

Pharmacy students' perceptions and experiences of the Community Health and Development Program—Interprofessional education in the University of the Philippines Manila

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Received March 26, 2019
Revised October 18, 2019
Revised January 28, 2020
Revised March 25, 2020
Accepted March 27, 2020

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ABSTRACT

Due to increasingly complex health issues, interprofessional education (IPE) has been advocated globally. Despite the multi-faceted benefits of IPE, there has been limited, reported experiences on it among health educational institutions in the Philippines, including pharmacy schools. The University of the Philippines (UP) Manila instituted the Community Health and Development Program (CHDP) to provide learning and practice opportunities for its students and faculty while promoting public health to partner communities through its IPE initiative. In line with this, the UP College of Pharmacy (CP) has deployed students under CHDP since 2014. This cross-sectional study aimed to: (1) describe the experiences of fifth-year, graduating pharmacy students who participated in CHDP; (2) describe their outcomes of participation; and (3) compare perceptions on IPE across different batches of students who participated in the CHDP. Pre- and post-deployment surveys, which consisted of two parts, were administered. The first part was based on an Interdisciplinary Education Perception Scale, while the second part was composed of open-ended questions on students' perceptions and other concerns on CHDP-IPE. A 100% response rate (n = 46) was recorded and analyzed using frequency statistics and hypothesis testing with non-normal distribution. Thematic analysis was done to describe their experiences, concerns and outcomes of participation in the CHDP-IPE. The analysis showed that the students developed increased positive perception on professional competency and autonomy, perceived needs for professional cooperation, perceived actual cooperation, and understanding the importance of other professions. Results suggest the continuation of CHDP-IPE with modifications address perceived challenges and issues throughout the years of implementing the program.

Key words: interprofessional education, community health development program, pharmacy, public health

1. Introduction

The health workforce has provided health services in the face of increasingly complex health issues (World Health Organization [WHO], 2010). The idea of improving health has many different dimensions rendering it difficult for an individual health care professional to address the patient's issues and provide comprehensive care that is suitable for his or her conditions (Lumague et al., 2006). Consequently, interprofessional approaches are undertaken by health care teams, whose backgrounds are diverse yet relevant towards achieving common goals for their patients (Parsell and Bligh, 1998).

Interprofessional education (IPE), as described by the WHO (2010), occurs when two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes. There has been growing evidence to indicate that IPE, through enabling effective collaborative practice, optimizes health services, strengthens health systems and improves health outcomes (WHO, 2010). IPE promotes understanding and respect among the different clinical professions by establishing intra-professional communications. Professionals participating in IPE can also assess their practice by evaluating their performance for improvement. This enables clinical professionals to be more confident and satisfied in their

practice (Lumague et al., 2006). Furthermore, students who have undergone IPE have observed similar benefits with that of other professionals engaged in IPE. These include an increase in knowledge of the other professions which promotes consultation among the IPE team, development of social and communication skills, and engagement in a collaborative process (Lumague et al., 2006).

However, IPE initiatives in the Philippines have not been properly documented (Opina-Tan, 2013). IPE has not been commonly integrated in the curriculum of most clinical undergraduate programs (Lumague et al., 2006). The University of the Philippines (UP) Manila, which is a public and secular institution envisioning itself as the national leader in the health sciences, instituted IPE through the establishment of the Community Health and Development Program (CHDP) in 2007. CHDP has been the UP-Manila unit responsible for developing and managing community-based health programs to assist partner communities in attaining increased capacity for health and development, while providing learning opportunities for the students and faculty. Notably, interprofessional practice and education have been advocated as one of its guiding principles (Opina-Tan, 2013; UP Manila, 2017).

CHDP had been initially implemented in San Juan, which is a first-class municipality in Batangas, from 2007 to 2013. First class municipality denotes that a government unit has obtained an average annual income of 15 million Philippine pesos or more. As the class of a unit becomes higher, the average annual income goes lower (Executive Order No. 249, 1987). The primary goal of CHDP in San Juan was to decrease by 50 percent the morbidity of children aged 0 to 12 years old. Thus, most activities that had been developed were aimed to improve children's health, including dengue prevention. There were also regular primary care services provided in barangay health stations for the local communities (UP Manila, 2017).

Since 2013, the CHDP has been undertaken in municipalities of Cavite that were clustered under an inter-local health zone. This implies that the municipalities were grouped and assigned with one core referral hospital where primary health care had been integrated with hospital care (Department of Health Philippines, ND). The partner municipalities were composed of Alfonso (first class), Mendez (fourth class), Indang (first class), General Aguinaldo (fifth class) and Amadeo (fourth class). They were also known as the AMIGA group of municipalities. The aim of CHDP in Cavite was to increase by 25 percent the number of controlled hypertensives and diabetics. Thus, most activities were focused towards achieving this goal, such as health screening, risk assessment and management. Patient-based curative services were also offered in rural health units and barangay health stations (UP Manila, 2017).

