Identifying the needs of community pharmacists to ensure continuity of pharmaceutical care for oncology patients: A qualitative study

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Introduction: Many drugs used in oncology are dispensed by hospital pharmacies, either for outpatients or for administration by injection in hospital. However, the rest of these patients' medication is obtained from a community pharmacy, which rarely has data on hospital treatments. The aim of this study was to identify the needs of community pharmacists to ensure optimal continuity of pharmaceutical care for patients treated with hospital-use anticancer drugs.

Methods: Community pharmacists were invited to participate in semi-structured interviews via videoconference. Participants were recruited voluntarily by phone. Interviews based on an interview guide were recorded, transcribed *verbatim*, and conducted until theoretical data saturation. The data were analyzed in double-blind using thematic analysis and organized with NVivo® 15 software.

Results: The data have been classified into four themes: identification of the oncology patient by the community pharmacist, roles of the community pharmacist in the care of the oncology patient, barriers encountered by the community pharmacist in the care of the oncology patient, and needs of the community pharmacist in the care of the oncology patient. The main barrier encountered was the lack of communication at transition points. Community pharmacists report needing training in oncology treatment and they would like to exchange treatment data between hospitals and community pharmacies via the oncology liaison booklet or via the e-health platform.

Conclusion: A rapid communication system integrated into the informatics systems of hospitals and community pharmacies needs to be developed so that hospital care providers and community pharmacists can communicate easily with each other.

Keywords: Community pharmacists, Hospital-use anticancer drugs, Pharmaceutical care, Belgium, Communication hospital-community pharmacy

Introduction

The number of cancer cases continues to rise worldwide. According to estimates by the World Health Organization, the global incidence of cancer is projected to exceed 35 million cases by 2050. Cancer represents a major public health challenge [1]. To treat cancer, different strategies have been developed. Among them, many drugs used in oncology are dispensed by hospital pharmacies, either for outpatients or for administration by injection in day hospitals [2]. However, the rest of these patients' medication is obtained from a community pharmacy. Community pharmacists rarely have access to data on treatments received in hospital [3]. Therefore, they have difficulty to identify potential adverse effects [4], and cannot check for drug interactions [5]. An extensive review has shown that several herbs and dietary supplements can induce or inhibit certain cytochromes involved in the metabolism of anticancer drugs, resulting to failure of oncology treatment or, on the contrary, to adverse effects [6]. This break of continuity of pharmaceutical care could lead to hospitalizations [7].

Community pharmacists have a paucity of knowledge in the field of oncology [8]. This represents a barrier to providing effective advice to patients [9], and identifying adverse effects and interactions [10]. Moreover, new molecules to treat cancers are released on the market every year [11]. As a result, pharmacists are not familiar with these new molecules.

To ensure optimal pharmaceutical care for oncology patients, effective communication between hospitals and community pharmacies must be developed. The healthcare professionals from different care settings should collaborate more closely [12], and communication practices must be harmonized [13]. Pharmacists must continually train in oncology [14]. The integration of oncology courses within pharmacy studies is imperative to ensure that students are equipped with the necessary competencies to effectively care for oncology patients [15]. Additionally, it is essential that pharmacists receive training in oncology throughout their practice [16].

Purpose

The aim of this study was to identify the needs of community pharmacists to ensure optimal continuity of pharmaceutical care for patients treated with hospital-use anticancer drugs, meaning those dispensed in hospital pharmacies and administered either on an outpatient basis or by injection in a day hospital setting.

Methods

Design and participants

The method consisted of an exploratory qualitative study based on semi-structured interviews with French-speaking community pharmacists. Eligible participants had the status of owner, associate, or itinerant, and practicing their profession in Belgium, in the Walloon or the Brussels-Capital region. Exclusion criteria included being pharmaceutical-technical assistants or hospital pharmacists.

