Pharmacy Education (2024) 24(1) 539 - 551
https://doi.org/10.46542/pe.2024.241.539551

RESEARCH ARTICLE

VET&PHARM pilot: Exploring interprofessional communication in pharmacy and veterinary students

Aurore Gaspar[1], Geneviève Philippe[1], Brigitte Evrard[2], Patrick Herné[3], Tiber Manfredini[4], Catherine Delguste[5]

[1] Department of Pharmacy, Pharmacy Practice Research Group, Center for Interdisciplinary Research on Medicines (CIRM), Faculty of Medicine, University of Liège, Liège, Belgium
[2] Department of Pharmacy, Center for Interdisciplinary Research on Medicines (CIRM), Faculty of Medicine, University of Liège, Liège, Belgium
[3] Department of Pharmacy, Faculty of Medicine, University of Liège, Liège, Belgium
[4] Department of Psychology, Faculty of Medicine, University of Liège, Liège, Belgium
[5] Fundamental and Applied Research for Animals and Health (FARAH), Faculty of Veterinary Medicine, University of Liège, Liège, Belgium

Keywords
Active learning
Interdisciplinary communication
Pharmacy education
Simulation training

Correspondence
Aurore Gaspar
Department of Pharmacy
Pharmacy Practice Research Group
Center for Interdisciplinary Research on Medicines (CIRM)
Faculty of Medicine, University of Liège
Liège
Belgium
aurore.gaspar@uliege.be

Abstract

Background: In the recent context of public health issues, the question of interdisciplinarity in healthcare has emerged as a central area of attention. The VET&PHARM pilot project aimed to test the feasibility of an interdisciplinary health simulation learning activity. **Methods:** This simulation activity explored different interactions at the counter of an experimental pharmacy setting, using role-playing scenarios between pharmacy and veterinary students. The study involved an interaction between a pharmacist and a patient, who was also an animal owner, and an interprofessional collaborative interaction through a pharmacist-veterinarian telephone contact. The debriefing focused on the healthcare professional's actions and their potential effects on patient care or animal care. **Results:** The analysis of post-intervention questionnaires highlighted the pedagogical value of the activity in terms of awareness of the importance of communication and collaboration skills and an increase in students' self-confidence in performing a similar task. The learning reported by participants exceeded the One Health vision expectations. **Conclusion:** The pilot interdisciplinary health simulation enhanced pharmacy and veterinary students' satisfaction and perceived value for learning and future practice.

Introduction

Interprofessional education (IPE) promotes knowledge exchange, enhances understanding of the roles of different healthcare professionals, and fosters better complementarity and more effective collaboration, leading to reduced errors and improved therapeutic outcomes (Shrader, 2013; Wilson & Vorvick, 2016; Cooke *et al.,* 2017; Crawford *et al.,* 2019; Lucas *et al.,* 2020). Recent studies have shown that IPE is now positively viewed by universities, providing healthcare academics the opportunity to drive IPE forward (Karlsson et al., 2024).

However, typically, pharmacy students receive little to no exposure to veterinary medicine students during their academic curriculum despite inevitable future professional interactions, underscoring the need for more integrated interprofessional learning experiences (Shaw *et al.,* 2004; Heise et al., 2024). Active learning methods can be used to provide a sequence of interactions aimed at promoting better communication among healthcare providers and between healthcare providers and patients. Recent research supports the use of these active learning methods as an effective means to improve communication in healthcare, benefiting both patients and healthcare providers (Englar, 2017; Adeyemi *et al.,* 2024). This strategy can

help explore potential partnerships between pharmacists, veterinarians, and patients or animal owners. Moreover, learning to communicate with patients and provide direct patient care requires experiential learning with feedback on student skills and abilities to reinforce their learning (Westberg *et al.,* 2006; Englar, 2017; Liao *et al.,* 2022). Simulation training has proven to be an effective method for teaching non-technical skills such as communication and interprofessional collaboration for patient-centred care and interprofessional exchanges (Gaspar *et al.,* 2024). Simulation is an active learning technique that enables learners to evolve in a safe environment. It is also used as a tool for transferring some learning experiences into the professional context (Barry Issenberg *et al.,* 2005; Gaba, 2007; McGaghie *et al.,* 2010). Indeed, during debriefing, skills such as detailed observation, interaction analysis, high-level critical thinking, and support for developing directly applicable skills in practice are encouraged (Miller, 1990).