The CHDP has served as a common field practicum site for the university's students, alongside the supervision of

faculty members, through its IPE initiative. By 2016, students from the colleges of Dentistry, Medicine, Nursing, Pharmacy, Public Health, and Social Work and Community Development have been involved in the program. The university's College of Pharmacy (CP) has deployed fifth year, graduating students since 2014 on a voluntary basis through its course subject on Public Health Pharmacy.

Nevertheless, there has been limited integration of IPE in the undergraduate curriculum of allied health courses in the country. There has also been limited data on the reported experiences on IPE among health educational institutions in the Philippines, including focused studies analyzing the experiences and outcomes of IPE among pharmacy students. This present study aimed to: (1) describe the experiences of graduating pharmacy students who participated in the interdisciplinary CHDP; (2) describe the outcomes of their participation; and (3) compare perceptions on IPE across different batches of students who participated in the CHDP.

2. Materials and Methods

2.1. Research Design

A descriptive, cross-sectional type of research was used in the study. There were 15, 20, and 11 fifth-year, graduating students of UP College of Pharmacy who participated in the CHDP-IPE initiative in 2014, 2017, and 2018, respectively. The students were immersed in a municipality in Cavite as part of an interprofessional team consisting of medical, nursing and social work students.

The program spanned six weeks for the 2014 batch and four weeks for the 2017 and 2018 batch. These batches were analyzed considering the changes made throughout the implementation of the CHDP-IPE across the batches. Aside from the span of time during these years, other changes included: (1) construction and use of an instructional design on IPE, (2) organization of faculty development seminars and workshops on IPE, and (3) integration of recommendations to improve the CHDP-IPE since its establishment in 2014.

2.2. Conduct of the IPE

The members of the IPE team depended on the students deployed for a certain time period. Also, the number of pharmacy students who can apply to the program each year vary depending on the needs of the community and available resources for the program. The schedule of deployment of pharmacy students overlapped with medical, nursing and social work students so these usually consisted the IPE team. In each IPE team, there was at least one pharmacy student involved. These students went to their assigned municipalities every Friday of the week for six weeks in 2014 and for four weeks in 2017 and 2018.

The students were given orientation on IPE by the faculty preceptor before being deployed to the municipalities in Cavite. They were also oriented at the program site during the

first meeting. For the first meeting of pharmacy students with students from other colleges, they were introduced to the facilitators and key personnel in the community. The roles of each healthcare professional in the team were also discussed among the students to determine what can be expected from each student through small group discussions with a facilitator. Students were given a lecture on IPE and the expected outputs from them at the end of the immersion. They were also oriented on the existing community programs and the prospect patients for the IPE team.

The facilitators consisted of the educators who were part of the CHDP-IPE, such as pharmacists and doctors. They supervised the IPE team and ensured that students could work collaboratively and apply appropriate care, both patient- and population-based, regarding the assigned cases. On the other hand, the key personnel were composed of local leaders and community organizers who ensured that there was regular contact and communication between the University and the assigned communities. These personnel were also helped in the organizing, advocacy, management and mobilization work within the program.

For the remaining days of the immersion, the IPE team visited their assigned patient or community partners. With the supervision of educators and health officers, the IPE team worked with their assigned patients or community stakeholders directly. The first goal was to assess the status and needs, and identify the most important issue to address in collaboration with the patient or community. After the assessment, the IPE team determined the appropriate intervention for the case. The intervention was implemented over the course of the immersion. At the end of the immersion, the interventions were evaluated by the IPE team together with the patient or community. The culminating activity was a team presentation to highlight the application of interprofessional collaboration among students in handling a patient or managing a program in the community.

2.3. Data Collection

Since the entire student cohort taking the program was examined, total population sampling was employed. The study is an evaluation of the program where students can enroll in. Participation in the study was not required and did not affect their grade in the course. Students who decided to participate were given an informed consent form prior to giving the questionnaire. The study did not undergo an ethical review process as it was part of the program evaluation. A pre- and post-deployment survey was administered for each student. They were given 15 minutes to answer the survey questionnaire. The study presented negligible risk to participants with its methods being an educational tool. The questionnaire consisted of two parts. The first part was adopted and modified based on the Interdisciplinary Education Perception Scale (IEPS) by Luecht and colleagues (1990) (Table 1). Through self-evaluation, students denoted

their level of agreement to each question through a Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). Meanwhile, the second part was composed of open-ended questions so that students can share their perceptions, experiences and concerns on the CHDP-IPE (Table 2). Validation of the instrument was not done in the study.

