with a mix of expertise in neurodevelopmental pediatrics, interprofessional education and qualitative research methods. Our intention was to ensure that multiple perspectives on the data were interpreted and analyzed appropriately and holistically.

A total of 129 students attended the workshops: 55 students in three IPE facilitated workshops and 74 students in five IPE non-facilitated workshops. The recruitment materials did not differentiate between the two kinds of workshops being offered and students registered to attend a workshop based on their schedules. After an informed consent form was signed, both facilitated and non-facilitated workshops began with students at each table introducing themselves and explaining their professional scopes of practice. In all of the workshops, students were shown short video clips of a child with Down syndrome and a child with autism being assessed by an actual interprofessional team. The video clips were interspersed with questions and a discussion about the clinical conditions. For the facilitated groups only, an open discussion about interprofessional team functioning was also included.

Following the formal workshop sessions, focus groups were conducted with all students by experienced focus group facilitators. After introductions and an explanation of the focus group process, students responded to semi-structured focus group questions, which provided participants with some guidance on what to discuss while also creating opportunities to explore issues that the research team may not have considered. Sandelowski (2000) recommends focus groups for qualitative descriptive studies because they provide a broad range of information about the participants' experiences. The opportunity for interactive discussion during the focus groups not only provided an opportunity to probe what the students had learned about interprofessional teamwork, but also provided us with feedback on each workshop.

Analyses

Data from the semi-structured focus group discussions were transcribed verbatim and analyzed using conventional qualitative content analysis. The coding structure was developed through consensus methods based on independent coding of three transcripts by the members of the research team and the second focus group facilitator. To validate the rigour of the codes that were developed, four of the 12 transcripts were coded by all members of the research team.

When coding of all transcripts was complete, the research team met to organize the codes into meaningful themes and examine potential relationships between the themes. The analysis resulted in an organized and comprehensive summary of student learning from the workshops.

The qualitative software program NVivo (QSR International: Melbourne, Australia) was used for data management and analysis.

Findings

The findings supported our original hypotheses for both research questions.

First, it was feasible to teach key components of interprofessional team collaboration to large groups of health sciences students. During the workshops, large groups of students were exposed to a well-functioning team through the use of video clips which students identified during the focus group discussions as effectively demonstrating many key components of effective collaboration and interprofessional team functioning in its actual practice setting. Students identified the behaviours that led to effective teamwork to include communication, collaboration and respect amongst all members. Students commented that having examples of a well-functioning interprofessional team provided them with positive role models and an understanding that effective team work is the best method for meeting the needs of these children and their families.

From the positive team collaboration they observed in the videos, the students also noticed the benefits and challenges that interprofessional teamwork presents for the families, the health professional team and the health care system in the context of assessing and treating children with Down syndrome and autism. Benefits included efficiency for the family, opportunities for professionals to learn from each other and eliminating redundancy for the health care system. Challenges identified included the potential for information overload to families, the need for conflict management between professionals and scheduling challenges for the health care system.

Although students in both facilitated and non-facilitated workshops were able to discuss knowledgeably key components of interprofessional team work, the IPE facilitation component provided added value Students in the non-facilitated workshops spontaneously identified that they would have benefited from facilitation related to interprofessional practice, and students in the non-facilitated workshops found the focus group discussions more valuable.

In addition to answering our two questions, one of the main findings from this research was the value that students placed on the interactive discussions they had about interprofessionalism during the IPE facilitated workshops and during the focus groups. Students in both IPE facilitated and non-IPE facilitated groups identified the need for more interactive discussion time, specifically on the functioning of interprofessional teams, including a discussion on conflict management.

Our findings demonstrate the value of face-to-face student interaction in a culture where online learning is being utilized more frequently. It also validates the need for a facilitator with interprofessional expertise in addition to clinical knowledge. Furthermore, students commented that unlike simulations or standardized patients, the video examples were most valuable for their learning because they knew they were experiencing actual interactions between patients and health care professionals.

Conclusion

Health science students were able to learn key components of interprofessional practice in a large group classroom format. Students attending both types of workshops demonstrated an appreciation for team collaboration, effective communication and a respectful working environment. They were able to identify benefits and challenges related to interprofessional teams for the families, for individual professionals and for the health system as a whole. Students found it particularly beneficial to have time to interact together, to learn with and from each other as part of the experience.

There was no discernable difference in student learning about the key components of interprofessional practice between the IPE facilitated groups and the non- facilitated groups. However, students who attended the non-IPE facilitated workshops indicated without prompting that they would have liked to have had more facilitated discussion about interprofessional practice.

Students who participated in the non-facilitated workshops identified the focus group as a key point of their IPE learning. This was not the case for the facilitated group, and this may demonstrate how the facilitation specific to interprofessional work adds to the student experience.

These findings also support the suggestion that deliberative discussion could be used as a teaching strategy to engage students. This approach supports the role of a facilitator as a guide to group discussion with an aim to engage in dialogue to reach a mutual understanding and agree on future actions (Goodin & Stein, 2008).

This modality is easily adapted to allow for exposure to a wide variety of different medical conditions, different settings and alternative team structures. This type of opportunity is important in teaching about young pediatric patients as well as in other clinical disciplines where large numbers of students have limited access to clinical placements or other forms of direct contact with patients.

Introduction

Working with families of children with developmental disabilities requires teamwork and careful coordination, often across multiple agencies, to optimize care and can lead to improved service provision (Bell, Corfield, Davies & Richardson, 2010*).* There is a wealth of clinical experience to be gained from working in strong collaborative teams in this pediatric specialty area, but exposing students to the clinical environment is challenging as only a small number of students can be accommodated in busy clinical assessment centres at any one time. Although simulated clinical encounters are commonly used both in teaching and when assessing students' learning about the treatment of adolescent or adult health conditions, they are not appropriate or even possible when dealing with young children. For example, one cannot train a two year-old child to act like a patient with Down syndrome for a simulated teaching case as one could an adult.

This research describes the evaluation of an intervention that aimed to successfully teach larger groups of interprofessional health sciences students about children with developmental delays and about interprofessional teams. Through a series of facilitated and non-facilitated workshops using video vignettes from a functioning assessment team, we aimed to answer the following research questions:

a) Can key components of interprofessional practice be taught to health science students in a large classroom format?

b) When learning about the assessment of children with Down syndrome and autism in the context of interprofessional practice, how effective is a facilitated videotaped assessment when compared to a non-facilitated assessment?

Literature Review

Collaboration

The Canadian Interprofessional Health Collaborative (CIHC) (2010) defines interprofessional collaboration as "a partnership between a team of health providers and a client in a participatory collaborative and coordinated approach to shared decision making around health and social issues" (p. 24). Interprofessional teamwork to support patients with chronic conditions is recognized as a key component of care. Interprofessional collaboration within primary care in Canada has been embraced by most governments and health authorities as the most important development in the support of patients with chronic or complex needs. Russell et al. (2009), looking at evaluating models of care, concluded that some Community Health Centres' (CHCs) high scores in chronic disease management could be explained in part by the collaborative team approach to care.

Advances in technology and health care have contributed to increased life expectancy. As a result, chronic conditions are now the leading cause of illness and disability in children and adults. A report by the Institute of Medicine (IOM) (2001) concluded that in order to support patients with chronic conditions effectively, a collaborative process was required. The document described the evolution of a health care system to meet these patients' evolving needs. In the final stage in the development of such a system, the IOM endorsed the need for leadership, training and skills development to support the multidisciplinary character of clinical practice. Similar recommendations have been proposed following a review of pediatric care in the UK, in which it was recognized that "the welfare and well-being of children and young people can only be met by a multi-professional response" (Kennedy, 2010, p. 97).

Interprofessional Education (IPE)

The website of the Centre for the Advancement of Interprofessional Education (CAIPE) defines IPE as "two or more professions learning with, from and about each other to improve collaboration and the quality of care" (Defining IPE, 2002). The need for increased collaboration and interprofessional care has resulted in a demand for IPE and the need for institutions of higher education to develop IPE opportunities for their undergraduate health sciences students. The advantages of multi-professional education were well described in the report from the World Health Organization (WHO) titled *Learning Together to Work Together for Health* (1988). The report identified benefits such as collaborative sharing of knowledge and skills, the development of mutual respect and understanding, the promotion of interdepartmental and interprofessional understanding and cooperation within institutions. Romanow (2002) identified the need for a more integrated approach to training of health care professionals, stating, "the Health Council of Canada should review existing education and training programs and provide recommendations to the provinces and territories on more integrated education programs for preparing health care provider" (p. 108).

The need to focus on clinical skills, problem-based learning and team accountability for medical and nursing students has been well documented (Ross & Southgate, 2000). Finch (2000) has suggested that health sciences students need to be aware of the roles of other professional groups, to be able to work with other professionals as part of a team, and to be able to substitute roles traditionally played by other professionals when circumstances suggest that this would be more effective. In addition, there is a need to develop positive attitudes and links between different professional groups early in the education process. Rudland and Mires (2005) found that medical students enter school with poor perceptions of nurses, but were encouraged that the same students expressed a willingness to learn together with nursing students.

Challenges of Large Group IPE

Hammick et al. (2007), in a best-evidence systematic review of interprofessional education, found that at pre-qualification levels there was a need to develop IPE that could be delivered to large numbers of students, as most IPE programs currently include only small groups of students.

