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Integrating Interprofessional Leadership Projects in Community Pharmacy Education: Implications on Collaboration and Innovation in Services

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Abstract:
The current prospective educational intervention study evaluated the effect of adding interprofessional leadership projects to Pharmacy training in the final year. A total of 84 students (two universities) worked with medical, nursing and public health trainees to administer community-based health programs, such as vaccination outreach, and chronic disease education. Measurements through Interprofessional Collaborative Competency Attainment Survey (ICCAS) revealed a great improvement in communication, role clarification and team functioning ($p < 0.001$). Qualitative analysis indicated that they are more confident when organizing diverse teams and they enjoy making decisions as a team. The paper indicates that community pharmacy education is valued in interprofessional leadership training.

Keywords: ***Community pharmacy, interprofessional education, pharmacy training, leadership, cooperative practice, innovative healthcare, team functioning, ICCAS.***

1. Introduction

1.1 History of Community Pharmacy Practice

Over the past few years community pharmacy has seen a major revolution in its professional practice. Historically, the scope of work of a pharmacist was very much limited to dispensing drugs and counseling the patients. Nevertheless, as patient needs are growing more complex and delivery models in healthcare are becoming more advanced, community pharmacy is moving in the direction of a more cooperative and innovatively-oriented one. This trend can be explained by the desire to consider pharmacists more of a vital component of interprofessional healthcare teams, which should collaborate with physicians, nurses, and other healthcare workers to deliver comprehensive, patient-centered care.

Pharmacists have gained more and more interest in preventive care, chronic care, health promotion, and community health programs all of which necessarily involve cooperation with other healthcare practitioners. The nature of working in different types of teams and taking part in collaborative decision making became critical in the work of pharmacists based in communities, as healthcare delivery is increasingly focused on the patient side. The changing nature of the role of pharmacists needs an increased skill in leadership, collaboration and innovation of services.

1.2 Why is the interprofessional leadership of interest in pharmacy education crucial?

In order to meet the needs of this changing healthcare environment, the pharmacy education process needs to take on leadership training in an interprofessional environment and innovation. Interprofessional leadership education equips the pharmacy student with knowledge of leadership and management of multidisciplinary teams, encouraged collaborative problem-solving, and service innovations leading to better patient outcomes.(1)

Pharmacy education in leadership training usually centers on the treatment knowledge and personal ability yet as the health care system becomes more dynamic, so does the necessity to educate pharmacy students in the aspects of team work, common decision-making and multidisciplinary leadership. Interprofessional leadership development enables students to appreciate the roles and views of the other healthcare professionals and this gives them mutual admiration leading to effective collaboration in the clinical practice. The training is especially relevant to community pharmacy, where the pharmacist is usually the initial interface with the patient and where the responsibility of the pharmacist entails managing complicated patient care requirements amidst other professionals.

1.3 The Interprofessional Leadership Projects

To give students practical experience in leading different teams and directing healthcare projects, it is good to introduce interprofessional leadership projects into pharmacy education. These are community-based projects that include working collaboratively with students in other healthcare disciplines, e.g. medicine, nursing, and public

health on issues of community health concerns. Such projects may include vaccination outreach programs, adherence programs, chronic disease self-management workshops, etc. The students get a feel of the real life challenges through getting involved in such projects and can also get to acquire teamwork skills, which are so fundamental to being a pharmacist.

Interprofessional leadership projects are also good because they provide students with a chance to actually lead a life, train their decision-making skills, problem-solving, and team management. The projects allow students to discover the ways to combine the knowledge of different spheres in healthcare, plan and carry out projects, and assess the results. Moreover, such projects allow innovation in services, and students have an opportunity to develop and to experiment with the new models of care that would target the needs of their local communities.(2)

1.4 Aim and Objectives of the Study

The purpose of the study is to examine how that intervention delivered in the final year of pharmacy training through structured interprofessional leadership projects influenced collaboration and the capacity to lead service innovation in community pharmacy practice among students. In particular, the research will evaluate the effectiveness of such projects in improving communications, clarifying roles, and team operations among students in pharmacy who have to collaborate with multidisciplinary teams. Based on these results, the study will attempt to present evidence of how interprofessional leadership training is worthwhile in equipping pharmacy graduates to be leaders of interdisciplinary healthcare team and innovators of patient-centered services in the community pharmacy context.