The instrument assessed the attitudes of students regarding interdisciplinary practice based on four domains, namely: (1) professional competency and autonomy, (2) perceived needs for professional cooperation, (3) perception of actual cooperation and resource sharing within and across various professions, and (4) understanding the value and contributions of other professions. The first domain consisted of items 1, 4, 5, 6, 9, 12, 13 and 16. Only items 7, 8, 10 and 11 contributed to the second domain. Domain three consisted of items 2, 3, 17, 18, 19, 20 and 21. Finally, the fourth domain was composed of items 14, 15 and 22.

2.4. Data Analysis

Frequency statistics were used to examine the self-perceived responses of the students on the CHDP-IPE before and after deployment. A two-sided Wilcoxon signed rank test was used to assess the change between pre- and post-deployment responses, and Kruskal-Wallis test was used to determine if there was a difference in at least one of the median Likert scores among the batches of students for the pre- and post-deployment surveys. All statistical analyses were conducted using Stata/MP (version 14, StataCorp LLC, 2015). A p-value <.050 was considered statistically significant for all analyses. Thematic analysis was also performed to describe the pharmacy students' experiences, concerns and outcomes of participation in the CHDP-IPE. Answers of the students across the three batches were categorized based on the group of people concerned in their answers to the four questions given. Then, recurring concepts were pooled and summarized.

3. Results

3.1. Modified Interdisciplinary Education Perception Scale

A total of 46 students across the different batches participated in the CHDP-IPE initiative. All of them (n = 15 for 2014; n = 20 for 2017; n = 11 for 2018) accomplished the pre- and post-deployment surveys. 15 (32.6%) of the respondents were males and 31 (67.4%) of whom were females.

Table 3 displays the median Likert scores for each item in the IEPS that was answered prior to the students' participation in the program across the batches. Statistical analysis using Kruskal-Wallis test found that item numbers 14 (individuals in my profession have a higher status than individuals in other profession, p-value = 0.044), 16 (individuals in my profession are extremely competent,

Table 1. The Modified Interdisciplinary Education Perception Scale™ used for the Pre- and Post-IPE Survey (Luecht et al., 1990).

| | 1 (Strongly Disagree) | 2 | 3 | 4 | 5 | 6 (Strongly Agree) |
|---|-----------------------------|---|---|---|---|--------------------------|
| 1. Individuals in my profession are well-trained. | | | | | | |
| 2. Individuals in my profession are able to work closely with individuals in other professions. | | | | | | |
| 3. Individuals in other professions are able to work closely with individuals in my profession. | | | | | | |
| 4. Individuals in my profession demonstrate a great deal of autonomy. | | | | | | |
| 5. Individuals in other professions respect the work done by my profession. | | | | | | |
| 6. Individuals in my profession are very positive about their goals and objectives. | | | | | | |
| 7. Individuals in my profession need to cooperate with people in my profession. | | | | | | |
| 8. Individuals in other professions need to cooperate with people in my profession. | | | | | | |
| 9. Individuals in my profession are very positive about their contributions and accomplishments. | | | | | | |
| 10. Individuals in my profession must depend upon the work of people in other professions. | | | | | | |
| 11. Individuals in other professions must depend upon the work of people in my profession. | | | | | | |
| 12. Individuals in other professions think highly of my profession. | | | | | | |
| 13. Individuals in my profession trust each other's professional judgment. | | | | | | |
| 14. Individuals in my profession have a higher status than individuals in other professions. | | | | | | |
| 15. Individuals in my profession make every effort to understand the capabilities and contributions of other professions. | | | | | | |
| 16. Individuals in my profession are extremely competent. | | | | | | |
| 17. Individuals in my profession are willing to share information and resources with other professionals. | | | | | | |
| 18. Individuals in other professions are willing to share information and resources with people in my profession. | | | | | | |
| 19. Individuals in my profession have good relations with people in other professions. | | | | | | |
| 20. Individuals in my profession think highly of other related professions. | | | | | | |
| 21. Individuals in my profession work well with each other. | | | | | | |
| 22. Individuals in other professions often seek the advice of people in my profession. | | | | | | |

Table 2. Open-ended Questions Given for Post-IPE.

| | |
|---|---|
| 1. What do you know about the interprofessional patient care in the community? | |
| 2. What do you feel you will gain from this experience? | |
| 3. What do you think will the following people/groups gain from the experience? | a. Patients b. Barangay c. Faculty preceptor from your own college d. CHDP staff and faculty e. Rural health unit staff |
| 4. What concerns do you have about this approach for yourself? | |
| 5. What concerns do you have for the following people/groups regarding this approach? | a. Patients b. Barangay c. Faculty preceptor from your own college d. CHDP staff and faculty e. Rural health unit staff |
| 6. Other comments | |

p-value = 0.011), and 18 (individuals in other professions are willing to share information and resources with people in my profession, p-value = 0.047) had at least one of the median scores significantly different from the other batches of pharmacy students.