The researchers randomly called community pharmacists during the day. The pharmacists were informed of the purpose and protocol of the study, as well as the estimated duration of the interview. During this telephone contact, the pharmacist expressed their interest in participating in the study. In the event of a positive response, the information letter and informed consent were transmitted via e-mail. Participation in the study was voluntary and unpaid.

The interviews were carried out until the data were theoretically saturated, defined as the absence of any new codes appearing during an interview. Two additional interviews were subsequently conducted to confirm the theoretical data saturation. These interviews did not lead to the identification of any new codes, but provided confirmatory information [17].

Development of interview guide

The researchers drew up an interview guide that was informed by articles from scientific literature. The guide was first validated internally by the research team, consisting of two pharmacists and a pharmacy master's student, regarding the content and meaning of the questions asked. Then, an interview was conducted with an eligible pharmacist. The objective of this interview was firstly, to validate the guide about regarding the comprehension of the questions, and secondly, to estimate the duration of the interview [18].

The interview guide consisted of five logically organized sections: (1) identification of patients on hospital-use anticancer drugs, (2) skills of community pharmacists in the care of patients on hospital-use anticancer drugs, (3) facilitators and barriers in the care of patients on hospital-use anticancer drugs in community pharmacy, (4) collaboration between hospital pharmacists, hospital staff, and community pharmacists, and (5) transmission of information about hospital-use anticancer drugs between the

hospital and the community pharmacy. Each section included main open-ended questions and occasional follow-up questions to clarify the answers given by the pharmacists during the interview.

Data collection

Semi-structured interviews were conducted by videoconference using Microsoft Teams® application by the researchers, one having the role of interviewer and the other of secretary. The interviews were directly recorded on the application.

Each interview commenced with a concise introduction, during which the researchers formally introduced themselves, and expressed their gratitude to the pharmacist for his availability. Then the secretary proceeded to elucidate the nature of the research project, its underlying aim, and the methodology employed. In addition to obtaining written informed consent, the secretary requested the pharmacist's consent to record the conversation. The rules governing confidentiality, data processing, and storage were reiterated.

During the interview, the interviewer asked the questions according to the interview guide, while the secretary listed and took field notes.

Data analysis

A *verbatim* transcript of the interviews was produced by the secretary within 24 hours to analyze data using an abductive approach. The secretary and the interviewer analyzed the data in double-blind using the six phases of Braun & Clarke's thematic analysis [19]. NVivo® 15 software was used to organize the interview data. The data were coded with a new code created for each idea that answered the objective of the study. As the analysis progressed, the various codes were grouped into themes and sub-themes.

Trustworthiness

This qualitative research was reported in accordance with the Standards for Reporting Qualitative Research guidelines [20]. Its trustworthiness was assessed based on the quality criteria defined by Lincoln and Guba [21]. To guarantee credibility, three strategies were employed: prolonged engagement, persistent observation, and triangulation of researchers (double-blind analysis). The transferability was enhanced by the provision of a comprehensive description of the protocol and the participants. Finally, the reliability was demonstrated by adherence to the six phases of Braun & Clarke's analysis, and by the value of Spearman's coefficient of rank correlation and intraclass correlation coefficient (ICC), calculated using IBM® SPSS 29 Advanced software. Spearman's correlation was calculated from the new codes generated by each researcher during the interviews to assess consistency between the two researchers [22]. The ICC, meanwhile, was measured based on the number of codes obtained per interview by each researcher. According to McGraw and Wong, the ICC form is mixed bidirectional effects, absolute agreement and single measurement [23, 24].

Ethical considerations

The study was approved by the Ethics Committee of the Faculty of Psychology and Education of the University of Mons (protocol ID: *UMONS-2024.11.15-VV-001*). All participants signed the informed consent. During the transcription process, data were pseudonymized: the letters InPh, meaning "Interview Pharmacist", were utilized with a number assigned in the order in which the interviews were conducted.