The VET&PHARM pilot activity relies on Kolb's experiential learning theory and Herrington's concept of authentic situations using an interprofessional simulation (Herrington & Kervin, 2007). Recent studies have explored the application of authentic learning principles in various educational contexts. These works collectively emphasise the importance of integrating real-life situations into learning activities, fostering in-depth understanding, critical thinking, and practical application of knowledge (Barrows, 1993; Englar, 2017).

Kolb's experiential learning theory posits that effective learning is a cyclical process involving four stages: concrete experience, reflective observation, abstract conceptualisation, and active experimentation. Following Kolb's learning cycle, students engage in concrete exploration of a patient-animal case, followed by reflection on management, active experimentation (role-play), and abstract conceptualisation (debriefing) (Kolb, 1984; Kolb, 2001). This process ensures that learners not only acquire knowledge but also apply and adapt it through continuous reflection and experimentation. Reflection on action relies on peer observations to build an understanding of group interactions (Van Oudenhoven *et al.,* 1987; MacDonnell *et al.,* 2016; Cooke *et al.,* 2017; Mowrey *et al.,* 2022).

One Health is a collaborative and transdisciplinary approach working at the local, regional, national, and global levels to achieve optimal health outcomes, recognising the interconnection between people, animals, plants, and their shared environment (CDC, 2024). The One Health approach acknowledges that human health is closely linked to animal health and their shared environment. Within this approach, antibiotic resistance has been extensively addressed in recent years, leading to essential changes in antibiotic counselling and dispensing practices in both human and veterinary medicine (CDC, 2024). However, other medications considered over-the-counter (OTC), such as antiparasitic drugs, have not yet been addressed similarly. Therefore, this pilot activity focuses on this category of medications. The pharmacotherapy skills of future pharmacists must be strengthened in many areas, particularly in the context of antiparasitic resistance (Immonen *et al.,* 2023).

The specific objectives of this seminar were to (1) introduce novice veterinary medicine students to final-year pharmacy and veterinary medicine students to discover the pharmacy profession and their future profession; (2) allow pharmacy students to advise on a human-use medication with a simulated patient unfamiliar with pharmaceutical knowledge (played by a novice veterinary medicine student) and receive feedback from this patient; and (3) facilitate a simulated interprofessional collaboration between a pharmacist and a veterinarian in the context of veterinary medication counselling (potentially impacting human, animal, and environmental health). This role-playing part took place between the master's-level pharmacy and veterinary medicine students.

Given the international scope of interprofessional collaboration and One Health, this type of seminar could be relevant in all medical training contexts, regardless of the country.

Methods

The STROBE (strengthening the reporting of observational studies in epidemiology) initiative developed recommendations on what should be included in an accurate and complete report of an observational study. The guidelines for good practice in writing observational studies have been adapted for this non-observational study (Von Elm *et al.,* 2007). Descriptive statistics were used where appropriate.

Context and participants

The 4-hour activity was conducted twice in May 2022 at the University of Liège in a didactic pharmacy, also known as an experimental pharmacy, a room designed to simulate a real-world community pharmacy equipped with a counter and medicine cabinets.

The students were recruited on a voluntary basis. The number of students in each seminar was determined based on the requirements of role-playing activities, room capacity, desired interactivity, and the number of

facilitators. If additional students had volunteered, an extra seminar session would have been organised. The BAC 3 VT students were chosen to provide them with insights into their future profession and their "*naive*" role-playing perspectives. Master Pharmacy and final-year VT students were selected due to their advanced stage of study, aligning with the professional focus of the activity. There were no exclusion criteria. Inclusion was based solely on the year of study and willingness to participate in the activity. Table I shows the distribution of the 40 students who attended the two seminars.

Each seminar included twelve second-year Master Pharmacy students (M2P), eight third-year Veterinary Bachelor students (B3V), and two third-year Veterinary Master students (M3V), one specialising in small animals and the other specialising in horses.

Table I: Distribution of students in each seminar

Seminar 1: Number of students	Seminar 2: Number of students
10 2nd year Pharmacy students	**10** 2nd year Pharmacy students
2 3rd year Veterinary Master students	**2** 3rd year Veterinary Master students
8 3rd year Bachelor students	**8** 3rd year Bachelor students

A total of 40 voluntary students participated in one or both seminars. Each seminar featured two scenarios: the first involved a simulated patient who owned a pet (a dog or a cat), and the second involved a simulated patient owning a horse. Different pathologies and medications were presented in each seminar to introduce variety in "*patient/animal*" cases and treatment options. However, both scenarios were designed with identical levels of difficulty.

Ethical considerations

Ethical approval was not required, as this study does not fall within the scope of the law of May 7, 2004, relating to experiments on human beings.