Within the field of pediatrics, Loutzenhiser and Hadjistavropoulos (2008) found that exposing students to an intensive autism interprofessional training program led to improved knowledge, improved understanding and respect for other health professionals. However, only five students participated in this study and two indicated they would not return to such an IPE experience. It was postulated that the amount of work required, over and above other commitments, to attend the clinics was the reason for students indicating they would not return. The authors recommended that an alternative means of teaching be found to accommodate large groups of students.

In a review examining the psychological and learning profiles of our current generation of students, Twenge (2009) suggested that this generation of learners would benefit from a structured but interactive learning experience, including the use of video to break up learning materials. Within the field of developmental disabilities, Iacono et al. (2011) used DVDs to teach students about cerebral palsy using a large group presentation of the videotaped material followed by guided discussion. The study demonstrated a shift in assumptions, attitudes about the condition and an understanding of team roles and decision-making.

Boyle et al. (2013) showed that web-based teaching modules have the potential to reach larger numbers of students and provided evidence that working individually can effect a change in attitude. However, exposure to video clips in this domain does not allow students to interact and learn from each other in real time. Asynchronous discussion allows for a measure of interaction with other learners and teachers with time for reflection, but students recognize that it detracts from important aspects of direct conversation such as immediacy, emotional context and non-verbal communication, which are important aspects of working in a team setting (Miers et al., 2007). This is supported by Curran, Sharpe, Forristall and Flynn (2008), who found

greater student satisfaction in case-based learning in small groups, compared to online asynchronous discussion.

Traditional clinical exposures include placement with another professional to learn about a role or working with a preceptor who is part of a team. Price et al. (2009) identified the benefit of face-to-face interaction in an education environment in the primary care setting. In traditional clinical settings the learning focus is typically on the patient's presenting condition and the management of the patient from the perspective of the preceptor's profession. Interaction with other professionals occurs coincidentally and there is typically no active learning about how the team is communicating or collaborating (Price, 2009). Pinto et al. (2012) explored alternative methods to enhance the clinical experiences, such as structured tutorial-based learning, which demonstrated improvement in understanding of roles and in collaboration.

IPE through Audiovisual Problem-Based Learning (PBL)

All of the health sciences programs at McMaster University use problem-based learning (PBL) to develop analytical thought and facilitate the integration of knowledge and skills within the clinical context. PBL utilizes collaborative group learning theory and simulates interactions seen in clinical practice (Dolmans et al., 2005).

De Leng et al. (2007) evaluated the use of videos in a PBL context to teach clinical content. Students reported that a structured approach to engaging with a video case was essential and they believed there was an important role for the tutor in this regard. The use of videos helped the students develop a realistic mental picture of a wide variety of disorders, including epilepsy and chest pain.

The challenge of preparing students for pediatric practice has also led to the use of videos in a PBL format to expose students to young children with early hypotonia (Lee, Jacobs & Kamin, 2006). Comparison of written PBL and videos to teach residents in pediatric practice has shown more cognitive stimulation through videos and it was suggested that this approach would be useful for interprofessional learning (Balslev et al., 2005).

Suggestions have been made recently about approaches to teaching IPE in the rehabilitation context, focusing on paper cases and video learning (Schreiber & Goreczny, 2013). Such experiences for students in higher education are about consciousness raising and preparation for future practice, and contribute to professional socialization (Freeth et al., 2002). It has been argued that informal interprofessional learning is also important, as are social opportunities to interact, such as refreshment breaks (Tipping, Donahue & Hannah, 2001).

Pilot Study

We completed a pilot study to evaluate a clinically based interprofessional experience developed to facilitate health sciences students' understanding of collaborative team functioning. We used an experienced interprofessional clinical team that demonstrated interprofessional roles working with children with disabilities and their families. The students were placed into interprofessional groups including medical, nursing, physiotherapy and occupational therapy students. Some groups directly observed two team assessments of children under 6 years of age at a children's treatment centre in Ontario, and the others observed video clips of the same assessments with a facilitator.

Focus groups were conducted to explore students' perceptions of their learning related to collaboration and interprofessional working. It was challenging to get a mix of health sciences students from different disciplines to attend the clinical placement because of the time required to travel to the clinical site and difficulties related to conflicting schedules for students in different programs. The assessments were held during the working day and there was no flexibility in timing. The pilot study showed that it was easier for students to access the

teaching using videos on campus as these were held at times that allowed for broader access and lead us to consider running large groups on campus.

Students had many questions about the pediatric medical conditions they observed in addition to the interprofessional teamwork and indicated that they valued the opportunity to discuss observations directly with a facilitator. We therefore wanted to explore the impact of a facilitator who focussed on team functioning as well as clinical teaching to determine if we could meet the needs of students from a variety of health programs while also engaging larger groups of students.

The Workshop Intervention

Our study used video-based problems rather than the traditional small group PBL paper-based format to enable larger interprofessional groups of students to learn together through the observation of real clinical evaluations using a functioning team consisting of four healthcare professionals. We built in time for social exchanges during and following our workshop and prior to the focus groups.

This study used video footage of two interprofessional assessments of children with common neurodevelopmental conditions. The assessments were reviewed and several vignettes demonstrating interprofessional interactions were selected.

A learning workshop was developed in which students were divided into interprofessional groups and introduced to the course objectives and broad key concepts of interprofessional practice by the facilitators. In their small interprofessional groups, the students were asked to share their roles and to indicate how these might relate to assessing children with neurodevelopmental problems. The video clips were interspersed throughout the workshop, with slides highlighting features of the pediatric medical conditions that were observed in the video footage from the assessments.

The workshops were led by a physician with expertise in clinical pediatrics and a nurse with expertise in interprofessional education. Two different workshops were implemented:

a) IPE facilitated – A workshop that included facilitated discussion about the pediatric medical conditions and facilitated discussion about interprofessional teamwork

b) IPE non-facilitated – A workshop that included facilitated discussion about the pediatric medical conditions but did not include any facilitated discussion about interprofessional teamwork or practice. During these workshops there were a few instances where students asked questions about interprofessional practice and these questions were answered but there was no facilitated discussion about interprofessional practice.

Both workshops used the same video clips and the same slides. The main difference between the groups was that students attending the IPE facilitated workshops were encouraged to share their observations of the interprofessional interactions and team processes and were further questioned by the workshop facilitators to discuss the apparent intent or purpose behind specific interactions between team members. Student learning about the medical conditions being observed in the videos and discussed during the workshop was not the focus of this evaluation.

The IPE non-facilitated workshops were designed to simulate the typical observation of a team in clinical practice, where teaching is focused on the condition rather than team functioning. With the IPE non-facilitated groups as a proxy for the typical observation of a team in practice, we compared the learning experiences of students attending the IPE non-facilitated workshops to those of students attending the IPE facilitated

workshops in order to evaluate the influence, if any, of facilitation specific to interprofessional teamwork on the learning experience.

Methodology

Recruitment and Sample

We recruited students from several undergraduate health sciences programs through the existing Program for Interprofessional Practice, Education and Research (PIPER) at McMaster University. The PIPER program works with all of the health sciences programs at the university to facilitate and provide interprofessional experiences to students in health professional programs. Health programs received electronic recruitment posters resulting in a convenience sample. The only inclusion criterion for participation in one of the learning workshops was registration in a professional health science program at the university. Students from all years of study were eligible to participate. Participating students were encouraged to suggest the sessions to other students, resulting in an additional snowball sample of contacts from early workshop attendees (Patton, 2002). Students were only able to register for one workshop.

Qualitative Method and Rationale

This research was conducted using a qualitative descriptive approach, which aims to provide a descriptive summary of the research organized in a way that best reflects the data. This method is described by Sandelowski (2000) as being "especially amenable to obtaining straight and largely unadorned […] answers to questions of special relevance to practitioners and policy makers" (p. 337).

The research team included individuals with an interdisciplinary mix of expertise in qualitative methods, pediatric education and interprofessional education. The combined expertise of the research team ensured that multiple perspectives were included in the analysis and allowed the data to be interpreted in an appropriate and holistic manner.

Data Collection

Data were collected through focus groups conducted with students immediately after they attended the learning workshops. Focus groups are generally recommended for qualitative descriptive studies because they usually provide a broad range of information about experiences (Sandelowski, 2000). The opportunity for interactive discussion during the focus groups allowed for exploration of students' learning about interprofessional teamwork and for evaluation of the learning workshops. We used a semi-structured focus group guide (see Appendix A) to structure the discussion about the learning experiences of students who attended the workshops. A semi-structured guide was chosen because it provides participants with some guidance on what to discuss while allowing for the exploration of issues that may not have been considered by the researchers when developing the focus group questions (Gill, Stewart, Treasure & Chadwick, 2008). The focus group guide was informed by the findings from our pilot study.

Sample Size

The sample size for the focus groups was dictated by the number of students attending the eight learning workshops. A total of 129 students attended the learning workshops, with 55 students attending one of three IPE facilitated workshops and 74 students attending one of five IPE non-facilitated learning workshop. As previously mentioned, the workshop recruitment materials did not differentiate between the two kinds of workshops and students registered for the workshop based on their availability. As we scheduled the workshops we tracked attendance and tried to balance the numbers to ensure that larger groups occurred for

both IPE facilitated and IPE non-facilitated workshops The IPE facilitated workshops were larger, ranging in size from 13 to 24 students. The IPE non-facilitated workshops ranged in size from seven to 19 students. Each workshop included students from at least two professional programs, with the breakdown by program for the total sample summarized below (see Table 1).