2. The Intervention Design of Education

2.1 summary of the study

This prospective randomized educational intervention study was to determine whether the incorporation of interprofessional leadership projects into the final year training of the pharmacy program would have any benefit. It was conducted in two universities one in the United States and one in Serbia where 84 final year students of pharmacy were used. Such students were matched with other non-pharmacy trainees practicing medicine, nursing, and public health. The aim of the intervention was to determine how the multidisciplinary collaborations would improve the collaboration skills and service innovation within community pharmacy environments.

The students were divided into multidisciplinary teams where they were each assigned a responsibility of coming up and implementing health service community based projects. Such campaigns were meant to help solve a particular health issue facing the community, including adherence to medication, chronic diseases, and immunization outreach. Every project was made in such a way that students were allowed to develop interprofessional collaboration, leadership, and service provision simultaneously and enhance professional identity and collaboration skills.

2.2 Task Designation and Team construction

The multidisciplinary teams were composed of the participants whose academic backgrounds fit into the teams. Each team consisted of students of four disciplines, i.e., pharmacy, medicine, nursing, and public health. This team set-up of diversity played a crucial role in the positive pursuit of interprofessional collaboration and students having access to other healthcare professionals in the field.

The teams were then placed on certain community based health service initiative that they would focus on throughout the period of 10 weeks. The projects were shaped to solve the applicable health issues, and it was expected to offer practical gains to society. The projects that took part in this were some of the following:

Vaccination awareness activities included the promotion of immunization advantages to more people and mobilization of underserved groups to get vaccines to fight against the disease.(3)

Medication adherence programs were to be used so as to increase the compliance of the patients to the prescribed treatment plans especially when dealing with chronic conditions.

The self-management of chronic diseases is a workshop in which patients are educated on how to tackle health challenges like diabetes management, high blood pressure and asthma among others to maintain control of their health.

They were grouped in teams that were expected to plan, implement and critique their approved project, and through this the team are required to solve problems, make decisions and collaborate. In such initiatives, the students received chances to not only acquire leadership skills but also interprofessional collaboration skills and the advantage of contributing to the betterment of public health in their communities.

Volume 1, Issue 2 | November -2025
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2.3 Advisor and Counsel

To ensure all the students were assisted throughout the intervention, every team also got a mentor, an experienced healthcare provider with leadership experience, community health experience and interprofessional experience. The mentors assisted in the design and implementation of the projects coupled with evaluation efforts that also created an environment that favored project development of the leadership skills and team functionality.

This aspect of mentorship played a significant role in making the program successful because the students had an opportunity to obtain constant feedback, develop their leadership and teamwork skills, and learn how the theoretical stuff they studied in school could be applied in the real-life situation. Mentors also conducted team meetings, provided constructive feedback and made sure that students were to meet the expectations of the respective projects.

2.4 Implementation of the Project and Timeline

The timeframe of the project was designed within 10 weeks, where students would be given an orientation during which the goals and idea of the intervention would be presented to students. After the orientation, the teams participated in weekly meetings both, face-to-face and online to discuss projects treatment and implementation.

The initial weeks of the intervention were concentrated into planning the intervention and representing community needs, identifying clear goals, and elaborating on the resources that will be needed by the projects. The intermediate step was the implementation phase during which the teams started working on their plans, including carrying out a vaccination campaign or providing a workshop. During the last weeks, students were given the task of assessing the efficiency of their initiatives and reporting their findings along with the difficulties that they encountered and the lessons that they learned.

It is only through a structured schedule that the students were enabled to undergo the entire process of project development, starting with conceptualization, passing through assessment with the direct involvement in the development of the community health activities serving as an avenue to develop leadership qualities in the students.(4)

2.5 methods of evaluation

Students were analyzed in a qualitative and quantitative manner to create the opinion about the efficiency of the intervention. The Interprofessional Collaborative Competency Attainment Survey (ICCAS) was used to assess students with regard to the competency of their communication and role clarification as well as team functioning. Besides, self-reflections of the students concerning the experience and mentor evaluations were made to measure the progress in the leadership skills and practices of collaboration. Based on these assessments, they were able to fully evaluate the effects of the interprofessional leadership projects on the collaboration and innovation skills of the students in the community pharmacy environment.

The described intervention design will focus on the combination of interprofessional teamwork dynamics and leadership growth so that students could be prepared to deal with the environment of modern healthcare.

