

ORIGINAL RESEARCH

Stroke – The Patient Journey: using healthcare simulation scenarios in series to facilitate interprofessional student learning in the longitudinal care of a stroke patient

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ABSTRACT

Introduction:

Multidisciplinary teamwork addresses the demands of the modern healthcare system. It enables collaboration between medical, nursing and allied health practitioners to deliver high-quality, patient-centred care. In a rural Australian setting, an interprofessional training programme, developed over the past decade, used healthcare simulation to deliver immersive student learning experiences. A three-part, half-day simulation programme allowed students to experience and learn from phases of care through, 'Stroke – the patient journey', including emergency management, allied health assessments and discharge planning.

Methods:

Twenty students from six different disciplines participated in the programme. Three assessments were used. Knowledge of participants' health disciplines was assessed pre- and post-training. A focus group was used to elicit student reflections on their learning experience. The individual Teamwork and Observational Feedback Tool was used by peers and tutors alike to assess in-exercise observable behaviours.

Results:

No increase in discipline-specific knowledge was demonstrated following the training. The focus group identified five key themes: (1) Understanding patient priorities; (2) Enhancing patient autonomy; (3) Observation of discipline-specific contributions to care; (4) Understanding the role of multidisciplinary team discussions and (5) Value of leadership in team-based care. The average scores were 70% for 'Shared decision-making' and 75% for 'Working in a team'. 'Leadership' was demonstrated by 70% of students and 'Patient safety' by 55%.

Discussion:

This study has demonstrated the value of the use of sequential healthcare simulation episodes to increase student understanding of acute and chronic management of a patient with a stroke. Learners understood that effective multidisciplinary communication and teamwork are essential in the care of a complex patient.

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What this study adds:

- Demonstrates the effectiveness of using simulation scenarios in series within one learning event.
- Healthcare simulation allows the exploration of a patient's journey through acute stroke to rehabilitation to discharge planning.
- Interprofessional education in this context enables greater understanding of shared decision-making.
- Discipline-specific knowledge may not increase but interdisciplinary understanding grows.

Introduction

Stroke has a significant impact on an individual's mental health and quality of life. As a neurological condition, stroke can leave an individual with long-term physical and language deficits, and other psychological sequelae [1]. This paper describes the development, implementation and evaluation of an undergraduate interprofessional education (IPE) activity that focused on the stroke journey of a patient and their family over a series of simulation activities. IPE has been defined as when, 'two or more health professions come together to learn about, from, and with each other' [2].

The multidisciplinary team (MDT) is a collaboration between allied health, nursing and medical staff, in both acute and primary healthcare settings, which can facilitate appropriate and timely inpatient care, discharge planning and follow-up. Working together, the MDT contributes a rich mix of knowledge, skills and distinct viewpoints that in the past were not incorporated into patient care [3].

The need for IPE and collaboration between medical, nursing and allied health professionals has been driven by international policies from organizations such as the World Health Organization [2] and national government departments [4] for over 20 years. However, there has been little exploration of complex approaches to IPE for students [5]. Historically, health students were educated independently in their own discipline and, during this time, they were expected to assimilate the skills and knowledge necessary to work together in a complex, team-based healthcare environment [6]. Similarly, referral and consultation requests were not routinely taught to healthcare students [7]. These skills commonly evolve only at the level of junior clinicians when they are expected to make decisions in the workplace without formalized teaching beforehand. This fragmented approach to interprofessional knowledge can result in compromised teamwork, ineffective collaboration and communication, that, in turn, impact patient outcomes and safety [3].

The increasingly complex needs of patients have driven the need for healthcare education to be delivered in a more sophisticated manner. The goals of IPE in healthcare include improved cooperation, effective communication and better teamwork. Together, these ultimately lead to higher-quality patient care with improved outcomes and safety. A relatively recent educational method commonly implemented as a form of IPE is interdisciplinary healthcare simulation (HCS). The Healthcare Simulation Dictionary defines this as, 'A technique

that creates a situation or environment to allow persons to experience a representation of a real health care event for the purpose of practice, learning, evaluation, testing, or to gain understanding of systems or human actions' [8]. This method has evolved over time to aid in closing gaps in interprofessional knowledge and communication. In this study, students assumed roles as professionals in their respective discipline and acted out scenarios in a controlled environment to simulate a real medical event.