Table 1: Breakdown of Sample by Professional Program

Professional program	Number of students
Medicine	76
Nursing	21
Occupational therapy	19
Midwifery	6
Physiotherapy	4
Physician assistant	3

Students attending each learning workshop were divided into two focus groups, which were run concurrently immediately after the workshop. Mirroring the workshop, students in each focus group were homogeneous in terms of exposure to either the IPE facilitated workshop or the IPE non-facilitated workshop. The focus groups were facilitated by experienced focus group facilitators and were digitally recorded. Recordings were transcribed verbatim.

A total of 15 focus groups were run with focus group size ranging from seven to 12 students. Our sample size of 15 focus groups resulted in repetition of themes and the lack of new themes or insight regarding the learning experiences of students attending the workshops, a phenomenon which is referred to as saturation in qualitative methods (Lincoln & Guba, 1985).

Data Analysis

Transcripts and field notes from the focus groups and interviews were analyzed using conventional qualitative content analysis, which is the method that Sandelowski (2000) recommends for qualitative descriptive studies. Conventional qualitative data analysis derives codes directly from the data rather than using preconceived categories (Hseih & Shannon, 2005; Coffey & Atkinson, 1996).

In this study, we used field notes from the focus groups to identify new themes to explore in future focus groups and to assess data saturation. As data collection proceeded, new data and new insights about the data were incorporated into the data collection, making it reflexive and interactive.

The research team, along with the second focus group facilitator, participated in the development of the coding structure for the focus group data. All four individuals read three focus group transcripts and assigned preliminary words or phrases to capture what sentences in the transcripts conveyed – a process in qualitative research called coding. The individuals then met to discuss the transcripts and the coding and to come to a consensus on a preliminary coding structure. The main analyst used this preliminary coding structure to code the remaining 12 transcripts. The coding structure evolved throughout the process of coding. To ensure that the coding structure accurately reflected the data being coded, all four individuals coded a fourth transcript midway through the coding process and held a second coding consensus meeting.

When coding of all transcripts was complete, the research team met to organize the codes into meaningful themes, an integral part of the coding process (Hseih & Shannon, 2005; Coffey & Atkinson, 1996). The team also engaged in axial coding at this point, a process described by Strauss and Corbin (1990) as a discussion

of potential relationships between these categories. The analysis resulted in an organized and comprehensive summary of student learning, based on attending IPE facilitated and IPE non-facilitated workshops.

The qualitative software program NVivo 10.0 (QSR International: Melbourne, Australia) was used for data management and analysis.

Rigour

To ensure the level of credibility discussed by Rodgers and Cowles (1993), we documented all changes as the coding list evolved throughout the analysis and coding decisions that were made. Rigour was also achieved through the involvement of four individuals in the development of the coding structure and the second coding consensus meeting held midway through the coding process. We followed recommendations made by Koch (1994) and reviewed all categories and identified sections of the transcripts from which they originated to ensure that the categories were firmly grounded in the data. We selected quotes to illustrate the codes to demonstrate a good fit between our results and the data.

Findings

Findings are presented according to themes that emerged from the focus group discussions with students attending both the IPE facilitated and the IPE non-facilitated groups. Data were initially analyzed for each workshop group independently, but are presented across both groups with differences between groups identified within the data presented on each theme.

Direct quotations are used throughout our results and where possible, the professional program the student attended is noted after the quotations. The use of "…" within quotations indicates that text was removed from the direct quotation and the use of [ ] indicates that the researchers have added something to the quotation for clarification.

Two main categories of themes emerged from the data: student learning about interprofessional teamwork and workshop evaluation (see Figure 1).

Figure 1: Main Categories of Themes from Data Analysis

Student Learning about Interprofessional Work

Three main themes specific to student learning about interprofessional teamwork were identified:

a) Behaviours that led to effective teamwork
b) Perceived benefits of interprofessional teams
c) Perceived challenges of interprofessional teams

Sub-themes within these three main themes are summarized in Figure 2.

Figure 2: Themes Relating to Student Learning About Interprofessional Teamwork
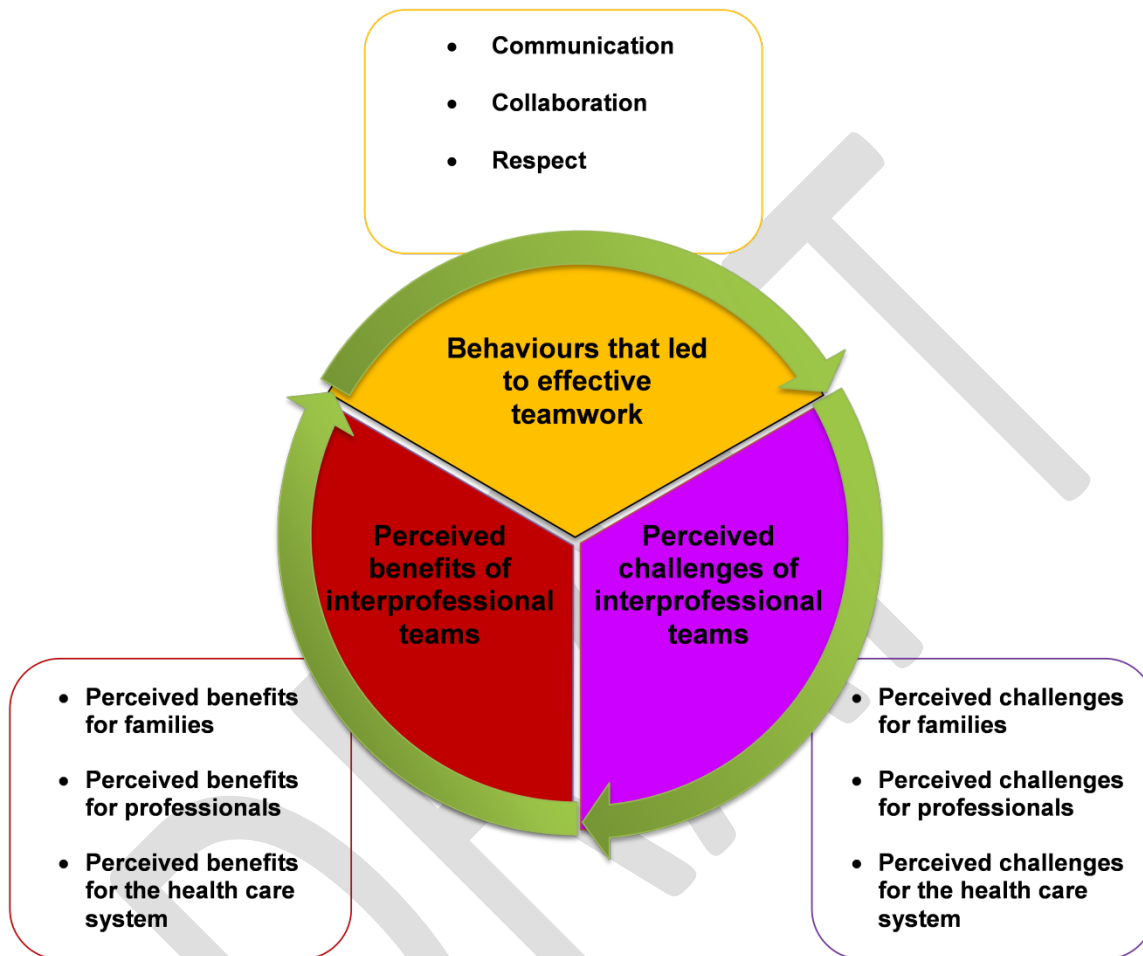
Behaviours That Led to Effective Teamwork – Communication, Collaboration and Respect

The focus group discussions about behaviours observed during the video clips that led to effective teamwork were sub-divided into three sub-themes:

    a) Communication
    b) Collaboration
    c) Respect

Students in both the IPE facilitated and IPE non-facilitated workshops identified the same behaviours that were coded into the three subthemes. No differences in learning were observed between students attending the two different types of learning workshops.

During the focus groups, students identified that the communication between the team members was an important factor that led to effective teamwork. The students described that the majority of the team's communication was non-verbal and that the assessment did not include breaks where team members described what they were going to do or needed help with; rather, the assessments were "fluid" and "seamless", with team members communicating non-verbally and "sensing" what other members were aiming to do. The students attributed this effective communication style to the fact that the interprofessional team they observed had a lot of experience working together. A few students noted that without this experience they might not be able to perform with such fluidity. Data supporting the sub-theme of communication are summarized in Table 2.

Table 2: Data Supporting the Sub-Theme: Communication

Communication
"They had very good non-verbal communication as a team. So, sometimes there would be one person who was doing one examination, trying to get the child's engagement in a certain way, and the other people would help them keep the child's attention or help distract the child or keep the focus or maybe bring in new ideas of how to interact with the child. And it wasn't like they were asking for help; they were just stepping in and providing support to each other." [*Medical student*]
"I think they were all quite aware of each other's body language and sort of like watching [the child's] facial and other behavioural cues to sort of know either if that person needed help or when to back off. They were good at communicating." [*Nursing student*]
"I was going to say that they seem to have a lot of experience working together. They could almost read each other a bit … there was just, you know, communication that, unspoken communication between them that usually comes more with experience working together with the same people." [*Health sciences student*]

Students also discussed how well the team members collaborated with each other during the assessments and identified collaboration as an influencing factor on effective teamwork. When discussing how the team collaborated, students described specific behaviours such as how leadership was shared amongst the team members. Data supporting the collaboration sub-theme are summarized in Table 3.

