Implementation Of Interprofessional Education To Improve Collaboration And Teamwork Capabilities

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Abstract. One of the problems in health care services is overlapping competencies due to insufficient cooperation between professions. Interprofessional learning (IPE) is required to foster a positive attitude between professions collaboration and teamwork skills between professions. The study was conducted to establish the application of IPE to increase students' collaboration and teamwork capability, using pre and post-design. The assessment of 148 students from four different professions, using instruments. The results were analyzed using Mean, SD, Min-Max, Wilcoxon Test. The results suggested an increase in scores of collaboration and teamwork, for about 51.11 and 20.67. Statistical analysis suggested a significant difference between before and after the program (p-value = 0.0001). IPE can encourage positive interaction between professions, so that students have benefited, both in terms of their profession and in studying other professions. The early application of IPE is expected to lead to better health services in the future.

Keywords: Collaborative, Interprofessional Education, Teamwork

1 Introduction

Today, one of the problems in health care is overlapping competencies due to the lack of optimal cooperation between professions. This condition can cause tensions between professions and reduce service quality [1],[2]. On the other hand, an increase in public health problems due to an increase in the number and increasingly complex causes of factors also requires multidisciplinary cooperation in the health profession [3]. Quality of health care is the production of collaboration between patients and health care providers. The quality of health care depends on the personal factors of the provider and the patient, as well as factors related to the health organization. The availability of resources, collaboration, and cooperation affects the quality of care and patient outcomes [4].

Collaboration between professions in health care is considered beneficial because it allows for a more holistic approach and thus increases the chances of success. Collaboration is an effort to improve the quality of health services [5]-[7]. Therefore, each team member needs to have adequate knowledge about each other's profession. In traditional health education, different professions learn very little about each other. In interprofessional learning (IPE), students are allowed to acquire knowledge and skills from other professions and foster mutual respect [8]. IPE is proven to provide added value benefits for improving patient outcomes [9], as well as

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overcoming fragmentation in health care delivery and separation among health professionals [3],[10]-[12]. IPE education is a necessary step in preparing a health workforce ready for collaborative practice [11].

IPE is broadly defined as a teaching and learning process that encourages collaboration between two or more professions [10],[13]. This method can increase the knowledge, skills, and understanding of learners about interprofessional practice [2],[14], and has the potential to produce an effective and integrated team facilitating and optimizing health services [7],[10],[15]. IPE also provides input to educational institutions about the importance of independent learning, peer guidance, and work-based learning [16],[17]. Small interprofessional group learning provides more value than large group lecture formats [14].

Services that overlap between professions occur due to a lack of communication between health workers in teamwork so that services received by the community are not effective and efficient [18]. Interprofessional education is a prerequisite for building a collaborative practice environment [12] because it encourages positive interactions between professions and improves attitudes towards other professionals [1],[8],[19].

Interprofessional cooperation skills cannot be expected to develop naturally but must be trained early so that students have the knowledge and experience of working together in teams with other professions. The World Health Organization (WHO) has initiated an inter-professional educational framework and collaborative practice to improve the quality of health services [1],[2],[20]. For IPE to occur, there must be a willingness from all healthcare professionals to change the way they educate and practice. This of course requires changes in traditions, education, and practices which will ultimately change the paradigm [10].

In Indonesia, the application of IPE in health higher education institutions has not been widely used. The IPE method used is joint clinical learning at health care centers and hospitals, and health services with home visits [2],[3],[18],[20]-[28],[5]-[7],[9],[12],[13],[15],[17]. Although showing good results, the learning program is implemented intermittently, ranging from 2-12 hours per week. There is concern that this will affect perceptions and cooperation between professions.