Although HCS is often performed for clinical skills examinations for medical, pharmacy and other professional schools, it is promoted in our organization through the Enhancing Rural Interprofessional and Cultural Health (ENRICH) programme [9–11]. Although previous research has considered the importance of IPE in healthcare, a review of current literature (2010–2022) did not identify any studies involving healthcare students that focused on HCS for a stroke patient.

A review article by Gough et al. collated evidence of 18 studies involving undergraduate health students in simulation-based IPE [12], demonstrating the educational benefits in the domains of leadership, teamwork and communication skills. Extensive work in sequential simulation has been carried out by Kneebone, Weldon and colleagues spanning the last decade. This has included a comparison of the care delivered by staff in a high-end restaurant with the same in a day surgery unit [13]. Weldon et al. employed a sequential simulation in an MDT setting to engage staff and enable reflection on the provision of integrated care within their organization [14]. It is also important to invest time and resources in developing the event [15] and the faculty [16] in order to create effective IPE events.

The aims of this study were to:

1. Understand how health students engage with IPE HCS in the settings of both acute and chronic care of a patient with a disabling condition;
2. Evaluate communication, leadership skills and capability of students to function within an MDT;
3. Evaluate knowledge improvements in MDT management of stroke; and
4. Understand the impact of the stroke IPE simulation experience on the students.

Simulation education for health students is a powerful tool to promote the dissemination of clinical knowledge

and the consolidation of learning among medical, nursing and allied health students in safe and realistic situations [6,17]. IPE simulation provides an opportunity for students to develop teamwork skills that are essential for future clinical practice [10].

Worldwide, there is a projected shortage of more than 18 million healthcare workers by 2030. To address this, the WHO recommends optimizing the health workforce with collaborative working through early-career IPE training [18], to cultivate collaborative, patient-centred healthcare [19]. WHO recognizes IPE as an important component of primary healthcare and promotes it as an essential learning milestone for a 'collaborative practice-ready' health workforce with a better understanding of local health needs and teamwork [18].

In Australia, over 420,000 people live with deficits following a stroke. Two-thirds of these are dependent on another person for their daily care needs. By 2032, it is expected that approximately 709,000 (2.4%) Australians will be affected by a stroke [20,21]. Therefore, training the future health workforce in effective MDT management of stroke is essential. Evaluation of this IPE learning activity aims to gain an understanding of any improvements in knowledge, awareness and clinical skills of future health professionals.

In 2017, a core group of IPE leaders used two international consultation workshops to derive a global consensus statement to guide IPE programme planners on how to assess, provide feedback and understand student perceptions during IPE. The workshops suggested assessment of IPE should include learning outcomes in the following six domains: role understanding; interprofessional communication; interprofessional values; coordination and collaborative decision-making; reflexivity and teamwork [22].

This Stroke Patient Journey simulation was implemented through the ENRICH programme [9]. The training included a series of three simulations that represented significant phases of a stroke patient's journey:

- 1) Acute phase (Emergency Department [ED] stroke management).
- 2) Inpatient multidisciplinary assessment within 4 weeks of the acute event.
- 3) Multidisciplinary discharge planning and meeting with the patient's family at 8 weeks.

Each simulation phase of this journey was approximately 1 hour in duration and consisted of a variety of different interprofessional learning activities.

A review of published literature from 2010 to 2022 using the keywords – stroke, patient journey, IPE, interprofessional education, Australia, medical, nursing, allied health – indicated there is little evidence of IPE-focused stroke simulation within the Australian context. This study will assist in the understanding of a student's perception of a patient's stroke journey from the acute presentation to the ongoing care of an individual and their family, as well as the role of a multidisciplinary approach to care. Ethical approval for the study was granted by the University of Sydney Human Ethics Committee. Project Number: 2018/823.