The 2017 batch had the lowest median scores among the three batches in majority of the items in the IEPS. Meanwhile, the 2018 batch had the highest medians across all domains in

the IEPS. The highest medians can be observed in items related to the domain of perceived needs for professional cooperation, and perception of actual cooperation and resource sharing within and across the professions. On the other hand, low median scores can be generally observed across all batches in the items that considered professional competency and autonomy, and understanding the value and contributions of other professions.

Table 3. Descriptive statistical analysis of the pre-IPE deployment surveys of the 2014, 2017, and 2018 batches of graduating Pharmacy Students.

| No. | Item | Pre-Test (Median, Min, Max) | | |
|---|---|--------------------------------|------------------|------------------|
| | | 2014 (n = 15) | 2017 (n = 20) | 2018 (n = 11) |
| Domain: Professional competency and autonomy | | | | |
| 1 | Individuals in my profession are well-trained. | 5.0 (3, 6) | 4.5 (3, 6) | 5.0 (4, 6) |
| 4 | Individuals in my profession demonstrate a great deal of autonomy. | 5.0 (3, 6) | 4.5 (1, 6) | 5.0 (1, 6) |
| 5 | Individuals in other professions respect the work done by my profession. | 4.0 (1, 6) | 4.0 (2, 5) | 5.0 (1, 6) |
| 6 | Individuals in my profession are very positive about their goals and objectives. | 5.0 (3, 6) | 4.0 (3, 6) | 5.0 (4, 6) |
| 9 | Individuals in my profession are very positive about their contributions and accomplishments. | 5.0 (1, 6) | 4.0 (3, 6) | 5.0 (4, 6) |
| 12 | Individuals in other professions think highly of my profession. | 3.0 (1, 5) | 3.0 (1, 4) | 4.0 (1, 6) |
| 13 | Individuals in my profession trust each other's professional judgment. | 5.0 (3, 6) | 4.5 (3, 6) | 5.0 (4, 6) |
| 16 | Individuals in my profession are extremely competent. | 5.0 (3, 6) | 4.0 (2, 6) | 5.0 (4, 6) |
| Domain: Perceived needs for professional cooperation | | | | |
| 7 | Individuals in my profession need to cooperate with people in my profession. | 6.0 (1, 6) | 6.0 (4, 6) | 6.0 (4, 6) |
| 8 | Individuals in other professions need to cooperate with people in my profession. | 6.0 (1, 6) | 6.0 (4, 6) | 6.0 (5, 6) |
| 10 | Individuals in my profession must depend upon the work of people in other professions. | 5.0 (2, 6) | 4.0 (1, 6) | 5.0 (1, 6) |
| 11 | Individuals in other professions must depend upon the work of people in my profession. | 4.0 (3, 6) | 4.0 (1, 6) | 5.0 (1, 6) |
| Domain: Perception of actual cooperation and resource sharing within and across professions | | | | |
| 2 | Individuals in my profession are able to work closely with individuals in other professions. | 5.0 (2, 6) | 4.0 (3, 5) | 5.0 (3, 6) |
| 3 | Individuals in other professions are able to work closely with individuals in my profession. | 4.0 (1, 6) | 4.0 (3, 6) | 4.0 (3, 6) |
| 17 | Individuals in my profession are willing to share information and resources with other professionals. | 6.0 (3, 6) | 5.0 (2, 6) | 6.0 (5, 6) |
| 18 | Individuals in other professions are willing to share information and resources with people in my profession. | 5.0 (2, 6) | 4.0 (2, 6) | 5.0 (4, 6) |
| 19 | Individuals in my profession have good relations with people in other professions. | 4.0 (2, 6) | 4.0 (3, 5) | 5.0 (4, 6) |
| 20 | Individuals in my profession think highly of other related professions. | 5.0 (3, 6) | 5.0 (4, 6) | 6.0 (4, 6) |
| 21 | Individuals in my profession work well with each other. | 5.0 (2, 6) | 5.0 (3, 6) | 5.0 (4, 6) |
| Domain: Understanding the value and contributions of other professions | | | | |
| 14 | Individuals in my profession have a higher status than individuals in other professions. | 3.0 (1, 4) | 2.0 (1, 4) | 3.0 (1, 5) |
| 15 | Individuals in my profession make every effort to understand the capabilities and contributions of other professions. | 4.0 (3, 6) | 5.0 (2, 6) | 5.0 (4, 6) |
| 22 | Individuals in other professions often seek the advice of people in my profession. | 4.0 (1, 6) | 3.0 (2, 5) | 4.0 (1, 6) |

Table 4 displays the median Likert scores for each item in the IEPS that was answered after the students' participation in the program across the batches. Statistical analysis using Kruskal-Wallis test found that there were no significant differences in the median scores among pharmacy students across different batches in all items of the IEPS. This implied that all batches generally yielded similar Likert median scores in all domains after participating in the CHDP-IPE. The results of the post-IPE survey showed high median scores for all batches except for item 14 (individuals in my profession have a higher status than individuals in other profession), where all batches disagreed on the statement.