The VET&PHARM activity

Figure 1 shows the four phases of the VET&PHARM learning activity (inspired by Kolb's cycle).

Exploration phase

The first phase involved students exploring the patient's profile and request. It was their first exposure to the critical elements of an authentic situation (the case was not prepared upstream). As in real-world conditions, there was no anticipation of the specific request or context.

Reflection phase

During the second phase, students reflected on the best way to manage the patient or the animal. For pharmacists, the reflection involved considering the pathology and providing advice on medication.

The explicit formulation of the objectives pursued by the pharmacist and the veterinarian contacted was a preliminary step to the simulation and debriefing. These objectives were requested at the end of the preparation period and before the simulation. Each simulated health professional, in turn, defined their objectives in front of the observers and facilitators while the other two actors were asked to leave the room. If the formulated objectives seemed vague or outside the intervener's control, facilitators could inquire about them. In this way, the observers were informed of the respective objectives of the simulated pharmacist and veterinarian, enabling them to better compare these objectives with what happened during the simulation.

Active experimentation

The third phase consisted of the complete simulation sequence. The patient was played by a B3V student who interacted at the counter of an experimental pharmacy with a community pharmacist (played by an M2P student). The veterinarian (an M3V student) was then contacted by phone regarding a request for the pet, which the pharmacist could not immediately address without the advice of the treating veterinarian. The exchange between the two healthcare providers led to a final interaction between the pharmacist and the animal owner. The entire sequence formed a complete simulation, followed by its debriefing, on which particular emphasis has been placed.

PHASE 1: Exploration

Students learn about the patient case and his question about his pet. The elements available to students are as follows:

- Human profile
- Chronic human pathology
- Request for simplification about chronic human pathology
- Request about advice on OTC human medication
- Request about advice on veterinary medicine for a pet

PHASE 2: Reflexion

The students are separated into 2 groups (pharma group and VT group) to analyse the case according to their respective professions.

- **M2P** for human request (considering the human pathology; providing advice on dosages and warnings for the requested medication)
- **B3V** and **M3V** for the request regarding veterinary medicine. It involved handling the veterinary request, where different alternatives were possible, and questioning about the animal.

Formulation of the **objectives** pursued by the pharmacist and the veterinarian.

PHASE 3: Active experimentation with the simulation sequence

- Simulation phase in 3 different parts (human request, pet request and telemedicine sequence between pharmacist and veterinarian) with a **B3V** student, a **M2P** student and a **M3V** student
- Other students were observers to prepare the large group debriefing of this simulated situation.

1. **Human request**

A) Request concerning a chronic human disease (focusing on the need for clarification about condition)

The patient played by the **B3V** asks the pharmacist a question about his chronic illness.

B) Request for an over-the-counter human medication (which could be infulenced in terms of advice given by the presence of the chronic illness)

The patient played by the **B3V** requests a medicine for human use that is not subject to prescription.

2. **Pet request**

Request for a veterinary medication

Due to lack of knowledge on this subject, the pharmacist cannot access the request directly without contacting a veterinarian. During this step, the patient played by the B3V becomes a customer pet owner because he is now talking about his pet.

3. **Telemedicine sequence with the veterinarian**

A) Exchange between the pharmacist and the veterinarian regarding the request for the pet.

B) Explanation of the content of the pharmacist-veterinarian discussion to the pet owner (creating a shared decision between the two healthcare providers and the pet owner)

PHASE 4: Conceptualisation with the debriefing

- Identification of the benchmarks for practice
- Ordered sequence of the debriefing framework:
  (1) Feedback from the **professional actors** (pharmacists and veterinarians)
  (2) Factual **observations of actions by the observers** (words, attitudes) and their **feelings** during the interaction
  (3) Construction of **shared hypotheses** to understand the **supposed effects** of interactions on the patient/pet owner
  (4) Feedback on the **reals effects** of interactions on the patient/pet owner (feelings, understanding, perception, intention regarding treatment and motivation)

Legend: *M2P student = pharmacist; B3V student = patient (part 1) and customer pet owner (parts 2 & 3); M3V student = veterinarian*

Figure 1: The four phases of the VET&PHARM learning activity (inspired by Kolb's cycle)

Conceptualisation

The fourth and final phase of the conceptualisation was the debriefing. After understanding the events and their reasons, it became possible to identify the conceptual and transferable elements that enabled achieving the objectives (i.e., what contributed to promoting interprofessional communication and reaching a shared decision among the various participants). The feedback came from both peer observations and the simulated patient. A debriefing framework was specifically designed for conducting VET&PHARM debriefings. The debriefing framework used for the VET&PHARM seminar was created in collaboration with the Soft Skills Unit of ULiège and inspired by debriefing methods already used in the Faculty of Veterinary Medicine and by shared decision-making principles (Emanuel, 1992; Girandola & Guéguen, 2014; Stiggelbout *et al.,* 2015; Bomhof-Roordink *et al.,* 2019). Students were asked to observe the effects of the actions taken by their peers involved in the role-playing scenarios and the resulting outcomes on the patient.