Table 3: Data Supporting the Sub-Theme: Collaboration

Collaboration
"I think the fact that not a lot of us could identify one like leader of the group really showed the equal collaboration among the professionals and, you know, that no one professional was like stepping on the toes of others or trying to dominate the session." [*Health Sciences student*]
"There was no communication needed to decide who was going next; it was just everyone sort of just went with the flow and whenever there was an opportunity for someone to do something or change what the child was doing they took that opportunity … everyone just sort of watched and saw what they could get out of whatever was being done at the time." [*Medical student*]
"One of the things I noticed as when they were trying to measure [the child's] head. One of the professionals like held the child while the other one distracted the child and then the other one got the measurement. So, there were three people working together to do one thing. And it seemed seamless." [*Midwifery student*]
"They know what their role is but it's not like, 'Okay, I'm the physiotherapist, you're going to exercise'. It's like 'Okay, what does this family need?' And it working with the family and their goals and their needs. So, that why I feel like there's a seamless flow … and such a great integration of roles." [*Physiotherapy student*] "Yeah, I totally agree … it was like they didn't have their own agenda." [*Medical student*]

In addition to communication and collaboration, the students identified respect as a facilitating behaviour for effective teamwork. They described the respect they observed in the team coming from knowledge about the roles of each team member and trust within the team and how these behaviours led to a shared agenda rather than power struggles and territoriality. Data supporting the sub-theme of respect are summarized in Table 4.

Table 4: Supporting the Sub-Theme: Respect

Respect
"There wasn't really the power struggle you might expect or you might see in some cases … they were allowing like one particular professional to do their role and other people step back and were more of a supporting role, and then they switched." [*Medical student*]
"I think having a solid understanding of each other's roles helped all the therapists work together. So, if you knew what the speech therapist was trying to accomplish, then you could help her with either distracting the child or removing distractions to keep the child focused on the speech pathologist … So, I feel like they all knew what one another was sort of looking for or hoping to assess, and I think that helped with the teamwork." [*Nursing student*]

> "It was very much the clear respect that they had for each other's roles, the knowledge they had of their capabilities and their … goals for the session." [*Medical student*]

> "There was definitely a trust amongst the members of the group because I didn't feel like anybody was sort of competing to accomplish their agenda or to get their assessment done first. Nobody was making their aspect of the job a priority … nobody sort of viewed themselves as superior or inferior in the group … The roles are broken up but they were all working together in the same capacity for the same goal." [*Nursing student*]

Perceived Benefits of Interprofessional Teams – For Families, Professionals and the Health Care System

During the focus group discussion, students were asked to identify perceived benefits of interprofessional teams. Students attending both types of learning workshops (IPE facilitated and IPE non-facilitated) consistently identified perceived benefits, with no distinct differences in learning demonstrated by the type of learning workshop the students attended. Data on the perceived benefits of interprofessional teams were coded into three sub-themes:

a) Perceived benefits of interprofessional teams for families
b) Perceived benefits of interprofessional teams for professionals
c) Perceived benefits of interprofessional teams for the health care system

When discussing perceived benefits of interprofessional teams for families, student learners identified the extra attention and emotional support that the team provides to parents, the logistics for parents attending one assessment versus multiple appointments, and the comfortable environment created for the child. Another perceived benefit was the synergistic effect of having multiple professional perspectives combined, which students believed resulted in an integrated, efficient and comprehensive assessment. Data supporting this sub-theme are summarized in Table 5.

Table 5: Data Supporting the Sub-Theme: Perceived Benefits of Interprofessional Teams for Families

Perceived Benefits of Interprofessional Teams for Families
"I think with families especially with children with developmental issues or physical disabilities, the more support they have around them the better just … to help the child as well but the emotional support, I think, would go a really long way … I think for the parents it's a huge help emotionally as well." [*Health Sciences student*]
"I think it's the best case scenario for client-centred care for sure and I think that for families it's probably reassuring to know that each one of these people is a specialist in their field … I think it would make you feel like there's less chance that anything would get missed and there's more chance that all of their knowledge together will sort of [be] synergistic. You know, like combined better than … than just one person." [*Nursing student*]
"In the second clip there were other kids as well that the mom was talking about. So, when I think about

the practicalities of trying to like wrangle all these children to go to all these different assessments, it seems like it would just be a pain to have to do that versus being able to go one time to an assessment." [*Occupational Therapy student*]

"I was sort of pleasantly surprised with the engagement of therapists …. socks off, on the floor, playing with the child, very hands-on and engaging and … it seemed like a really effective method and made for a really comfortable environment for the child." [*Health Sciences student*]

"I also see how it would be incredibly beneficial to have that many professionals dealing with a child, like either with Down syndrome or with Autism because they do need such attention, I feel like it's comforting to both the parent and the child to know that there are many people who are trying to help." [*Medical student*]

"I guess the biggest one is the efficiency and how um each person is doing what they're best at, what they're trained to do, and the patient can get the care they need without … you hope without having to go to too many like loops and circuitously to get there … direct, more efficient care." [*Medical student*]

"It just seems like they such a comprehensive assessment in like one visit right there, which is really nice for the patient, I think." [*Medical student*]

During the discussion about the perceived benefits of interprofessional teams for professionals, the students identified the potential for professionals to better understand the diagnosis and the opportunity for professionals to learn from each other. Students also identified that professionals working on a team would not feel alone or be under so much pressure to try to know everything. Instead, they would feel supported by other members of the team with whom they could discuss treatment options. One student also noted that working with other professionals would lead to increased confidence when needing to consult with other professionals. Data supporting this sub-theme are summarized in Table 6.

Table 6: Data Supporting the Sub-Theme: Perceived Benefits of Interprofessional Teams for Professionals

Perceived Benefits of Interprofessional Teams for Professionals
"Because we're all trained in I guess more specific fields, maybe one sign or symptom means something different to somebody in a different profession. They have a different perspective on it. So, it might help us better understand what's going on, better understand the diagnosis because we don't have expertise in that area." [*Medical student*]
"And I think it would help them evolve individually as well because they're learning so many different things from people who specialize in different areas. So, overall you'd probably have a greater knowledge than someone who doesn't work in a team like that." [*Nursing student*]
"When you work with other health care professionals you kind of pick up things that they look for … It's just a way to know more about the other professionals and be able to refer on." [*Midwifery student*]
"And I think is also helps relieve some of the pressure that maybe you feel that you're working with this child alone, in isolation. But then when you have all these people that are bringing all their skills to the table all at once, it kind of reminds you that we can all work together and help … relieve some of the pressure off of you for having to know everything and you feel like you have to pick everything up." [*Medical student*]
"You can't catch everything all the time. There's so much stress in having to catch everything yourself of what's being presented to you. So, if you have four professional eyes on the same problem, I guess, then you have a better chance of putting in the best treatment plan possible." [*Health Sciences student*]
"You are not alone in making decisions … It's always nice to have somebody else you can ask your opinion and double check what you think with them." [*Nursing student*]
"It's also a way to safety-net. So, you aren't necessarily worried about missing something because you trust the other person to catch it … There's always someone else helping you out. So, you can be fairly confident that you'll see everything you need to." [*Medical student*]
"You have like a different comfort level when you consult someone you know, and like if they see you working, then you're like: Well, they know I'm not an idiot or asking this … So I think the comfort level is something that definitely helps." [*Midwifery student*]

In terms of perceived benefits for the health care system, student learners identified that early intervention is beneficial for children with developmental disabilities and could lead to improved outcomes and ultimately less financial cost to the health care system. This finding was echoed by one student describing evidence to support that interprofessional teamwork leads to improved outcomes for patients with chronic health care

conditions. Other perceived benefits for the health care system included the provision of better care, reduced administrative costs to the system and a decrease in unnecessary referrals. Data supporting this sub-theme are summarized in Table 7.

Table 7: Data Supporting the Sub-Theme: Perceived Benefits of Interprofessional Teams for the Health Care System

Perceived Benefits of Interprofessional Teams for the Health Care System
"I guess that if they did such a thorough assessment so early it might be better from a system's perspective down the line because for a lot of conditions with children, early intervention is more beneficial, and so if they waited and didn't get help until later it might be more costly or they might be able to make fewer gains." [*Occupational Therapy student*]
"I know there's been a lot of studies talking about having interprofessional groups actually improves outcomes for chronic conditions. That in itself just places less of a burden on the health care system if you have healthier people instead of sicker people." [*Medical student*]
"The team could deliver better care to the patient than everybody individually. The information isn't siloed between professionals; they're all on the same page and in the same place so they can interact with each other and ask each other questions. It's not difficult to get a hold of each other." [*Medical student*]
"There's also all of that systematic labour that goes into scheduling and coordinating, and you eliminate a lot of redundancy there by taking what could be four appointments and making it into one. And four different rooms, making it into one room." [*Medical student*]
"It also decreases the need for unnecessary referrals." [*Occupational Therapy student*]

Perceived Challenges Related to Interprofessional Teams – For Families, Professionals and the Health Care System

During the focus group discussions, students were asked to identify challenges related to interprofessional teams. Students attending both types of learning workshops (IPE facilitated and IPE non-facilitated) discussed the same types of perceived challenges for interprofessional teams. There were no distinct differences in learning based on the type of learning session. Similar to the data on perceived benefits of interprofessional teams, the challenges students identified related to interprofessional teams were coded into three sub-themes:

   a) Perceived challenges of interprofessional teams for families
   b) Perceived challenges of interprofessional teams for professionals
   c) Perceived challenges of interprofessional teams for the health care system

When considering challenges related to interprofessional teams from the perspective of the family, some students described that they initially felt overwhelmed by the level of noise and the number of people involved when they were observing the video clips of the assessments. They noted that the number of professionals in

the room during the assessment might be overwhelming for the parent as well as for the child. Students also suggested that families might find the volume of information they received during the assessment to be overwhelming. Finally, students commented that each of these challenges would be exacerbated even further in situations where the team was not functioning well. These data are summarized in Table 8.

