

# The impact of an inter-professional induction program on the perception of inter-professional collaboration (IPC) among new staff at a tertiary rehabilitation center

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## Abstract

**Background:** Existing literatures showed IPC trainings within undergraduate curriculum could enhance students' perceived communication skills and teamwork abilities. However, the values of IPC training for staff in clinical actual setting are unclear.

**Aim:** To develop an effective inter-professional induction program for new staff at Tan Tock Seng Hospital Rehabilitation Centre in Singapore aiming to improve their perception on IPC.

**Method:** Participants went through e-learning materials prior attending a workshop focusing on IPC core competencies through real case studies, discussions and interactive activities.

**Results:** 24 new staff from different professional background (8 physicians, 7 nurses, 8 physiotherapists and 1 occupational therapist) participated in the study. The results showed the mean ATHCT score, team skill scale score and team fitness test score had increased from 92.13 to 95.71 ( $p=0.009$ ), 52.17 to 57.38 ( $p=0.036$ ) and 76.29 to 82.08 ( $p=0.013$ ) respectively.

**Discussion and conclusion:** The results suggested IPC induction or education in clinical setting is valuable and important to enhance IPC perception for setting good foundation for IPC practice. Contextualized IPC training conducted in clinical setting is also believed to be more superior to generic training conducted during undergraduate or pre-professional training, as the training could be designed specifically to suit actual work requirement and culture.

## Practice points

- Inter-professional induction program in clinical setting is valuable in enhancing new staff's perception on inter-professional collaborative (IPC) practice.
- Such induction program is useful for staff that has no previous exposure to IPC during their undergraduate training or previous work experience.
- The induction program is contextualized to suit actual work requirement and culture, which is believed to be more superior to generic IPC trainings during undergraduate trainings
- It might be worthwhile for each clinical setting to develop its own IPC induction program.

**Keywords:** Inter-professional, teamwork and undergraduate.

## Article

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### Introduction

According to the World Health Organization (2010), inter-professional collaboration (IPC) is defined as multiple health workers from different professional background work together with patients, families, carers and communities to deliver the highest quality of care. While inter-professional education (IPE) is defined as learners from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes (WHO, 2010). Lingard et al (2002) further illustrated that IPC practice as cultivated by IPE forms the nucleus of both patient-centric care and clinical education for novice. IPE is in contrast to traditional individual professional education, which largely focuses on team-related skills, such as effective communication and teamwork rather than just individual professional competencies. Thus, there is a need to review existing practices and create an environment for sharing best practice to support IPC and IPE so as to foster higher quality of clinical care (WHO, 2010).

The current study was conducted in Tan Tock Seng Hospital Rehabilitation Centre, which is a tertiary rehabilitation centre in Singapore that specialised in the care of people with stroke, brain injuries, spinal cord injuries, amputations and trauma. In order to manage the complex needs of clients, each profession is required to work closely together to achieve the best care outcomes. However, the concepts of IPC are generally not covered adequately during undergraduate training of different health professionals in Singapore. The centre also currently does not have a structured training program to equip our new staff with the skills and knowledge to function effectively in different inter-professional teams. Staff would often learn on-the-job by observing how seniors manage their day-to-day issues arisen from the team, such as conflict resolution among team members. We observed that not all staff picked up the necessary competencies and skills and perform at a satisfactory level as expected from inter-professional teams. Some of them actually struggled to work inter-professionally in delivering patient-centric care.

Existing literatures showed IPC trainings within undergraduate curriculum could enhance students' perceived communication skills and teamwork abilities (Pollard, 2004 & Pollard, 2008). In addition, IPC trainings for healthcare students in ward settings enhanced perceived interprofessional competence and knowledge of other professions (Hallin et al., 2009). However, the values of IPC training for staff in actual clinical setting are unclear.

Therefore, the objective of this study is to develop an effective inter-professional induction program on IPC using IPE for new staff at Tan Tock Seng Hospital Rehabilitation Centre aiming to improve their perception on IPC.

### Methods

#### Design

This study employed a prospective pre and post-test design to examine how the inter-professional induction program affects staff's perception on IPC.

