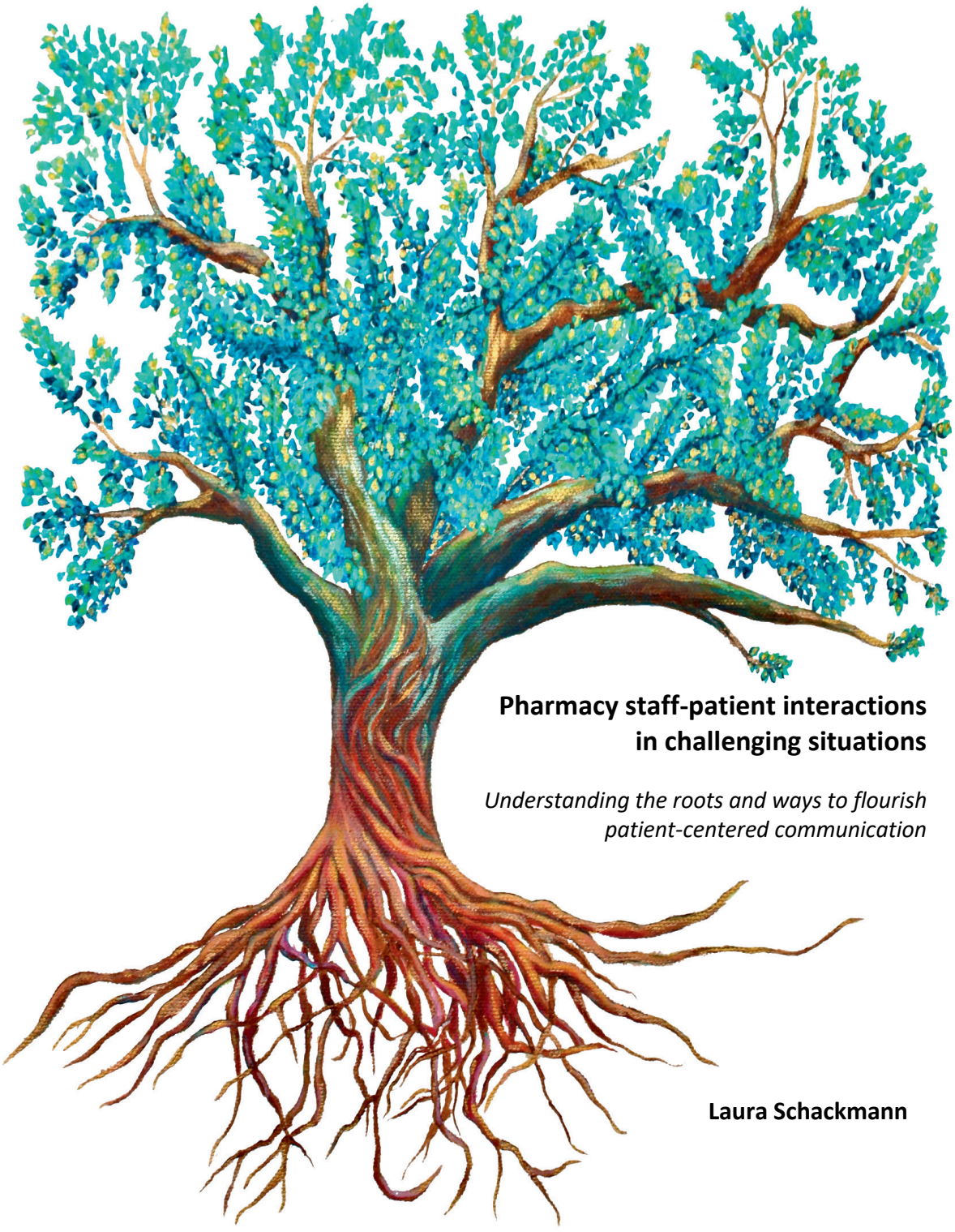

Pharmacy staff-patient interactions in challenging situations

Understanding the roots and ways to flourish patient-centered communication

Laura Schackmann

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Understanding the roots and ways to flourish patient-centered communication

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Table of contents

Chapter 1	General Introduction	7
Part I	Information provision about medicines and vaccines in challenging situations	
Chapter 2	Comprehensibility of a personalized medication overview compared to usual-care prescription drug labels	25
Chapter 3	Provision of and trust in COVID-19 vaccines information: Perspectives of Persons who have had COVID-19	47
Part II	Ways to address challenging situations in pharmacy practice using patient-centered communication	
Chapter 4	Communication during encounters about medication switching: self-reported experiences of pharmacy technicians and patients	77
Chapter 5	Facilitating pharmacy staff's conversations about non-medical medication switches: development and testing of a communication training	107
Chapter 6	A pharmacy team communication training for non-medical medication switch conversations: experiences of pharmacy team members and patients	131
Chapter 7	Exploration of the effects of an innovative mentalization-based training on patient-centered communication skills of pharmacy staff: a video-observation study	157
Chapter 8	General Discussion	175
Appendices	Nederlandse samenvatting	196
	List of publications	200
	Dankwoord	202
	Curriculum vitae	205

CHAPTER 1

General Introduction

In the Netherlands, many people use medication on a daily basis. In 2019, 75% of Dutch patients used one to five different medicines. About one third of all medication dispensed by pharmacists is used incorrectly or not used at all[1]. Due to improper medication use, the number of drug-related hospitalizations in the Netherlands was 49,000 in 2013,[2] and of these admissions 50% were preventable[2]. The number of drug-related hospitalizations are probably the tip of the iceberg of preventable drug harm. Unnecessary side effects and lower quality of life are examples of other consequences of medication errors. To prevent drug-related problems, there is a need to support patients and even more so in challenging situations. A challenging situation as defined in this thesis, is a situation outside the influence of the pharmacy team member or patient and where someone's ability or determination to perform a task are tested.

