How we implemented Continuous Interprofessional Education at a newly established public hospital in Singapore

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Abstract

Introduction: To promote interprofessional collaboration (IPC), our newly established hospital implemented the Continuing Interprofessional Education (CIPE) initiatives, which included a half-day workshop and 15 sessions of Grand Rounds, with the content focusing on establishing interprofessional patient-centered care pathways, policies, and ultimately to build a community of IPC.

Methods: To evaluate the impact of the CIPE initiatives, 120 staff who attended at least 50% of the CIPE sessions were invited to complete the Interprofessional Attitudes Scale (IPAS).

Results: 67.5% of the invited participants completed the survey. The majority of the participants answered “agree” or “strongly agree” for the domains of Teamwork/Roles/Responsibilities, Patient-centeredness, Diversity and Ethics, and Community Centeredness after going through the CIPE initiatives. The Interprofessional Bias domain revealed mixed responses.

Discussions and Implications of practice: The significant contributing factors towards the success of the CIPE Grand Rounds included: (1) the topics were proposed by our staff and centered on clinical practice; (2) the delivery format was interactive, guided by adult learning principles. The mixed responses regarding the presence of biases among the participants suggested that interprofessional biases are deep-rooted in the healthcare setting, and attendance of these CIPE Grand Rounds made participants more acutely aware of these biases. However, more actions are needed to eradicate these biases.

Keywords
interprofessional education, interprofessional collaboration, continuing interprofessional education

Introduction

As the population in Singapore ages and lives longer, our healthcare system feels the crunch of increasing numbers of patients with complex conditions. Working collaboratively in the multidisciplinary team is at the heart of the complexity.¹,² Hence, respect and understanding health professionals’ contribution, skills, and expertise are instrumental in enabling better communication and improving the overall quality of care.³

The World Health Organization (WHO) defines Interprofessional Collaboration (IPC) as “when multiple healthcare workers from different professional backgrounds work together with patients, families, caregivers, and communities to deliver the highest quality of care”, and interprofessional education (IPE) as “students from two or more professions learn about, from, and with each other to improve collaboration and quality of care.”⁴ Interprofessional education is aimed at healthcare trainees, whereas Continuing Interprofessional Education (CIPE) focuses on those post qualification or licensure.⁵ Published studies showed multiple benefits of IPE and CIPE in healthcare, including increased
efficiency, improved employee morale, increased inter-staff support, better conflict resolution, enhanced learning, better clinical care and outcomes, clinical cost-effectiveness, patient safety, and satisfaction, and strengthened professional identity.\textsuperscript{1,6–8} Interventions that improved participants’ IPC competencies via IPE include early adoption of interprofessional rounds and interprofessional meetings.\textsuperscript{5,7,9} This paper shares how we developed the CIPE initiative in a new hospital and aimed to assess participants’ attitudes toward attending the CIPE Grand in IPC.

**Methods**

Our hospital is a 1000-bed public hospital in Singapore, founded in 2012 and opened its doors in 2018. From 2015 to 2018, our hospital operated at a nesting site while awaiting construction of the new premises, prepared to ramp up the clinical services and established infrastructures. To promote interprofessional practice and care, we started with a half-day workshop, followed by CIPE Grand Rounds, to provide a sustainable long-term open platform for communication, collaborative practices, shared decision-making, and improved work environment necessary for successful IPC.\textsuperscript{4,9}

The half-day workshop titled “Towards Inter-Professional Care”, introduced the IPC core competencies,\textsuperscript{6} which the Interprofessional Education Collaborative (IPEC) Expert Panel developed in 2011 to guide effective IPE and IPC interventions development.\textsuperscript{6} The IPC core competencies include Values/Ethics of Interprofessional Practice, Roles and Responsibilities, Interprofessional communication, and Teams and Teamwork. The workshop utilized case discussion and reflection of IPC core competencies using the example of a joint consultation with a patient diagnosed with Sjogren Syndrome by a care team (family medicine physician, rheumatologist, nurse, dietician, occupational therapist, physiotherapist, medical social worker, and pharmacist).\textsuperscript{6,7}

The discussion centered explicitly on the following IPC themes:

1. Roles and expertise of professionals represented on the panel team
2. Benefits of working on an interprofessional collaborative practice team
3. Challenges related to working on an interprofessional collaborative practice team

Furthermore, the guided reflection exercise asked:

1. What does inter-professional care mean to you in the workplace?
2. What does inter-professional care mean to the hospital?
3. What are the challenges you experienced in IPC at work?
4. What are the strategies to overcome the challenges in IPC?