## Study Population

This study intended to include staff from all professional groups who were with the centre for less than 6 months at the time of the program being conducted. The study team attempted to recruit as many participants as possible within the year 2013 and 2014. However, administrative staff and assistants were excluded from the study.

## Instruments

### *Attitudes toward health care teams scale (ATHCT)*

The main outcome measure used in this study was the attitudes toward health care teams scale (ATHCT) developed by Heinemann et al. (1999). It is a 21-item instrument with a 6-point Likert scale from 1 (strongly disagree) to 6 (strongly agree). This tool has been shown to be reliable and valid (Heinemann et al., 1999 & Hyer et al., 2000) and was used in previous studies to evaluate educational interventions in both western countries (Leipzig et al., 2002 & Fulmer et al., 2005) and more recently Asian countries (Hayashi et al., 2012 & Makino et al., 2013). There were negatively worded items in the scale and they were reverse-scored when the total score were being calculated. The higher the score indicates more positive attitude and perception toward IPC.

### *Team skill scale*

It is often used in conjunction with the ATHCT. It is a 17-item tool with a 5-point likert scale from 1 (poor) to 5 (excellent) for assessing inter-professional team skills (Grymonpre et al., 2010). It has a high internal consistency with Cronbach's alpha of 0.95 according to the study by Miller & Ishler (2001). The higher the score indicates the better perception of inter-professional team skills the respondent has.

### *Team fitness test*

This tool was adopted from the Geriatric Interdisciplinary Training Program under John A. Hartford Foundation in the United States (Hyer et al., 2002). It is a 25-item instrument with a 4-point likert scale from 1 (does not describe) to 4 (definitely) providing insight into individual and team behaviours that impact team performance. The higher the score indicates higher perceived team skills or performance.

## Procedures

Eligible staff were informed and given the study information sheet 1 month before the start of the program. After verbal consent was obtained from each participant, the ATHCT, team skill scale and team fitness test were administered. Access to e-learning materials on the core concepts of IPC was then granted. These materials were developed by the study team with reference to the WHO guidelines (2010). Participants were required to go through the materials themselves and sat for an individual readiness assurance test (IRAT) making sure all are equipped with the necessary knowledge prior to the actual induction program.

The induction program was conducted over 2-half days (3 hours each) using inter-disciplinary team-based learning approach. Participants were divided into 2 to 3 groups of 3 with a mix of different professions in each group. They were given 3 to 4 different real case scenarios that illustrated the IPC core concepts including team values and ethics, roles and responsibilities of team members, effective communication and conflict resolution. Participants learnt through group discussion, idea presentation, debates and role-plays, which were guided and facilitated by faculty members. All faculty members were reminded not to advocate solutions to situations illustrated in the case scenarios. Instead, free flow of ideas among participants was encouraged. The main aim of the program was to let participants experience and discuss potentially difficult (e.g complaints,

disagreement between team members, etc) or dangerous (e.g. fall incidences, patients/ staff being harmed due to poor communication, etc) situations in a safe and controlled environment. There was a short debrief to summarize all the learning points arisen from each scenario by the facilitators.

Upon completion, participants were asked to complete the ATHCT, team skills scale and team fitness test again. Narrative feedback on course administration and course content was then collected from each participant.

#### Data Analysis

Participants' demographics data was collected. The total scores of each instrument were calculated for each participant. The mean pre and post-program scores from each instrument were tested for statistical significance using the Wilcoxon signed ranks test, while the correlations between ATHCT and team skill scale and team fitness tests were calculated using the Spearman's Rho in SPSS.

#### Results

There were 24 new staff completed the program including 8 physicians, 7 nurses, 8 physiotherapists and 1 occupational therapist in the year 2013 and 2014. Table 1 shows the demographics of these participants. There was only 1 dropout, who was a medical social worker, due to work commitment and manpower shortage during the second half of the program. After the induction program, there was a significant increase in the ATHCT mean scores indicating improvement in the perception towards IPC among the participants (Table 2). Similar trend was also found for the team skill scale reflecting participants were more confident in their abilities to function in interdisciplinary teams (Table 2). For the team fitness test, the change was also positive showing participants had a better perception on their own teams' performance (Table 2).

