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International Journal of Epidemiology and Public Health Research

Research Article

Interprofessional Skills Development in Public Health Education: Perceptions, Knowledge Gaps, and Learning Opportunities

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Article Info

Received: September 14, 2023
Accepted: September 26, 2023
Published: October 02, 2023

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Citation: Jojola Mount J, Haas S, Brady A, Adams AP, and Mulcahy ER. (2023) "Interprofessional Skills Development in Public Health Education: Perceptions, Knowledge Gaps, and Learning Opportunities". International Journal of Epidemiology and Public Health Research, 3(2). DOI: 10.61148/2836-2810/IJEPHR/049

Abstract:

Multidisciplinarity is essential for addressing future challenges in public health disciplines. This study investigates interprofessional practice knowledge among undergraduate and graduate students, aiming to analyze their perceptions and enhance understanding of these skills during their educational journey. The research involved pre-training and post-training assessments, including an online interprofessional practice scenario. Two main objectives guided the study: 1) to evaluate the incorporation of interprofessional practice skills into curricula at various educational levels (undergraduate, graduate, and professional) in public health, veterinary medicine, and One Health and 2) to assess the effectiveness of online training modules in bridging potential knowledge gaps. Before training, 28 out of 66 participants were unable to define "interprofessional practice." Following the training, only four students still struggled with the concept. Notably, students exhibited significant improvement in identifying complex interprofessional practice themes after completing the training module. This study highlights the potential of online, asynchronous interprofessional practice training, serving as a foundation for enhanced collaboration in professional healthcare settings.

Keywords: interprofessional practice; public health education; problem-solving; multidisciplinarity; asynchronous education; healthcare

Introduction

The term "interprofessional practice", or IPP, emerged in the late 1960s to describe the relationships and communication skills needed for diverse healthcare professionals to work together effectively. Similarly, One Health, or the interconnectivity between animal, environmental, and human health, is a more recent addition to the public health field, becoming a widely adopted paradigm in the early 2000s.[1] As for relevance, both practices have significantly contributed to the contemporary understanding of public health, communication, and research.

In "Impact of Interprofessional Education on Subsequent Practice", Mark Spencer traced the meanings conveyed by the term IPP and highlighted IPP as the integration of previously discordant fields of study into a new curriculum.[2] While IPP training can be achieved in various ways, Spencer specifically examined the use of a single, interprofessional education course administered between 1975 and 1981.[2] Broadly, while the course itself was rarely referenced as of significant importance for participants in their later interprofessional interactions, students who had participated were more

likely to successfully engage in IPP-associated behaviors, such as collaborative practice.[2] Participants' knowledge growth was evaluated on the basis of positive changes in attitudes and beliefs in relation to IPP. Spencer tentatively framed IPP in a temporal context as a burgeoning and important field, indicating IPP training can help students later in their careers.

As the world has become more specialized and narrowly focused, one of the lessons from studies of IPP has been how vital multisystem thinking and action are in various applications. In "Interprofessional Education in Community Health Contexts: Preparing a Collaborative and Practice-ready Workforce", the authors found that by increasing medical students' and practitioners' interactions with diverse communities, they could improve patient outcomes via a better understanding of the social determinants of health and community resource acquisition.[3] Similarly, Fifolt et al. utilized an experiential learning simulation to help a group of racially underrepresented college students interested in healthcare professions learn about proper personal protective equipment (PPE) use.[4] While the primary goals of this exercise were training students for biohazard response and introducing underrepresented students to a hands-on healthcare experience, secondary-level takeaways included participants' increased abilities to work on a diverse team. [4]

In an integrative, educational program conducted with healthcare-allied individuals at the Muhimbili University of Health and Allied Sciences, one of Tanzania's major medical degree-granting universities, interprofessional competence is a foundational principle.[5] Students cannot graduate without demonstrating the ability to effectively communicate with diverse populations, both as patients and coworkers. In a novel approach to underscore these skills, the university began Interprofessional Day in which participants worked on teams to directly address IPP issues. By completion, all students demonstrated an introductory understanding of IPP, with suggestions for how IPP training events could be expanded and supported in the future. [5]

Second to the demonstrated importance of introducing interprofessional education (IPE) into health programs is the evaluation of these specific interventions. Bradley et al. studied the introduction of IPP into varying professional levels and indicated the literary gap in IPE program evaluation. [3] Bradley, and several other subsequent researchers, introduced IPE program evaluation through participant attitudes toward and in agreement with IPP statements. [1,3,6] In this context, program assessment consistently applies Likert scale questions for evaluation.