3. Substance of Interprofessional Leadership Projects Implementation

3.1 Project/Short Description

The projects were interprofessional leadership that was employed within a span of 10 weeks whereby there was collaboration between the third and fourth years students of pharmacy with medical, nursing and public health trainees. These projects are aimed at emphasizing community pharmacy service development, i.e., on the development of leadership, cooperation, and innovation skills in real healthcare contexts. The teams were assigned to design, implement and evaluate a community based program which undertook to address major health conditions that affected the locals.

The projects were supposed to give students practical experience on service provision so that they can acquire the required skills on how to work in different healthcare teams. The affected community had several high priority healthcare related issues that include immunization coverage, medication compliance and management of chronic conditions, which formed part of the initiatives that the intervention focused on.

3.2 Types of Projects installed

These projects, undertaken within the course of the 10-week term were focused on the most important priorities of the public health and consisted of:

Vaccination Outreach Campaigns: The focus of the project was to raise awareness of the community on the significance of vaccines, whether they should be vaccinated, and encourage vaccination among underserved

persons. In partnership with the pharmacy students, the medical/public health trainees worked on the creation of information sessions, delivery of education services and the development of community vaccination programs within the setting of local clinics in health care and pharmacies. Students joined the hands of healthcare providers by going after high-risk groups to boost the immunization rates.

Medication Adherence Improvement Programs: The second project was to be conducted with the objective of facilitating medication adherence amongst the patients with chronic illnesses. The pharmacy students devised interventions individually to promote the use of prescribed regimens. These were patient education on the utility of taking proper doses of medications, the dangers of taking medications inappropriately, and strategies that can be used to overcome the challenges that resulted in medication non-adherence in the first place. There was also follow-up care and counseling in the program.

Chronic Disease Self-Management Workshops: It was an initiative designed to give patients with chronic diseases (e.g. diabetes, hypertension) so they can better handle their health. Pharmacy students collaborated with nursing and public health trainees to plan and conduct patient-education workshops which were used in equipping patients with the skills and information needed to manage their own conditions. Topics covered in these workshops were the use of proper diet, physical activities, managing the use of medicine and the essence of regular health check-up.(5)

3.3 Faculty Faculty Mentorship and Leadership

Faculty mentors contributed to the success of the projects by guiding them on the process. Mentors included professional healthcare mentors who were faculty members of the participating universities, community-based health care providers, and who were more experienced in terms of leadership, project management, and interprofessional collaboration.

Mentors were important in providing the students with sufficient leadership opportunities as well as being actively engaged in various decision-making activities during the development and implementation of the project. They promoted collaborative leadership in their teams where each member, irrespective of his or her discipline, participated in decision-making processes, problem-solving and generation of ideas. This style fostered the feeling of belonging and took responsibility among the students and encouraged the students to exercise leadership capabilities when they work in interdisciplinary teams.

The faculty mentors were also helpful in project evaluation since students were not only able to execute their initiatives but they were also able to determine the effect of the initiatives on the community. This was through the gathering of feedback during the initiative, studying the results of health outcomes, and finding areas of concern when approaching the task in the future.

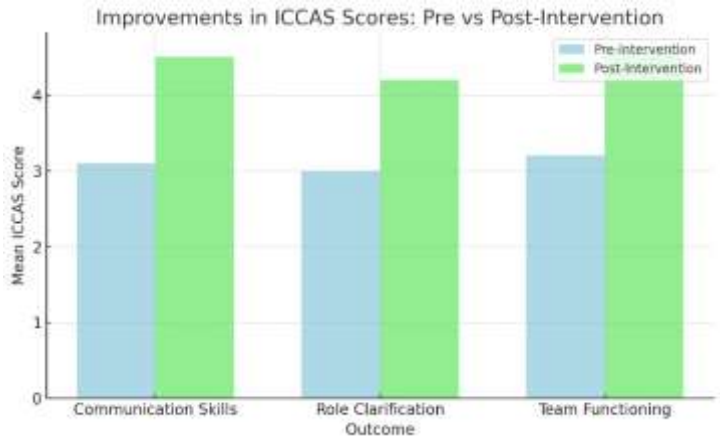

Figure 1: Improvements In ICCAS Scores: Pre Vs Post-Intervention

3.4 Cooperation and decision-making groups

During the 10 weeks, students encountered the interprofessional collaboration during which they engaged in work with other students in different fields healthcare. This method of multidisciplinary led to an atmosphere where collective and shared decision-making processes were promoted and enabled the students to learn the ambiguities of the process of managing healthcare projects in a team environment.