In pharmacy practice, a prominent example of aa challenging situation affecting patient education and counseling and patients' actual medication intake behavior are non-medical medication switches (*See Box 1 for a real-world case)*. A non-medical medication switch is defined as a change in a patient's medicine or its brand, which is expected to have comparable or similar effects as the old medicine. In case of generic substitution, the new medicine contains the same active substances, though the medication's inactive ingredients, name, appearance, and packaging can be different, while in case of therapeutic substitution the medication's active ingredient is different[3,4]. Generic switches are partly enforced by health insurance policies directed towards reduction of prescription medication costs. Also, the increasing number of medication shortages worldwide[5] results in an increased number of medication switches, both generic and therapeutic. Patients often find it bothersome to switch as they might experience new side effects or become confused about their medicine intake as a result of the switch. This may result in decreased adherence, which in turn leads to poorer clinical outcomes[6].

Box 1. Medication switch case in pharmacy practice

"A patient's daughter came to the pharmacy to ask why her mother had been given a different medicine brand: instead of the brand drug for losartan [blood pressure medication] she received a generic variant of the medicine. Her mother tried this generic variant before and got a rash, so the daughter insisted that her mother would receive the brand losartan again. She had already arranged a doctor's prescription underlining the medical necessity. The pharmacy was fairly busy, and the patient seemed rushed."

~ female (31-year-old) Dutch community pharmacist

Besides the possible negative effect on medication use and clinical outcomes, non-medical medication switches create tension in the pharmacy, both for the pharmacy team member as well as the patient. Conversations about medication switches are often experienced as difficult. They can be bothersome for the pharmacy team member because the policies held in place by health insurances or shortages are outside the influence of the pharmacy team. Regarding the patient, medication switches can lead to unpleasant emotions, which can have a negative impact on the communication between the patient and pharmacy staff. Therefore, attention for how pharmacy team members and patients experience these conversations and focus on how to conduct these conversations in the best possible way is important. For example, in the losartan case (Box 1), good communication in the sense of responding adequately to the daughter's emotions is essential, though not always done in practice. The pharmacist in the losartan case can use different types of communication styles and ways of responding to the patient's daughter. How the pharmacist reacts, feels, or where the bottlenecks lie, can be different in

every situation, as every patient and their situation is different. This elicits the importance of tailored communication for each patient in every situation.

In the losartan case, the daughter of the patient comes to visit the pharmacy and insists that the pharmacist gives the old medication brand. The sense of urgency as expressed by the daughter is often a result of a negative previous experience, in this case fear of having the same rash as before. Such reaction by the patient's daughter, insisting for this medication in a busy pharmacy while being in a rush, can impact how effective the communication is between her and the pharmacy team member. How the pharmacy team member reacts in this situation is crucial for the remainder of the conversation. If the daughter does not feel heard or understood, emotions in the conversation may escalate. It is thus vital to tune into the factors potentially affecting effective communication and addressing these appropriately using patient-centered education and counseling, including informing patients about the medicine, their health, treatment plan, or potential therapeutic outcomes[7]. Elements such as establishing trust, communicating verbally and non-verbally, listening and asking questions are important[8].

To illustrate these communication and information provision aspects, the losartan case (Box 1) will be used in this chapter to exemplify the underlying mechanisms that affect communication.

Ways to flourish patient education and counseling in challenging situations in pharmacy practice

For the pharmacy team to support patients in proper medication use and prevent drug related problems, patient education and counseling is key,[9-12] to identify and take away patients' doubts about their medicine use and to reduce medication-related problems[13-15]. The pharmacy team member's role as healthcare provider has changed over the past decades[16], from mainly dispensing medicines, to a more patient-centered role[16,17]. Medication-related problems can have practical and perceptual origins and can lead to unintentional or intentional non-adherence[13,18]. Practical barriers may include forgetting to take their medications, having difficulty opening the package, a complex intake regimen, or misunderstanding medicine-use information[18-22]. Perceptual barriers often include fear of side effects or doubts about the necessity of the medicine,[18-22] and are related to emotions, beliefs, or values that are associated with patient medication use[18]. Two major types of perceptual barriers are 'necessity barriers' and 'concern barriers'[13]. The necessity barrier suggests that a patient does not believe (enough) in the need of taking their medication, and a concern barrier often includes fear of side effects or dependency of taking the medication which can be based on actually having experienced a side effect before. In the losartan case (Box 1), the daughter of the patient shows perceptual barriers towards the alternative brand, as she is concerned that her mother will have side effects as a result of taking this alternative brand as she has had these in the past. Identifying patient factors and how to address them as a pharmacy team member in a challenging situation is a key aspect of this thesis. There are several ways as to how pharmacy members can do this, such as patient-tailored information and patient-centered communication.

Patient-tailored information

One of the services in the pharmacy is to provide verbal and written information about medicines and to ensure that patients understand why, how and in what dose to take their medication. Instructions on the prescription medication label are important in this context. These text labels should be clear, concise, and comprehensible. However, instructions on these labels are often too complex and ambiguous for the patient to understand[23-29]. For people with low health literacy skills this is more challenging. Up to 50% of the adult population[24,25] shows limited understanding of medication labels, precautions, and medication warnings[23-29]. As a result, the incomprehensibility of medication information is a common cause for medication errors[23].

Previous research has focused on how to make the label text as comprehensible as possible[30]. Studies have particularly focused on complexity of dosing instructions in relation to patient health literacy[25,26,31-36], and how to meet the needs of this group. Also, focus has been put on the requirements concerning content and comprehensibility of the text[37-39]. These requirements should be met to ensure comprehensible labels for all patients. Lastly, efforts have also been made regarding the precision of writing dosing instructions[25], and the use of icons, graphics and pictograms[26,40,41].

Next to comprehensible medication labels, another key aspect in supporting patients with proper medicine use is tailoring information to patients' individual needs[42]. An example is that information about COVID-19 vaccines partly asked for distinguishing between patients who already had COVID-19 and those who had not. Information provision on vaccines during a pandemic was challenging anyhow due to uncertainty among citizens and emotions about safety aspects.

In pharmacy practice, patient-tailored information entails that the pharmacy team members give patients advice (i.e., in verbal or written form), addressing specific topics relevant to the patient, and transparent information exchange[43]. Also, this includes information provision in a patient-centered way, whereby the specific health needs and patient's level of understanding are taken into consideration[16,42]. Tailoring to the specific needs and preferences can have positive outcomes on how the patient understands and recalls the information[44,45], in return stimulating proper medicine use.