Throughout the history of education in healthcare, there has been a consistent recognition of the importance of incorporating IPP into curricula. This recognition dates back to the late 1960s when the concept of IPP first emerged, emphasizing the need for diverse healthcare professionals to work collaboratively and communicate effectively.[1] Over the years, various studies and initiatives have underscored the value of IPP in fostering teamwork, improving patient outcomes, and addressing complex healthcare challenges. This longstanding recognition highlights the enduring commitment to preparing healthcare professionals who can effectively collaborate across disciplines, a fundamental principle that continues to shape contemporary healthcare education.[2-6]

In 2016, the Interprofessional Education Collaborative released "Core Competencies for Interprofessional Collaborative Practice" to serve as a basis for introducing and evaluating interprofessional education in health professions.[7] With an emphasis on the evaluation of IPP, competencies and sub-competencies are inclusively outlined. The four core competencies promote mutual learning, teamwork, and communication relating to success in individual and public health care.[7] Evaluation and creation of IPP education can also be established through knowledge management (KM). Defined by the major themes of knowledge, organization, process, information, and use, KM is described as the interdisciplinary process of creating, using, sharing, and maintaining an organization's information and knowledge.[8] There is demonstrated success surrounding the multidisciplinary practices of IPP and KM in health education. Through KM techniques, programs can attain full educational capability and provide students with the knowledge necessary for a smooth and contributive transition into the public health workforce. KM serves as a framework to systematically organize and manage the wealth of information and expertise within healthcare education, ensuring that it is accessible, up-to-date, and effectively utilized to promote collaborative practices among future healthcare professionals. Through the strategic deployment of KM methodologies, healthcare education programs can enhance their effectiveness in preparing students to meet the evolving challenges of the healthcare industry, ultimately contributing to improved patient care and the advancement of public health.[8,9]

Professional collaboration is clearly a central feature of healthcare practice across the globe. Its central tenets, though, and those of One Health—multisystem thinking, strong transdisciplinary communication, and collaborative practice—are more broadly utilized outside the medical and public health fields. With the goal of adapting to the growing complexity of the healthcare field, several researchers have demonstrated success in the introduction of interprofessional learning in an online module format. One study involving undergraduate healthcare students provided participants with five online, asynchronous IPP modules. Levels of knowledge attainment following these modules were measured using quizzes, discussion questions, and case studies. Following the five modules, students demonstrated higher perceived value in IPE. Participants demonstrated value in collaboration, communication, and cohesion among a professional team. Students' improved perceptions of the importance of core interprofessional tendencies demonstrate the potential success of the incorporation of similar modules in other institutions. [10]

To wholly establish a linkage between public health and IPP, it is important to distinguish the differences between and recognize the importance of both multidisciplinarity and transdisciplinarity. Multidisciplinary approaches to problem-solving include general references to knowledge from varying disciplines. Transdisciplinary approaches to problem-solving include merging professional knowledge in a previously nontraditional manner.[11] Combining these two practices contributes to the ever-growing need for One Health approaches to attaining public health. One Health enables a link between IPP, intercultural communication,

and animal and environmental health practices, and likely, is the answer to the extremely complex questions of the future.[9] Such issues can only be addressed through work collaboratively performed in environmental, veterinary, medical, and public health fields, with necessary deference to varying cultural, racial, and ethnic attitudes towards these topics.[12]