Tanjung Karang Health Polytechnic is a vocational health higher education institution that produces professional graduates. We have tried to carry out interprofessional education which involves four skills or professions, namely nursing, midwifery, environmental health, and health analyst. Learning is carried out continuously, without interruption. The methods developed were a) forming groups of different professions at the beginning of the introductory session; b) conduct introductory sessions for 24 hours (8 hours per day); c) carry out field learning for 24 days continuously and live together; d) assign a facilitator to each group since the introductory session, and participate in the field learning with students.

This paper focuses on describing the improvement of students' collaboration and teamwork capabilities through the IPE method. It is important to socialize and research IPE learning that can facilitate increased student understanding and skills for communication, values , and ethics among professions, teamwork, roles and responsibilities, and other boundaries of professional authority.

2 Methods

2.1. Learning methods

The research was conducted simultaneously with learning activities using IPE which was designed for 7th-semester students (7 semesters out of a total of 8) from 4 vocations, namely environmental health, nursing, midwifery, health analyst, totaling 148 students. We did not take samples, so measurements were made of all the 148 students of the IPE program.

Learning is carried out in two stages, classroom learning as an introduction and field learning. Classroom learning is designed by combining students from different professions in small groups of 7-8 students. Through the incorporation from the start, it is expected that a process of socialization and interaction between individual students will occur. Furthermore, this group will continue to be together until field learning.

All student groups receive a 24-hours introductory session conducted over 3 days before field learning begins. So that the whole group receives the same information and has the opportunity to meet each other and the facilitators before their first day in the field. In the introductory session, each group will get an explanation of guidelines for field practice activities, data processing, problem-solving techniques, introduction to work areas, and interprofessional problem-solving simulations.

Field learning is carried out for 8 hours/day continuously for 24 days. The tasks that must be carried out during the field study are to map public health problems through surveys, data analysis, preparation of problem-solving plans, and health problem interventions. The planning of problem-solving to intervention is carried out with an interprofessional approach that involves all team members.

2.2 Facilitator

The facilitator is 21 lecturers who come from four different professions, environmental health, nursing, midwifery, and health analyst. The main task of the facilitator is to assist students, both in introductory and field learning sessions. Also, the facilitator provides an assessment of the students' collaboration and teamwork abilities, using the instruments that have been developed. Facilitator training is conducted to obtain the same knowledge, skills, and assessment of students.

2.3 Assessment and Instruments

Assessments ranging from 1-5 (1 = very poor; 2 = poor; 3 = fair; 4 = good; 5 = excellent), were carried out twice using the pre and post design. The initial assessment is carried out at the beginning of the students being put together in small groups, and the final assessment when the program ends. The results of the assessment were analyzed using the SPSS 20.0 device, with Mean, SD, Min-Max, Wilcoxon Test.

The average score of collaboration and teamwork capabilities before and after the learning program was also used to create a quality rating scale, both for students and educational institutions. The range of score and weight/quality in Table 1.

Tables 1. Score and Quality

Collaborative		Teamwork	
Score	**Quality**	**Score**	**Quality**
35.00-69.99	Poor	20.00-39.99	Poor
70.00-104.99	Fair	40.00-59.99	Fair
105.00-139.99	Good	60.00-79.99	Good
140.00-175	Excellent	80.00-100	Excellent

The instrument was developed by representative lecturers from four professions, to assess students' teamwork and collaboration capabilities. The collaboration assessment contains 35 assessment items which are grouped into 1) roles, authorities, and responsibilities; 2) inter professions communication, while the teamwork assessment contained 20 assessment items (Table 2).