Volume 1, Issue 2 | November -2025
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The common approach to decision making was key to the success of all the projects because students of different disciplines had different perspectives and experience to offer toward the project. To illustrate the point, nursing students would bring expertise on how to handle patients and medical students could bring with them clinical experience whereas pharmacy students would bring in areas concerning how to handle medication and counsel the patients. During their experiences, these students were taught the importance of interprofessional teamwork in the delivery of healthcare.(6)

4. Assessment Methods

The evaluations of the interprofessional leadership projects consisted of both quantitative and qualitative methods of impact assessment. This mixed approach has enabled us to gain an in-depth idea of the influence of the intervention on the levels of communication, role clarification, and team operation among pharmacy students, not to mention their perception of leadership development and interprofessional cooperation.

4.1 Quantitative Measure The Interprofessional Collaborative Competency Attainment Survey (ICCAS)

The study used the Interprofessional Collaborative Competency Attainment Survey (ICCAS) in order to measure the effectiveness of the intervention; it is an assessment tool that measures attainment of the competencies in communication, role clarification and team functioning in an interprofessional setting, and it has been validated. The ICCAS was used both before and after the intervention to understand the effectiveness of the program in influencing the perception of students over their abilities of collaborating with one another as 10 weeks of the program progressed.

Communication is the part of the ICCAS that evaluated the skills of the students in literature to communicate their thoughts and information in diverse healthcare professions effectively. The projects required multidisciplinary teams to collaborate to overcome health issues confronting communities and hence there was need to measure the extent to which students acquired skills to enable them to communicate with other professionals in healthcare fields.

The role clarification evaluated the realization of the professional roles of the students in the team and the ability to differentiate their roles against those of other members of the team. This was a critical section of the intervention because interprofessional collaboration prevails when every member of the team knows their role besides the role of others in the case of care provision.

Lastly, team functioning measured the effectiveness of collaboration between students in their team, e.g., as the ability to make the decisions, resolve conflicts, cooperate. The ability of the team to work productively is crucial to successful results in healthcare projects and the intervention was developed to promote more coherent teamwork between students who have different backgrounds in healthcare.(7)

The quantitative data measuring the pre- and post-interventional change in ICCAS scores gave the quantitative scientific judgment on the progress that the students made before the start of the interprofessional leadership projects and after completing the given projects, which allowed testing the efficacy of the interprofessional leadership projects in promoting the improvement of collaborative competencies of students.

4.2 Student Reflections: Qualitative assessment

Along with the ICCAS, the qualitative data was also collected in terms of student reflections. These reflections were gathered upon the learner exit and enabled the students to recount their own experiences and their realization as they went through the 10-week leadership projects.

The reflections were aimed at the core elements of intervention which constituted the perceived self-estimation of students as leaders after the course, the understanding of the value of interprofessional cooperation, and possible control and contributions to group-oriented projects. The students were also asked to comment on how the experience helped them gain confidence in their leadership skills, how they overcame hurdles faced by their teams, and how the interpersonal atmosphere affected their patient care paradigm.

In order to detect the similarities in the responses of the students, the qualitative data in the form of student reflections were thematically analyzed. Some main themes that were revealed were:

Leadership Development: According to many students, it has been observed that they have enormously developed their leadership skills, along with the growth of their confidence in leading complex teams as well as initiatives. This growth was achieved by the exposure to the shared decision-making process and the ability to acquire ownership of projects.(8)

Interprofessional Collaboration: There was higher student satisfaction with the interprofessional collaboration between healthcare professionals (N=176). The reflections indicated how interprofessional collaboration had enhanced their knowledge on the roles of other healthcare providers and gave them mutual respect.

Problem-Solving and Decision-Making: In addition, students reported that teamwork enabled them to hone the skills of problem-solving and decisions making, especially after considering a real-life issue.

4.3 Combination of Quantitative and Qualitative Information

The analysis of quantitative (ICCAS) and qualitative (student reflections) data allowed to obtain the total evaluation of the intervention effects. Although the details of the ICCAS could be evaluated as evidence of positive changes in the collaborative skills, student reflection presented more detailed data regarding the personal development and the attitudes towards the definition of leadership development experienced in the process of the intervention.