There are several published studies identifying gaps and opportunities in education and knowledge in veterinary and public health programs. A study conducted at the University of Sydney's School of Veterinary Science outlined the growing complexity of the veterinary public health (VPH) field and the lack of professional skills being introduced into the VPH curriculum.[9] University of Sydney faculty integrated VPH management as a post-graduate program to bridge the gap between student education and their professional work. The online, asynchronous program integrates animal and human health policy as well as management and communication skills into the training. Success of the program has been demonstrated through student career promotions and student testimonials of smooth transitioning between the academic field and professional workplace.[9] Another study recognized the need for increased educational training related to disaster management in veterinary curricula in US Veterinary Schools and Colleges.[13] Following the evaluation of several US veterinary schools, it was concluded that lack of disaster management education can be attributed to poor resource allocation.[13] Furthermore, a study assessing emergency preparedness in various health professions discovered that there are notable gaps in response capabilities. The researchers proposed that deficiencies in these practices could be resolved through interprofessional collaboration involving healthcare workers and public safety officials.[14]

Methods

Survey Design and Distribution

A study of undergraduate, graduate, and professional students at a land-grant university in a midwestern state of the United States (U.S.) was undertaken to assess gaps in knowledge and understanding of IPP. Student participants were surveyed using a pre-training questionnaire followed by the completion of an online, asynchronous training module discussing various IPP scenarios. Participants then completed a post-training survey to determine the impact of the training module on their IPP knowledge and perceptions. The post-training questionnaire also asked participants to identify perceived challenges in meeting IPP standards during the given scenario.

The present study draws from data collected as part of a master's degree report and extends the analysis to identify recurring patterns and emerging themes that are relevant to IPP and IPE in the context of public health. The survey questionnaire, scenario design, and sampling methodology described in this study were developed specifically for the master's report.[15]

Data was collected from participating university students by an online survey. Both quantitative and qualitative assessments of the survey data were performed. The voluntary sample population was randomly selected through online distribution channels. The sole inclusion criterion was being a student over 18 years old. The study population consisted of 49 undergraduate students and 17 graduate/professional students pursuing varying degrees (Tables 1 and 2). The study was approved by the university's Internal Review Board (IRB # 10234). An electronic copy of the survey was distributed via Qualtrics®, participants provided consent, and submitted their responses anonymously via the online software. Prior to completion of the IPP training modules, participants were asked to quantify their agreement with IPP-related statements (see the "Data Analysis" section) with responses on a Likert scale of "strongly agree," "somewhat agree," "neutral," "somewhat disagree," and "strongly disagree". Participants were also asked: "What is your understanding of the phrase 'interprofessional practice'?" prior to the online IPP training program. Immediately following the IPP training module, participants answered the same questions, in addition to questions relating to one of six IPP scenarios including, "What challenges do you foresee in executing the plan you developed?" and "As the professional in this scenario, what are three strengths in this role that you would bring to an interprofessional team?". Participants were not provided any example answers for these questions and were asked to type their responses in textboxes in Qualtrics.

IPP Training Scenarios

The IPP scenarios used in this study were developed through a combination of KM techniques including systematic organization and leveraging expertise to ensure comprehensive and realistic scenario representation.[8,9] The randomly assigned scenarios, asking participants to embody the role of a professional such as a doctor, lawyer, teacher, veterinarian, dietitian, or physical therapist, were created with the goal of providing an immersive IPP learning experience. Participants were presented with complex, yet common issues to solve for their client in the hypothetical scenario. The complexity of the scenarios was designed to facilitate interprofessional thinking throughout the remainder of the survey questionnaire.

Data Analysis

For pre- and post-analysis of Likert scale responses, participant attitudes were recorded based on the percentage of agreement with the given IPP statement.[2] For the Likert statements: "I will not have to work collaboratively or creatively on a diverse team in my future profession (statement 1)," "Interprofessional competency means that all members of a team must have the same knowledge and backgrounds to produce the best outcome from their work (statement 3)," and "Conflict is completely avoidable on a well-functioning interprofessional team (statement 4)" responses of "strongly disagree" and "somewhat disagree" were recorded to indicate a positive attitude toward IPP. For the Likert statement: "Healthcare has routinely demonstrated that teams with better interprofessional communication have better patient long-term outcomes (statement 2)" responses of "strongly agree" and "somewhat agree" were recorded to indicate a positive attitude toward IPP.