Facilitators had experience as community pharmacists or practising veterinarians, which allowed for stronger connections to practice. This experiential learning, echoing real-life cases, placed students in a situation they might encounter in their professional lives.

The VET&PHARM debriefing framework consists of an ordered sequence of various fundamental elements:

(1) Feedback from the professional actors (pharmacists and veterinarians) on their actions and perceived effects, their impressions of whether they had achieved their objectives, and their feelings during the interaction.

(2) Observers' factual observations of actions (words, attitudes) and their feelings during the interaction.

(3) The construction of shared hypotheses for understanding the effects of interactions on the patient.

(4) Feedback on the effects of interactions on the patient in terms of:

a. Feelings during the interaction.

b. Understanding of the discussed elements and medical information.

c. Perception of addressing their main concerns

d. Intention to adhere to treatment upon leaving the pharmacy and motivation for this intention.

e. Establishing a relationship of trust between the participants.

This feedback enables the shared assumptions to be compared with the reality of the patient's experiences, understanding, and intentions, and ultimately, assesses the level of the trust relationship established and the achievement of shared decision.

Accordingly, a summary table was created for each scenario. This synthesis included essential elements and transferable lessons for each patient or companion animal case. It was initiated during the debriefing and subjected to collective validation. Appendix A presents the table's template, synthesising the main elements that served or hindered the trustful relationship and the achievement of shared decisions. Possible solutions were also proposed at the end of the debriefing when problems remained latent or interactions resulted in non-shared decisions.

Data collection

A post-activity questionnaire (Appendix B) developed on Google Forms was administered to students to assess their level of satisfaction and validate the achievement of the seminar's objectives.

The VET&PHARM pilot seminar was evaluated based on three criteria: (1) satisfaction, (2) perceived value, and (3) usefulness for future practice. Two types of results were collected:

1. Semi-quantitative evaluation using a 4-point Likert scale (strongly agree, agree, disagree, and strongly disagree) in the post-activity questionnaire.

2. Qualitative evaluation through thematic analysis of responses to open-ended questions.

Semi-quantitative evaluation

The percentages of agreement in Table I refer to respondents who either agreed or strongly agreed with the statements. However, since not all questions applied to all participants, the option "NA" was assigned where appropriate.

Comments were selected based on their representativeness among respondents to whom the statement was relevant.

Qualitative evaluation

Thematic analysis was conducted based on participants' responses to the open-ended question, "*What did you like the most about the seminar? Please explain your answer*."

Process of thematic analysis:

1. Familiarisation with the data: Researchers read and re-read the responses to become thoroughly familiar with the content. Initial notes and observations were made during this phase to capture preliminary thoughts.

2. Generating initial codes: Data were systematically coded using open coding, assigning each relevant segment a code. Direct quotes and descriptive codes (interpretative labels) were used.

3. Searching for themes: Codes were examined to identify patterns or themes, grouping similar or related codes together.

4. Reviewing themes: The themes were reviewed and refined for coherence regarding the coded extracts and the entire dataset. Some themes were combined or discarded if not sufficiently supported by the data.

5. Defining and naming themes: The themes were clearly defined and named to encapsulate their essence. Detailed descriptions were written to outline what is unique about each theme.

6. Producing the report: Themes were integrated into a coherent narrative that addressed the research question. Representative quotes from participants were included to illustrate the themes.

Results

All 20 M2P students, all 4 M3V students, and 9 out of 16 B3V students responded to the post-activity satisfaction survey. The response rate for the survey was 82.5%, with 33 out of 40 participants completing the questionnaire.

Semi-quantitative analysis

Table II shows the results of the post-activity questionnaire.