The hospital Education Office analyzed the feedback from the workshop participants; surveyed all hospital staff to identify emerging needs, including ambiguity in clinical care workflows that require clarity; and developed the list of the topics as shown in Table 1 for the CIPE Grand Rounds. The planning and implementation processes were aligned with recommendations made by Schmitt.\textsuperscript{10} The CIPE Grand Rounds continued for a total of 15 sessions from August 2016 to January 2019. These Grand Rounds aimed to apply IPC core competencies into practice, address existing challenges shared by participants, and create patient-centered care pathways, protocols, and policies.\textsuperscript{5} The facilitators and moderators were content experts and key stakeholders in these topics. The interactive formats included expert panel discussions, debates, live case demonstrations with actors, role plays, interactive lectures with polls and quizzes, and live skills demonstration, all of which were grounded on the adult learning theory.\textsuperscript{11–12}

Following each Grand Round, workgroups were formed to develop related care pathways and policies to improve patient service delivery.

To assess how attending the CIPE initiatives affected participants’ attitudes towards IPC, we used the Interprofessional Attitudes Scale (IPAS).\textsuperscript{5,6,13} This outcome measured is at Level 1 reaction of the Modified Kirkpatrick’s Model for IPE.\textsuperscript{14} The IPAS scale included the 27 items under five domains of attitudes assessment which is aligned to the IPC core competencies, that is, Teamwork/Roles/Responsibilities (9 items), Patient-centeredness (5 items), Interprofessional biases (3 items), Diversity and Ethics (4 items), and Community Centeredness (6 items). Please refer to Supplementary appendix Table 1 for IPAS.\textsuperscript{6,13} Participants assessed their attitudes across five domains on the IPAS by using a 5-point Likert scale (from “strongly disagree” to “strongly agree”).\textsuperscript{13} Descriptive analysis was performed for the 27 IPAS items using SPSS. The study was granted exemption from the SingHealth Centralised Institutional Review Board (2020/2382).

**Results**

When the CIPE was conducted in our hospital, there were 239 staff, including 58 medical, 92 nursing, 33 allied health professionals (AHPs), and 56 administrative staff. Among 239, 198 attended at least one of the CIPE sessions. The average attendance rate at sessions was 31.4%, ranging from 20.5% to 55.1%. Table 1 shows all the attendances and topics for the sessions. Using purposeful sampling, we invited the 120 participants including 35 medical, 45 nursing, 15 AHPs, and 25 administrative staff who attended at least 50% of the 15 sessions of Grand Rounds to the study. The email invitation was sent by the Education Office with an anonymous survey link. The participation was voluntary. The reason for the minimum 50% attendance is to ensure that participants had sufficient exposure to the intervention. Of these, 81 (67.5%) responded, including 10 administrative staff, 25 AHPs, 39 nurses, and 7 doctors.