For qualitative thematic analysis, survey answers were reviewed by all authors, and codes were assigned for analysis of thematic

content with themes related to the IPP competencies created by the Interprofessional Education Collaborative care.[7] Using the process and themes of KM, gaps in IPP training were identified and accounted for via student responses. To ensure accurate coding and consistent and reliable identification of themes, the authors discussed and agreed on the identified recurring patterns and emerging themes. This method ensures the process of coding is systematic and the coded data collection is consistent. The corrected, typed transcripts, and notes were entered into NVivo12 Plus software (QRS International Ltd., Burlington, MA, USA, 2018) to sort and analyze the data.[16,17] Each participant was only counted once per category (i.e., if they mentioned "communication" three times in the response, they were only counted as one respondent in the summary), but certain responses could contribute to multiple categories (i.e., they mentioned communication and empathy as two of their skills).

Results

Through the pre- and post-training renderings of these IPP statements, sixteen total participants, eight undergraduate and four graduate, did not change their ratings for any statement. Of the 28 (42%) total participants who indicated no understanding of IPP initially, only four (14%) repeated this lack of knowledge by the end of the survey. A total of 77 completed responses were collected, including eleven responses that were incomplete, and therefore, not included. There were 66 completed responses including 17 from graduate and professional students and 49 from undergraduate students (Table 1).

Table 1. Student Programs and Responses.

Student Program	Number of Participants (% of total*)
Undergraduate (BA or BS)	49 (74%)
Master of Public Health (MPH)	6 (9%)
Master of Science (MS)	4 (6%)
Veterinary Medicine (DVM)	4 (6%)
Dual Degree (DVM/MPH)	2 (3%)
Doctoral (PhD)	1 (1%)
Total	66

*The percentage was calculated as the number of responses per student category out of a total of 66 responses.

The undergraduate participants (Table 2) included ten participants in a pre-medical field (pre-nursing, pre-dentistry, pre-physician's assistant, or pre-surgeon), psychology (9), education (4), biology (3), kinesiology (3), animal science (3), communications (2), architecture (2), business (2), undecided (2), mechanical engineering (2), biochemistry (1), agriculture (1), computer science (1), political science (1), and regional planning (1).

Table 2. Undergraduate Program.

Undergraduate Program	Number of Participants (% of total*)
Arts and Sciences	18 (37%)
Veterinary Medicine	10 (20%)
Agriculture	4 (8%)
Education	4 (8%)
Architecture, Planning, and Design	3 (6%)
Engineering	3 (6%)
Health and Human Sciences	3 (6%)
Business	2 (4%)
Undecided	2 (4%)
Total	49

*The percentage was calculated as the number of responses per student category out of a total of 49 responses.

Pre-training survey responses to IPP fact-based statements were used to gauge IPP knowledge prior to completion of the online training module and to compare potential knowledge gained following training. Responses by student program were analyzed based on responses of "strongly agree" and "strongly disagree" to the IPP-related statements (Table 3), culminating in two major groups of students (i.e., undergraduate, and graduate/professional students).

Table 3. Pre-training responses to IPP statements by student program.

IPP Statement*	Strongly Agree		Strongly Disagree	
	Undergraduate[1,2]	Graduate/ Professional[1,2]	Undergraduate[1,2]	Graduate/ Professional[1,2]
1	1 (2%)	1 (2%)	26 (53%)	9 (18%)
2	19 (39%)	5 (10%)	0 (0%)	0 (0%)
3	1 (2%)	0 (0%)	8 (16%)	9 (18%)
4	2 (4%)	0 (0%)	11 (22%)	3 (6%)

[1]Thenumber of participants selecting this response; [2]the percentage of participants selecting this response. *See the "Data Analysis" section for IPP statements.