Table II: Post-activity questionnaire results

Respondents' students			% agreement		Questions/statements
M2P	B3V	M3V			
20	9	4	100	Q1	Students were able to learn through **role plays played by their peers**.
20	NA	4	100	Q2	M2P and M3V students believe they have **learned to exchange/collaborate with other healthcare providers** (66.7% of students strongly agree with this statement).
20	NA	NA	100	Q3	M2P students have **learned to explain a chronic illness to a patient in simple terms** (simplification or otherwise). They have also **learned to provide appropriate advice about a non-prescription medication** (60% of students strongly agree with this statement).
NA	NA	4	100	Q4	M3V students have **learned to provide appropriate advice about veterinary medication**.
20	9	4	97	Q5	Students agree to strongly agree with the fact they have **explored communication and the patient-provider relationship**.
20	9	4	100	Q6	Students have **explored interprofessional collaboration from different perspectives** (as actors and observers).
20	9	4	94	Q7	Students have **gained self-confidence** in performing a similar task.
20	9	4	70	Q8	Students found the patient/animal **case preparation** task **easy**.
20	9	4	70	Q9	Students found the task of **critically analysing the simulation** was **easy**.
20	NA	NA	50	Q10	M2P students found the task of **explaining a chronic pathology** and providing appropriate advice on a non-prescription medication **easy**.
20	NA	4	54	Q11	M2P and M3V students found it easy to **collaborate with a colleague from another profession on a veterinary issue**.
NA	NA	4	50	Q12	M3V students found **easy to deliver appropriate advice** on **veterinary medications**.
20	9	4	91	Q13	Students found the **debriefing in a large group easy**.
20	9	4	100	Q14	Students gained insights into **patient care at the pharmacy** and/or the **interaction between a pharmacist and a veterinarian** through **role-plays**.
20	9	4	100	Q15	Students gained insights into **patient care at the pharmacy** and/or the **interaction between a pharmacist and a veterinarian** through **debriefing** (discussion of elements that (dis)serve the pursuit of objectives).
20	9	4	88	Q16	The task of **preparing the patient/animal case** led respondents to make **connections** with **theoretical concepts** taught in the Pharmacy or Veterinary Medicine curriculum.
20	NA	4	88	Q17	M2P and M3V students believe that **collaborating** with a colleague from another professional curriculum led them to make **connections** with **theoretical concepts** taught in the Pharmacy or Veterinary Medicine curriculum.

Respondents' students			% agreement		Questions/statements
M2P	B3V	M3V			
NA	NA	4	75	Q18	For M3V students, the task of **delivering appropriate advice on veterinary medication** led respondents to make **connections** with **theoretical concepts** taught in the Veterinary Medicine course program.
20	9	4	94	Q19	The **debriefing** in a large group led students to make **connections** with **theoretical concepts** taught in the Pharmacy or Veterinary Medicine course program.
20	9	4	97	Q20	**Collaborating** with colleagues motivated students to **engage in the preparation of the case.**
20	9	4	100	Q21	**Collaborating** with colleagues motivated students to **engage in the critical analysis of role-plays**.
20	9	4	97	Q22	**Collaborating** with colleagues motivated students to **engage in the debriefing in large group**.
20	9	4	100	Q23	Case preparation task, collaboration with a colleague, participation in role-plays, critical analysis of the simulation, and debriefing in a large group were adequately explained.
20	9	4	100	Q24	The **time** given was sufficient.
20	9	4	97	Q25	The **level of difficulty** of the cases was deemed appropriate.
20	9	4	100	Q26	The **preparation** of role-plays (by studying the case) was a source of motivation.
20	9	4	61	Q27	Students would have been additionally motivated by the possibility of **direct play**.

M2P student = pharmacist; B3V student = patient (part 1 & part 2) and pet owner (part 3); M3V student = veterinarian; NA: not attributed

Qualitative analysis

The thematic analysis revealed several central themes that captured the participants' experiences and perceptions of the seminar.

Learning through role-playing games played by peers

Even those who did not actively participate in the role-playing games found the seminar informative. The debriefing sessions allowed observers to express their thoughts on the simulated scenarios. One M2P student commented:

> *"Even though I didn't actively participate in the simulations, I found it instructive. The scenes played out are more memorable than the theory alone. The debriefing was also highly instructive, as the questions encouraged us to delve deeper beyond passive observation."*

Understanding of respective roles

During the VET&PHARM seminar, interactions between students from different sections (during role-playing games and debriefing sessions) influenced their perception of the complementarity of their respective roles. This seminar marked the first time such an experience was introduced into the curriculum, and it was highly valued. One student stated:

> *"I enjoyed meeting pharmacy students because I had preconceived notions about the profession due to previous negative experiences, but in the end, I understand better their uncomfortable position regarding patients who want their medication. Thank you very much for this initiative." (M3V)*

Another student remarked:

> *"Since the beginning of our studies, it's the first time we've faced such situations." (M2P)*