Looking deeper into the main outcome measure, participants with prior IPE/ IPC exposure had higher ATHCT scores as compared to those without both before and after the induction program (Table 2). Participants without prior IPE/ IPC exposure appeared to have more gains in mean ATHCT scores upon completion of the induction program. Similarly, the ATHCT scores were higher in participants with at least 6 months of work experience as compared to those with less than 6 months of work experience both before and after the induction program (Table 2). However, the gains in mean ATHCT scores were similar regardless of participants' prior work experience.

There were positive moderate correlations between ATHCT and team skill scale both before and after the induction program. However, only the correlation after the induction program was statistically significant. For ATHCT and team fitness test, the correlations were moderate and strong before and after the induction program respectively. And both correlations were statistically significant (Table 3).

Number of subjects (n)	24
Age Mean Range	27 20-41
Gender Male Female	10 (41.67%) 14 (58.33%)
Profession Physician Physiotherapist Occupational Therapist Nurses	8 (33.33%) 8 (33.33%) 1 (4.17%) 7 (29.17%)
Highest Qualification Diploma Degree Post-graduate Degree	5 (20.84%) 18 (75%) 1 (4.17%)
Prior IPE/ IPC Exposure Yes No	6 (25%) 18 (75%)
Work Experience (years) Less than 6 months At least 6 months	8 (33.33%) 16 (66.67%)

Table 1: Demographics of new staff who completed the IPC induction program.

Outcomes	Pre-program	Post-program	Significance
ATHCT (n=24)	92.13 (SD=9.22)	95.71 (SD=10.9)	p=0.009*
ATHCT (subjects who had IPE/ IPC exposure, n=6)	96.5 (SD=10.88)	99 (SD=9.17)	p=0.223
ATHCT (subjects who had no previous IPE/ IPC exposure, n=18)	90.67 (SD=8.44)	94.61 (SD=11.44)	p=0.024*
ATHCT (subjects who had less than 6 months work experience, n=8)	90 (SD=9.07)	93.13 (SD=15.06)	p=0.176
ATHCT (subjects who had at least 6 months work experience, n=16)	93.19 (SD=9.4)	97 (SD=8.43)	p=0.017*
Team Skill Scale (n=24)	52.17 (SD=9.54)	57.37 (SD=10.63)	p=0.036*
Team Fitness Test (n=24)	76.29 (SD=12.16)	82.08 (SD=10.43)	p=0.024*

Table 2: Mean scores of ATHCT, team skill scale and team fitness test before and after the IPC induction program.

p<0.05 indicates statistical significance

Correlations	Coefficient	Significance
ATHCT and team skill scale (pre-program)	0.359	p=0.085
ATHCT and team skill scale (post-program)	0.472	p=0.02*
ATHCT and team fitness test (pre-program)	0.475	p=0.019*
ATHCT and team fitness test (post-program)	0.708	p=0.000*

Table 3: Correlations between ATHCT and team skill scale and team fitness test  
p<0.05 indicates statistical significance

## Discussion

The study team was delighted to see the various positive impacts of this induction program on new staff joining the rehabilitation centre. During the planning stage, with such a short 2 half-day program, the study team understood the importance of being focused to design an induction program that could really improve new staff's perceptions on IPC practice. It was a bonus to us that there were improvements in confidence in the abilities to function in interdisciplinary team and also perceived team performance, as the induction program was not mean to teach practical team skills in the first place.

The relatively high baseline ATHCT scores, especially in participants with prior IPE/ IPC exposure, could be because all participants were not fresh graduates and had already started working for 2 months to 4 years. These participants could have learnt some IPC concepts unknowingly during their day-to-day work in the rehabilitation centre or in their previous workplaces. Despite of this, the study team would like to stress the need for proper IPC induction in the rehabilitation centre, as we realize not all local universities and healthcare providers offer students or staffs with adequate IPC exposure. All participants had significant improvement in their perception towards IPC after the program. That means even with high baseline ATHCT scores, the IPC induction program was successful in further improving participants' IPC perception and ensuring similar level of understanding towards IPC. This achievement is exceptionally important to us, as there are always strong needs to collaborate effectively in the rehabilitation centre for better care delivery and meeting the complex needs of our clients.