Participants then completed one of six IPP scenarios randomly assigned by Qualtrics, where participants were asked to embody the role of a professional (i.e., middle school teacher, dietitian, doctor, veterinarian, lawyer, or physical therapist) working to coordinate care for an individual with complicated needs. After reading this scenario, participants moved to the post-training survey in which they were asked what care plans and allies they would need for a successful patient health outcome.

The post-training re-assessed IPP knowledge and their new understanding of IPP (Table 4). At no point, beyond what was mentioned in the informed consent, was a formal definition of IPP provided.

Table 4. Post-training responses to IPP statements by student program.

IPP Statement*	Strongly Agree		Strongly Disagree	
	Undergraduate[1,2]	Graduate/ Professional[1,2]	Undergraduate[1,2]	Graduate/ Professional[1,2]
1	3 (6%)	0 (0%)	27 (41%)	11 (22%)
2	19 (39%)	9 (18%)	1 (2%)	0 (0%)
3	1 (2%)	0 (0%)	15 (31%)	8 (16%)
4	1 (2%)	0 (0%)	10 (20%)	5 (10%)

[1]The number of participants selecting this response; [2]the percentage of participants selecting this response. *See the "Data Analysis" section for IPP statements.

Following the training, there was a higher percentage of change in responses from graduate/professional students than undergraduate students. Overall, the cumulative pre- and post-training Likert-type responses to questions one, two, and four did not indicate high levels of change in attitude toward the IPP statements (Table 5).

Table 5. IPP Attitudes.

IPP Statement*	Pre-training Agreement[1]	Post-training Agreement[1]
1	86%	86%
2	92%	88%
3	72%	82%
4	71%	70%

[1] Percentage of participant responses indicating a positive attitude toward IPP. *See the "Data Analysis" section for IPP statements.

For these response types, participants had a relatively high positive attitude toward IPP. Responses to question three indicated a 10% increase in agreement with the IPP related statement.

Analysis of participant responses in defining IPP demonstrated an increase in knowledge post-training. This was indicated in the analysis of themes identified in participant's pre- and post-training answers (Table 6). Themes in participant responses were identified in relation to sub-competencies from the Interprofessional Education Collaborative.[7] Post-training responses show an increased depth of understanding of the importance of professional collaboration in patient care, problem-solving strategies, and the usefulness of outside knowledge and expertise.

Table 6. Demonstrated Pre- and Post-training Themes.

Interprofessional Practice Competencies[7]	Identified Pre-training Themes (Frequency[1])	Example Participant Responses	Identified Post-training Themes (Frequency[1])	Example Participant Responses
"Work with individuals of other professions to maintain a climate of mutual respect and shared values".[7]	Interacting in a professional field (35)	"Professionals working together" "Professionalism between coworkers" "Working together in a professional setting" "Interactions between colleagues in the workplace"	Building and maintaining professional relationships (8)	"The need to have interprofessional relationships to increase your success as an individual professional" "You can still have conflict between team members; however, your professional acumen should allow the team to overcome those obstacles"
			Considering opinions of those with differing backgrounds and skill sets (31)	"Collaboration of different professions each with unique skill sets" "People of different educational backgrounds work together towards a common goal"
			Communicative problem solving (7)	"Professionals must work together to find solutions" "Those who are involved in the clients care plan are able to effectively communicate and problem solve between them"
"Apply relationship building values and the principles of team dynamics to perform effectively in different team roles to plan, deliver, and evaluate patient/population-centered care and population health programs and policies that are safe, timely, efficient, effective, and equitable".[7]	Teamwork in varying professions (22)	"Working with other people from different companies/jobs" "Professionals of all background collaborating for a specific goal"	Promoting efficiency and quality in patient care through collaborative practice (6)	"Healthcare providers working with others in their profession, outside their profession, and while working with patients and their families. To provide quality care through communication"
"Communicate with patients, families, and communities, and professionals in health and other fields in a responsive and responsible manner that supports a team approach to the	Working with professionals from different areas of expertise (16)	"Working together with health professionals of different expertise" "Multiple	Working with professionals from different areas of expertise to benefit patient care (8)	"Collaboration of different professions each with unique skills sets for the overall successful treatment of a patient"