Methods

Participants self-selected to be part of the IPE session by indicating their intention to attend following a generic Expression of Interest (EOI) e-mail to a student pool of 45 who were on clinical placement on the date the IPE was to be held. The EOI e-mail outlined the learning objectives of the IPE session. If the student registered to attend, they were sent a follow-up e-mail advising that the session would be part of a research study which they had the opportunity to consent to involvement with if they wished.

The inclusion criteria were:

- Undergraduate health science student on clinical placement;
- Voluntary participation in the IPE session;
- Consented to participate in research study before, during and after the IPE session.

A mixed-methods research design was used to examine the perspectives and experiences of participants who took part in the Stroke Patient Journey – IPE simulation event at a rural clinical school in regional Australia. The IPE activity began with an introduction to the format of the activities, allocating students into multidisciplinary groups and obtaining informed consent from students for involvement in the research.

Four measures were used to collect data to assess subjective and objective aspects of student learning and experience. General demographic information was collected, including gender, health discipline and year of study.

Questionnaires

Prior to commencing the first activity, participants were asked to complete a knowledge questionnaire consisting of 10 multiple choice questions; 5 questions were discipline specific and the remainder focused on the participants' knowledge of other disciplines. At the completion of all simulation activities, a new questionnaire was completed by all participants. Results from pre- and post-IPE event were used to determine changes in participant discipline specific knowledge as well as that of other disciplines.

Individual Teamwork Observation and Feedback Tool

The Individual Teamwork Observation and Feedback Tool (iTOFT) is a validated observational tool to provide feedback to individual learners who undertake interprofessional teamwork activities. There are two versions of iTOFT, the Basic and the Advanced. The Basic iTOFT can be used for learners who have little clinical teamwork experience and consists of 11 questions under the headings: 'shared decision-making' (seven items) and 'working in a team' (four items). The Advanced iTOFT is used for learners with experience in interprofessional teamwork activities and consists of 10 questions under the headings: 'shared decision-making' (three items), 'working in a team' (three items), 'leadership' (two items) and 'patient safety' (two items). This study used the Advanced iTOFT as this student cohort had previous clinical experience in interprofessional teamwork activities [23].

Focus group

A focus group of participants consisting of volunteers from each health discipline was held at the completion of the activity. A focus group provides an opportunity to explore in detail the learnings and experiences of students that can be difficult to capture using standardized surveys [24]. Giving voice to participants increases the richness and rigor of data through the triangulation process during analysis [25,26].

The learning event

All participants were given a brief introduction to stroke and had an opportunity to share their individual experiences of stroke (during their training or of a family member). Questions from the participants were encouraged and were answered by session facilitators who were medical and nursing clinicians.

Simulation 1: Acute phase (Emergency Department stroke management)

At the beginning of the session, a brief orientation to the simulation room, including available equipment and the patient simulator SimMan® by Laerdal Medical. Students were reminded about confidentiality and an introduction to the scenario was provided to all participants. Three medical students and two nursing students were asked to volunteer to participate in the simulation with the remaining students observing. The emergency simulation scenario was a patient presenting to a rural ED with a new onset of left-sided weakness, speech impairment and confusion.

During the simulation, a facilitator acted as the patient's voice and answered the questions directed towards the patient. Facilitators had instructed the students to act according to their distinct professional roles and future responsibilities. A hot debrief of participants occurred at the completion of the ED phase of the presentation. Ideally, this type of debrief occurs immediately after a significant ED event and allows team members (who agree to) to review what has just occurred. The aim of a hot debrief is to generate insights into individual, team and systemic processes such as technical skills, decision-making, communication, use of time and resources, leadership, and teamwork [27]. In addition to hot-debriefing having been shown to be effective in ED, particularly after cardiac arrest events, the concept and process involved in critical reflection post-acute episodes has also been shown to be useful in other clinical situations [28].