Wilcoxon signed-rank test was used to assess the difference between pre- and post-deployment responses. The p-values of the difference between pre- and post-deployment scores are tabulated in Table 5. There were only a few observed statistically significant changes in the responses of the 2018 batch (7/22) to the IEPS, as compared to the 2014 batch (14/22 items) and 2017 batch (19/22 items). Notably, the median pre-deployment scores for the 2018 batch were generally higher than the two batches. In items where there was no significant change for the 2018 batch, their median pre-deployment scores were already relatively higher

compared to those of batches 2014 and 2017.

Batch 2014 and 2018 had significant differences in the pre- and post-deployment test scores in items focused on assessing the perceived autonomy competence within one's own profession as well as the subscale on the perception of the actual profession between one's own profession and other professions. However, only the 2017 batch significantly changed its perception regarding the competence of individuals in their profession (item 16) and the ability of pharmacists to work closely with other professions (item 2). Only the 2017 batch had a significant change in their perception of understanding the relative need for interdisciplinary cooperation as it impacts their own profession as per item 10. There was no significant change among all the batches for the item in the same subscale which addresses their perception on the cooperation of pharmacists with other professions (item 7). Although, their pre-deployment scores correspond to a moderate agreement to the statement. There was a significant increase in two out of the three items that assess the perception of students on their understanding of the value of other professions for majority of the 3 batches. The only item wherein there was no significant change for all the batches states that pharmacists

Table 4. Descriptive statistical analysis of the post-IPE deployment surveys of the 2014, 2017, and 2018 batches of graduating Pharmacy Students.

| No. | Item | Post-Test (Median, Min, Max) | | |
|---|---|---------------------------------|------------------|------------------|
| | | 2014 (n = 15) | 2017 (n = 20) | 2018 (n = 11) |
| Domain: Professional competency and autonomy | | | | |
| 1 | Individuals in my profession are well-trained. | 5.0 (3, 6) | 5.0 (4, 6) | 5.0 (4, 6) |
| 4 | Individuals in my profession demonstrate a great deal of autonomy. | 5.0 (4, 6) | 5.0 (2, 6) | 5.0 (3, 6) |
| 5 | Individuals in other professions respect the work done by my profession. | 5.0 (2, 6) | 5.5 (2, 6) | 6.0 (4, 6) |
| 6 | Individuals in my profession are very positive about their goals and objectives. | 6.0 (4, 6) | 6.0 (4, 6) | 6.0 (5, 6) |
| 9 | Individuals in my profession are very positive about their contributions and accomplishments. | 5.0 (4, 6) | 5.0 (4, 6) | 5.0 (5, 6) |
| 12 | Individuals in other professions think highly of my profession. | 5.0 (2, 6) | 5.0 (4, 6) | 4.0 (2, 6) |
| 13 | Individuals in my profession trust each other's professional judgment. | 5.0 (3, 6) | 5.0 (4, 6) | 6.0 (5, 6) |
| 16 | Individuals in my profession are extremely competent. | 5.0 (3, 6) | 5.0 (4, 6) | 5.0 (4, 6) |
| Domain: Perceived needs for professional cooperation | | | | |
| 7 | Individuals in my profession need to cooperate with people in my profession. | 6.0 (4, 6) | 6.0 (4, 6) | 6.0 (5, 6) |
| 8 | Individuals in other professions need to cooperate with people in my profession. | 5.0 (3, 6) | 6.0 (4, 6) | 6.0 (5, 6) |
| 10 | Individuals in my profession must depend upon the work of people in other professions. | 5.0 (2, 6) | 5.0 (1, 6) | 5.0 (1, 6) |
| 11 | Individuals in other professions must depend upon the work of people in my profession. | 5.0 (2, 6) | 5.0 (1, 6) | 5.0 (1, 6) |
| Domain: Perception of actual cooperation and resource sharing within and across professions | | | | |
| 2 | Individuals in my profession are able to work closely with individuals in other professions. | 5.0 (2, 6) | 5.5 (3, 6) | 6.0 (4, 6) |
| 3 | Individuals in other professions are able to work closely with individuals in my profession. | 5.0 (4, 6) | 5.0 (3, 6) | 5.0 (4, 6) |
| 17 | Individuals in my profession are willing to share information and resources with other professionals. | 6.0 (4, 6) | 6.0 (5, 6) | 6.0 (5, 6) |
| 18 | Individuals in other professions are willing to share information and resources with people in my profession. | 6.0 (2, 6) | 5.5 (4, 6) | 6.0 (4, 6) |
| 19 | Individuals in my profession have good relations with people in other professions. | 5.0 (3, 6) | 5.0 (4, 6) | 6.0 (4, 6) |
| 20 | Individuals in my profession think highly of other related professions. | 6.0 (3, 6) | 5.0 (4, 6) | 6.0 (4, 6) |
| 21 | Individuals in my profession work well with each other. | 6.0 (4, 6) | 5.0 (5, 6) | 6.0 (5, 6) |
| Domain: Understanding the value and contributions of other professions | | | | |
| 14 | Individuals in my profession have a higher status than individuals in other professions. | 3.0 (1, 4) | 2.0 (1, 6) | 1.0 (1, 5) |
| 15 | Individuals in my profession make every effort to understand the capabilities and contributions of other professions. | 5.0 (4, 6) | 6.0 (3, 6) | 5.0 (5, 6) |
| 22 | Individuals in other professions often seek the advice of people in my profession. | 5.0 (3, 6) | 5.0 (2, 6) | 5.0 (3, 6) |