promotion and maintenance of health and the prevention and treatment of disease".[7]		professionals in different fields working together on a common goal or task"	Integrating families into patient care (3)	"Collaborative practice and ideas between people within your field as well as others and families in order to make the best decision for the safety and wellbeing of the patient"
"Use the knowledge of one's own role and those of other professions to appropriately assess and address the health care needs of patients and to promote and advance the health of populations".[7]	Collaborative patient care (5)	"Working with other professions for someone's best care"	Collaborative patient care (10)	"Collaboration of different professions each with unique skill sets for the overall successful treatment of a patient" "Collaborative communication with other healthcare providers to effectively learn from each other and benefit the patient"
			Providing the best possible patient health treatment and outcomes (8)	"Overall successful treatment of a patient" "Make the best decision for the safety and wellbeing of the patient"

[1]Themes in participant responses were identified and matched to identify related frequency values.

Participants were also asked in the post-test to identify characteristics or abilities that would be of greatest benefit to the individual described in their scenario. While two participants interpreted this within the context of their personal Clifton Strengths® assessments and specifically stated this, the most frequently identified traits were: empathy, strong communication, and coordination or leadership (Table 7).[18]

Table 7. IPP Characteristics.

Characteristics	Explanation[1]	Number of Respondents
Empathy	Creating personal connections with, and being compassionate to, the client/patient.	20
Communication	Coordinating with those necessary in order to provide quality client/patient care.	19
Knowledge	Having the skills and education necessary to properly care for the client/patient.	14
Leadership	Organizing and leading strategic client/patient care plans.	12
Adaptability	Making necessary adjustments to problem-solve and meet the needs of the colleagues and the client/patient.	11

[1] Explanation is a summary of overarching themes indicated in participant responses.

Finally, participants were also asked to identify challenges to the plan they intended to implement in their given scenarios. While many mentioned specifics of the scenario that they received as potential points of contention, there were many more participants who identified more general concerns (Table 8). Of the 66 total respondents, 22 (33%) mentioned getting buy-in from the central figure of their scenario as a potential concern. For 22% of respondents, underlying costs and resource investment would be of primary concern to them. Of note, three participants specifically mentioned that they assumed an unlimited budget, further indicating that most who took the survey recognized finite resources as being a barrier to IPP. Nine participants indicated coordinating care for their individual as being potentially problematic.

Table 8. IPP Challenges.

Challenge	Explanation[1]	Number of Respondents
Engagement	Client/Patient may be unable or unwilling to accept the help of a care team.	22
Finite resources	Issues regarding government funding, budget and/or limited income possessed by the client/patient.	15
Coordination	Complications related to working on a diverse team and ensuring the client/patient is still helped.	9

[1] Explanation is a summary of overarching themes indicated in participant responses.

Discussion

Many undergraduate programs in the U.S. do not have an emphasis or requirement for IPP-related skills, and they have continued to face barriers when trying to implement these skills into the curriculum.[19] Some barriers include lack of support, power, and flexibility.[19] Pertinent to this study, which was conducted in 2022, over 150 majors and certificate programs are offered through the university used for this work, where only six programs are formally classified as "interdisciplinary".[20] Like other universities across the country, many interdisciplinary offerings are related to the humanities and typically take a more "double major" appearance than true interprofessional work as defined for this study. This is possibly reflected in the number of undergraduate respondents who did not know the term IPP as indicated in the pre-test results.
Moreover, introducing IPP and transdisciplinary topics in undergraduate education is a neglected subject; to date, few articles have been published on the matter.[21] Instead, the focus has always been on building these skills for graduate and professional students later in their degree fields. While this is obviously effective, as the world continues to evolve at an unyielding pace, the benefits of introducing these concepts earlier in the academic pipeline has potential benefits. In the same manner that healthcare providers who took IPP courses in their medical training were more likely to display collaborative care tendencies in their own practices, undergraduate students who are introduced to these ideas have the potential to bridge previously discordant fields to solve the major issues of the future.[2] In this study, this idea is further demonstrated through growth in participant responses to defining IPP. Undergraduate students showed improved responses to the importance of interdisciplinary coordination and communication in several different patient care areas.