Observational assessments of the ED simulation participants were carried out during this session by peers or academic supervisors using the iTOfT assessments [23]. A larger de-brief of the simulation was conducted involving all the students (participants and observers) before proceeding to session 2 [29].

Simulation 2: Inpatient multidisciplinary assessment within 4 weeks of the acute event

Participants were split into three multidisciplinary groups. Scenarios were developed to support individual groups in evaluating the patient approximately 4 weeks into their stroke journey. The first group observed a mental health

assessment by a social worker student using a K10 score [30]. A second group observed a video in which a mobility assessment was conducted by a physiotherapy student (as no physiotherapy students were on placement at the time, the assessment was recorded in advance). A third group performed a speech assessment led by a speech pathology student. Each group had an opportunity to discuss findings and possibilities for future management with the scenario facilitator.

Simulation 3: Multidisciplinary discharge planning and meeting with the patient and their family at eight weeks

At the completion of Session 2, students were asked to select one volunteer from each discipline to participate in a MDT meeting. Five students (one from each discipline) participated in the meeting. There were two phases to Session 3: the first was an MDT discharge planning meeting, followed by a second, a 'Family Meeting'.

Student volunteers engaged in a 15-minute MDT meeting which was held approximately 8 weeks into the patient's stroke journey. Each student was given a prewritten discipline-specific summary of the patient's condition and instructed on how to contribute to the discussion on discharge planning. At the conclusion of the MDT, the same team proceeded to the next stage of the simulation, 'The Family Meeting'. A simulated stroke patient and his daughter were invited to participate in the discussion with the aim of achieving a safe and timely discharge. The scenario included a difference in opinion between father and daughter: the patient was very keen to get home despite some reticence on the MDT's side, whilst the daughter was adamant her father shouldn't be allowed home until a safe discharge could be guaranteed. The 'Family Meeting' was designed to provide an opportunity for students to navigate communication challenges and family-related dynamics that could impact positively or negatively on the patient's care planning. It also allowed the opportunity for those observing to see the role of MDT planning in a patient's journey.

At the completion of the family meeting, a short debrief occurred for MDT participants. Student participants, including those observing the family meeting, were given an opportunity to provide feedback. Observations and reflections were made by student observers, supervisors and academics.

Focus group

During the briefing of participants prior to the IPE event, students were advised that there would be a short focus group at the end of the afternoon, which would ideally involve a representative from each discipline. They were encouraged to consider who might want to participate in this. There was an opt-in or opt-out tick box on the participant consent form where they could indicate their willingness. Once the final exercise was completed, students volunteered of their own accord and no coercion from the investigators was involved.

Discussion was facilitated using the focus group prompt questions developed by the researchers (Box 1). Discussion

was encouraged to flow freely from one topic to another when required; probing questions and paraphrasing were used during the discussion to focus on specific comments made by one or more students [24,31].

The digital recording of the focus group was transcribed in a conversational style and de-identified during this process. The research team made notes during the focus group and, after the session, reviewed and highlighted potential patterns and trends in the discussion.

Box 1: Framework questions from focus group

- Q1) What were the interesting things about this session?
- Q2) How did you find working together with the other disciplines?
- Q3) How is the integrative or multidisciplinary approach useful in long-term management of stroke outside the hospital setting?
- Q4) Do you think you will use this integrative approach in the future?
- Q5) How can we improve this programme?

Thematic analysis guided the transcription and analysis process of this study [32]. Thematic analysis is a suitable method for identifying and organizing data items into codes, and subsequently into themes within qualitative research.