Patient-centered communication

In addition to comprehensible and tailored information provision, patient-centered communication is also vital in order to match the patients' needs and preferences. Pharmacy team members learn communication skills during the course of their education, but these skills can be further improved when working in pharmacy practice[46,47]. Previous research found pharmacy team members to be respectful and friendly towards patients and showed they give information about medicine dosages, duration of treatments, and how to administer medication[48]. However, some communication skills such as eliciting the patient's perspective, stimulating patients to interact in conversations, and checking if patients understood the information[48,49] are not always employed. Furthermore, pharmacy team members do not always discuss patients' beliefs and preferences regarding their medication use. Still, patient-centered communication in the pharmacy is difficult[46,47], but possible to train[48]. Those pharmacy team members who practice their communication skills provide better pharmaceutical care[47,48]. Pharmacy team members also need to explore patient's preferences in order to provide the patient with information that helps them make the right medication treatment-related decisions[49-53]. In order to be effective, communication needs to be adapted to patients' needs and experiences.

Patient-tailored information and patient-centered communication in challenging situations

In challenging situations, where factors are outside the influence of the situation, e.g., policies/agreements in place by health insurers, effective communication and tailored information provision can be more difficult. This is because challenging situations can cause stress, resulting in decreasing confidence and less job satisfaction among pharmacy staff members[42]. This is often due to increased anxiety levels and heightened emotions amongst patients[54]. For example, undesirable emotional patient reactions such as fear of side effects or doubts about the effectiveness of the medicine, as a result of information the patient has read or received. There should be focus on providing proper information, directing patients to proper information sources, and communicating effectively in pharmacy practice, particularly in situations where increased anxiety and strong emotions are present. Supporting pharmacy team members in these challenging situations may give them more self-efficacy, and may prevent decreased job satisfaction, or even potential burnout[55]. This is all the more important given the increasing emphasis on strengthening the role of the pharmacist in the primary care setting. The new Dutch integrated care agreement [translation: Integraal Zorgakkoord (IZA)] (2022), strives for a more in-depth role for the pharmacy team in optimizing pharmaceutical care for patients[56]. Thus, pharmacy team members increasingly gain a role in ensuring that patients use their medicines properly. This includes noticing medication-related problems patients may encounter, which pharmacy staff should take up (more).

Understanding how pharmacy team members can support patients

Often, there is an interplay of different factors that influence communication. In this thesis, an adapted version of the Feldman-Stewart communication framework[57,58] will be used to understand these factors, particularly those impacting effective communication (Figure 1). This framework is based on different communication frameworks, and stems from the oncology setting where emotional and stressful situations are common[57,58]. In this context, this framework was often used to generate hypotheses about the underlying mechanisms of the patient-provider interaction, and to enhance patient care using effective interventions[57,58].

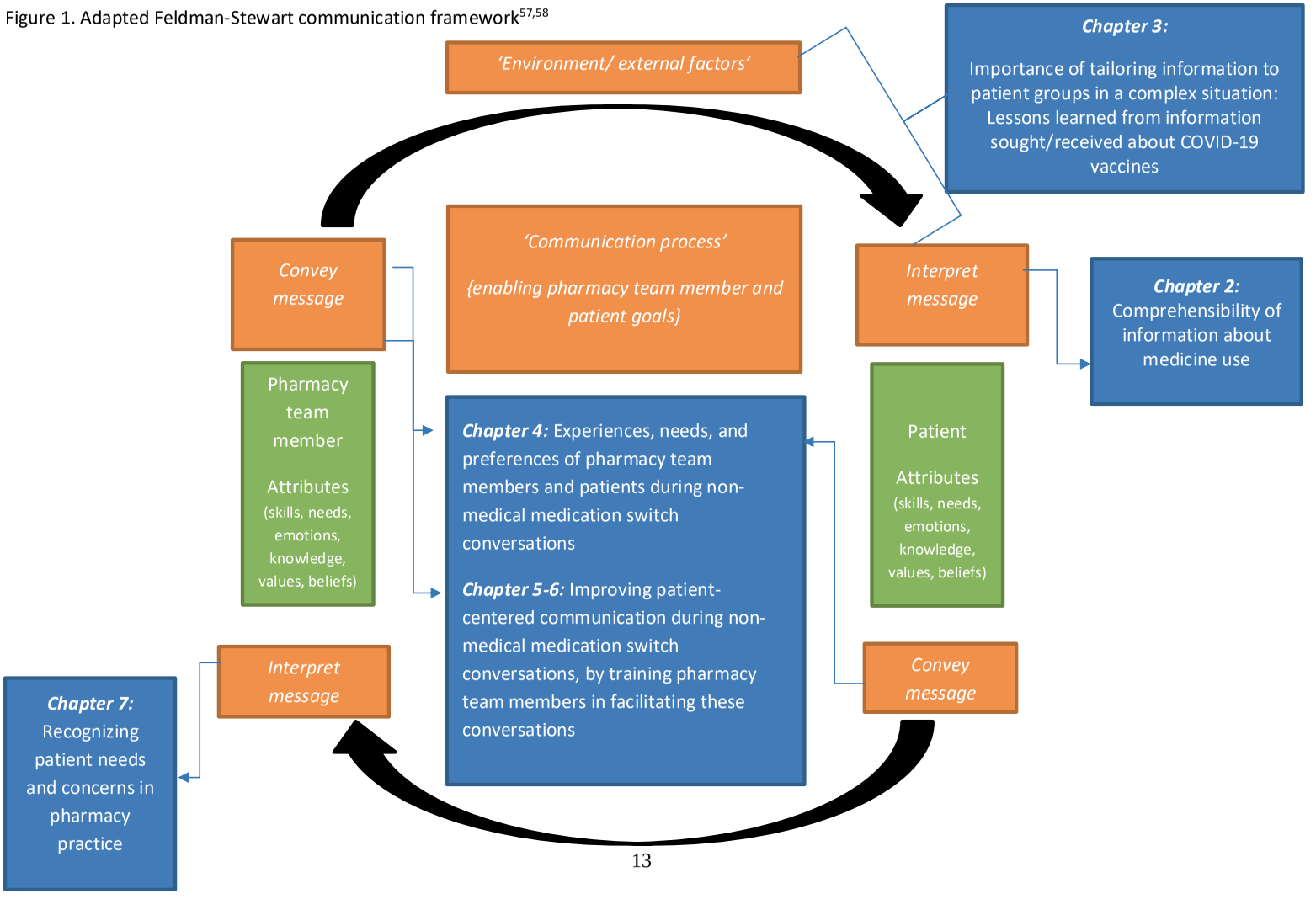
As shown in Figure 1, the chapters in thesis are centered around specific challenging situations where there is increased uncertainty, a lack of mutual understanding, and strong emotion.