Table 2. Instruments for Interprofessional Education

NO	EVALUATION ITEMS
	Roles, Authorities, and Responsibilities
1	Demonstrate professional skills with full responsibility
2	Show the roles according to the authority and competence of each profession
3	Recognizing the limitations of one's abilities, both knowledge, and skills
4	Willing to hear and respect the opinions of others
5	Able to involve other professions according to their expertise to solve patient problems
6	Develop ideas for coordination/collaboration with other professions according to their expertise to solve patient problems
7	Describe the uniqueness of his role according to his professional abilities in a responsible manner
8	Describe strategies for building teamwork in providing health services
9	Utilizing professionals in the team according to their expertise
10	Providing services by ensuring client safety
11	Providing services fairly
12	Providing services effectively and efficiently
13	Shows adaptive attitude/can control emotions in interactions between team members
14	Able to clarify the role of each member in health services to clients and society
15	Build trusting relationships between other professions
16	Build interdependent relationships between other professions
17	Participate actively in doing client problem solving
18	Participate actively in building the capacity of the work team
19	Demonstrate the ability to do creativity and innovation to optimize service to clients
20	Demonstrate unique abilities according to professional competence to optimize service to clients
	Inter-Profession Communication
1	Use effective communication tools and techniques
2	Facilitate discussion and interaction between professions to improve team function
3	Able to communicate messages completely and systematically to clients (intent and purpose, use of actions, choices, risk of action, work procedures)
4	Able to communicate messages completely and systematically to team members (intent and purpose, use of actions, options, risk of action, work procedures)
5	Able to communicate information about patients in a clear, confident manner
6	Be able to communicate his opinion about the patient clearly and confidently

NO	EVALUATION ITEMS
7	Show respect for the opinions of others / the team
8	Able to listen actively
9	Encourage group members to express their ideas and opinions
10	Able to provide appropriate, sensitive, constructive feedback to team members
11	Able to receive feedback, respect team members' opinions, and other professional assessments
12	Provide an explanation using language that can be understood rationally,
13	Contribute to creating effective communication, conflict management, and positive working relations between professions
14	Actively participate in conflict management between professions
15	Express opinions consistently about the importance of teamwork in health services
	Teamwork
1	Describe an effective team-building process
2	Describe the importance of their respective roles ineffective team development
3	Demonstrated the ability to build consensus ethically in solving service problems to clients
4	Demonstrated the ability to build consensus ethically to solve problems in the group
5	Involving related professions according to their expertise to solve problems
6	Integrate knowledge and skills of other professions that are suitable in certain situations
7	Effectively communicate to clients, the community about the results of team decisions
8	Demonstrate an exemplary role in collaborative practice
9	Be able to realize ideas
10	Able to integrate ideas into collaborative practice
11	Able to encourage team members in managing disagreements constructively
12	Provide team members with constructive ideas for managing disagreements
13	Appreciate the skills, roles, and responsibilities of other professions in solving client, community problems
14	Collaborate and refer appropriately to solving client and community problems
15	Reflecting on individual performance to improve one's performance
16	Reflect on team performance to improve team performance
17	Using group improvement strategies to increase the effectiveness of collaboration between professions
18	Using available evidence/data to carry out teamwork practices
19	Participate actively according to his expertise to solve problems
20	Actively participate in teamwork according to their roles and functions in different situations

3. Results

The number of students participating in the study was 148 people with different skills, environmental health, nursing, midwifery, and health analysts, belonging to 21 groups. The highest proportion of expertise in midwifery was 44.6%, the lowest was environmental health at 14.2%. The number of participants is following the number of students in each professional program (Tabel 3). Based on gender, most of the students were female (89.2%), following the majority of their origin education profession, are midwifery, and nursing.

Table 3. Description of Student

Variable	Frequency	Percent
Profession		
Environmental Health	21	14.2
Laboratory Analyst	29	19.6
Midwifery	66	44.6
Nursing	32	21.6
Gender		
Male	15	10.1
Female	133	89.9

The results of the collaboration assessment showed an increase of 51.11, from 86.05 (70.00-100.00) to 137.16 (62.00-83.00). In the teamwork, there was an increase of 20.67, from 55.24 (42.00-64.00) to 76.11 (62.00-83.00). The average score is also used to determine the quality of program success, both for individual students and at educational institutions. From Table 3, it can be seen that the collaboration of students before the IPE program is in the Fair category, and after the program has improved to be Excellent. The same as the teamwork ability, initially in the Good category, increases to Excellent (Table 4).