Table 1: Results of knowledge scores by discipline

Discipline (number)	Pre-event average score	Post-event average score
Medicine (4)	5.75	4.75
Nursing (2)	7.5	8
Occupational therapy (4)	5.5	5
Dietetics (2)	4.5	5
Social work (1)	9	6
Speech therapy (5)	6.6	5.8
Interprofessional mean	6.16	5.52

Researchers independently read the transcription of the focus group, then later met as a group to review codes and combined them to form themes and sub-themes. Thematic analysis guided by Braun and Clarke's approach was utilized for its simple and flexible nature, which allowed the researchers to tailor the methodology to the requirements of the research data. Thematic analysis allows an in-depth systemic analysis of data, as well a flexible process that provides an opportunity to regularly modify themes as new insights emerge from the data [33,34].

Results

Twenty undergraduate health science students from six disciplines (medicine (5), nursing (2), dietetic (2), social work (1), speech pathology (5) and occupational therapy (5)) participated in the IPE activity. Eighty-five per cent identified as female. None of the participants indicated they were of first nations decent. English was the common language used in the IPE session.

Pre- and post-event questionnaires

All 20 participants answered pre- and post-teaching episode questionnaires (100%). They were analysed by the researchers to assess changes between pre- and post-session knowledge. There was no statistically significant improvement between the pre- and post-session scores in each discipline. In fact, none of the discipline average scores increased. In some cases, the post-session scores were lower (Table 1).

iTOFT

Eleven iTOFT forms were completed in total: six by academic researchers and five by student peers. The iTOFT employs a scoring system that produces a quantitative analysis result of observable behaviour. The average score for 'Shared decision-making' was 70% and 'Working in a team' was 75%. 'Leadership' was demonstrated by 70% of students and 'Patient safety' by 55% (Table 2).

Focus group

Seven students volunteered to participate in the focus group: two speech pathologists, one social worker, one

Table 2: Collation of iTOFT observation scores during the whole simulation activity

Student	Assessor	Shared decision-making	Working in a team	Leadership	Patient safety
Medicine 1	Social work academic	3	3	2	Blank
Medicine 2	Speech therapy academic	3	3	Blank	Blank
Medicine 3	Nursing academic	4	6	3	3
Medicine 4	Medical student	4	4	4	2
Medicine 5	Medical student	2	3	2	2
Nursing	Nursing student	6	6	4	2
Dietetics	Nursing student	4	5	3	4
Occupational therapy	Speech therapy academic	NA	4	NA	NA
Speech therapy	Speech therapy student	6	6	1	1
Speech therapy	Speech therapy academic	1	6	NA	NA
Social worker	Social worker academic	5	3	3	2

occupational therapist, one medical student, one dietician and one nursing student. The focus group discussion was recorded and lasted 20 minutes. The focus group transcript was analysed by the researchers and five discussion themes emerged (Box 2).

Box 2: Themes

1. Understanding patient priorities
2. Enhancing patient autonomy
3. Observation of discipline-specific contributions to care
4. Understanding the role of multidisciplinary team discussions
5. The value of leadership in team-based care

The first group of student quotes (Box 3) incorporates two themes relating to the patient's view of the world – their priorities and their autonomy in decision-making.

Box 3: Understanding patient priorities and enhancing patient autonomy

Speech 1: '... in such a chaotic and fast paced environment, that there was always support for the family and the client ... that's not being forgotten about is really nice'.

Social Work: 'Giving patients the opportunity to have the most autonomy ... if they want to go home, for instance, we want to get what they want done safely, as soon as possible'.

Nursing: 'Teaching patients to be empowered, when we have provided them with the resources they can use'.

Speech 1: '[it is important to] promoting independence and putting your client first'.

The second group of quotes pertains to the students' observation of each other's roles and discipline-specific responsibilities in the care journey.

Box 4: Observation of discipline-specific contributions to care

OT: 'Since this was my first time being exposed to different disciplines, it was definitely interesting understanding each discipline's role and what the priorities are for the clients and how it differs from an OT role'.

Social Work: 'Social workers do a lot of referring to different services and it only dawned on me doing this, I didn't really know what half of them actually did'.

