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FITRI's four steps in developing primary health cares' interprofessional collaborative: an intervention for fostering IPCP competencies

Fitriana Mawardi ^{a,b}, Ayuningtyas S Lestari ^c, Hari Kusnanto ^a, E P S Sasongko ^b, and Dany Hilmanto ^d

^aCommunity and Family Medicine Department, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia; ^bPublic Health Department, Faculty of Medicine, Universitas Padjajaran, West Java, Indonesia; ^cNursing Study Program, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada, Yogyakarta, Indonesia; ^dHealth Pediatric Department, Faculty of Medicine, Universitas Padjajaran, Indonesia

1 ABSTRACT

It is important to fill the gaps in collaborative practice due to the lack of the healthcare professionals' ability to work in collaboration with other disciplines. However, the current team training does not routinely address this important issue. This study aimed to identify how interactive interprofessional collaborative practice (IPCP) learning materials in a virtual course and community implementation called FITRI's four steps in developing primary health cares' interprofessional collaborative practice can be used in primary healthcare settings to address IPCP competencies of healthcare providers. This research was a quasi-experimental study with an untreated control group design using a dependent pretest and posttest sample. A purposive sample of 50 primary healthcare providers consisting of general physicians, dentists, nurses, dietitians, and pharmacists were nonrandomly divided into the control and intervention groups. This study showed that IPCP competencies measured by the Interprofessional Collaborator Assessment Rubric (ICAR) in the intervention group were significantly higher after the training and implementation than before. The Mann-Whitney tests indicated that IPCP competencies were better in the intervention group than the control group. Based on effect size analysis, the intervention had a very strong impact and could significantly improve the participants' competencies, especially in the collaborative patient/client-family centered approach domain. The FITRI's four steps in developing primary health cares' interprofessional collaborative practice can be implemented and provide positive impacts in primary healthcare settings to improve and foster competencies of IPCP in primary healthcare.

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1 KEYWORDS

Community-based training;
interprofessional
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Introduction

Effective interprofessional collaboration, defined as multiple healthcare professionals from different backgrounds working together to deliver the highest quality of care, is necessary to improve the quality of healthcare (Stadick, 2020). The World Health Organization (WHO) (2010) promoted and supported interprofessional collaborative teams as one effective approach to address safety concerns and help create positive patient outcomes (Granheim et al., 2010). The healthcare providers must develop their skills associated with effective Interprofessional Collaborative Practice (IPCP) including communication, roles and responsibility, group problem solving, and shared goal setting (McGinness et al., 2019). Primary healthcare providers serve as the first gatekeepers in the community and the clinical workplaces increasingly rely on IPCP (Rifkin, 2018). However, recent studies indicated that gaps in communication and collaborative practice continue to occur due to the lack of the healthcare professionals' ability to work in collaboration with other disciplines. These gaps between the expectations and reality in collaborative practice in primary healthcare are also caused by mismatches between the competence of health professionals, poor teamwork skills, weak leadership skills, and other core issues (Findyartini et al., 2019).



Today, healthcare providers especially in primary healthcare settings need to be competent in providing team-based care; however, the current team training does not routinely address this important issue (Digregorio et al., 2019). Furthermore, the Institute of Medicine (IOM) recently stated that the critical need to enhance education and training for healthcare providers focused on IPCP is not being met in some interprofessional programs (Malcolm et al., 2017).

1 In this study, we designed, developed and tested interactive IPCP learning materials for use in a virtual course and community implementation called FITRI's four steps in developing primary health cares' interprofessional collaborative practice, where FITRI stands for Formation, Introduction, Training, and Implementation. The aim of this study was to identify how this IPCP course can be implemented and provide positive impacts in primary healthcare settings to address IPCP competencies of healthcare providers.

Methods

Research design

This quasi-experimental study was conducted using a research design with a control group who did not receive the training and a dependent pretest and posttest sample. Quasi-experiments

2 CONTACT Fitriana Mawardi  fitriana.8918@ugm.ac.id  Community and Family Medicine Department Faculty of Medicine, Public Health and Nursing Universitas Gadjah Mada, Jalan Farmako Sekip Utara Caturtunggal Depok Sleman, 55281, Indonesia

involve treatment, outcome measurement, and experimental units without randomization. We included an intervention group and a control group using nonrandom assignment. Both of the intervention and control groups did the pretest and posttest. The healthcare providers who met the inclusion criteria were chosen by mandate from the head of the primary healthcare centers.

Setting and participants

A purposive sample of 50 primary healthcare providers divided into two groups participated in this study from 10 primary healthcare centers in Sleman District Daerah Istimewa Yogyakarta Indonesia that have primary accreditation. The sample size calculation used the formula of Hemming et al. where each arm consisted of five groups. The participants consisted of general physicians, nurses, dietitians, dentists, and pharmacists from the primary healthcare centers (Hemming et al., 2017).