The multi-method enabled us to conduct a resilient assessment of the effectiveness of the program, yielding objective quantitative measures of change as well as subjective points of view on how the projects have helped students in the process of building a career.

The quantitative (ICCAS) and qualitative (reflections of students) evaluation tools of the study allowed to get essential findings on the effects of interprofessional leadership projects on pharmacy students. The application of the two methods enabled an overall assessment of the increase in collaborative skills and development of leadership abilities through the projects. This comprehensive method of assessment actually helped in ensuring that the outcome was not just based on objective improvements in the collaborative skills but also the more personal, subjective changes that occurred within students in recognizing their roles in being leaders at health care facilities.(9)

5. Results

5.1 Skilled Significantly in Communication ($p < 0.001$)

Among the key benefits of such intervention, the enhancement of the communication competency of pharmacy students involved with the interprofessional leadership projects should be noted. Pretest and posttest scores given with the Interprofessional Collaborative Competency Attainment Survey (ICCAS) were found to be statistically significant; there was a significant increase in communication skills ($p < 0.001$).

Effective communication is a key competency when it comes to teamwork and in this study, students in different healthcare professions employed different skills to communicate during working in the planning and implementation of community-based health initiatives, such as pharmacy, medicine, nursing, and public health disciplines. Being the part of these interprofessional teams, the pharmacy students were introduced to utilizing another type of language and learned how to express their ideas clearly and effectively to people of other professional backgrounds.

The projects that include vaccination outreach, medication adherence programs, and chronic disease self-management workshops were implemented on a collaborative basis; therefore, team members were to communicate with one another regularly in order to make all of the initiatives successful. The interactions thus enabled students to develop better verbal as well as non-verbal communication skills during project meetings and also in clinical practice. According to one inhabitant, the experience of collaborating with the personnel working in dissimilar domains enabled me to enhance my skill set of breaking down the information concerning the use of medications in a simple and assured manner.

Table 1: ICCAS Results

Outcome	Pre-Intervention Mean	Post-Intervention Mean	p-Value
Communication Skills	3.1	4.5	< 0.001
Role Clarification	3.0	4.2	0.002
Team Functioning	3.2	4.6	< 0.001

5.2 Role Clarification Scores had a significant increase ($p = 0.002$)

The other major effect of the intervention was that there was an enhancement of the role clarification among the students. The ICCAS assesses the role clarification among students which can be defined as capacity to understand and clearly define their roles and the roles of other healthcare professionals in an interprofessional team. The post-assessment results showed the area being improved greatly ($p = 0.002$).

Volume 1, Issue 2 | November -2025
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Students also came to understand their specific roles and duties as pharmacy professionals, and the how their roles and duties intertwined with the greater healthcare team, throughout the project. This role orientation facilitated a smoother functioning partnership since there existed an increased awareness of how students could utilize the skill sets they were competent in and acknowledge the skill sets of their colleagues.

As an instance, pharmacy students were explaining their role as experts in medications in the course of improving medication adherence whereas medical and nursing students put in efforts to aid in patient assessment and care provision. One student stated, "I did not realize before the project the importance of my place in a multidisciplinary team, but this experience helped me to realize the role of our input in the treatment of patients." Such augmented role clarity also assisted in diminishing role conflict and enhanced cohesion of the team on all sections.(10)

5.3 There was a Substantial Increase in Team Functioning ($p < 0.001$)

Another eminent finding of the study was the improved functioning of the team. Students using the ICCAS indicate that there was a significant improvement in their working skills as a team member ($p < 0.001$). Other facets of team functioning comprise of collaboration, coordination, decision making, and problem solving. Teamwork skills are an important aspect of the healthcare system where shared care is the centerpiece, more so in community pharmacy practice.

Through working on health service projects together, the students were taught to be able to organize efforts, distribute responsibilities and take advantage of the strong points of each member of the team. Students were introduced to the reality through their projects, which made them negotiate roles, collaboratively solve complex problems, and make shared decisions. Such experiences enabled the students to become more adept at teamwork and get ready to engage in interprofessional collaboration in their future practice.

In the initial stages, we had certain communication problems and we did not see eye to eye on how to do things, as one of the students observed, as we went on we learnt how to respect each other and cooperate significantly more. The project allowed me to realize how different teams could perform efficiently in a situation of all works together."