Table 8: Data Supporting the Sub-Theme: Perceived Challenges of Interprofessional Teams for Families

Perceived Challenges of Interprofessional Teams for Families
"In terms of the parent perspective, it could still be pretty overwhelming to have a large group of people sort of in the room with you, talking at you … generally at the same time." [*Nursing student*]
"I think there is some information overload sometimes on the family because you'd have four different professionals in that example telling you four different things about whatever their specialty is…So, I definitely think going home again with a piece of paper is helpful but it can be overwhelming for a family at first." [*Physiotherapy student*]
"Part of me questions whether with children with Autism or Down syndrome if it's a good idea to have four like figures in the room looming over them." [*Medical student*]

Challenges arising from interprofessional teams that students identified for professionals included different goals being held by parents and different types of professionals, the possibility that each professional might not be able to do a full assessment and the potential difficulties related to ensuring that all team members were on the same page for each patient. As one student noted, the team might need to manage conflict within the team as a result of different opinions or advice. A few students also believed that personality differences within professionals on the team might be challenging to manage. These data are summarized in Table 9.

Table 9: Data Supporting the Sub-Theme: Challenges of Interprofessional Teams for Professionals

Perceived Challenges of Interprofessional Teams for Professionals
"I think one big challenge is the difference in goals between the parents and the professionals and even within professionals." [*Occupational Therapy student*]
"Another challenge would be not having the opportunity to assess all the aspects that you planned to assess or look at because too many other professionals have to look at the child in that same period of time. So you might skip some of the components." [*Occupational Therapy student*]
"It's very difficult to make sure everyone is on the same page of every given patient. And do you all have the same expectations? Like, within your field you have certain expectations but then to be aware of what's on the forefront in someone else's mind … I guess it all comes down to being able to communicate effectively between everyone and to have the time to do that." [*Medical student*]
"I think that some conflict management might have to happen at some point … You can see how maybe two different professionals would have conflicting advice." [*Midwifery student*]
"I think that sometimes when teams are formed there's an adjustment period and you have to get used to each other's roles and ways of working together … and I think one of the challenges could be if the members of the team kept changing frequently." [*Medical student*]
"I think that with any team if you have personal…like personality differences that may clash, I think it would be challenging to not bring those into the assessment room and show them in front of the family … I think that could be really challenging." [*Health Sciences student*]

In terms of the challenges interprofessional teams present to the health care system, students' discussions focused on the logistics of scheduling the different professionals and paying for their time. Some students questioned the efficiency of the resources needed (i.e., time, number of professionals and cost) and wondered if interprofessional teams might contribute to longer waiting lists for services. A few of the students noted that given the resources required, it might be difficult to convince health care organizations to implement interprofessional teams in practice. These data are summarized in Table 10.

Table 10: Data Supporting the Sub-Theme: Perceived Challenges of Interprofessional Teams for the Health Care System

Perceived Challenges of Interprofessional Teams for the Health Care System
"I think it would just be a nightmare trying to schedule everyone … Maybe everyone could have one day a week when they're in clinic doing these assessments but that's very time limiting and would just prolong the wait to see one of these teams. I think that's a huge issue." [*Medical student*]
"I'm just wondering in terms of waiting lists and everything if this wouldn't perhaps make this larger or longer? Cause it takes an hour and a half for these initial assessments, and you have everyone at the same time focused on one kid." [*Health Sciences student*]
"I think coordinating financing would be very complicated." [*Nursing student*]
"Also a question of cost … to the health system of having four health professionals in the same room." [*Medical student*]
"Everyone is covered by OHIP but still under different groups and so that would be a logistical nightmare for whoever is the administrator of that team to figure out … and to have to justify that perhaps because it is a lot of resources all in one room. Obviously, when you see it working and interacting it seems like a great thing but perhaps justifying that to a health care system that's fairly tight as it is would be tough." [*Medical student*]

In summary, all students, regardless of which type of workshop they attended (IPE facilitated or IPE non-facilitated), demonstrated that they had learned about interprofessional teamwork and the behaviours that led to effective teamwork, and both groups were able to identify benefits and challenges associated with interprofessional teams with respect to families, health care professionals and the health care system.

Workshop Evaluation

Three main themes specific to the workshop evaluation were identified:

   a) Aspects of the workshop that contributed most to learning
   b) Suggestions for improving the learning experience
   c) What students perceive they will take from the learning experience into practice

These themes and their related sub-themes are summarized in Figure 3.

Figure 3: Main Themes Related to Workshop Evaluation
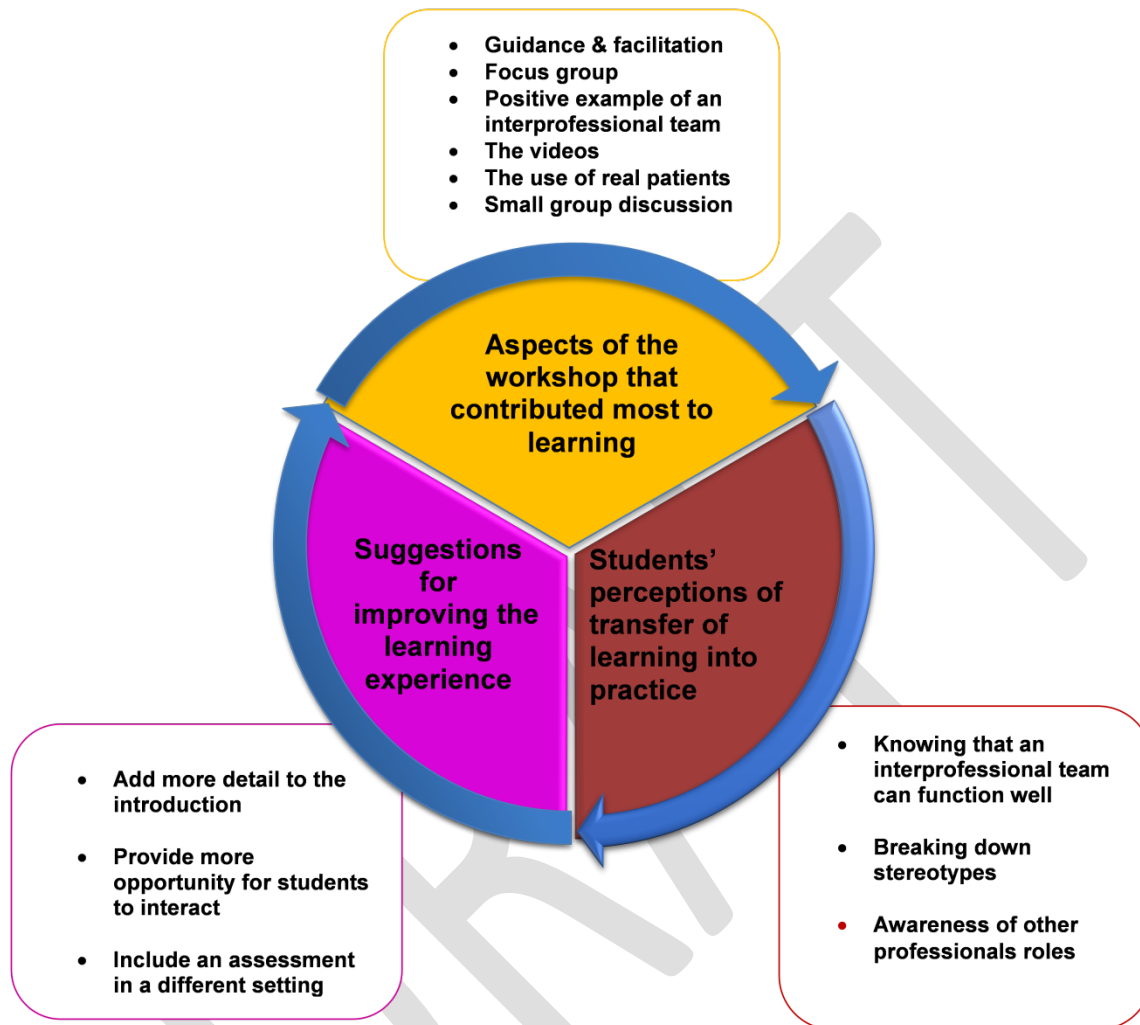
Aspects of the Workshop that Contributed to Learning

During focus group discussions students identified the aspects of the learning workshops that they believed contributed most to their learning. Their responses were broken down into the following six sub-themes:

a) Guidance and facilitation
b) The focus group after the workshop
c) Seeing a positive example of an interprofessional team
d) The videos
e) The use of real patients
f) The small group discussion at the beginning of the workshop

Students who attended both the IPE facilitated and the IPE non-facilitated workshops received the same facilitation in learning about the conditions, but those in the IPE facilitated group received additional facilitation

surrounding interprofessional teamwork. Both groups described the guidance and facilitation throughout the workshop as a component that contributed to their learning. Students who attended the IPE non-facilitated workshops indicated, without prompting, that they would like to have had facilitation around interprofessional teamwork included in the workshop. Data supporting this sub-theme are summarized in Table 11 and Table 12.