For the inclusion criteria, participants had over two years' experience working in the research area's primary healthcare facility and had to participate in all of the course sessions. Exclusion criteria were any primary healthcare provider who refused to be involved in the entire study.

Intervention

The IPCP course for the intervention group is called *FITRI's four steps in developing primary health cares' interprofessional collaborative practice*, where *FITRI* stands for *Formation, Introduction, Training, and Implementation*. The details of the program course are:

Formation

The first step of the program involved *formation* of the IPCP group and conducting an overview of the program plan. The IPCP group from primary healthcare consisted of a general practitioner, dentist, nurse, dietitian, and pharmacist. The goals of IPCP course included understanding the theory of collaboration, challenges of collaboration in the community level, and practicing the steps in the implementation of IPCP in assessing, diagnosing, and giving the intervention. The program plan of the IPCP course is outlined as follows in Table 1.

Introduction

The second step was the *introduction* to give the explanation and overview related to IPCP for the primary healthcare providers.

Training

The *training* of IPCP for the primary healthcare providers involved a one-day session for 6 h of virtual training via the online *Zoom* application. The virtual training consisted of interactive lectures, discussion, and case study presentation. The topics of the interactive lectures consisted of aging theory, roles and responsibility of each health profession, IPCP in primary healthcare, and IPCP in clinical settings. The participants did the pretest before the training and the posttest after the training through the online *Nearpod* application. Case study presentation and discussion were also conducted via the *Nearpod* application.

Implementation

The *implementation* of the IPCP course was conducted through home visits to the elderly with malnutrition, who served as the target population of the IPCP course. The healthcare providers visited the elderly to conduct assessment, make diagnoses, and give interventions based on their own roles and responsibility. The healthcare providers visited patients' homes once in a week with duration of 30–45 minutes each visitation, for 4 weeks. The participants did the second posttest after the implementation, at the end of the home visitations in the fourth week.

Control

The control group of primary healthcare providers continued providing usual daily care to their patients. In the daily service in primary healthcare centers, the patient comes to the primary healthcare center with their health problem and is then assessed by the nurse, examined by the general physician, and finally given the prescription by the pharmacist. Referral to the dietitian and dentist is not part of the routine treatment and is only based on the special needs of certain patients.

These primary healthcare providers in the control group did neither receive any IPCP course material nor training during the study period. At the completion of the study (i.e., after completing post-intervention measures), the control group participants then received the same IPCP course as given to the intervention group participants.

Table 1. Program plan of IPCP course.

Learning Objectives	Learning Methods	Learning Activities	Duration
Describe theory of collaboration, role and responsibility of each profession, and teamwork in interprofessional team	Interactive Lecture	Interactive Lecture Structure of interactive lecture was to describe the goal of the collaboration, with explanations from real cases, and basic concepts of collaboration.	4 hours The participants did the pretest before start the training
Develop clear understanding related to challenges of collaboration in community level	Case Study	Case studies were related to collaboration in primary health care.	2 hours The participants did the first posttest after the virtual training
Health care providers from five professions collaborate based on their role and responsibility to assess, diagnose, and give the intervention	Experimental Learning	Implementation Health care providers did home visits to implement the collaboration.	Once in a week with duration of 30–45 minutes each visitation, for four weeks. The participants did the second posttest after the implementation, at the end of the home visitations in the fourth week.

Instrument

We used the Interprofessional Collaborator Assessment Rubric (ICAR) for all of the participants as the pretest and posttest instrument. The ICAR was designed to assess competencies stated by the Interprofessional Committee collaborative competencies (Curran et al., 2011). ICAR measures six competencies of IPCP including communication, collaboration, roles and responsibility, collaborative patient/client-family centered approach, team functioning, and conflict management/resolution. ICAR contains five achievement levels which are scored 0–5 observable/applicable, well below expected, below expected, expected, above expected, and well above expected. ICAR has been already tested for validity in the Indonesia language and has a high level of internal consistency ($\alpha = 0.87$) and high level of inter-rater reliability percent agreement $>80\%$ (Randita et al., 2019).

Data collection

Data collection occurred from October 2020 to December 2020. Study data were collected using the *Nearpod* application that is designed to collect the self-answers from the ICAR questionnaire. *Nearpod* is user-friendly and easy to access using a Smartphone or personal computer. In the questionnaire, the primary healthcare providers chose the best answer which represents their collaborative understanding, ability, and environment related to collaborative practice. Data from *Nearpod* were exported into Microsoft Excel for tabulation.