Learning collaboration and exchange with another healthcare provider

In their future practice and sometimes even during their internship in a pharmacy, pharmacy students experience fears of being torn between the desire to accommodate a client's request, especially when the client owns an animal, and adhering to professional ethics. One veterinary student expressed:

> *"Having a different perspective from a veterinary point of view helps to understand why there are issues with dispensing without a prescription, misunderstandings, etc. It clearly demonstrates the need for better communication and 'training' in alignment between veterinarians and pharmacists to address all these problems."*

Another second-year pharmacy student (M2P) stated:

> *"The viewpoints of students from another discipline were inspiring; we were able to draw relevant conclusions from it."*

Exploration of communication, simplification, and patient relations

Explaining complex pharmaceutical knowledge in simple terms to a simulated patient unfamiliar with the topic was found to be rewarding. According to the Master's students in pharmacy, this role-playing game closely mirrors real-life situations experienced in the pharmacy. Students also appreciated receiving feedback from the patient on what was actually understood from the discussion following the exchanges during the debriefing. One M2P student commented:

> *"Usually, during role-playing games between pharmacists, I feel that not all aspects of a topic are addressed at the counter. By engaging in this activity with students from another field, I find that it better reflects real-world scenarios. These individuals may not be familiar with the dispensed medications and associated advice. Thus, receiving feedback from this less 'knowledgeable' audience on medications is highly valuable for improving this practice (providing clear advice, explanations, etc.) and gaining insight into what the patient thinks and retains from the discussion with the pharmacist."*

Learning to provide appropriate advice on veterinary medications

Responding to veterinary requests (based on their area of expertise) and providing appropriate advice on veterinary medicines were prominent themes highlighted by the students, who also acquired skills in offering advice on veterinary medications. One comment from a M2P student was:

> *"I enjoyed learning more about veterinary products since we haven't discussed them throughout the curriculum."*

Another student remarked:

> *"One must be more vigilant when dispensing veterinary medications." (M2P)*

Exploration of interprofessional collaboration from different perspectives (actor/observer)

Interprofessional collaboration was explored from different perspectives (actor/observer) by all students who participated in the satisfaction survey. Students gained insights into the respective roles of various healthcare providers. One M2P student expressed:

> *"I appreciated the opportunity to directly interact with Veterinary Medicine students. In this course, we rarely have the opportunity to meet other healthcare providers. However, in pharmacy practice, we are faced with interacting with doctors, veterinarians, or even nurses every day."*

Increase in self-confidence (for similar tasks)

Student feedback indicated that they felt more capable and confident in handling similar situations in the pharmacy.

> *"I really enjoyed the interprofessional collaboration exercise and the active teaching method. These activities helped us better handle veterinary cases in the pharmacy. Moreover, the exercises offered reassurance for future assessments and this professional activity. Thank you for implementing this type of seminar." (M2P student)*

Discussion

While pharmacotherapy skills among pharmacy students should be strengthened, the VET&PHARM pilot seminar was not focused on knowledge acquisition. Nevertheless, participants reported acquiring new insights, particularly in medication counselling for both human and veterinary cases (Immonen *et al.,* 2023). The VET&PHARM seminar aimed to foster collaboration through experiential learning, establish a partnership with the pet owner, and explore relational positioning in care to identify facilitators and barriers to effective therapeutic engagement. It also emphasised the importance of interprofessional communication and collaboration, with these skills being developed throughout the simulation process.

In line with the literature, students expressed high interest in working on communication skills and interprofessional training (Rauch *et al.,* 2021). The result indicates that observing and actively participating in interprofessional collaboration simulation can enhance students' reported interprofessional collaboration skills (Fusco & Foltz-Ramos, 2020). From a One Health perspective, local actions can influence the environment. A secondary objective was to raise awareness about the potential for action in terms of animal health at the local level (Immonen *et al.,* 2023).

Recognised as essential for the learning process (Shinnick *et al.,* 2011), the debriefing focused on the actions, including counselling and attitudes, of both the pharmacist and the veterinarian and their potential effects on decisions made and therapeutic intentions (Tversky & Kahneman, 1981; Ajzen, 1991; Emanuel, 1992; Stiggelbout *et al.,* 2015; Bomhof-Roordink *et al.,* 2019). It involved confronting the observations and

feelings of each participant with feedback from their counterparts. This step also allowed participants to compare the reflective objectives discussed earlier with the reality of the role-playing scenarios. The concept of reflexivity (reflection on action) was introduced, enabling participants to gather observations and build a shared understanding of what had been enacted.