Tabel 4. Collaboration and Teamwork Score

Variable	Mean	SD	Minimal	Maximal	Quality
Pre Collaboration	86.05	6.91	70.00	100.00	Fair
Post Collaboration	137.16	7.25	119.00	150.00	Excellent
Pre Teamwork	55.24	4.24	42.00	64.00	Good
Post Teamwork	76.11	3.82	62.00	83.00	Excellent

We also classified the score of collaboration and teamwork by profession and gender to obtain information on capacity for each group (Table 5). In general, collaboration capabilities have increased in all professions. The average before was between 85.24-86.53; and after the IPE program becomes 136.14-137.95. Also in teamwork, It can be seen that the mean scores before the IPE program ranged from 54.10 to 55.82; and the value after is 75.52-75.75.

The distribution of the score of increased collaboration and teamwork is also not different based on gender. The average score of collaboration before the IPE program for male and female students was 84.67 and 86.21; thereafter to 138.27 and 137.03. The teamwork scores from 54.53 and 55.32; increased to 74.93 and 76.25. This description shows the IPE program can increase the collaborations between professions.

Statistical analysis is used to prove an increase in collaboration and teamwork capabilities, as well as a measuring tool for the success of learning programs. In the first step, an analysis is carried out to determine the normal distribution of the data using the Kolmogorov Smirnov Test. The results of the analysis obtained an abnormal distribution of data on the value of collaboration (p-value = 0.00) and teamwork (p-value = 0.04), so it was decided to use non-parametric analysis techniques with the Wilcoxon Test.

Tabel 5. Scores of Collaborative and Teamwork Based on Profession and Gender

Variable		Profession				Gender	
		Environmental Health	**Laboratory analyst**	**Midwifery**	**Nursing**	**Male**	**Female**
Collaborative Pre-Tes	Mean	85.81	85.24	86.53	85.97	84.67	86.21
	SD	7.35	6.12	6.66	7.98	7.58	6.84
	Min	70.00	70.00	70.00	71.00	70.00	70.00
	Max	100.00	97.00	99.00	98.00	97.00	100.00
Collaborative Post-Test	Mean	137.95	136.14	137.55	136.75	138.27	137.03
	SD	7.89	6.27	7.15	8.06	8.57	7.12
	Min	120.00	123.00	123.00	119.00	120.00	119.00
	Max	150.00	148.00	150.00	150.00	148.00	150.00
Teamwork Pre-Tes	Mean	54.10	55.59	55.82	54.50	54,53	55.32
	SD	5.21	4.25	3.77	4.22	5,53	4.09
	Min	42.00	44.00	46.00	44.00	44.00	42.00
	Max	60.00	62.00	64.00	60.00	62.00	64.00
Teamwork Post-Tes	Mean	75.52	75.83	76.59	75.75	74,93	76.25
	SD	5.347	3.96	3.06	3.90	4,71	3.71
	Min	62.00	66.00	72.00	66.00	66.00	62.00
	Max	80.00	83.00	83.00	81.00	82.00	83.00

The results of the analysis (Table 6) show a significant difference between the score of collaboration before and after the IPE program (p-value = 0.0001). As well as, the teamwork score test before and after the IPE program also showed a real difference (p-value = 0.0001). These results concluded that IPE can improve the students' capabilities in collaboration and teamwork.

Tabel 6. Wilcoxon Analysis

Variable	Z	p-value
Colaboration_Post - Colaboration_Pre	-10,595	0,0001
Teamwork_Post - Teamwork_Pre	-10,761	0,0001

4. Discussion

The IPE program has had a positive impact on students in terms of their professional skills as well as in learning more about other professions. In this study, the increase in collaboration skills was 51.11, and teamwork capabilities were 20.67. Statistically, before and after the

program showed a significant difference (p-value = 0.0001). IPE learning shows added value compared to traditional methods in health education [16],[19],[22],[29].