Results

The study took place over a six-week period from November 2024 to December 2024. A total of 14 interviews were conducted to reach theoretical data saturation. An additional two interviews were carried out to confirm this saturation. The average duration of the interviews was (15±7) minutes. The sample population was predominantly female, with 75% of the participants being women, and 25% men. The study population consisted of community pharmacists with an average of (17±10) years of experience. The sociodemographic characteristics of participating pharmacists are presented in Table 1.

Table 1 Sociodemographic characteristics of participants (n=16)

Pharmacists	Gender	Status	Province of profession	Experience (years)	Duration of interview (minutes)	Average of codes obtained between the two researchers
InPh1	Women	Owner	Hainaut	27	18	38.5
InPh2	Women	Owner	Walloon Brabant	15	30	48
InPh3	Women	Owner	Walloon Brabant	22	25	44.5
InPh4	Men	Itinerant	Hainaut	15	10	9.5
InPh5	Women	Owner	Hainaut	36	21	19.5
InPh6	Men	Owner	Brussels-Capital	10	13	20.5
InPh7	Women	Associate	Liege	18	7	21
InPh8	Women	Associate	Liege	4	23	31
InPh9	Women	Owner	Hainaut	15	11	20
InPh10	Men	Owner	Luxembourg	27	16	21
InPh11	Women	Owner	Hainaut	15	5	8.5
InPh12	Women	Associate	Liege	30	16	26
InPh13	Men	Owner	Hainaut	17	12	12
InPh14	Women	Owner	Hainaut	24	14	25
InPh15	Women	Associate	Hainaut	1	11	15.5
InPh16	Women	Itinerant	Hainaut	1	15	21.5

The value of Spearman's correlation coefficient is 0.91 ($p < 0.001$). The result indicates a strong statistically significant positive correlation, suggesting that the two researchers followed a similar dynamic in the coding process. The ICC is 0.90, which indicates good reliability. The researchers therefore coded the interviews in a very consistent manner.

Care for patients treated with hospital-use anticancer drugs by community pharmacists.

The data obtained from the interviews analysis were categorized into four themes and 14 sub-themes presented in Table 2. The results are supported by the presentation of *verbatim* relevant extracts. These extracts were translated into English as soon as they were selected. Figure 1 presents a summary diagram of the first three themes described.

Table 2 Themes and sub-themes resulting from the analysis after triangulation

Themes	Sub-themes
Identification of the oncology patient by the community pharmacist	1. *Through the patient*
	2. *Through prescriptions*
	3. *Through hospital documents*
Roles of the community pharmacist in the care of the oncology patient	1. *Oncology patient reception*
	2. *Approach to disease*
	3. *Pharmaceutical analysis*
	4. *Support for oncology patient*
Barriers encountered by the community pharmacist in the care of the oncology patient	1. Lack of communication and collaboration
	2. Lack of skills in oncology

Needs of the community pharmacist in the care of the oncology patient	1. *Knowledge that the patient is receiving hospital oncology treatment* 2. Information to receive from the hospital about oncology treatments 3. Communication tools between hospital and community pharmacy 4. *Information tools about oncology treatment* 5. *The oncology patient's entourage*

Themes and sub-themes created during the analysis appear in italics.

Theme 1: Identification of the oncology patient by the community pharmacist

Pharmacists generally identify patients undergoing hospital oncology treatment through either direct communication with the patient or when patients request advice on supportive care. The patient's physical or emotional state can serve as an indicator of the oncology patients, such as those experiencing hair loss or weakness.

“They're like my family, the patients (...). They confide in me because they need to tell me, or I ask them « How are you doing? »” InPh1 (27 years' experience)

Then the pharmacist can also learn that the patient is undergoing oncology treatment through the prescribing physician or through prescriptions that include supportive care (*i.e.* anti-emetics, painkillers, oral preparations such as mouthwashes, and hormone treatments).

“When we get prescriptions for magistral dexamethasone, that is often a sign, Litican® (…), drugs that are often associated with nausea or side effects that may be related to oncology treatment” InPh12 (30 years' experience)

Finally, administrative documents, such as those for obtaining social security benefits (*i.e.* reimbursement certificates for certain supportive care drugs) may be issued as part of oncology treatment, enabling the pharmacist to be informed about the patient's cancer.