The concept of "*awareness of what actually happened*" was explored by evaluating whether the pharmacist and veterinarian were mindful of how their behaviours, words, and attitudes affected other participants. The debriefing analysis focused on trust-building, collaboration levels, comprehension issues, and decision-making. The combination of perspectives from three different roles, i.e., observers, healthcare providers, and patients, offered a comprehensive understanding of the learning outcomes. By comparing each participant's observations and interpretations with the experiences and insights of others, especially the patient, valuable lessons were learned. This process contributed to the development and exploration of patient-centred communication skills and the application of patient-reported outcomes (Liao *et al.,* 2022; Maruszczyk *et al.,* 2022).

The evaluation process was formative. It was conducted during the debriefing of each patient-pet case, where a feedback table was constructed to highlight the development of shared decision-making (Stiggelbout *et al.,* 2015; Bomhof-Roordink *et al.,* 2019). Formative evaluation was chosen deliberately over summative evaluation. A summative assessment could have been counterproductive and could have undermined the effectiveness of the simulation. Psychological safety is essential for participants to engage fully in this type of exercise and to ensure its efficacy.

The themes that emerged during the debriefings underscored the seminar's impact on participants' perceptions of their roles and interprofessional collaboration. Beyond counselling, the seminar fostered a form of anchoring between the pet owner and the broader medical world, with the community pharmacist serving as the frontline link. While some elements were expected, others exceeded expectations, suggesting a broader scope than initially intended. Notably, the complementary roles of professions in supporting human, animal, and public health emerged.

The One Health approach emphasises the rational use of medicines. The VET&PHARM covered topics related to products under surveillance due to their impact on human, veterinary, and/or environmental health, e.g., antiparasitics, antibiotics, and analgesics (CDC, 2024). Students gained awareness of the critical importance of responsible prescribing and dispensing of veterinary products, realising that their actions could extend far beyond the patient's animal. This broader perspective facilitated discussions on various themes related to the One Health concept, including the environmental impact of drugs.

The literature has shown that interprofessional simulation encourages students to exchange ideas about their respective roles, eventually redefining these roles (Koo *et al.,* 2014; MacDonnell *et al.,* 2016; Christopher *et al.,* 2019). After this simulation sequence, participants' perceptions of their roles and those of other healthcare professionals shifted, leading to a better sense of complementarity and overall care. The other profession was no longer seen as a potential threat but rather as a resource in terms of knowledge and skills.

This simulation sequence enhanced the confidence of all the master's students in veterinary medicine regarding their ability to provide appropriate counselling on veterinary medications. However, this assessment was limited to this group of participants. This question should have been asked to all other students as well, whether observers (bachelor's degree students) or pharmacy students, who are also authorised to provide some veterinary advice in pharmacy settings.

Limitations

The critical number of voluntary students affected the group size. For optimal functioning, the number of participants will be revised to a maximum of 16, an ideal number considering the classroom size and the required level of interactivity. The assessment of satisfaction and perceptions relied solely on self-reported questionnaires, making it challenging to evaluate the seminar's effectiveness and the overall impact of this intervention.

While this innovative research was conducted twice and involved the collaboration of two faculties, the Faculty of Medicine and the Faculty of Veterinary Medicine, it was restricted to a single institution, the University of Liège, thus hindering the generalisability of findings to a broader range of educational audiences. However, this study highlights intriguing avenues for interprofessional collaboration. Future iterations could benefit from including pre-post measures of the participants.

Additional attention should be given to balancing speaking time and exploring all perspectives, especially with bachelor students who could feel intimidated in the presence of their master's-level counterparts. Notably, it is worth mentioning the difficulty faced by

the organisers in coordinating three different student cohorts with their busy schedules.

The single-session format with simulated interactions at the counter could induce changes in students' attitudes towards interprofessional collaboration, suggesting meaningful impacts on future professional practice.

Future seminars will maintain the same debriefing techniques and the involvement of bachelor's students in veterinary medicine. These students became aware of the importance of communication between healthcare providers from various backgrounds. They felt more engaged through role-playing and gained insights into the concept of adjustment or adaptation specific to each interaction between a healthcare professional and a client.

Conclusion

The VET&PHARM seminar surpassed its initial goal of fostering innovation in interprofessional collaboration and telemedicine between pharmacy and veterinary students. It evolved into exploring role perceptions, patient partnerships, and the implications of these relationships on health promotion. These themes emerged during post-activity surveys and debriefings, where the learning outcomes were constructed.