Table 11: Data Supporting the Sub-Theme: Guidance and Facilitation from Students Attending the IPE Facilitated Workshops

Guidance and Facilitation (IPE Facilitated Workshops)
"I guess having done like a different IPE yesterday where there were very, very similar goals in terms of understanding the scope of practice and working together as a team and etcetera, etcetera, I did not find that learning experience very helpful but I found this a lot more helpful perhaps because there is more guidance and facilitation … The guidance and facilitation by Dr. [X] was helpful in terms of moving things forward … Everything that she showed was new things for me to look for and like new things for me to learn, you know? So, definitely valuable. [*Health Sciences student*]
"It was helpful to have a facilitator there too just to fill in any gaps or answer any questions that we had going along ... and some back story like if we followed the parents how that would work, kind of thing, that helped to fill in sort of any questions or concerns we had along the way." [*Medical student*]
"I feel like both the video and the sort of explanations were useful for learning by maybe in different ways. I mean like being able to actually see a patient and persons with specific conditions was very valuable for learning just to observe ... I don't think I would have learned as much without someone to sort of explain and put things into context. So, I think having someone with experience explaining things or building on what I saw was really valuable." [*Midwifery student*]
"And it wasn't just like, you know, a twenty minute video and then you just couldn't remember anything afterwards. Like, going very step-by-step and walking us through it. And kind of how you would almost imagine if you were one of the health care professionals in that situation, like your thought process throughout the entire thing. Like, you're gaining information bit by bit as you go along. So, I liked almost having that insider perspective." [*Medical student*]

Table 12: Data Supporting the Sub-Theme: Guidance and Facilitation from Students Attending the IPE Non-Facilitated Workshops

Guidance and Facilitation (IPE non-Facilitated Workshops)
"We didn't really have like a chat time about the scenarios in the sense of like: 'Well, what did you think about this? Like, what did you notice?' I guess we're doing it now, but in the actual ... information session we didn't have that opportunity. And I thought maybe just like evaluating the roles during that time would have been useful." [*Midwifery student*]
"Most of the stuff we put up on the slides in between clips was like medical and like sort of what you should have been looking for. But it might have also been interesting in between the clips to say like: 'So, like what did you see in terms of like team functioning?' ... and kind of discuss that side of it as well. That would have been cool." [*Medical student*]
"We talked about how there's like a fluidity in like how they're all sort of overlapped, and that was good, for the sake of the assessment, but I found it hard to kind of tease out in my own mind the agendas of the different health professionals. And it would have been kind of cool um during those discussion parts to sort of focus in on: 'This is what the speech language pathologist was deliberately doing. It was very subtle during but like she was making these prompts because she was looking for this. And the OT this and the PT this'." [*Medical student*]

Students from each of the learning workshops (IPE facilitated and non-facilitated) identified the focus group as a main component of their learning, a finding that was more frequent in students who had had attended the IPE non-facilitated workshops. These data are summarized in Table 13.

Table 13: Data Supporting the Sub-Theme: Focus Group after the Workshop

The Focus Group After the Workshop
"I thought that it was a great start when the session began where we decided, 'Okay, well as a medical student, I think my role might be this' or the nursing students: 'I think my role would be this.' But after that I think that's where the interprofessionalism ended, until we came to this focus group." [*Medical student*]
"I think the focus group was probably the most useful thing, just hearing people's opinions on what they saw." [*Medical student*]
"I'm not really sure like exactly how this experience would be translated to just a stand-alone learning experience but I mean the focus group component of it was really nice as like a sort of source of discussion where we can like comparing impression, discuss the dynamics of an interprofessional team. And should it only be that session without the focus group, I think I'd like to see some opportunity for like interprofessional discussions ... and that kind of like group-based reflection within that context." [*Medical student*]

"To be honest the interprofessional part of it I've gotten more of that here [the focus group] since we've been talking about it than I did just there watching the video … A lot of what I got for interprofessional was through the conversation that we've had after." [*Medical student*]

Students in both workshops described seeing a positive example of an interprofessional team as an important facet of the learning experience, as was the use of videos and real patients. Students discussed how, in other learning situations, they had typically been exposed to negative examples of team functioning and the use of standardized patients (actors). These data are summarized in Table 14.

Table 14: Data Supporting the Sub-Themes: Seeing a Positive Example of an Interprofessional Team, the Use of Videos and the Use of Real People

Seeing a Positive Example of an Interprofessional Team
"I also think the fact that it was like a really positive example was nice … I find also when you're learning, people show you like what not to do which is fine but ultimately not that helpful. So, it's nice to have like a really positive, as you said, sort of ideal model that we can try to emulate." [*Health Sciences student*]
"I think a good thing that will probably stick with me is the cohesiveness of the group and how well they worked together and how just like polite and respectful and professional that they were. So, I think that given all of the negative examples that we are likely to be experiencing, it's nice to have like a positive contrast of like what is possible and what one can aspire to." [*Health Sciences student*]
"The other one that we went to was, again, as someone mentioned before, a lot more negative. It was like, 'This person missed this and then this person missed this, and this, and then the patient died. So, who was at fault?' ... This is how you work together and this is how you make sure it's done well instead of just presenting all these bad scenarios." [*Health Sciences student*]
"Knowing that it can work really well with everyone working together, and actually seeing an example of it, 'cause we talked about it a lot, where like, you know, everyone has their own role, and it's equally important as everyone else's role, but to actually see people embrace that is kind of nice." [*Medical student*]

The Videos
"I also felt that in terms of keeping my attention, it was nice to have videos, there was something that was changing and dynamic and visual and I personally do better when I can learn in a lot of different ways at the same time." [*Health Sciences student*]
"I think seeing the videos was a really great teaching tool … I mean, it's great to talk about things in the ideal and what you think a good team is but actually seeing it in practice is really helpful." [*Medical student*]
"For me it was really, really beneficial to have the video clips, and I found that I was focusing more on just like what all the different health care professionals were doing and how they were working together instead of actually focusing on what are they checking for in this child. So, I definitely got out of it more like how should a team function." [*Medical student*]
"I've attended interprofessional conferences before so I have learned there but … I did learn more specifically what their role is, especially by watching the video. I got to see what they're specifically looking for, like either gross motor movement or fine motor movement, et cetera." [*Nursing student*]
The Use of Real Patients
"I thought the video examples of the real life team scenario of how the team functions was incredibly valuable because the other sort of events I've gone to have been you sit around and you talk and you try and figure out what your interests are, and you sort of do this general broad spectrum, 'What's professional, what's unprofessional, what breaking confidentiality, what's isn't.' … It gets a little repetitive and you don't actually come away knowing what other people really do or how you would work together … Actually seeing a team and not a staged team, right, where they're like, 'I'm going to do my role now', but actually interact with the child, with themselves, with the mother, ... and then breaking it down every couple of minutes to sort of go over that was um probably way more valuable than the other events I've gone to, so... that's well done." [*Health Sciences student*]
"I like how the videos were actual patients, 'cause I know a lot of the videos I've seen so far in school have been standardized patient interviews." [*Health Sciences student*]

Students attending both types of workshops identified the small group discussion at the beginning of the workshops as a valuable component of the sessions for their learning. These data are summarized in Table 15.

Table 15: Data Supporting the Sub-Theme: Small Group Discussion at the Beginning of the Workshop

Small Group Discussion at the Beginning of the Workshop
"I think um I learned most from the first ten minutes where we got to speak to other health care professionals about their roles." [*Health Sciences student*]
"I think there's also the task to beginning to kind of talk about what our roles are… It was also beneficial to learn more about what other people in that group were doing. And so then you can kind of relay that information to what we were watching in the short clips and kind of pick the bits and pieces that we were discussing earlier on in the activity." [*Nursing student*]
"But then I felt like it was more effective to have us like discussing about what we think our roles are and just hearing about the other people's experience. Like, I felt that that was ... how I learned the most about interprofessionalism." [*Health Sciences student*]
"I really liked the time we had before we watched the videos and had the presentation to hear what the OTs had to say, and like learn about more what you guys do because I wasn't as aware. And yeah I think it really benefited us, especially since we're in first year, so it was a good like opening. [*Medical student*]

Suggestions for Improving the Learning Experience

Student suggestions for improving the learning experience of the workshop were coded and summarized into three recommendations:

a) Add more detail to the introduction
b) Provide more opportunity for the students to interact during the workshop
c) Include an assessment in a different setting

The majority of students from both types of learning workshops (IPE facilitated and IPE non-facilitated) talked about the need for more background information to be provided as part of the introduction. Specifically, they described the need for more background information on the goals of the workshop, children's treatment centres, the medical conditions being assessed in the video clips and the role of the professionals in the video clips. These data are summarized in Table 16.