In order to address increased uncertainty as a challenging situation, a first focus this thesis has, is to understand:

- How well different patient groups understand information about medicines and vaccines.
- Which needs and preferences they particularly have in relation to the provided and sought information about medicines and vaccines.
- Which aspects still can be improved for the information to be as inclusive as possible for the vast majority of people using medication or receiving vaccines.

To address the lack of mutual understanding in a challenging situation, a second focus this thesis has is on understanding the needs, preferences, and experiences of both pharmacy team members and patients during communication. Lastly, to address challenging situations where heightened or strong emotion is present, this thesis includes work on how to flourish pharmacy team member-patient interaction, by supporting pharmacy teams in their communication skills and patient counseling in challenging situations.

Figure 1. Adapted Feldman-Stewart communication framework[57,58]



Communication and information process during challenging situations in pharmacy practice

Pharmacy team member's and patient's primary goals

At the heart of the Feldman-Stewart communication framework are the provider and patients' primary goals **(chapter 4)**. These goals are a driving force that underlie effective communication[57,58]. For example, for the pharmacy team member, a goal may consist of improving the therapeutic outcome for the patient or informing the patient about their medicine use. In the losartan case (Box 1), the pharmacist's goal would be to provide a suitable treatment for the patient and as such improve therapeutic outcomes. The patient has overlapping as well as different goals, for example, simply retrieving their medications, seeking information on how to use their medicine, or to resolve certain doubts about their medicine use. In the losartan case, the daughter of the patient has concerns about the medication, as her mother previously had a rash as side-effect of the alternative brand of the medicine. Thus, both the sender and the receiver in the communication process in the losartan case have their own goals that affect the communication[57,58]. Being aware of these potentially different goals, and taking these into consideration during the interaction is important to ensure that both parties are on one line and sending and receiving the right signals.

Pharmacy team member and patient's attributes

Pharmacy team member's and patient's attributes comprise of different components, i.e., needs, skills, knowledge, values, beliefs, and emotions (Figure 1) [57,58]. The failure to understand and include pharmacy team members' and patients' beliefs, preferences, and expectations can influence medication non-adherence[59-63], a common challenge amongst patients[18]. Meeting the patients' needs and preferences is always important, but in challenging situations where often heightened or strong emotions are present, this is even more important. Stress and arousal are common disruptors for effective communication. In a heightened emotional state, people are less inclined to reflect, and stress influences one's cognition, e.g., ability to make decisions, judgement, ability to listen, or to pay attention[64]. It is therefore essential to identify **(chapter 4)** and address **(chapter 5 and 7)** disruptors that may arise in the interaction between the pharmacy team and patient, and to stimulate effective communication **(chapter 6 and 7)**.

<u>Patient's understanding of information about medicines and vaccines</u>

General information about medicines is often sought via internet, however not always found reliable or trustworthy[65,66]. This can result in undesirable emotional reactions such as fear of side effects or doubts about the effectiveness of the medicine. It is therefore vital that people seek information about medicines or vaccines via reliable sources **(chapter 3)**. Hence, the importance for the healthcare provider, e.g., the pharmacy team, to provide proper information and refer patients to reliable sources with information about medicine use. In return, this can prevent poor patient health outcomes[67,68].

The quality of the information about medicines is also key, as this can influence actual medication intake and patients' attitudes towards the medication. A wide variety of information about medicines can be found via, for example, written and digital sources, such as the medication package leaflet, written information from the pharmacy, and on many websites. The information is often provided in a fragmented way and is often too complicated[68]. For instance, the package leaflet often contains an

abundance of information that is not clear for all medication users[69-71]. In particular, medicine use information is often difficult to find, understand and apply for people with low health literacy skills[72,73]. It is therefore essential to accommodate different patient types with information about medicines tailored to their needs[49] **(chapter 2)**. The information provided by the pharmacy should be given in an objective, adequate, up-to-date, and easy to access manner[74] **(chapter 3).**

Ways of responding to the patient in a pharmacy team member-patient encounter

Reacting to the patient can be interfered by, for example, different pharmacy team members' or patients' perceptions of the message, interruptions, emotions, and/or attitudes[75]. Pharmacy team members can react to patient cues by using affective and instrumental communication. Affective communication is process-oriented, e.g., showing empathy and focusing on the emotions. Hereby, non-verbal conversation, such as body language is key[76,77]. Instrumental communication is sender-focused, e.g., information provision about the query or concern of the patient[76,77]. Both an affective and an instrumental response may be necessary in dealing with patient concerns and providing the right information about the switch. Both types of responses are needed for effective communication. In this thesis, ways in which the pharmacy team member can respond, especially in challenging situations will be explored, e.g., more information-based or more focused on emotions, needs, preferences, and experiences of the patient **(chapter 4-7)**.

Environment/external factors affecting the communication process

The environment/external factors in which the communication takes place include social, cultural, legal, and physical aspects that affect how the message can be conveyed and/or received[57,58]. These environmental factors can facilitate or limit the communication process. For instance, a medication switch due to medicine shortages or as a result of policies and/or agreements with health insurers as presented in the losartan case (Box 1) is common in pharmacy practice. The imposed policies from health insurers and medicine shortages can limit effective communication, as these are external factors that are outside the influence of the pharmacy team. This creates tension in the conservation for both the pharmacy team and the patient.