Data analysis

Data analysis was done using SPSS Version 25 (IBM Corp., Armonk, NY). We performed the normality data test to decide to use non-parametric or parametric tests for further analysis. Based on the normality test, the data were not normally distributed therefore the non-parametric test was chosen. The Wilcoxon test was used to evaluate the pre and posttest scores in each control and intervention group. The Mann-Whitney was used to evaluate the changes in scores from the pretest and posttest between the control and intervention groups. Using Cohen's *d* scores, we also analyzed the effect size of the intervention in each domain of IPCP competencies.

Results

Demographic

Demographic data were collected from the control and intervention groups (Table 2). The majority of the participants in both groups were in the age range of 40–49 years old and mostly female. The participants in the control group had working experience for 2–3 years ($n = 9$) and more than 5 years ($n = 9$), and most of the participants of the intervention group had working experience more than 5 years ($n = 13$). Most of the participants have the degree level of bachelor with clinical profession degree. None of the participants were lost to follow-up (Response rate 100%). Also, none of the healthcare providers refused to be involved in this study.

Table 2. Demographic characteristics of participants.

No		Control Group		Intervention Group	
		n	%	N	%
1	Age in Years				
	20–29	0	0	0	0
	30–39	6	24	7	28
	40–49	15	60	14	56
	50–59	4	16	4	16
2	Gender				
	Male	1	8	1	4
	Female	24	92	24	96
3	Profession of Participant				
	General practitioner	5	20	5	20
	Dentist	5	20	5	20
	Nurse	5	20	5	20
	Dietitian	5	20	5	20
	Pharmacist	5	20	5	20
4	Working Experience in Years				
	2–3	9	36	9	36
	3–4	3	12	0	0
	4–5	4	16	3	12
	>5	9	36	13	52
5	Degree Level of Participant				
	Associate	8	32	7	28
	Bachelor	5	20	3	12
	Bachelor and clinical profession	12	48	14	56
	Master	0	0	1	4

IPCP competencies

The results showed that there was improvement in the average ICAR scores between the pretest and posttest in both groups. The Wilcoxon Signed-Rank test indicated that there was no significant difference between the pre and posttest in the control group ($p = .100$). In the intervention group, the second posttest ICAR scores were significantly higher than the first posttest ICAR score after training ($p < .01$) and were significantly higher than the pretest scores before implementation ($p < .01$; Table 3).

The Mann Whitney test indicated that there was no significant difference in the pretest scores between the control and intervention groups ($p = .239$). The posttest scores indicated that there was a significant difference between the control and intervention groups ($p < .01$) in which significantly higher posttest scores were in the intervention group (Table 3).

We conducted significance tests for every domain in IPCP based on the posttest scores. The results showed that the posttest scores of the control group in every IPCP domain were significantly lower than the intervention group (Table 4). The Cohen's *d* tests in Table 5 showed the effect of the FITRI's four steps in developing primary health cares' inter-professional collaborative practice on the intervention group for each domain ranged from moderate ($d = 0.51$ – 1.00) to very strong ($d > 1.50$). The effect of the intervention was the

Table 3. Comparison of ICAR scores in control and intervention group.

	ICAR Pre Test	ICAR Post Test	<i>p</i> Value (95% CI)
	mean \pm SD	mean \pm SD	
Total ICAR Control Group	51.52 \pm 4.13	53.52 \pm 7.13	0.100
Total ICAR Intervention	55.24 \pm 8.70	62.20 \pm 6.81 ^a	0.000*
<i>p</i> Value (Mann Whitney)	0.239	0.000*	0.000*
95% CI			

^aFirst posttest after training

^bSecond posttest after implementation

*significance <0.05 ; CI, confidence interval; SD, standard deviation.

Table 4. Significance in each IPCP domain and effect size of intervention.

Domain	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)	Cohen d
Communication	83.500	408.500	-4.619	.000	0.990
Collaboration	149.000	474.000	-3.415	.001	0.895
Roles and responsibility	91.500	416.500	-4.468	.000	1.077
Collaborative patient/client-family centered approach	89.500	414.500	-4.529	.000	1.674
Team functioning	67.500	392.500	-5.017	.000	1.136
Conflict management/resolution	67.500	392.500	-4.929	.000	0.921

strongest in the collaborative patient/client-family centered approach domain (Cohen's $d = 1.674$, $p < .01$) and was considered strong in both the roles and responsibility (Cohen's $d = 1.077$, $p < .01$) and also team functioning (Cohen's $d = 1.136$, $p < .01$) domains.

Discussion

The intervention of this study named FITRI's four steps in developing primary health cares' interprofessional collaborative practice involved virtual training for primary healthcare providers and implementation through home visitations. The results indicated that the overall IPCP competencies in the intervention group are significantly higher after the training and implementation, IPCP competencies were better in the intervention group than the control group, the IPCP course had a very strong effect to improve collaborative patient/client-family centered approach and a strong effect to improve the roles and responsibility as well as team functioning competencies.