Table 16: Data Supporting the Recommendation: Add More Detail to the Introduction

Add More Detail to the Introduction
"I think it would have been nicer if there was a bit more clarity at the outset about what the goals of the session were. I wasn't sure if we were meant to focus on the clinical features of the stories that were being presented or the function of the team or the process of our own learning in that environment. I was really unclear about what we were sitting through, to be honest." [*Medical student*]
"… [the] children's treatment centre, maybe some background on that 'cause I realize we have no idea what that is… So just to kind of give a background and that so we're kind of aware of the scenarios in the background." [*Medical student*]
"Maybe giving some background on Down syndrome and Autism before the clips. Like, it's great to be watching the clips and try to pick out different things but when you don't have an idea of what to look for... if you have no background in either of them it's tough to like look for those things and like ... if you've never been in a pediatric setting either, it's just a lot of new things, and maybe a little background would help with the clips." [*Medical student*]
" A little bit of background information would be helpful and maybe just some information on what the health care providers were trying to look for, not just what the condition entails but also what they were trying to accomplish so I could pick out how they were doing that as I watched the clips. 'Cause you sort of figure it out as you go along but to be able to have it from the start might be helpful." [*Midwifery student*]

All of the students indicated that providing more opportunity for interaction amongst themselves during the workshop would have been helpful. Students who attended both types of workshops concluded that the focus group discussion itself provided more opportunity for interprofessional interactions than did the workshop. These data are summarized in Table 17.

Table 17: Data Supporting the Recommendation: Provide More Opportunity for the Students to Interact During the Workshop

Provide More Opportunity for the Students to Interact During the Workshop
"After watching the videos, like aside from Dr. [X] asking if anyone had any questions or comments, if we could have gotten back into our small groups that we started in and discussed that and what that was like for each of us to watch it and our reactions, what would we do that that way or differently. I think that it would have been valuable to come back to that smaller group setting." [*Health Sciences student*]
"I'm not sure that there is enough interprofessionalism between like us actually being here… I don't think that we sort of were asked to collaborate on that level, rather than just talking about the videos." [*Medical student A*]

"I agree. I thought that it was a great start … when the session began where we decided 'Okay, well as a medical student, I think my role might be this' or the nursing students: 'I think my role would be this.' But after that I think that's where the interprofessionalism ended, until we came to this focus group." [*Medical student B*]

"... doing something a little more interactive other than just observing a video and having someone ... Although there was some form of discussion, it wasn't as interactive as this focus group would have been and this focus group itself if helpful but it's optional. So, I think ... having that interactive portion throughout the entire workshop would have been more beneficial, to be able to discuss your ideas and thoughts." [*Health Sciences student*]

"Even just if [students at] each table... like after each clip would talk amongst themselves and then just each table come up with a point to share. In fact ... I expected that. So, I was surprised um after they finished showing the clip that we didn't get to talk to each other about that, and instead they just went over some points and asked us questions about it." [*Medical student*]

Students from both types of learning workshops also indicated that exposure to different settings would improve the learning experience. These data are summarized in Table 18.

Table 18: Data Supporting the Recommendation: Include an Assessment in a Different Setting

Include an Assessment in a Different Setting
"Because you were looking at the same people in the same scenario with like almost the same setting, it was kind of a little repetitive on the interprofessionalism… but just to vary like scenarios…So, just looking at that and trying to incorporate like a lot more. And I think too, personally, because we're in a hospital setting this is why I'm thinking more along those lines whereas that was more like ... a clinic setting." [*Nursing student*]
"I also thought it might be helpful to have had the clips from two different settings because I think that interprofessional collaboration looks very, very different obviously with different teams but more so in different settings … It would have been nice to have like a different positive contrast, I guess." [*Health Sciences student*]
"I also think like in terms of like not only the teams ... the dynamic within the team but like their job changes. So, like what an OT or a PT or a nurse does in like a family care setting or a treatment outpatient treatment facility setting is really, really different to what they'd be doing in a critical care unit. So, I think having a broader understanding of the general scope of each profession as well as how the interprofessional group changes in different settings would both be helpful." [*Health Sciences student*]

Students' Perceptions of Knowledge Transfer into Practice

The type of workshop attended did not affect the aspects of the learning experience that students believed they would take with them into practice. The components that students perceived they will take with them into practice were coded in the following three sub-themes:

   a) Knowing that an interprofessional team can function well
   b) Breaking down stereotypes
   c) Awareness of other professionals' roles

During the focus group discussions, students articulated that having observed a well-functioning team demonstrated to them that interprofessional teams can function well and that this example would be something they would take with them into practice.

Students also talked about how the workshop experience – both the interprofessional team they observed in the video clips and the interactions they had at the workshop with students from other programs – helped to break down existing stereotypes about different health care professionals. Students also described how they developed a further awareness of the need to promote their roles in interprofessional teams along with the need to seek understanding of the roles of colleagues from other professions.

Data supporting these sub-themes are summarized in Table 19.

Table 19: Data Supporting the Sub-Theme: Students' Perceptions of Transfer of Learning into Practice

Knowing that an Interprofessional Team Can Function Well
"I'd also say to know that it can take time to function that well and absolutely that the ideal that that team has been working together for a while kind of instills confidence that you could get into a flow in an interprofessional team." [*Medical student*]
"I think just seeing that sort of team approach to medicine ... that idea of, you know, putting a bunch of specialist in a room and expecting them all to do their own assessments at the same time, I would think that it might be a little chaotic and might not be very functional, but actually being able to see it and seeing it work, obviously taught me that it's possible." [*Medical student*]
"I feel like the overall picture of what an interprofessional team looks like is something that I'll definitely take with me. It's not necessarily: 'I'll adopt this behaviour or I'll communicate in this way'; it's more like the overall image is something that I'll be familiar with. It's sort of like this is what you're striving for. This is what really works and this is why it works well for patients. I think that sense is really valuable" [*Medical student*]
"I thought as a whole they were just an incredible set of role models to demonstrate how a team can work together really effectively. And it was just absolutely seamless and fluid…It's something to strive towards and keep in mind and think about, you know, maybe in the future if you're having a difficult time working in a team, just be like, 'Well, we can... we can improve this' and someday be like that." [*Medical student*]

Breaking Down Stereotypes
"I think that this event was important in the way that we can like, as nursing students, we've never had interaction with like medical students or PT students, things like that. And so like in these sessions we kind of like meet them and you kind of can break that stereotype kind of thing." [*Nursing student*]
"I also found it refreshing just to see the MD fitting so well in with the team because so often like I guess we get that like stereotype of like the doctor's really not involved with what the physio and the OT are going to be doing. And there's such that disconnect there, and it was so smooth, she was just so in there and very involved with everything. So, there wasn't that disconnect and that hierarchy." [*Occupational Therapy student*]
Awareness of Other Professionals' Roles
"I think from whatever unit I'm on I'll try to get a really good idea of the roles of the professionals in that specialty if it is a specialty, hopefully so that I have a better idea of sort of how to work with them, know who they are, really just work as a team 'cause you can get lost in the shuffle." [*Health Sciences student*]
"I think in working in any kind of an interprofessional team I think the most important thing is really to establish what the roles are beforehand and make sure everybody's very clear on what those are. Maybe recognize that there are blurry areas and realize you can help each other rather than just saying: 'Okay, I'm done and stand back'. You can work together to get through those areas. So, it doesn't have to be set defined. There can be gray areas but you work with it and you make sure everybody's interactive." [*Medical student*]
"I think for Occupational Therapists, because um a lot of other professionals aren't really aware of our scope of practice and our contribution to the team, it's important for us to make other professionals more aware of our role and how we can contribute to the team, otherwise there isn't going to be that collaborative team approach if they're not sure of how we play into a team." [*Occupational Therapy student*]

Discussion

Implications for Research and Practice

Data from the focus groups indicate that students in both types of workshop interventions learned about key components of interprofessional team work by observing a well-functioning team.

The *National Interprofessional Competency Framework* identified interprofessional communication and patient- or family-centred care as the two key domains that support interprofessional practice (CIHC, 2010, p. 10). By observing the video clips of real assessments the students were able to identify how the team used non-verbal communication to support each other, the parent and the child during the assessments. The students' appreciation of the role of non-verbal communication during the assessments demonstrates the

value of using optimal examples of team functioning, as students were able to see how good interprofessional communication can be used to support patients. It is not possible to guarantee that students will observe such examples of high functioning interprofessional teams in clinical placements.

Students' observations demonstrate that they appreciated the concept of family-centred care and could see the benefits of interprofessional teams for families. Their observations support the opinions of families of children with developmental disabilities, which have identified the need for organizational culture to reflect family-centred services by providing fewer places where children receive care and focusing of care on the specific needs of families (Law et al., 2003). However, they also identified that meeting several professionals at once might be physically overwhelming and that they may feel overloaded with information. There is no research to suggest that this is the case. Rather, Brooks, Bloomfield, Offredy and Shaughnessy (2013) found that parents are more concerned about the lack of communication among team members and conflicting advice, which may result when team members are not physically working together or when siloed services lack communication and as a result do not plan or coordinate care. Such concerns that arose during observations could be a focus for the further development of a discursive component to the workshop.

The students' observation that it is advantageous to the health care system to avoid unnecessary referrals resonates with the fact that parents of children with developmental disabilities have multiple demands on their resources (such as time and financial demands). Minimizing the number of appointments for these families should be seen as family-centred from an organizational perspective. The provision of an early comprehensive assessment clearly benefits families, but it was also identified as providing a potential long-term cost saving to the health care system. However, the students expressed concerns about the impact of scheduling for multiple professionals and the potential increase in wait times using such a model of care. In our clinical experience, similar concerns are often heard from practicing professionals. It would be important to ensure that students are aware that there is evidence that flexible team working benefits families and the service delivering care. Wait times have been shown to decrease, whilst clinical contact and capacity increases (Bell et al., 2010).