Medicine: 'We are taught through medical school to refer to certain disciplines without a complete understanding of what to do and what the expectations are around that. [It] makes you more well-rounded'.

Speech 2: 'The overlap did surprise me ... it's all more interconnected than I first thought'.

The third theme captured in Box 5 relates to the purposes, as understood by the students, of the MDT discussion.

Box 5: Understanding the role of MDT discussions

Speech 1: '... seeing the different goals that an interdisciplinary team can bring in that discharge process ... I thought was really interesting'.

Medicine: 'I don't have a complete understanding of how MDT meetings are run'.

Social Work: 'Depending on the background of the person leading the meeting, it would take vastly different directions'.

Speech 2: 'But just having a brief rundown of the structure and how long an MDT usually is, and just talking about the points that we need to cover so we are all prepared, and everyone can have active involvement ...'

Nursing: 'With the MDT meeting, having someone not from a medical field, being the chairperson that would be good'.

The fourth group of reflections (Box 6) considers the mechanisms of leadership within a team approach to care.

Box 6: Value of leadership in team-based care

Medicine: '... there's the transition from sort of the doctor-centered approach to the multidisciplinary approach in all of healthcare... we're pretty much going to be using this sort of approach. And the more you practice it, the better you're going to get at it'.

Nursing: 'From past placements, I haven't really seen that multidisciplinary teamwork ... So even promoting it in my workplace in the future, [and] educating fellow nurses to utilise that to make patient outcomes even better'.

Speech 2: '... there were always contingencies. There was always that sort of backup. If something didn't go as you would hope, there was always that next avenue you could take ...'.

Speech 1: '... now building upon that and forming relationships with other professions and keeping that line of communication is going to follow that patient through their journey'.

Medicine: 'You can sort of have this web of connectiveness between what's appropriate, what resources you have to use and somebody's heading, that sort of plan is important'.

Discussion

HCS in IPE is a valid, engaging and useful learning tool that helps to bridge the communication gap between medical, nursing and allied health professions. This study has shown both the unfamiliarity and the knowledge gaps of healthcare students regarding an interdisciplinary approach to care. It suggests a willingness and a desire to learn. Students also demonstrated an understanding of the importance of an interprofessional approach to patient care.

Knowledge assessment

This study identified no significant difference between pre- and post-event knowledge scores in all disciplines. This result is not surprising as the questionnaires were designed

to assist engagement of students in the session, with input from each academic discipline to ensure inclusion of all students. In particular, consideration was given to allied health students who may have had limited medical or nursing knowledge. Future studies could include a more generic questionnaire for all participants to assess overall gain in knowledge irrespective of the student's usual discipline.

iTOFT discussion

The results clearly identify that all disciplines demonstrated teamwork skills. All students, apart from two, were observed engaging in shared decision-making. Academics tended to provide more written feedback than student peers. This is likely to represent a difference in confidence levels between academics and students in their own skills in each domain. Students may be more reluctant to criticize others, however, constructively. Training in the use of the tool would enable more effective assessments and feedback. Some questions were left completely blank. This was adjusted for in the scoring system by excluding them from the average in that domain.

Focus group

The focus group discussion highlighted five emergent themes from the IPE HCS activities. As presented in Box 3, students appreciated how clinicians in the simulation were supportive and calm in a chaotic environment, and that focus was given to patients and their families. These findings are consistent with previous research on resuscitation theory. The appointment of leader roles in acute resuscitation has been shown to improve team performance during resuscitation. Lack of leadership and poor teamwork are associated with poor clinical outcomes, and teams that are the most successful are those which demonstrate greater leadership behaviours and explicit role and task designation [35].

Students identified that support for the family during acute management was important. In the ED simulation, this role was designated to a nursing student by the team leader. A designated family liaison role remains fundamental to successful implementation of family presence during resuscitation [36,37]. Generally, there is little formalized training for this role in medical and nursing programmes, and there is no clear evidence to support which discipline is best suited to speak to the family in this context. However, a combination of nurse and doctor has been suggested as ideal by Porter et al. [36] and results from our study suggest evidence for the same.