Inter-professional education is developed from some educational theories, sociology, and psychology [29]. This method is used in health education to address fragmentation in health service delivery and the separation of health professionals [3],[10]-[12], is a step to prepare a health workforce ready for collaborative practice [11]. The focus is on health professionals and students who learn together from and about each other to improve collaboration and quality of patient care [29]. An interprofessional approach allows the sharing of professions and perspectives to form a common goal, namely restoring or maintaining health [21].

Inter-professional cooperation skills must be trained since the education period so that students have the knowledge and experience of working together in teams with other professions [1],[7],[20]. The interprofessional collaboration will improve the quality of health services [4],[5],[11],[19],[30] because it can avoid competency overlaps and reduce tensions between professions in providing services [1],[2]. The quality of health services is the result of the collaboration between patients and health service providers, which is influenced by personal factors from service providers and patients, as well as factors related to health organizations [4].

In student groups, there will be communication, exchange of ideas, a learning process, until finally finding an agreement to solve health problems [18],[24]. Good communication is the key to creating team collaborations [11],[12],[22],[25],[27],[31]. Perceptions of individuals and other professions are important factors that must be considered at the beginning of learning. Perception has an impact on attitudes and willingness to be involved in teamwork [32]. Poor perceptions will hinder the occurrence of communication between students [3],[17]. A positive attitude will arise if the program can provide opportunities for professional role development, independence, and self-esteem, learn about other professions, and learn how to work in teams [25],[27]. In this case, the role of the facilitator is very important in forming perceptions [18].

In IPE learning, the role of the facilitator greatly affects students' readiness. A facilitator must have the skill to optimize learning opportunities, appreciate differences and expertise, and be familiar with the dynamics of IPE learning [33],[34]. Facilitators who make disparaging comments and negative stereotypes will weaken the inter-professional message (29). Also, a facilitator must be an innovator, because students do not have experience in solving community health problems. Facilitators must understand the pedagogical methods and must provide students with constructive feedback [27]. A facilitator must also be able to act as an innovator in implementing IPE [13],[16],[18],[22],[33].

Developing professional skills is the most important goal of any learning program. The IPE concept is to provide opportunities for all students to improve their professional skills through a teaching and learning process that encourages collaboration between two or more professions. In this paper, we have proven that there is an increase in collaboration and teamwork capabilities in each profession and gender. Increased collaboration ability based on expertise ranges from 50.9-52.42; teamwork ranges from 20,23-21,42. In the gender group, increased collaboration capabilities ranged from 50.82 to 53.60; teamwork ranges from 20.40-20.93. These results indicate that IPE learning can be followed by all students, and can encourage positive interaction between professions, and improve attitudes towards other professionals. Every student has benefited, both in terms of their profession and in studying other professions.

Lack of optimal cooperation between professions can cause tension [1],[2], the increasingly complex health problems and increasingly complex causal factors, require collaboration with multidisciplinary health professions [6]. IPE can promote teamwork in the future work life of students [32]. Thus, the application of learning the IPE method from an early age is expected to lead to better health services in the future. Interprofessional education should be introduced early during health education to promote collaborative understanding, and to counteract negative perceptions among health professionals [27].

Several IPE methods have been developed, but the IPE program we have developed seems to show better results. We combine students from different professions in small groups from the time of classical introductions. Furthermore, this group lives together during the field study. Facilitators are assigned to each group since the classical introduction period. In the field study, the facilitator lives with the group during the learning process. Facilitators are the key to success in the IPE program.

5. Conclusion

We have proven that the IPE method can enhance collaboration and teamwork capabilities. This method can encourage positive interaction between professions, improve attitudes towards other professionals, and get benefits from a professional perspective. Communication is the main key to creating collaboration and teamwork that begins with positive perceptions between students and between professions. The role of the facilitator is an important part of building student perceptions. Early adoption of IPE is expected to lead to better health services in the future.

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