The remaining four domains identified in the *National Interprofessional Competency Framework* include role clarification, team functioning, collaborative leadership and interprofessional conflict resolution. The latter was the only area not covered in the workshop as our intent was to provide students with positive examples of interprofessional teamwork. It is interesting to note that although students identified the use of positive examples in the workshop as a key component that influenced their learning, they also indicated that observing the team resolve a conflict would be of interest in in future workshops.

Students recognized the fact that roles were clear but did not have to be explicit and that they could overlap comfortably when it was in the interest of the child. This was demonstrated in the students' discussions about how a good understanding of each other's roles resulted in respect within the team, which was described by the students as being integral to effective collaboration.

Students valued the demonstration of collaborative leadership in the team model they observed. They commented on the trust demonstrated by team members, the lack of a hierarchy and the absence of any dominating team members. While this was seen as positive, the students expressed concern about how conflicts might be resolved if there was no identified leader in the team. Although the aim of the workshop was to provide positive models, the concern about conflict and its reality within teams should be addressed in a comprehensive interprofessional education curriculum (Greer, Saygi, Aaldering & de Dreu, 2012).

Effective collaborative team functioning was identified by the students and was reflected in many areas. This was clearly evident when the students described how the members of the team could benefit from learning from each other and, through the interprofessional approach, could ensure that all aspects of care were covered. This decreased stress through shared responsibility prevented any gaps in the child's care. Students

believed that this type of collaboration has the potential to cut through bureaucracy to enable more effective support for families.

Students identified possible challenges of interprofessional teams for professionals, including ensuring common goals and managing time so that team members are able to complete necessary tasks. Students touched on the need to behave professionally in front of patients to ensure that any conflicts were not apparent. Mitchell et al. (2012) in the Institute of Medicine discussion paper *Core Principles and Values of Effective Team based Health Care* speak to the need for a deep understanding and respect for team members' roles and responsibilities and the need to work together to maximize these to achieved shared goals. This level of functioning requires the development and nurturing of personal values to prepare professionals to work effectively in a team environment. The ability of students to identify these key challenges may encourage them to reflect on the effectiveness of teams that they see in practice.

The focus group discussions provided an opportunity for student learners to reflect on the behaviours related to interprofessional teamwork observed in the assessments. We believe that this reflection is one of the reasons why there were no appreciable differences between the two types of learning interventions (IPE facilitated and IPE non-facilitated) related to core behaviours and interprofessional team functioning. However, students in the IPE non-facilitated group indicated that they would like to have had facilitation to explore the functioning of the team they observed. Students in this group identified that the focus group allowed them to explore this aspect of learning more frequently in contrast to the facilitated group. This observation supports our hypothesis that immersing students in a clinical team without explicit guidance about the interprofessional interactions and functioning is less effective than using video examples of well-functioning teams with facilitation to learning. The opportunity to 'step back' from the scenario and reflect was also helpful in the learning process. This is difficult to achieve when students are immersed in clinical teams as they are expected to keep up with the pace of the clinical activity.

The focus group allowed for more direct student interaction. The benefit of the focus group itself was not anticipated. This speaks to the value that the students place on learning together and from one another (Falk et al., 2013). The time for our teaching session was limited by the fact that a focus group needed to directly follow the session itself and as such there was less time available for group discussion within the workshop itself. The students valued the opportunity they did have at the beginning of the session to learn about each other. Going forward, incorporating more student discussion will be a key component of the teaching experience. Ruiz, Ezer and Purden (2013) found that faculty development programs should assist facilitators to re-examine teaching approaches and encourage students to assume the responsibility for discussing issues and collaborating with others in interprofessional contacts.

Through the use of videos, it was possible to ensure that the students had exposure to a well-functioning team that demonstrated many key components of effective collaboration and interprofessional team functioning. This was recognized and appreciated by the students. This appeared to contrast with previous teaching experiences, the majority of which the students described as focusing on the problems with working in teams. If we are to promote enthusiasm in our students for working in clinical teams we should provide examples of both positive and negative experiences in order to prepare them for the realities of clinical practice and, as the students who participated in our research suggested, provide an example of a well-functioning team handling conflict. Students commented that having examples of well-functioning teams provided them with positive role models and an understanding that a focus on effective teamwork is necessary to meet the needs of patients and their families.

The use of videos allows educators in this area to ensure that students are exposed to positive examples of real team functioning, a variety of clinical scenarios and real patients. The latter is a particular challenge in pediatric practice. Exposing young children to groups of students is not realistic and clinical video teaching in pediatrics has been utilized (Lee et al., 2006). The use of real patients was clearly appreciated by the students.

The students suggested that they would like to have a more detailed introduction to the team members at the beginning of session to learn about their scope of practice and role in the team before observing the team. This can easily be incorporated and may be presented in video format by the professionals themselves. They would like to have more information about the setting, purpose of the assessment and background about the conditions. This is useful information and can easily be added to the introduction.

One of the main findings from this research is the value that student learners place on interactive discussions. This emerged when students identified both the focus group discussions and the small group discussions at the beginning of the workshop as key components to their learning. It is also evident in the data on suggested improvements for the workshop experience, where students identified the need for more interactive discussion. This finding clearly demonstrates the value of face-to-face student interaction in a culture where online learning is being utilized more frequently and validates the need for facilitation and discussion in interprofessional education.
These findings support the suggestion that deliberative discussion could be used as a teaching strategy to engage students. This approach supports the role of a moderator or facilitator as a guide to group discussion with an aim to engage in dialogue to reach a mutual understanding and agree on future actions (Goodin & Stein, 2008).

Comparisons between online and face-to-face interaction have shown a higher student satisfaction with the latter (Curran et al., 2008). Our students welcomed small group, problem-based learning in interprofessional groups, which Thompson demonstrated produced improvements in attitude towards other professions (Thompson, 2010). Students involved in team-based classroom learning reported that discussion led to greater understanding of problems and appreciation of different perspectives (Feingold et al., 2008).

Strengths

The study utilized a workshop format that had been used in a pilot study. We were able to use information about the logistics of engaging students to help us devise this program. In addition, we used findings from the pilot study to inform the development of the focus group questions. The study and workshops were presented by professionals from two different disciplines, which models interprofessional collaboration. We were able to study two different educational workshops, with and without facilitation as comparators. The focus group discussions reached saturation and we are confident that we obtained all pertinent themes related to student learning.

Limitations

The majority of students had been to previous IPE events, so the between-group differences may have been diluted. It is difficult to access students who have had no previous experience of IPE, particularly as we were recruiting across programs.

The mix of professional disciplines among the students attending the workshops was limited at times. This was the result of conflicting schedules across programs, the fact that IPE is not mandatory for all programs and the fact that there was no mechanism in place to ensure that students who signed up for a workshop actually attended. This challenge resulted in many of the learning groups being smaller than we had planned for and limited our ability to evaluate the intervention in large groups. The format worked well in the groups that we worked with and it is anticipated that larger groups could be accommodated.

Another limitation relates to having video clips available only from one interprofessional team in one setting. We believe that the ability to include videos from more than one interprofessional team would add value to the workshop. Students in this learning experience identified the potential value for being able to include more than one setting in the workshop.

This was a single-centre study using the same two facilitators. It would be helpful to know if the same workshop would be effectively facilitated by other professional staff.

Conclusions

Health sciences students were able to learn key components of interprofessional practice in a large group classroom format. Students attending both types of workshops demonstrated an appreciation for team collaboration, effective communication and a respectful working environment. They were able to identify benefits and challenges related to interprofessional teams for the families, for individual professionals and for the health system as a whole. Students found particular benefit in having time to interact together, to learn with and from each other as part of the experience.

When comparing the facilitated groups to the non-facilitated groups, there was no discernable difference in the learning of key components of IPE. However, the students who did not receive IPE facilitation indicated, without prompting, that they would have liked such facilitation. Furthermore, students in the non-facilitated group commented that the focus group discussion became a key point of their IPE learning. This was not the case for the facilitated group and demonstrates how the discussion offered in the workshop specific to interprofessional work was appreciated by the students.

This modality is easily adapted to allow for exposure to a wide variety of different medical conditions, different settings and alternative team structures. Students particularly valued the fact that they were seeing real clinical encounters rather than simulated scenarios. This type of opportunity is important in teaching about young pediatric patients, an area with limited exposure resulting from the fact that young children cannot be trained as standardized patients to act out different pediatric medical conditions.

Recommendations

The workshop should be revised based on feedback from the student learners in this research to include:

a) At least one additional setting
b) More opportunity for interactive discussion amongst the student learners
c) More detailed introductory information

Just under 1,000 students enrolled in health sciences programs at McMaster University this year (see Appendix B). Given this large number, there is a need for high-quality IPE learning experiences to be made available for large groups of students.

In some professions, such as speech language pathology, there are a very limited number of placements available to students. Given this challenging situation, facilitated workshops like those used in this study could be a good proxy for team immersion or job shadowing to learn about interprofessional practice.

The workshop could be implemented prior to a clinical placement and might decrease the time a student needs to spend in that placement, thereby increasing the potential number of placement opportunities for students.

The workshop could be offered to individual programs using facilitators from different programs to maintain an interprofessional component to the facilitation component. This learning opportunity would overcome some of the challenges related to recruiting students across multiple programs.

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