Theme 2: Roles of the community pharmacist in the care of the oncology patient

The interviews highlighted four stages in the management of oncology patients by the community pharmacist.

Firstly, the pharmacist reported welcoming the patient and identifying those receiving oncology hospital treatment. Next, the pharmacist must create a link with the patient to establish a climate of trust. This facilitates direct communication between the pharmacist and the patient, allowing the pharmacist to inquire about the patient's illness and the treatment received in the hospital. Some pharmacists participating insisted on the importance of noting in patients' records that they are undergoing oncology treatment. After, pharmacists explained that they analyze prescriptions to check for potential interactions and contraindications, to prevent adverse effects, and to advise on precautions. They also encourage their patient adherence to treatment and provide therapeutic education. Finally, the last stage mentioned during the interviews consisted of supporting the oncology patient, meaning providing supportive care, nutritional, and cosmetic advice, managing adverse effects, and referring to the oncologist when necessary. Pharmacists have asserted that they demonstrate heightened vigilance when dealing with the oncology patient, taking the time to listen to the patient and offering interviews at the pharmacy.

“So, firstly, it's about identifying and secondly, it's about creating the link. Because identifying is all very well, but you have to create the link. So, we need to know what treatment they are receiving in hospital so that we can care them properly” InPh2 (15 years' experience)

Theme 3: Barriers encountered by the community pharmacist in the care of the oncology patient

The main barrier encountered by pharmacists was lack of communication. Firstly, some pharmacists expressed the feelings that patients do not receive explanations about their treatment in hospital and adequate guidance on administrate procedures. Other pharmacists reported that the information

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understood by the patient does not seem to correspond with the hospital documents presented by the patient at the pharmacy. The patients also do not seem to be made aware by hospitals staff of the need to inform other healthcare professionals of their disease. Therefore, pharmacists sometimes claim to be unaware that their patients are receiving hospital oncology treatment. However, when the pharmacist identifies an oncology patient, communication between the patient and pharmacist may not be effective. Sometimes, the pharmacist is afraid of being indiscreet, or the patient refuses to share information about their illness.

"Some patients are more discreet. They don't know or they don't realize that it's important to tell the pharmacy that they're undergoing oncological treatment, they don't say so straight away, and we don't know"
InPh9 (15 years' experience).

All pharmacists reported that they had never been in contact with a hospital pharmacist regarding an oncology patient. Additionally, they were of the same opinion regarding the absence of collaboration between hospital staff and community pharmacists. Hospital staff do not share information about the treatment of oncology patients with community pharmacists. Consequently, pharmacists are obliged to proactively seek information regarding oncology patients. It appears that the General Data Protection Regulation (GDPR) is perceived by pharmacists as a hindrance to acquiring information. The e-health platform, an official GDPR-compliant platform, is considered difficult to access by pharmacists. In addition, some pharmacists testify to the difficulty in contacting the oncologist, while others have found it straightforward to do.

"We really don't have any contact with other health professionals, we're not brought into the loop"
InPh3 (22 years' experience)

A unanimous sentiment among the interviewed pharmacists was a perceived deficiency in their competencies within the domain of oncology.