For the secondary outcome measures, the mean scores for both team skill scale and the team fitness test improved significantly after the induction program. Although the main aim of this induction program was to enhance participants' perception towards IPC through understanding of core IPC concepts instead of teaching actual team skills or ways to improve team functions. Participants perceived to have better team skills after the induction program was probably due to the various team skills surfaced during the case scenarios illustration and group discussion. Participants had chance to discuss and decide what strategies or team skills to be used pertaining to the case scenarios. Rather than going into details of each skill or advocating a particular skill or method, facilitators encouraged participants to brainstorm more ideas. The other reason might be participants were unaware or underestimated their own abilities. The case scenarios actually assured the participants the possessions of these team skills. Similarly, the improvement in perceived team fitness was likely as a result of the better understanding on various practices that could influence team fitness through the case scenarios.

The moderate to strong correlations between ATHCT and team skill scale and team fitness test illustrated positive attitude towards IPC affected team skills and team performance positively. This finding further strengthened the idea by Ruebling et al. (2014) that attitude is recognized as a key element in developing or changing behaviour. Good attitude towards IPC among team members sets good foundation for further IPC training and eventually maximize the potential of achieving collective team competence (Lingard et al., 2009) for better care outcomes.

In view of the benefits as mentioned, the rehabilitation centre has plan to incorporate this IPC induction program into the routine staff orientation program until all the major local universities provide healthcare students with adequate IPC exposure during their undergraduate training. In order to minimize dropouts due to unforeseen circumstances, the study team would like to reduce the total training hours to 4 hours instead of two 3-hour sessions on separate dates. This could be achieved by reducing the number of case studies to 3 instead of 4 and making sure the remaining 3 case scenarios could illustrate all the IPC core components. In addition, the study team believes a one-off IPC induction is not adequate to ensure new staff's abilities to function and contribute effectively in interdisciplinary teams, as the effects of such program would likely diminish over time (MaFayden et al., 2010 & Pollard & Miers, 2006). Thus, it is important to form an IPC resource group to provide on-going support and coaching to new staff in resolving day-to-day IPC issues. Furthermore, it would be interesting to explore other instructional methodologies in the delivery of the IPC core competency content, such as using social media, injecting more dynamic and interactive strategies, instead of using the current one-way e-learning platform.

Since majority of the IPC studies were done in western countries, further researches would be important to establish the importance of IPC on effective care delivery in Asian context. The encouraging results from this preliminary study set the foundation for further researches in Asia. In addition, IPC training in clinical setting has its importance and values as compared to generic IPC training conducted during undergraduate and pre-professional training. It is because variations in practices exist among different clinical settings and there is a need to acknowledge these variations by designing IPC induction or education that is contextualized and suit workplace requirement and work culture. Therefore, it might be worthwhile for each clinical setting to develop its own unique IPC training for staff to best meet the needs of individual organizations. More researches into this area would be useful to establish the evidences of such setting specific IPC training.

Furthermore, other future research directions would include larger sample size studies to further strengthen the results from current study, more vigorous study designs to produce more convincing results, incorporate qualitative components to better explain current findings and obtain more ideas for future studies, establish the linkage between IPC perception and actual IPC behaviour, establish minimum ATHCT score change needed for behavioural changes in actual clinical settings, find out the effects of IPC induction program on fresh graduates, investigate how effective IPC practice could lead to better patient outcomes, etc.

## Conclusion

This study was one of the first studies attempted to evaluate IPC perception of working health professionals and the impact of an IPC induction program on their IPC perception. The results of this study suggested IPC induction or education in clinical setting is valuable and important to enhance IPC perception for setting good foundation and common understanding for IPC practice. Contextualized IPC training conducted in clinical setting is also believed to be more superior to

generic training conducted during undergraduate or pre-professional training, as the training could be designed specifically to suit actual work requirement and culture. It might be worthwhile for each clinical setting to develop its own unique IPC training to better suit the needs of individual organization.

### **Ethical Aspects**

This study was approved by the local ethics committee.

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### **Declaration of Interest**

The authors report no conflict of interest.

### **Notes on Contributors**

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