Table 5. Statistical analysis using Wilcoxon signed rank test of the pre- and post-IPE Deployment Surveys of the 2014, 2017, and 2018 Batches of Graduating Pharmacy Students.

| No. | Item | p-value | | |
|---|---|------------------|------------------|------------------|
| | | 2014 (n = 15) | 2017 (n = 20) | 2018 (n = 11) |
| Domain: Professional competency and autonomy | | | | |
| 1 | Individuals in my profession are well-trained. | 0.034 | <0.001 | 0.083 |
| 4 | Individuals in my profession demonstrate a great deal of autonomy. | 0.011 | 0.019 | 0.320 |
| 5 | Individuals in other professions respect the work done by my profession. | 0.009 | <0.001 | 0.016 |
| 6 | Individuals in my profession are very positive about their goals and objectives. | 0.050 | 0.002 | 0.046 |
| 9 | Individuals in my profession are very positive about their contributions and accomplishments. | 0.030 | 0.004 | 0.655 |
| 12 | Individuals in other professions think highly of my profession. | <0.001 | <0.001 | 0.047 |
| 13 | Individuals in my profession trust each other's professional judgment. | 0.002 | 0.008 | 0.295 |
| 16 | Individuals in my profession are extremely competent. | 0.055 | 0.003 | 0.317 |
| Domain: Perceived needs for professional cooperation | | | | |
| 7 | Individuals in my profession need to cooperate with people in my profession. | 0.190 | 0.389 | 0.564 |
| 8 | Individuals in other professions need to cooperate with people in my profession. | 0.729 | 0.564 | 0.157 |
| 10 | Individuals in my profession must depend upon the work of people in other professions. | 0.458 | 0.028 | 0.381 |
| 11 | Individuals in other professions must depend upon the work of people in my profession. | 0.508 | 0.042 | 0.237 |
| Domain: Perception of actual cooperation and resource sharing within and across professions | | | | |
| 2 | Individuals in my profession are able to work closely with individuals in other professions. | 0.369 | <0.001 | 0.084 |
| 3 | Individuals in other professions are able to work closely with individuals in my profession. | 0.051 | <0.001 | 0.047 |
| 17 | Individuals in my profession are willing to share information and resources with other professionals. | 0.037 | 0.005 | 0.157 |
| 18 | Individuals in other professions are willing to share information and resources with people in my profession. | 0.001 | <0.001 | 0.026 |
| 19 | Individuals in my profession have good relations with people in other professions. | <0.001 | <0.001 | 0.047 |
| 20 | Individuals in my profession think highly of other related professions. | <0.001 | 0.012 | 0.084 |
| 21 | Individuals in my profession work well with each other. | <0.001 | 0.001 | 0.157 |
| Domain: Understanding the value and contributions of other professions | | | | |
| 14 | Individuals in my profession have a higher status than individuals in other professions. | 0.130 | 0.700 | 0.249 |
| 15 | Individuals in my profession make every effort to understand the capabilities and contributions of other professions. | 0.012 | 0.009 | 0.317 |
| 22 | Individuals in other professions often seek the advice of people in my profession. | <0.001 | <0.001 | 0.027 |

have a higher status than individuals in other professions. The average of the students' responses indicate that they moderately disagree with the statement.