Although the scope of this project is limited, the study indicates the promise of conducting IPP training in an online, asynchronous format. One of the biggest struggles with IPP-related education is being able to coordinate times across disciplines for professionals and pre-professionals to meet for this training, and this type of training is often considered to be time-intensive and cost-prohibitive.[22] The initial results from this study indicate the effectiveness of IPP training in this format, where participants reported increased knowledge and understanding after IPP training. The time investment for the participant is relatively minimal, where most respondents spent under 20 minutes on the entire survey, and little-to-no interdepartmental coordination was necessary. While it is ideal to conduct IPP training in person, it is promising that 86% of respondents who indicated little familiarity with the term in the pre-training phase, communicated a clear understanding of the subject post-training.

Though a comparison of individual Likert-type responses did not show a significant change in IPP attitudes post-training, the level of improvement in open-ended IPP responses indicates probable success in a slightly altered questionnaire format. Potentially limiting this study is the use of the Likert scale to evaluate participants' knowledge growth, as it may limit the participant's ability to express their complete thoughts on the subject. Secondly, the small sample size of the study may limit the reliability of the results in other contexts. Though distribution was random, study participation was voluntary, subjecting sampling to potential selection bias. Potential selection bias limits reportable external validity. We achieved a representative student population covering several different fields of study, justifying some prediction of success in an online, IPP training in other populations. Several past studies on this subject matter revisit participants' IPP knowledge some time following the initial intervention.[4,5] However, this study does not indicate sustained knowledge as participant knowledge was not revisited later. Recommendations for future improvements include an increase in sample size and a survey redistribution following a waiting period to measure knowledge retention.

The survey instrumentation can clearly be further refined (e.g., feedback from participants included the desire to be able to scroll back to the scenario for reference while answering the post-test questions), but the underlying capability is available for this format as a cost-effective way of introducing IPP to large-scale audiences. Using KM techniques can assist in overcoming barriers to implementing IPP training into differing educational and professional levels. Organized and efficient knowledge distribution within varying programs can be established through KM. Application of existing institutional knowledge and everchanging real-world situations allows for formation of programs teaching some of the most important practices needed to succeed in the multidisciplinary workforce.[22] Combining IPP, and KM practices holds potential for large-scale benefits for students later in their careers. With this innovative and collaborative approach to IPP education, students can apply principles of interdisciplinary communication and problem-solving, further improving their success and transition into the professional field of healthcare in all capacities.

The effectiveness of this format for IPP training is further underscored by the skills participants identified as being important to their scenario as well as the potential challenges to implementing the plans they foresaw. Without being provided any formal definition of IPP outside of the informed consent document, participants were able to deduce skills and challenges commonly associated with IPP, including strong communication skills, the ability to be empathetic, and coordinating across disciplines. This further supports the possibility of such online work as being beneficial to promoting IPP in areas of One Health.

Conclusions

In summary, this study contributes to a larger body of work on IPP, One Health, and the need for IPP-based communication. It underscores the importance of transdisciplinary thinking and multisystem interaction, brings to light gaps in current IPP education, and presents a plausible solution to the challenges of this type of training for interprofessional practice in public health and veterinary medicine. The result of this study provides preliminary results and an opportunity for other institutions to create and evaluate an IPP online training plan.

Acknowledgments

We would like to thank those who participated in the data collection process. We also thank Dr. Shalin Hai-Jew for her assistance with NVivo.

Funding

This research received no external funding.

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