Another example of a particularly uncertain situation is the COVID-19 global pandemic. In such situations, proper information provision is crucial. Potentially more than at other moments, during a global pandemic, people wish to be well informed and ask and seek for more health-related information[78,79]. A particular issue where information was crucial during the COVID-19 pandemic was vaccination. Vaccines were developed and brought to the market at a pace never seen before. This causes uncertainty among parts of the population. Therefore, it is important to gain insight into where and how people seek information in such an uncertain situation, as well as how they perceive the quality of the information **(chapter 3).** Finding high quality information that meets their needs is important as the decision to vaccinate relies on the trust that COVID-19 vaccines are safe and effective[80-82].

It is therefore necessary to find ways to cope with these environmental factors and prevent such factors to escalate ineffective communication **(chapter 2, 3, 5)**.

Interplay between factors in Feldman-Stewart communication framework

Recognizing and (re)acting appropriately to the interplay between the factors described above are key to effective communication. Particularly, it is key to understand the interplay of factors related to information provision and how to bring the message about proper medicine use. This is particularly the case in challenging situations, which will be explored in the studies of this thesis.

Thesis aim

The overall aim of this thesis was to understand how the pharmacy team can support patients in challenging situations using patient-tailored information provision and patient-centered communication.

Chapter outline

Chapter 2 and 3 provide insight into the importance of proper information provision about medicines and vaccines. In **chapter 2** the comprehensibility of tailored medication information provision is explored. **Chapter 3** maps different types of patients who seek and use information about COVID-19 vaccines.

Chapter 4, 5, 6 focus on communication regarding one specific challenging situation, namely non-medical medication switches. In **chapter 4**, the experiences, needs and preferences of pharmacy team members and patients regarding non-medical medication switch conversations are identified. **Chapters 5 and 6** study ways to train and provide pharmacy team members with effective patient-centered communication skills during these conversations. Lastly, in **chapter 7**, we explore the effects of a mentalization skills-based communication training on pharmacy team members' ability to recognize and address the emotions and feelings of patients and whether this impacts their capability to provoke and recognize patients' medication-related needs and concerns. **Chapter 8** includes a reflection on the main findings using the adapted Feldman-Stewart framework. Also, implications for formal education and lifelong learning in practice, as well as for future research are formulated.

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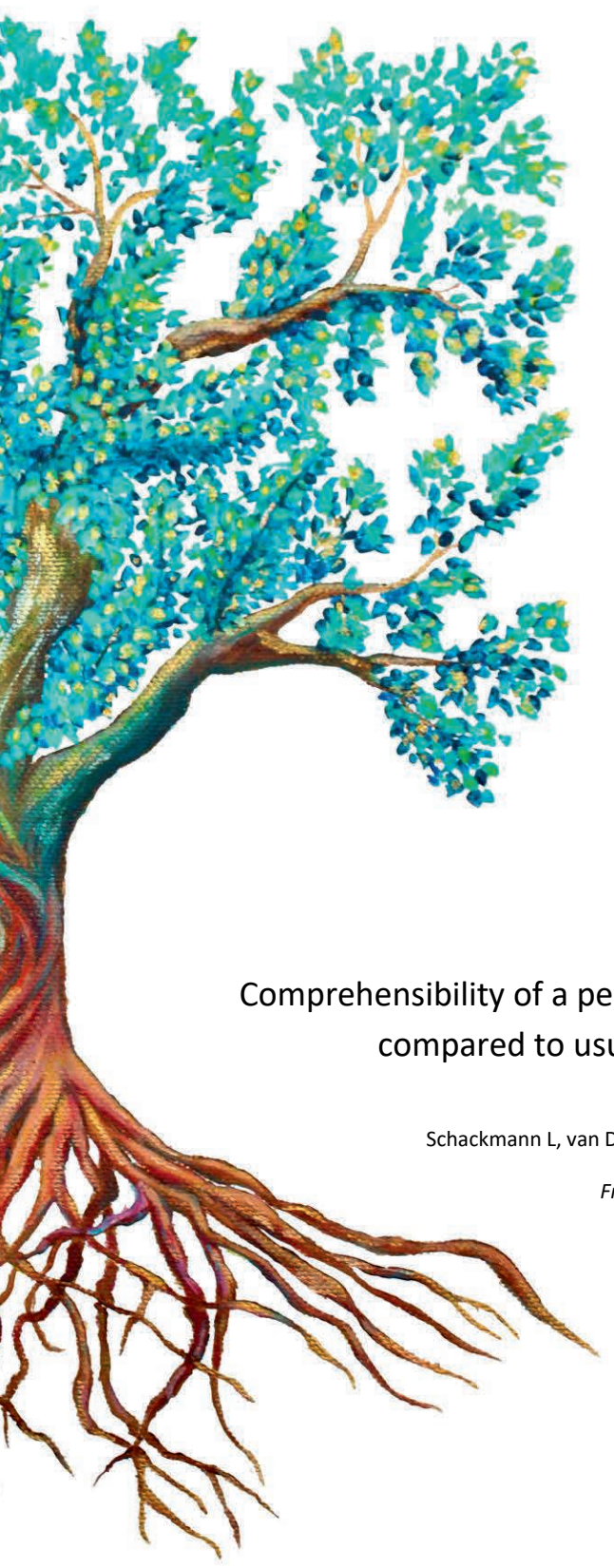
PART I

Information provision about medicines and vaccines in challenging situations



CHAPTER 2

Comprehensibility of a personalized medication overview compared to usual-care prescription drug labels

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Abstract

Background: Poor understanding of prescription drug label (PDL) instructions can lead to medication errors, suboptimal treatment (side) effects, and non-adherence. A personalized medication hard-copy overview listing PDL instructions and visual information may support patients in their medication use.

Objective: This study aimed to investigate the comprehensibility of PDL instructions on a personalized medication overview compared to usual-care PDL instructions presented on a medication box.

Methods: A hypothetical-online-experiment was set up, comparing groups of respondents exposed vs. not exposed to the medication overview and who received PDL instructions for three, five, or eight medications. Participants were divided randomly in six groups. Online questionnaires were sent to a stratified sample of 900 members from the Nivel Dutch Healthcare Consumer Panel. Outcome measures included comprehension of instructions for medication use, e.g., how often, dose timing, usage advice and warnings for a medication with simple use instructions (omeprazol) and more complex use instructions (levodopa/carbidopa (L/C)). To analyze differences between experimental conditions ANOVA testing was used.