These various barriers result in the pharmacist not being able to respond to patient requests or to determine when to refer them to the oncologist. This may cause the patient to worry and result in a loss of time in care of the oncology patient.
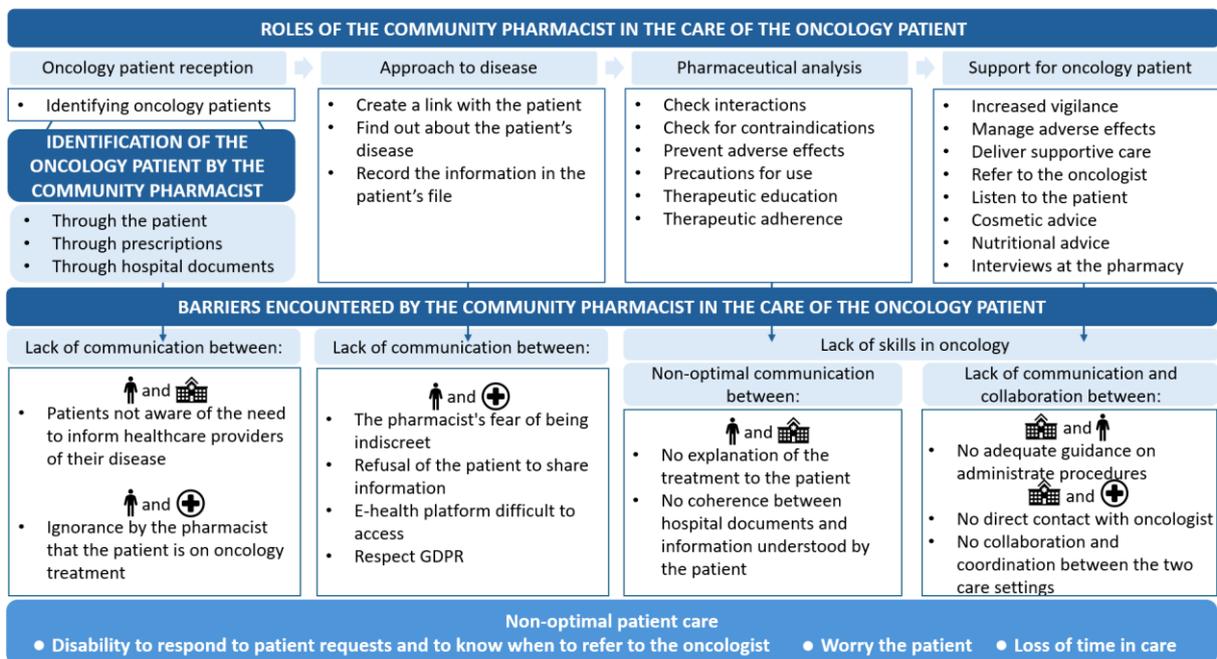
Figure 1 Care of oncology patient by the community pharmacist in the pharmacy

👤: patient; 🏥 : hospital staff; ⊕: community pharmacist; GDPR: General Data Protection Regulation

Theme 4: Needs of the community pharmacist in the care of the oncology patient

Community pharmacists expressed their need to improve the care of the oncology patient (Figure 2). The first need identified by the pharmacists was to be informed that the patient is receiving hospital oncology treatment. The participants would suggest receiving this information by means of a notification in their pharmacy software when they open the patient file, or by making the patient aware of the need to inform other healthcare professionals about their disease. Pharmacists would like to obtain the following information from the hospital about their patient's oncology treatment: molecule, type of treatment, adverse effects, advice to be given to the patient to manage adverse effects, interactions with other medications, nutritional supplements and food, as well as posology, length of treatment, warning signs, biological data, renal function, and contraindications to vaccination. To share information between the hospital and the community pharmacy, pharmacists proposed communication tools. The digital tools included pharmaceutical record shared, e-mail exchanges, a site where the reference pharmacist can log in, the electronic prescription system, and the e-health platform. While the paper format was preferred by some pharmacists, such as liaison booklet, detailed prescription of supportive care, letter from the hospital, or a small card to take with you, brought either by the patient to the pharmacy or sent directly by post to the pharmacy.

"Unfortunately, liaison books are not used to their full potential at this level. I think they're a fantastic tool"
InPh14 (24 years' experience)

The interviews revealed that pharmacists wanted more training in oncology to provide better care for patients as well as participation in multidisciplinary oncology consultations. They would also like to receive summary sheets on oncology treatments or have access to a site providing comprehensive information on oncology treatments. To improve multidisciplinary care, pharmacists proposed organizing medical-pharmaceutical consultations, working in groups or meeting with other healthcare professionals. Finally, following an oncology patient in hospital was suggested as a way of understanding the patient's care pathway.