There was a significant change observed in some of the batches in three out of four items that assess the student's perception on how other professions work and cooperate with pharmacists (items 3, 11, and 18). There was no significant change in the item that addresses the need for other professions to cooperate with pharmacists (item 8), but the pre-deployment scores of the students were already high.

Thematic analysis of the answers to open-ended questions revealed the following themes: working with other professions; working with the patient and the community; and challenges encountered.

3.2. Working with other professions

Role perception connotes the perception of each student of the roles and scope of practice of the other members of the IPE team. The findings showed that there is a lot to learn about the roles and capabilities of other professions. Also, there are misconceptions regarding the scope of each practice. These issues were addressed by clearly defining the roles of each member and correcting misconceptions related to one's field.

Specific reflections by the students include learning that "physicians are not limited to clinical work but are actually social mobilizers too" and that social workers are "enablers of the community." The most common misconception about the pharmacy profession corrected by the students is that pharmacists can prescribe medicines.

Openness refers to the attitude of each student toward other members of the team. It was found that the students, recognizing their own limitations, acknowledge the strengths of and are open and interested to learn from one another. Owing to this, there was no one profession leading the team.

Differences and similarities were observed among the different members of the team. Students from each profession are trained differently or to a different extent, and as such they look at a case from a particular and varied perspective. However, it was found that despite these differences, each member of the team had the shared goal of improving patient outcomes or helping the community.

3.3. Working with the patient and the community

Engagement is defined as the extent to which a patient and their family or the community interacts and works with the IPE team. There were varying experiences among the students with some students being welcomed more warmly in the community than the others. But a recurring observation was the importance of including the patient, and their family, or the community in any intervention. Patients were asked about their goals for their therapy and their expectations were leveled with those of the team so that they worked toward one direction.

Continuity of care was a concern raised by the teams since they only had a finite period to handle their cases. Solutions to address this include endorsement of the patients to the succeeding set of medical interns and tapping on the patients' families and the barangay health workers to monitor them.

3.4. Challenges encountered

Lack of diversity was observed in some IPE teams. Not all groups were composed of students from more than two different colleges. Also, physical therapists were required by teams handling stroke cases. However, there were no physiotherapy students during the IPE rotation. Students expressed that they would have wanted to work with and learn from members of other professions as well.

Each team was given a patient case or a community program to work on, which produced varying responses from the students. One student was surprised because he thought their work in IPE was "to handle cases of patients, and not programs to improve services of the rural health units." Another was assigned a community program to handle but would have liked a patient case better.

Time was also an issue, as the students were only present in the community for at least four Fridays, only communicating with the other members of their teams through text or online messages for the rest of the week. To quote, the time that they were physically presented in the community "is not enough to effectively engage the community and the patient, perform interventions, as well as monitor and assess these interventions."

4. Discussion

To our knowledge, this is the first study in the country that reported and analyzed the perceptions and experiences of pharmacy students on interprofessional education. The results could contribute in building evidence on the significance of IPE and how it is being applied to practice. These could also help in developing more programs that integrate IPE towards achieving optimum, patient-centered care.

The Interdisciplinary Education Perception Scale (IEPS) measures four attitudes: competency and autonomy, perceived needs for professional cooperation, perception of actual cooperation within and across professions, and understanding the contributions of other professions (Luecht et al., 1990). The test was administered prior to and following completion of deployment to evaluate the presence and significance of change in a student's perceptions on interprofessional education (IPE) through participation in the program. Notably, responses of students from 2014 represented the beginning and initial deployment of UP College of Pharmacy to CHDP for the IPE initiative, while the responses of students from 2017 and 2018 tried to reflect the changes that had happened across different batches.

Generally, the three batches of pharmacy students

moderately agreed to majority of the items in the questionnaire which reflects their openness to working and trusting people from the pharmacy profession, as well as those who are from a different healthcare profession. The lower pre-IPE test scores observed in batches 2014 and 2017 may translate to the presence of a misconception in the healthcare profession hierarchy among students before they were exposed to the other professions. The curricular timing of IPE as well as the clinical experience in the pharmacy program affects the pre-IPE test scores of students (Simko et al., 2017). It is likely that changes in the teaching methods and experiences of students in the 2018 batch contributed to their higher pre-IPE test scores. To note, since the implementation of CHDP, the professors have been more active in incorporating topics regarding the roles of pharmacists and importance of interprofessional collaboration. This may have positively affected the perceptions of students in the 2018 batch about IPE even before their involvement and deployment in the CHDP-IPE.

A high median post-IPE score across the batches is observed in item 17 (individuals in my profession are willing to share information and resources with other professionals). This is similar to a study wherein the same item ranked second highest in median score. It relates to the reflection of students regarding their openness towards the other members of the IPE team (Maharajan et al., 2017). After working with students from other colleges, students were able to clarify the scope of practice of each profession allowing them to identify areas where they can contribute to in the assessment and management of the patient or the community. This enabled them in realizing the amount and quality of information they can provide to the healthcare team.