Results: In total, 604 respondents (net response 67%) completed the questionnaires. Respondents exposed (E) to the overview gave a higher proportion of correct answers compared to non-exposed (NE) respondents for usage advice (L/C: mean 0.83, SD 0.4 E; 0.03, SD 0.2 NE, $p<0.001$; omeprazol: mean 0.85, SD 0.4 E; 0.10, SD 0.3 NE, $p<0.001$). Both groups gave the same proportion of correct answers (mean 0.80, SD 0.4, $p=1.0$) for dose timing of omeprazol. More NE respondents gave correct answers for how often (mean 0.85, SD 0.4 NE; mean 0.76, SD 0.4 E, $p=0.02$) and dose timing (mean 0.92, SD 0.3 NE; mean 0.86, SD 0.4 E, $p=0.04$) of L/C. No differences were found regarding number of medications, nor were interaction effects found between the number of medications and information type.

Conclusion: As a medication overview contains additional information, it can be a good addition in supporting patients in their medication use compared to usual-care PDLs. Future research should focus on identifying patient groups who might benefit more from a medication overview, by testing the effect of such overview on this group.

Key words: comprehensibility, (usual care) prescription drug labels, medication overview, patient tailored medication information, treatment adherence.

Introduction

Poor understanding of prescription drug label (PDL) instructions can lead to medication errors, side effects, suboptimal treatment effects and non-adherence1, 2. PDLs are often the most read source of information before a patient starts using the medication3, and they contain dosing instructions, usage recommendations and warnings4. On the PDL, there is only limited space, making it difficult to provide additional information5. Consequently, the information on the PDLs is often not comprehensible, as up to 50% of the adult population show limited understanding of PDLs, precautions, and medication warnings[4, 6-13].

Problems understanding medical information seem to be more common in certain patient groups, such as the elderly, people with limited health literacy, and people with language barriers[14]. However, when it comes to PDLs also some people with adequate health literacy skills find it difficult to understand and apply the usage instructions on PDLs. Previous research by Davis et al (2006) showed that 37% of the interviewed patients, including those with adequate health literacy scores, did not understand instructions on the PDLs correctly[9]. To ensure understanding of instructions it is important to formulate instructions as clearly and explicitly as possible[7, 10].

Researchers have long studied how to best provide comprehensive medication information related to medication use and understanding in a simplistic and practical manner. As such, numerous studies related to this topic have been published[15]. Studies have focused on factors such as, complexity of dosing instructions particularly in relation to patient health literacy[7, 16-21], requirements concerning content and comprehensibility of the text[22-24], precision of writing dosing instructions[25], and the use of icons, graphics and pictograms[26, 27]. As a result, guidelines have been drawn up with standards on how information should be presented on the PDL (i.e. simple language, one message per PDL line, formulated text as concretely as possible[28, 29]. Also, studies have focused on communication of medicines information, format and organization of the medicines label, as well as number of medicines dispensed[4, 7, 21, 30]. There is attention for improving the PDL texts[15, 31], which has improved the labels. However, the ideal approach to bundle these aspects still remains unclear.

Tools have been developed to clarify prescription medication label texts to facilitate medication use. For example, medication overviews have been developed using illustrations and icons to support label texts[32, 33]. These information aids are intended to increase understanding of the usage instructions of prescribed medications[34, 35], however, there is not yet a good simple solution for patients using multiple medications. A medication overview listing the patients' medications and use instructions can support patients with polypharmacy to keep a clear overview of their medication use, which in return may lead to better treatment adherence[36].

The aim of this study was to understand whether such a personalized medication overview can support patients in their medication use compared to the usual-care PDLs. Our hypotheses were that:

1) Patients better understand the medication instructions when they have a personalized medication overview rather than PDLs-only.
2) This understanding increases with the number of medications (the more medications, the greater the benefit from the overview).
3) A personalized medication overview has influence on the comprehensibility of the medication-use instruction, as it is intended to help patients better process the information on PDL instructions, particularly patients with low health literacy skills.

Methods

Design and procedure

2 x 3 between-subjects experimental design

A hypothetical online experiment was set up, comparing groups of respondents exposed vs. not exposed to a medication overview and who received PDL instructions for three, five, or eight medications. Participants were divided randomly in six groups (each receiving one of the six questionnaires, for one of the six conditions; n=150 participants per questionnaire).

Participants

Online questionnaires were sent out to panel members of the Nivel Dutch Health Care Consumer Panel, which collects the general populations' experiences and opinions on different matters regarding to healthcare[37]. This panel, of approximately 11,500 people (2021) who are 18 years and older from the Netherlands, is an access panel where members have given permission to be contacted to fill in questionnaires on a regular basis. The background characteristics of the panel members, such as their gender, age, self-reported health status, and education are known. The panel is renewed on a regular basis to ensure that representative samples of the Dutch population can continue to be drawn, regarding age and gender. Participants are recruited via bought addresses from an address supplier. Panel members are approached about four to five times a year to complete questionnaires, from the approximately eight times to ten per year a survey is distributed on all kinds of topics within the healthcare sector. The respondents are given the choice to fill in a paper or online questionnaire. Respondents can withdraw themselves from the panel at any time but cannot sign up on own initiative to become member of the panel. Panel members do not receive financial compensation for filling out questionnaires, nor is there a membership fee, though by answering the questionnaires they can save up for a gift card.

For this study, we approached a sample of 900 members from the Nivel Dutch Health Care Consumer Panel[37]. An expert-based opinion was used to determine the appropriate number of respondents, which has also been done in a study with a similar study design[38]. First, we selected respondents from previous surveys (2019 and 2020) who indicated they were taking prescription medications, and from the 2019 sample in which health literacy scores were assessed, we also selected respondents who had limited health literacy skills according to their answers/scores on a health literacy scale. This resulted in 811 eligible panel members. Secondly, to complete the total sample of 900, another 89 respondents were sampled at random from the panel. All 900 respondents indicated online as their preference for completing the questionnaire.