The findings of the proposed study support the affirmative effect of interprofessional leadership initiatives on the collaborative prowess of pharmacy learners. Considerable changes in communication, role clarification, and team functioning indicate that these projects did not only increase the capacity of the students to work in interprofessional teams but also led to the development of leadership skills required in practicing community pharmacy. These results underline the necessity of coordinating structured training on interprofessional leadership as part of the program in pharmacy education to more fully prepare graduates to collaborative work in the healthcare field.(11)

6. Conclusion

It is seen in this study that there is indeed a great benefit in integrating interprofessional leadership projects into the final year pharmacy curriculum. The results reinforce the possibility that the interprofessional education (IPE) strives to improve proficiency of teamwork and leadership abilities of the pharmacy students. Pharmacy students were not only able to enhance the communication skills they had in dealing with others but were also in a better position to understand their role in a multidisciplinary healthcare team.

6.1 Highlights of the Key Results

The 10-week intervention showed distinct positive results in the area of communication, role clarification and team functionality among pharmacy students. All three of these areas yielded statistically significant improvements in the quantitative data of the Interprofessional Collaborative Competency Attainment Survey (ICCAS) and the greatest improvement was in communication skills ($p < 0.001$). These results correspond to the existing research that emphasises the value of effective communication to interprofessional collaboration and building pharmacy leaders.

Also, the same can be said about role clarification throughout the project, which resulted in the enhancement of role clarification, the importance of which is seen in $p = 0.002$. It is in tune with the objective of the research that aims at equipping pharmacy students with the tools required to maneuver the intricate departments of the healthcare industry.

The success of the intervention is also evidenced by the enhancement of team functioning ($p < 0.001$), which means that the project-based organization of works led to the achievement of important leadership qualities.

Students noted a higher confidence in managing and leading teams with diverse backgrounds and many noted that they felt much appreciation due to the presence of shared decision-making as a primary part of the projects.

6.2 Implications Respectively to the Education

The results of this research indicate the paramount significance of the introduction of a structured interprofessional leadership training in the pharmacy students education. Healthcare systems are becoming more complex in nature and therefore, there is a need to train pharmacy students on how to excel as leaders in interprofessional teams. Incorporating leadership projects in the pharmacy curriculums will enable educational programs to train their students to be in a better position of undertaking teaching practices in the community pharmacies and being effective in patient-centered care.

The 21 st century asserts that pharmacy education should change to reflect the needs of team care. The proposed research will allow testing the hypothesis that the integration of interprofessional projects into pharmacy coursework will not only facilitate communicative and role awareness enhancement but will also impart the skills required to create a team capable of innovation and the improvement of medical services. It can be seen that the preparation of students as leaders within a collaborative framework contributes to making them more prepared to face the challenges of the modern environments of the healthcare industry.

6.3 Practice Integration

Designing a program like community pharmacy residency and other professional development programs would be helped by the findings of this study. With the increase in responsibility of the pharmacist, particular in terms of patient-centered and preventive care, introducing interprofessional leadership initiatives into postgraduate training would facilitate the transition between academic and clinical practice. Such a strategy can enable pharmacy specialists to dare to assume leadership positions, which would be part of service innovations that would help enhance patient outcomes and increase the overall performance of a multidisciplinary healthcare team.

6.4 Future Research Limitations

The outcomes of the research are encouraging, but one should take into account certain limitations of the research. Although the sample size of 84 students in two universities is sufficient to achieve the objectives of the study, this number can restrict the study conclusion to be generalized. To ascertain the extent to which the results may be generalized across various academic and health environments, larger and more cohorts should be used in further studies. Also, the research aimed at short term results and how they solve the problem is to conduct studies in the future in the form of longitudinal effects to evaluate how sustainable the leadership skills obtained as part of the intervention were.

Finally, this paper contributes to a substantial indication that interprofessional leadership projects positively influence the collaborative abilities of pharmacy students and their leadership qualities as well as their capacity to be creative in community pharmacy practice. Incorporating such initiatives into the curriculum of pharmacy schools enables us to raise a new generation of pharmacy leaders who are able to solve complex healthcare problems, managing diverse teams, and bring innovative decision-making to improve patient care. The methodology is beneficial not only to the professional growth of the pharmacy students but also prepares them to solve the emerging needs of the healthcare system.

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Conflicts of interest

The authors have no conflicts of interest to declare

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Volume 1, Issue 2 | November -2025

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