Students expressed surprise at the amount of role overlap observed between disciplines (Box 4). Students from within each discipline seemed unfamiliar with the roles of other professionals, despite knowing the need for referral within the workplace. Reasons for this included lack of knowledge, experience and training. Clemence and Seamark found that General Practitioners' (GPs) experience and knowledge about physiotherapy significantly affected referral patterns, and that appropriateness of referrals could be improved by better communication [38].

Building relationships between different healthcare providers is known to lead to better communication between services. Written guidelines for referral were found to be of less use than direct verbal communication [38]. Therefore, by educating students in the capabilities of what other disciplines can contribute to coordinated care, patient outcomes and safety will improve, as well as the likelihood of appropriate referral and efficient use of resources.

Access to appropriate MDT follow-up for patients along their journey, beyond the scope of acute medical treatment, will also be enhanced. These findings are consistent with research into a collaborative approach to chronic disease management in the GP-allied care context, where chronic disease management improved with integrated healthcare, more appropriate referrals and consequently increased patient satisfaction [39,40].

This study highlights the importance of understanding the role of each discipline in a patient care journey. From the MDT meeting exercise, students observed the importance of patient autonomy, with mention of the questions posed to the patient about his care and next steps independently and with his family (Box 5).

Some students expressed unfamiliarity with the process of MDT meetings for patient discharge planning. This is not entirely surprising, as there are many forms of MDT meetings which can be classified according to disciplines, specialties or ranking of attendees. Interprofessional meetings, such as the one in this study, allow opportunity for allied health professionals to offer advice and provide input into the holistic management of patients. However, there are undoubtedly different priorities when it comes to providing healthcare for medical, nursing and allied health professionals.

There was confusion and debate about which discipline should chair MDT meetings, with one participant expressing a lack of support for a medical lead. Mizrahi and Abramson found that in the context of collaboration with physicians for patient care, social workers were less satisfied and perceived more disagreement about the approach to management than their physician collaborators. However, there was an appreciation of the variety of goals a meeting like this achieves and the different avenues it can take depending on who is leading. Students in this study expressed interest in learning more about these types of discussions in future educational sessions [41].

Most students had exposure to multidisciplinary care whilst previously on placement and expressed how they would carry along this teamwork-based approach to their workplaces in the future (Box 6). The transition to a team-based care model for patients was highlighted. Students expressed appreciation of the multidisciplinary contribution to optimizing a patient's care, particularly in situations where a change in the original care plan was necessary.

Limitations

The questionnaire only employed 10 discipline-specific questions whilst no attempt was made in the session design to provide discipline-specific education or feedback. The

discipline-specific questions were different pre- and post-event, thus reducing the possibility of an improved score.

It would be beneficial to give more time to training in the use of the iTOFT tool, especially for the students. Limitations in the results of this study include the failure to use the 'inappropriate' column by all assessors.

The focus group questions were limited, and the lead facilitator should have allowed more time for a deeper exploration of themes; this may have given a greater richness to the qualitative data in the results.

This study focused on a relatively small group of undergraduate healthcare students; findings here may not be generalizable to a wider population of the same.

Conclusion

This study affirms the value of IPE HCS in the context of acute and chronic management of a patient with debilitating disease. Traditional health workplaces may offer limited opportunities for collaboration and communication at a personal level between healthcare workers from different yet connected disciplines. This can occur because of time constraints, perceived hierarchical limitations and lack of interprofessional knowledge. This study reaffirms the importance of IPE simulation during health student learning, to build a firm platform on which trainees can grow, by sharing learned concepts with colleagues in the workplace early in their careers.

Future research should be considered to evaluate the implementation of IPE in the training of practising doctors, nurses and allied health staff.

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1. Emergency Scenario
2. Multidisciplinary assessments
3. Collaborative Discharge planning meeting

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Competing interests

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