Stimulus Materials

The three 'exposure' groups received both the PDLs as used in usual care as well as the medication overview, My Medication Review (in Dutch: Mijn Geneesmiddel in Beeld® (MijnGiB)) (Figure 1), and the three 'non-exposure' groups received PDL instructions only as presented on the medication boxes (Figure 2). Within the conditions, the same medication order was used. The order of the stimulus was also fixed for the participants who received PDL or PDL + MijnGiB.

Figure 1. Example of MijnGiB overview for three medications

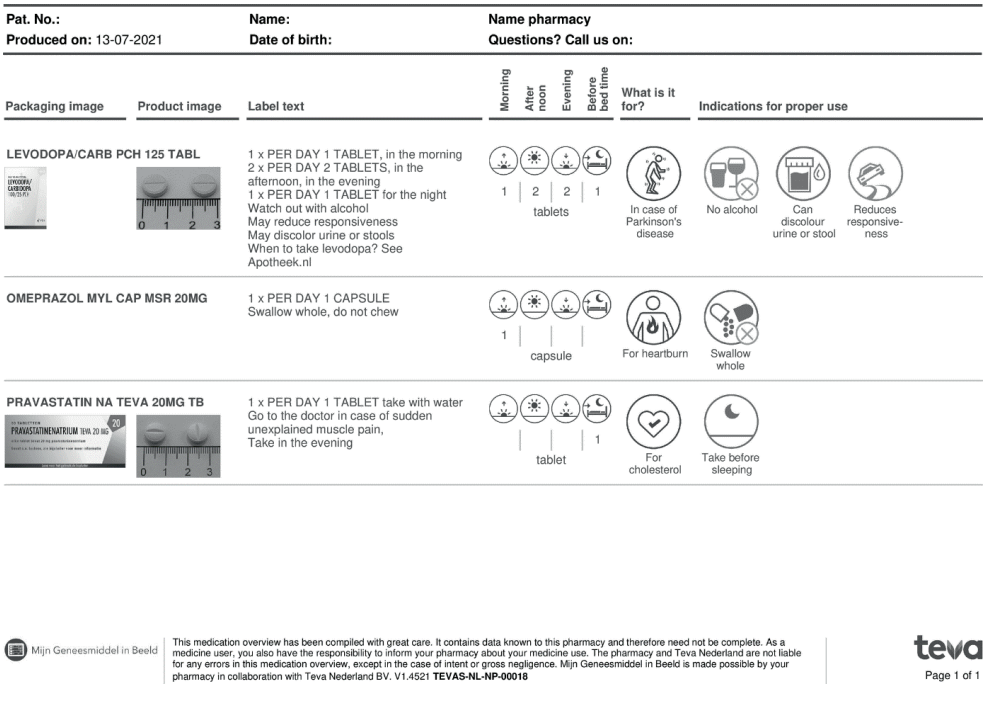
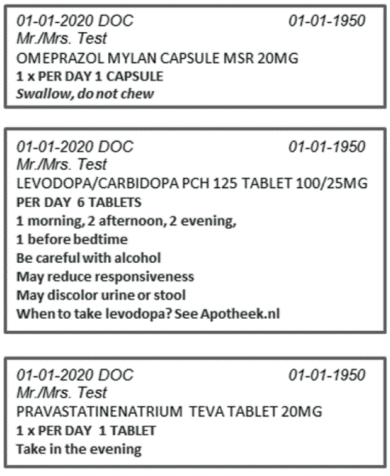


Figure 2. Prescription drug label 1-3 (translated from Dutch to English)



Since 2019, the pharmaceutical company Teva has been offering MijnGiB, a complete paper version, personalized overview of all medications of the patient in addition to the regular PDL provided by the pharmacy. MijnGiB includes the following information: name of medication, PDL text, moment of intake, the number of tablets per daytime, for which condition or disease the medication is used, advice and warnings for use, photos of Teva products to recognize the medication, and pictograms/icons of the instructions for proper use.

Both PDLs on medication boxes and MijnGiB communicate dosage instructions, usage advice and warnings. MijnGiB gives more information on the moment of intake, for which condition or disease the medication is taken, as well as photographs of the prescribed medications and tablets/capsules. The additional information on MijnGiB is intended to help patients better process the information on PDL instructions, particularly patients with low health literacy skills.

The respondents were asked to read a hypothetical case (Box 1 & 2) and to imagine that this hypothetical situation was applicable to them. During the online questionnaire, participants could scroll back to the stimuli material. However, they could not print the stimulus, or at least, this was not presented as an option. The participants were not timed when filling in the questionnaire or viewing the stimuli material. Questions were asked for a medication with simple (i.e., 1 dose moment per day, 1 tablet) use instructions (omeprazol) and a medicine with more complex instructions (levodopa/carbidopa (L/C)).

Box 1. Hypothetical case: situation where three different medications are prescribed and MijnGiB and PDLs were provided (translated from Dutch to English) (PDLs and MijnGiB followed this hypothetical case)

Imagine being prescribed a new medication by your general practitioner. You go to the pharmacy to pick up this medication. The pharmacy technician (PT) tells you how to take the medication and says that you can also read the instructions on the PDL on the medication box. The PT also gives you two other medications that you have already been using for some time. You can also read on the PDL how to take these medications. In addition, the PT gives you an overview whereby the information is presented in a different way. This overview is called 'Mijn Geneesmiddel in Beeld' (MijnGiB). You decide to read this at home. See below the three PDLs and MijnGiB.

Box 2. Hypothetical case: situation where three medications are prescribed and PDLs only are provided (translated from Dutch to English) (PDLs followed this hypothetical case)

Imagine being prescribed a new medication by your general practitioner. You go to the pharmacy to pick up this medication. The pharmacy technician (PT) tells you how to take the medication and says that you can also read the instructions on the PDL on the package. The PT also gives you two other medications that you have been taking for some time. You can also read on the PDL how to take these medications. You decide to read this at home. See below the three PDLs.

Data collection and ethical considerations

The online questionnaire was sent out to the sample of panel members on the 1st of December 2020, and two reminders were sent on the 8th and 15th of December. The questionnaires closed on the 22nd of December.