"It would be interesting that have training on this. So, it would be an oncologist I suppose who would do this training or with a hospital pharmacist" InPh16 (1 years' experience)

The final need reported by the pharmacists was to know the oncology patient's entourage. The names and telephone numbers of the various actors involved in the patient's care pathway should be shared with the healthcare professionals caring for the patient. This data sharing will enable direct contact to be established in the event of any questions. Furthermore, pharmacists recommended that patients provide the name and telephone number of their pharmacist to the hospital staff, thereby enabling the latter to share information.

NEEDS OF THE COMMUNITY PHARMACIST IN THE CARE OF THE ONCOLOGY PATIENT

Knowledge that the patient is receiving hospital oncology treatment	Information to receive from the hospital about oncology treatment	Communication tools between hospital and community pharmacy	Information tools about oncology treatments	The oncology patient's entourage
• Notification in the pharmacy software • Raising patient awareness in hospital of the need to inform other healthcare providers of his disease	• Molecule • Type of treatment • Adverse effects • Advice on dealing with adverse effects • Interactions • Posology • Length of treatment • Warning signs • Biological data • Renal function • Contraindication to vaccination	*By digital means* • Pharmaceutical record shared between the hospital and the community pharmacy • By e-mail • On a site where the reference pharmacist can log in • Through the electronic prescription system • Through the e-health platform *By paper format* • Liaison booklet • Detailed prescription of supportive care • Hospital letter • Carry card	• Summary sheets on oncology treatments • Site providing comprehensive information on oncology treatments • Training in oncology • Participation in multidisciplinary oncology consultations • Organization of medical-pharmaceutical consultations, group work and meetings between healthcare professionals • Follow-up of an oncology patient in hospital	• Name and telephone number of care providers involved in the patient's care pathway • Communication of the name and telephone number of the reference pharmacist to the hospital via the patient

Figure 2 Needs of the community pharmacists in the care of the oncology patient at the pharmacy

Discussion

This study shows that tools for sharing information between different care settings exist in Belgium, both in paper format with the liaison booklet and in digital format through the national e-health platform. The liaison booklet compiles information provided to oncology patients, mainly details about treatment and the management of adverse effects. There is no uniform booklet for all Belgian hospitals, and some hospitals or organizations offer their own guide or care pathway booklet for patients [25]. Pharmacists interviewed reported that no patient had presented this booklet at the pharmacy, despite its potential usefulness for community follow-up. Adding a section specifically dedicated to community pharmacists could encourage patients to bring it with them to the pharmacy. The online e-health platform, which enables the secure electronic sharing of patient health data between care providers [26], remains largely underused by pharmacists. Poor integration with dispensing software and insufficient training make access difficult. This is consistent with a Belgian study that revealed that 83 % of physicians reported their use of the platform several times a week, while 95 % of pharmacists reported never using it [27]. The use of the e-health platform by pharmacists should be part of the adoption process. The purpose, logic and benefits must therefore be understood and accepted to ensure continued use [28].

Pharmacists have proposed alternative solutions for facilitating data sharing. It should be noted that not all proposals are feasible. It is evident that personal data sharing systems are subject to the provisions stipulated by the GDPR standards. It is imperative that data is shared securely, and that patients provide their informed consent for the pharmacist to have access to their personal data.

It is important to distinguish between the barriers perceived by pharmacists and the structural barriers within the system. The difficulties associated with using the e-health platform are mainly due to organizational factors perceived by pharmacists, such as the lack of training and operational challenges. On the other hand, structural barriers stem from GDPR requirements and the insufficient integration of the online e-health platform with pharmacy software. The distinction shows that some limitations can be overcome by practical measures such as integration software solutions, while others are governed by (inter)national standards and cannot be changed without regulatory amendments. Indeed, the lack of interoperability reflects suboptimal system integration, while GDPR requirements constitute legal constraints that fall within the broader regulatory framework.