The lowest median score in this study was observed in item 14 (individuals in my profession have a higher status than individuals in other professions). This reflects the perception of the students who participated in CHDP-IPE regarding the differences of each profession and how they can depend in the expertise of other professions to achieve their common goal of improving patient health outcomes. This also implied that the students realized the strengths and limitations of the pharmacy profession and other professions, such that there is no single profession that leads and holds a higher status in the interdisciplinary team (Green and Johnson, 2015).

The perceptions of students who were from the earlier batch contributed in the development of the instructional design and materials used for the latter batches of deployed students. The results from this study highly suggest that the CHDP-IPE should be continued but require positive changes to maximize learning by the students through an interdisciplinary approach, such as giving pharmacy students more opportunities to discuss their roles and responsibilities with other health professions and encouraging them to participate more in this type of education. Students from

other relevant colleges are also encouraged to correct misconceptions about their professions. By working with other students from the different health colleges, pharmacy students realized the possible contributions from each profession. Also, they identified the common misconceptions with the pharmacy profession and addressed these while offering their knowledge and skills to the team. The collaboration of the different professions in managing a patient or a community problem through IPE opened a channel for a more open communication among the healthcare team. The importance of shared learning in assessing and managing patients and developing communication skills are emphasized through IPE (Maharajan et al., 2017). Pharmacy students can be more comfortable in asking for assistance from other professions and answering queries that involves their specialty (Tolleson et al., 2016).

Students who participated in the IPE have generally shown significant increase in the knowledge and understanding of the importance of the pharmacist's roles as well as the roles of the professions they have encountered. This is a consistent observation post-IPE across several studies that used IEPS to assess the change in perception of the participants (Maharajan et al., 2017; Shrader and Griggs, 2014; Simko et al., 2017; Tolleson et al., 2016).

Lack of time in the field was a common issue encountered by the respondents. Whereas the other members of the IPE team lived in the community for the duration of the program, the pharmacy students were only present for one day every week. They communicated with their colleagues through text message or online chat the rest of the time. To quote a student, the time they physically spent in the community was "not enough to effectively engage the community and the patient, perform interventions, as well as monitor and assess these interventions." A lack of diversity was also observed in some IPE teams. For instance, there were groups consisting of medicine, nursing, pharmacy and social work students, while other groups only had pharmacy students and medical interns. Also, physical therapists were required by teams handling stroke cases. Students expressed they would have wanted to work with and learn from members of other professions as well.

The results of the study are limited to the small population of students who participated in IPE for the three years considered. The background of each student regarding interaction or collaboration with other healthcare professionals prior to the initiation of IPE was not considered. The diversity of the teams formed during the IPE was not taken in account during the assessment of the changes in their perception post-IPE. It is highly possible that the perception of students who were exposed to more than one profession differ from those who were able to work with only one other profession. The changes in the teaching methods and clinical experience in other subjects that may have been present across different batches were not clearly assessed in the study. The differ-

ences in the knowledge and skills acquired by students from 2014, 2017, and 2018 might have an impact in their pre-IPE test scores which affected their post-IPE test scores.

5. Conclusion and Recommendations

Participating in IPE allowed students to realize how a pharmacist can contribute in the healthcare team as well as the function and importance of the other professions in the team. The benefits and challenges of communicating and working with a team enabled the pharmacy students to understand the importance of IPE. Although the highlight of the IPE was on teamwork, the students became more aware of involving the patient or community in planning for the intervention or program to be implemented.

Results of the administered Interdisciplinary Education Perception Scale (IEPS) for the 2014, 2017, and 2018 batches showed that pharmacy students who participated in the CHDP-IPE initiative developed an increased positive perception in all four domains: competency and autonomy, perceived need for cooperation, perception of actual cooperation, and understanding the value and contributions of other professions. There were still, however, perceived challenges and issues in their experiences in the program such as a lack of time in the field and a lack of diversity of IPE teams.

Future improvement of the studies can address the limitations encountered by this study by having a control group which will not participate in IPE activities. Future studies can consider other factors such as the differing backgrounds and IPE experiences of each participating student.

The incorporation of IPE activities in the pharmacy curriculum can be improved based on the studies done in other countries. More IPE activities can be embedded in the program as it addresses the problem of a lack of time in the field and diversity of IPE teams since students have more opportunities in participating and collaborating with other professions. Also, it has been shown that it will be better to require students to participate in multiple IPE activities than offer a single IPE program in a voluntary basis (Shrader and Griggs, 2014). This can also address the limitation of a low number of participants in the IPE program of the college.

Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this article.

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