Figure 1 shows their responses for the five domains of the IPAS scale. The stacked bar charts for the domains of Teamwork/Roles/Responsibilities, Patient-centeredness, Diversity and Ethics, and Community Centeredness lean towards “agree” or “strongly agree”, which indicates the majority of the participants perceived these domains important for interprofessional care. For the domain of interprofessional biases, there
| Month Year | Speakers professions | Attendance | Titles |
|------------|----------------------|------------|--------|
| Aug 2016   | Patient, Family Medicine, Rheumatology, Physiotherapy, Nursing, Dietetics, Social Work, Pharmacy | Medical, \(n = 35\), Nursing, \(n = 29\), AHP, \(n = 25\), Admin, \(n = 19\), Total, \(n = 108\) | Towards Inter-Professional Care in SKH: Case discussion of a patient with debilitating pain |
| Nov 2016   | Geriatric Medicine, Medical social work, Clinical Governance, Legal Advisor, Bioethics | Medical, \(n = 24\), Nursing, \(n = 27\), AHP, \(n = 16\), Admin, \(n = 3\), Total, \(n = 70\) | Management of an Elderly Patient with Impaired Mental Capacity and the Potential for Elder Abuse |
| Mar 2017   | Endocrinology, Physiotherapy | Medical, \(n = 14\), Nursing, \(n = 19\), AHP, \(n = 22\), Admin, \(n = 4\), Total, \(n = 59\) | Patient with Diabetes Mellitus: Within & Outside the Hospital |
| Jun 2017   | Endocrinology, Nursing | Medical, \(n = 26\), Nursing, \(n = 14\), AHP, \(n = 7\), Admin, \(n = 3\), Total, \(n = 50\) | Postural BP |
| Aug 2017   | Endocrinology, Respiratory Medicine, Geriatric Medicine, Psychiatry, Nursing, Physiotherapy, Bioethics | Medical, \(n = 37\), Nursing, \(n = 29\), AHP, \(n = 28\), Admin, \(n = 7\), Total, \(n = 101\) | Patient Restraints |
| Sep 2017   | General Surgery, Hospital Ethics Committee | Medical, \(n = 37\), Nursing, \(n = 34\), AHP, \(n = 23\), Admin, \(n = 15\), Total, \(n = 109\) | Ethical Dilemma in the Practice of Medicine (Part 1) |
| Oct 2017   | Paediatrics | Medical, \(n = 32\), Nursing, \(n = 24\), AHP, \(n = 9\), Admin, \(n = 9\), Total, \(n = 88\) | SKH Interprofessional Day: How to successfully run IPE sessions in a tertiary hospital |
| Nov 2017   | Nursing | Medical, \(n = 9\), Nursing, \(n = 74\), AHP, \(n = 19\), Admin, \(n = 2\), Total, \(n = 104\) | Updates on Advancement in Technology and Devices in Enteral Nutrition |
| Jan 2018   | Respiratory Medicine, Pathology, Nursing, Pharmacy | Medical, \(n = 22\), Nursing, \(n = 36\), AHP, \(n = 4\), Admin, \(n = 6\), Total, \(n = 68\) | Flu or Not, Isolate or Not |
| Feb 2018   | Family Medicine, Palliative care, Nursing | Medical, \(n = 11\), Nursing, \(n = 28\), AHP, \(n = 29\), Admin, \(n = 7\), Total, \(n = 75\) | “A good death for the terminally ill patient and a good farewell for the families” |
| Aug 2018   | Hospital Ethics Committee (HEC) | Medical, \(n = 19\), Nursing, \(n = 27\), AHP, \(n = 14\), Admin, \(n = 3\), Total, \(n = 63\) | Ethical Dilemma in the Practice of Medicine (Part 2) |
| Sep 2018   | Endocrinology, General Medicine, Dietician, Physiotherapist, Psychologist | Medical, \(n = 14\), Nursing, \(n = 17\), AHP, \(n = 14\), Admin, \(n = 4\), Total, \(n = 49\) | Obesity Prevention |
appears to be mixed responses. The first item under this domain, “Health professionals from other disciplines have prejudices or make assumptions about me because of the discipline I am in,” 20.99% disagreed with this statement, 38.27% indicated neutral, while 32.1% answered, “Agree.” For the second item, “I have prejudices or make assumptions about health professionals from other disciplines,” 33.33% answered “Disagree,” 33.33% “Neutral,” and 24.69% “Agree.” For the third item, “Prejudices and assumptions about health professionals from other disciplines get in the way of delivery of health care,” 14.81% answered “Disagree,” 25.93% “Neutral,” and 49.38% “Agree.” The evaluation of the CIPE strengths and weaknesses was obtained from informal feedback sessions after each CIPE session. The informal feedback mainly focused on improving the CIPE sessions and used to guide the subsequent CIPE sessions design and planning.

### Table 1. (continued)

| Month Year | Speakers professions       | Attendance | Titles                                          |
|------------|-----------------------------|------------|-------------------------------------------------|
| Oct 2018   | Geriatrics Medicine Palliative medicine Hematology | Medical, n = 17 Nursing, n = 24 AHP, n = 19 Admin, n = 9 Total, n = 69 | End of Life Care: Blood Transfusion - Medical Futility? |
| Nov 2018   | Medical Nursing Allied Health | Medical, n = 17 Nursing, n = 15 AHP, n = 16 Admin, n = 11 Total, n = 59 | SKH Interprofessional Day: Empathy in healthcare and “Being” |
| Jan 2019   | Endocrinology Podiatry Dietician | Medical, n = 10 Nursing, n = 22 AHP, n = 18 Admin, n = 4 Total, n = 54 | Diabetic Foot Ulcer: Identifying and Managing Rightly |

![Figure 1. IPE scale domain responses.](image)