Although some findings are specific to the Belgian context, such as the national e-health platform and the absence of a standardized liaison booklet, certain conclusions can be applied to other healthcare systems. Needs related to structured communication channels between hospital and community care, and specific oncology training for pharmacists have been reported in other countries [29, 30]. For this reason, in a study conducted in France in 2021, a "city-hospital pharmacist coordination" working group has created computerized exchange tools, integrated into the computerized patient's medical file. Through the use of tools, a collaboration between hospital pharmacists and community pharmacists about oncology patients have been developed. Their use in practice has improved the follow up of outpatients undergoing oncology treatment by improving the management of adverse events and drug interactions [31].

Patients are the first to be affected by this break in continuity of pharmaceutical care between the hospital and the community pharmacy. Furthermore, an exploration of their sentiments regarding the issue of information communication is warranted. As demonstrated by a French study, patients undergoing oncology treatment exhibited a higher frequency of visits to their pharmacist in comparison to those not undergoing oncology treatment (41% *versus* 20%). The results indicate that patients expect their pharmacist to manage adverse effects with a report to the hospital and propose solutions to mitigate these effects. However, 36% of participants agreed to share hospitalization information with their community pharmacist [32].

In the event of the dispensing of all oral oncology treatments being undertaken in community pharmacy, the pharmacist would know the patient's treatment and thus be in a position to provide pharmaceutical care. It must be noted that this solution does not solve the problems associated with injectable treatments administered in day hospitals, and that a community pharmacy could hardly bear the financial burden of purchasing anti-cancer drugs, given the high cost of these treatments [33].

Strengths and weaknesses

A potential recruitment bias may arise from voluntary participation. Indeed, pharmacists who agreed to be interviewed were likely more interested and engaged in oncology care, which may limit the representativeness of the findings. It is important to specify that the problems raised probably do not concern all patients or all hospitals. The pharmacists interviewed reported the most significant situations.

Moreover, the participants included exhibited a wide experience level, different functions, and geographical regions. The sample appeared diverse. Indeed, newly qualified pharmacists proposed relevant elements thanks to their recent training, while the added value of more experienced pharmacists was linked to the fact that they had managed a greater number of clinical cases. Interviews with pharmacists with fewer years of experience were as rich as those conducted with more experienced participants. Besides, the number of codes obtained during the interviews was comparable. Secondly, owner or associate pharmacists do not have the same relationship with their patients as itinerant pharmacists, who seem to have more difficulty in establishing links. Finally, the results do not depend on the practices of a specific region or hospital. These elements have contributed to the establishment of a wide range of concepts.

Conclusion

To ensure that pharmacists can provide optimal pharmaceutical care to oncology patients in the community pharmacy, the use of a rapid communication system must be deployed by integrating into the informatics systems of hospitals and community pharmacies. To facilitate the management of patients undergoing hospital treatment, it is essential to enhance the training of pharmacists in oncology treatments and to develop continuing education programs. This will ensure that pharmacists have access to the information they require throughout their practice.

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CRediT authorship contribution statement

Conceptualization: A.P., S.P., V.V.; Methodology: all authors; Investigation: C.B., V.V.; Formal analysis: C.B., T.M., V.V.; Supervision: S.P.; Validation: C.B., T.M., S.P., V.V.; Visualization: C.B., V.V.; Writing - original draft preparation: C.B., V.V.; Writing - review and editing: T.M., A.P., S.P., V.V.

Ethics declaration

Conflict of interest

The authors declare that they have no conflict of interest.

Ethics approval

The study was approved by the Ethics Committee of the Faculty of Psychology and Education of the University of Mons (protocol ID: *UMONS-2024.11.15-VV-001*).

Informed consent

Informed consent was obtained from all participants included in the study.

Supplementary Information

The interview guide used to conduct the interviews.

Data availability

All data are archived by the University.