The results also showed that there was improvement in IPCP competencies after the primary healthcare providers participated in the virtual training compared to before. This finding is in-line with study by Robertson et al. in 2021 that provided evidence indicating participants enjoyed the experience of virtual learning more because it made scheduling simpler than planning an in-person session and allowed this activity to occur despite restrictions to the pandemic (Robertson et al., 2021). Another study conducted by Williams et al. in 2020 also found that after the simulation, participants felt the qualities identified prior to the simulation were important to teamwork. Participants emphasized the importance of collaboration and functioning as a team. The participants also recognized the need for quality provision of patient-centered care, interprofessional collaboration, and effective application of the psychomotor skills (Williams et al., 2020).

Based on the study, there were significantly higher scores after the intervention in the group who participated in the virtual training and implementation than the control group. A study by Ryan et al. in 2020 that conducted online clinical learning for IPCP and did the project site implementation also showed that the summative program evaluation highlighted the positive impact of trends of improvement in project staff participants' positive perceptions of their collaboration and teamwork competencies. The interprofessional, asynchronous online learning made them more accessible. The results showed that the blended pedagogical method can address the challenge of disparate schedules and can facilitate more interactions to learn from and with each other (Ryan et al., 2020).

The effect of the intervention was very strong in the collaborative patient/client-family centered approach domain. The findings of this study are in-line with a study conducted by Moll et al. in 2019 that showed how interprofessional collaboration as a team process can deliver effective patient-centered care. Upon completion of the interprofessional activity, the respondents viewed the team collaboration as relatively positive (Moll et al., 2019). A study conducted by Nieuwoudt et al. in 2020 found one of the benefits of IPCP training was that the participants gained an appreciation of the importance of holistic patient care from a patient's point of view. In the training process, the participants learn about patient centered care and think more holistically about the patient's perspective (Nieuwoudt et al., 2021).

Practice transformation is rapidly evolving with modern technological advancements and collaboration of healthcare professionals is direly needed. The workplace-based training can contribute to improve healthcare professionals' IPCP competencies to deliver based-team care especially for elderly people who have complex health problems. Health professions who participated in IPCP training reported improvement in collaborative competencies. IPCP in primary healthcare gained more engaging collaboration and satisfaction with decisions made in a team (Lamothe et al., 2020). Through the experience of IPCP training, primary healthcare professionals learn to communicate and work together based on patients' needs, value each other's contributions, and demonstrate leadership. Ultimately, the quality of care is improved and both patients and providers are more satisfied (Selleck et al., 2017).

The findings of this study suggest that the IPCP course named FITRI's four steps in developing primary health cares' interprofessional collaborative practice can be effective in fostering IPCP competencies toward working inter-professionally in primary healthcare. The quasi experimental design enables robust analysis of changes in IPCP competencies of those exposed and not exposed to the intervention. All of the participants completed the data collection and there were no participants lost to follow-up.

Although group allocation was not random, the process of allocating participants to a group was completely independent. Since this study only used statistical data, it is possible to miss important but subtle information in this study concerning the complexity of interprofessional collaboration. Further study using randomization and supported by in-depth interviews or peer reviews would strengthen and confirm the findings in this study.

Conclusions

Effective workforce collaboration is needed to improve patient outcomes due to the complexity of patients' illnesses and needs. However, many primary healthcare providers indicated

that they had not received any training on IPCP. The course of IPCP in primary healthcare needs to be developed to scale up IPCP competencies for improved collaboration among healthcare providers for high quality care.

This study implemented FITRI's four steps in developing primary health cares' interprofessional collaborative practice for intervention group involving virtual training and implementation through home visitations. The results showed that the competencies of IPCP were significantly higher in the intervention group than the control group. The IPCP intervention could help to significantly improve the IPCP domains, especially in the collaborative patient/client-family centered approach. IPCP competencies need to be integrated into the clinical learning environment to educate and train both current primary healthcare providers and the next generation of health professionals concerning how to work together in IPCP.

Disclosure statement

We declared no potential conflicts of interest with the research, authorship, and/or publication of this article

ORCID

Fitriana Mawardi  <http://orcid.org/0000-0002-8058-3220>
 Ayuningtyas S Lestari  <http://orcid.org/0000-0003-1130-4993>
 Hari Kusnanto  <http://orcid.org/0000-0001-7052-6516>
 E P S Sasongko  <http://orcid.org/0000-0002-1921-7598>
 Dany Hilmanto  <http://orcid.org/0000-0003-3684-4144>

Ethical considerations

Ethical approval was received from the Research Ethics Committee with protocol number 914/UN6.KEP/EC/2020. To address ethical considerations, recruitment of participants was voluntary and there was no impact from their grades in any manner. Also, anonymity of all participants was maintained, and the control group was given the IPCP module in the end of the research for equality of information access between the intervention and control groups.

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