**Discussion**

Our CIPE initiatives positively influenced participants’ attitudes towards interprofessional collaborative practice. Participants liked the Grand Rounds, as a result, they were more willing to share their feedback. The contributing factor towards the success of the rounds was the authenticity and relevance of the topics because they originated from clinical practice and were recommended by the staff themselves. When seeing the relevance of the topics to practice, they were motivated to participate in the discussion, learn from experts, and endeavor to find solutions for potential challenges. The second factor was the interactive delivery strategies which motivated participants to attend because they were engaging, problem-based, goal oriented, and experiential. Also, the faculty were from multi-professional and experienced educators who played a pivotal role in facilitating meaningful discussions.
role in planning and facilitation of sessions.10–11 Our CIPE initiatives employed educational pedagogy and spanned over two years longer than most published IPE interventions.7,10–11

A strength of our study was a modest survey response rate of 67.5%, which is significantly higher than studies that developed the IPS scale, which had an average response rate of 46% (n = 678).13 An interesting observation was our participants’ responses towards the interprofessional biases domain compared to the other four domains. Our interpretation is that interprofessional biases are deep-rooted in the healthcare setting;13 thus, attending these CIPE Grand Rounds made participants more acutely aware of their biases. Awareness is an essential step for participants to change their actions in the future. We recommend that future CIPE sessions highlight these implicit biases, strive to debunk cross-disciplinary prejudice among different professions, and develop action plans to mitigate these biases.

Limitations and future directions

One of the limitations of our study is the small sample size, as it was challenging to identify a common time that worked for all staff. As a result, the CIPE Grand Rounds often clashed with clinical working hours, concurring with barriers to IPC/E suggested by Batalden et al.15 Conversely, the CIPE Grand Rounds and data collection were conducted at the ramp-up phase of our hospital, during which staff number was relatively small and clinical load was more manageable (patient capacity was 40% of the volume at the time when we wrote this article). Moving forward, we plan to alternate the timings of the Grand Rounds to cater to different professions’ work schedules, live stream, and record the sessions so those who could not attend the session live can watch the recordings. In addition, we did not administer a pre-survey for the study, with the concern of participants’ post-shift biases.

For the follow-up studies, we plan to collect data on the downstream impacts of attending the CIPE initiative on organizational practice, focusing on IPC.2–3,5 We also plan to measure changes in practice and patient care quality and evaluate the effectiveness of these policies because ultimately, all CIPE initiatives should be translated into better patient care and outcome.2–3,5

Conclusion

Our CIPE initiatives in the newly established public hospital created a platform for different professions to establish patient-care pathways, build a community of practice, and improve patient care and safety. We plan to continue improving these CIPE sessions to reduce interprofessional biases and provide better patient care.

Acknowledgements

We would like to thank Clin. Professor C. Rajasoorya, Prof Christopher Cheng, Professor Ong Biauw Chi for supporting this programme, Associate Professor Melvin Chua, Dr Clement Yan, Ms Leaw Bee Leng, Ms Siti Mariam Bte Mohamad Salim for being part of the programme faculty; Prof Peter Mack and Sengkang General Hospital Nursing Education and Development Department for being early part of the programme. We thank all the participants to the study. Most importantly we thank the administrative personals of the Education Office of Sengkang General Hospital for their relentless background work in making this programme a success.

Author contributions

Dr Dong Chao Yan and Dr Lee Wai Ching Deanna researched literature and conceived the study, gaining ethical approval, participant recruitment, and data analysis. Dr Lee WCD wrote the first draft of the manuscript together with Dr Dong CY. All authors reviewed and edited the manuscript and approved the final version of the manuscript.

Declaration of conflicting interests

All Authors are employee of Singhealth company and based in Sengkang General Hospital. Prof Derrick Aw and Dr Lee Wai Ching Deanna are affiliated to DUKE-NUS University as faculty. All authors disclosed no financial associations or other possible conflicts of interest.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Authors’ note

For each author: first name, last name, institution, Twitter handle (Optional), description of work performed by each author.

Author Declaration

Any opinions, findings, conclusions, or recommendations expressed in this material are those of the authors and do not reflect the views of the Ministry of Health or the SingHealth institution.

Informed consent

Written informed consent was obtained from the patient(s) for response to the questionnaire which was anonymized to be published in this article.

Ethical approval

This study has been granted an exemption by the SINGHEALTH CENTRALISED INSTITUTIONAL REVIEW BOARD (CIRB) DETERMINATION.

Availability of data

The datasets generated and/or analyzed during the current study are available from all the authors.

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Supplemental material

Supplemental material for the article is available online.

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