The scope of this seminar exceeded initial expectations, extending beyond local levels and individual animal and human health. This activity introduced and discussed the public health and One Health aspects with students during debriefings, enabling them to explore the global impact of the actions undertaken. The VET&PHARM seminar highlighted the complementarity of roles among different professions, all serving a unified health concept, thus emphasising the idea of an integrated approach to healthcare.

Conflict of interest

The authors declare no conflict of interest.

Source of funding

This work was supported by the University of Liège (CUEF funding 2021-2022).

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Appendix A: Framework of the debriefing table

<table>
<tr><td rowspan="3"><u>PATIENT</u>

<u>Patient feeling post-simulation</u>

- How the patient feels
- What the patient understood
- What the patient will implement</td><td colspan="2"><u>PHARMACIST</u>

<u>Pharmacist pre-simulation objectives</u>
- about chronic illness
- regarding the request for medication not subject to prescription
- about the veterinary request

<u>Post-simulation impressions of the pharmacist</u>
- feeling
- encountered difficulties

<u>Pharmacist's feelings about the veterinary call</u>
- feeling
- encountered difficulties</td></tr>
<tr><td><u>SOLUTION retained by the patient following the discussions</u>

- about chronic illness
- regarding the request for medication not subject to prescription
- about the veterinary request</td><td rowspan="2"><u>VETERINARIAN</u>

Veterinarian Pre-Simulation Objectives
- about the veterinary request
Post-simulation impressions from the veterinarian
- feeling
- encountered difficulties</td></tr>
<tr><td colspan="2"><u>OBSERVERS</u>

<u>Actions pinned by observers</u>
Facts of observations & verbatims illustrating the facts observed and their effects
- about chronic illness
- regarding the request for medication not subject to prescription
- about the veterinary request</td></tr>
</table>

Appendix B: Post-intervention questionnaire

1. Your participation in this seminar allowed you to learn through role plays played by peers.
2. If you are in M2 Pharma, your participation in this seminar allowed you to learn to explain in simple language (popular language or other) a chronic pathology to a patient and to learn to provide adapted advice around a medicine not subject to prescription.
3. If you are in M3 VT, your participation in this seminar allowed you to learn how to provide appropriate advice on medicines for veterinary use.
4. Your participation in this seminar allowed you to explore communication and the relationship with the patient.
5. Your participation in this seminar allowed you to explore interprofessional collaboration from different points of view (actor or observer).
6. Your participation in this seminar allowed you to gain self-confidence in carrying out a similar task.
7. How challenging was the task of preparing the patient/animal case for you?
8. How challenging was the task of critically analyzing the simulation for you?
9. If you are in M2 Pharma, what was the scale of the challenge represented for you by the task of popularising a chronic pathology and providing advice adapted to a medication not subject to prescription?
10. If you are in M2 Pharma or M3 VT, what was the extent of the challenge that the task of collaborating with a colleague from another profession on a VT problem represented for you?
11. If you are in M3 VT, how big a challenge did the task of providing appropriate advice on medications for VT use represent for you?
12. How challenging was the large group debriefing task for you?
13. During the role play, your interventions enlightened you on the way in which a patient is taken care of in the pharmacy and/or the interaction between a pharmacist and a veterinarian.
14. During the debriefing (discussion of the elements which (dis)serve the pursuit of objectives), your interventions enlightened you on the way in which a patient is taken care of at the pharmacy and/or the interaction between a pharmacist and a veterinarian.
15. The task of preparing the patient/pet case led you to make connections with the theoretical concepts taught in the courses of the Pharmacy or Veterinary Medicine curriculum.
16. If you are in M2 Pharma or M3 VT, the task of collaboration with a colleague from another profession has led you to make connections with the theoretical concepts taught in the courses of the Pharmacy course or Veterinary Medicine.
17. If you are in M3 VT, the task of providing advice adapted to medications for VT use has led you to make connections with the theoretical concepts taught in the courses of the Veterinary Medicine course.
18. The large group debriefing led you to make connections with the theoretical concepts taught in the Pharmacy or Veterinary Medicine courses.
19. Collaborating with your colleagues motivated you to get involved in preparing the patient/pet case.
20. Collaborating with your colleagues motivated you to engage in the critical analysis of role-playing games.
21. Collaborating with your colleagues motivated you to get involved during the large group debriefing.
22. The following tasks have been explained to you sufficiently so that you know what to do.
23. The time allocated for these tasks was sufficient.
24. The level of difficulty of the patient/pet cases was adequate.
25. Preparing a role play (by learning about the patient/pet case) was a source of motivation for you.
26. The possibility of playing directly has/would have been a source of motivation for you.
27. What did you like most about the seminar? Explain your answer.