According to Dutch legislation, neither obtaining informed consent nor approval by a medical ethics committee is obligatory for carrying out research using the Nivel Dutch Health Care Consumer Panel[39]. Data were analyzed pseudonym and processed according to the privacy policy of the Dutch Healthcare Consumer Panel, which complies with the General Data Protection Regulation (GDPR). A privacy regulation is accessible for the Nivel Dutch Health Care Consumer Panel[40]. The research team who analyzed the data had no access to any identifiable information of the respondents, such as name and

address. Participation is voluntary and members are not forced to participate in surveys. They can stop their membership at any time without giving a reason.

Measurements

Experiment outcome measures

The online questionnaire had four experimental outcome measures (Appendix 1, for outcome measure questions from questionnaire with 3 medications, for the MijnGiB + PDLs group). These were: dosage instructions; 1) how often (x times per day or ''I do not know''), 2) dose timing (morning, afternoon, evening, before bedtime, ''I do not know''), 3) whether it was clear which condition or disease the medication is for (yes/no), and 4) usage advice and warnings. The advice and warnings questions consisted of which aspects does one need to pay attention to when taking these medications (respondents could select multiple answers, including the options ''other'', or ''none of the above''). We asked the outcome measures for a medication with simple instructions for use (omeprazol) and a medication with more complex instructions (levodopa/carbidopa). At the end we asked if it was clear for which condition or disease the respondent had to hypothetically take the medication (answer options: yes or no).

Given that medication instructions are either followed correctly or incorrectly, we grouped the answers into dichotomous variables. The ''I do not know" option was combined with the incorrect answer, except for the question regarding the moment of intake of omeprazol for the condition PDL-only. In practice the PDL text on the medication box corresponds to the PDL text on MijnGiB. In this experiment, the PDL-only did not state at which moment of the day the patient should take their medication. Therefore, the PDL-only group could not have known the answer. Thus, for the respondents who stated, "I do not know,'' this was also classified as a correct answer.

Background characteristics

Gender, age, education level (low, middle, high)[41], household composition (one-person household or multi-person household), ethnicity (native Dutch or (non-) western foreigners), income and perceived general and psychological health on a scale from 1-5 (bad, fair, good, very good, excellent) were already known from the panel members. The questions used for the perceived general and psychological health were: In general, how would you describe your general/mental/psychological health? The five-point Likert-scale participants used to answer the questions are based on the categorization of the SF-12 questionnaire[42].

In addition, questions were asked related to medication use (yes, currently taking one or more prescription medications; no, not at the moment; or no, never used a prescription medication), whether the patient has (a) chronic condition(s) (yes/no), and whether the patient is familiar with MijnGiB (yes (either received from pharmacy or heard of), or no).

Health literacy score

Chew's Brief questions to identify patients with inadequate health literacy (SBSQ) tool was used to assess the health literacy of the respondents. Three questions provided insight into their understanding of health information: 1) how often respondents receive assistance in reading health information, 2) their confidence in filling out medical forms, and 3) how often the respondents find it difficult to learn more about their health because they do not understand written information. The respondents' health literacy score was calculated by taking the sum of the three 5-point Likert scale

questions, a scale from 0 to 4 (always have problems/not confident to never have problems/confident)[43]. An average score of 2 or lower indicates inadequate health literacy, and a score greater than 2 indicates adequate health literacy[44, 45].

Statistical Analysis

The statistical analysis software STATA version 16 was used to perform the statistical analysis. A p-value of <0.05 was considered statistically significant. Descriptive statistics were used to describe the sample population. A randomization check using one-way ANOVA test (F-test)[46] and chi-square tests (for dichotomous proportions) were performed to examine whether the participant characteristics were equally divided across experimental conditions. One-way ANOVAs were used to analyze differences in proportion of correct answers regarding dosage instructions and advice/warnings between the experiment conditions. Thereby it apparent whether there was a statistically significant difference between amount of incorrect and correct answers in the exposed and non-exposed group. The outcome measures were coded dichotomously (0=incorrect, 1=correct). Tukey post-hoc tests revealed the difference in means in the groups of respondents with the different experimental conditions. In the case there was a statistically significant difference, the summary of means (SD) gave insight in how much variance there is, e.g., which group (exposed vs. non-exposed) had a higher proportion of correct answers than the other group. Two-way full-factorial ANOVA tests were used to analyze interactions.

Results

Of the 900 invited panel members, 661 responded to the questionnaire and 604 panel members completed the questionnaire fully (response rate 67%). The respondents were almost equally distributed over the six groups, see Table 1. Mean age was 63 years (SD 13). As selected for, most had a chronic condition (79%) and used prescription medications (87%), also almost equally divided over the six groups. The majority had a self-perceived adequate health literacy (96%), implying that the hypothesis on the role of health literacy cannot further be analyzed as the number of respondents with an inadequate health literacy score was too small.

Table 1. Distribution of participants per condition

Condition	N (%)
3 medications + MijnGiB	95 (15.7)
5 medications + MijnGiB	101 (16.7)
8 medications + MijnGiB	100 (16.6)
3 medications without MijnGiB	108 (17.9)
5 medications without MijnGiB	98 (16.2)
8 medications without MijnGiB	102 (16.9)

The randomization check presented no significant differences between the six experimental conditions and the participant characteristics. The small group of participants who were familiar with MijnGiB (n=43) were not equally spread across the six conditions (χ^2 (5) = 14.4, p=0.01)**.** The participants were

therefore excluded from the sample for the data analysis of the experiment, but not for the questions for background characteristics of the sample population. See Table 2 for background characteristics of the respondents.

Table 2. Background characteristics of respondents (N=604)

Characteristics	Values	N	Randomization check, p-value
Age (years), mean (SD: range)	62.7 (12.9; 28 - 90)	604	X^2 (5) = 3.8, p=0.6
Gender, N (%)		604	X^2 (5) = 1.3, p=0.9
Male	305 (50.5)		
Female	299 (49.5)		
Education, N (%)		595	X^2 (10) = 13.7, p=0.2
Low	56 (9.4)		
Middle	281 (47.2)		
High	258 (43.4)		
Household, N (%)		595	X^2 (5) = 6.3, p=0.3
One-person household	148 (24.8)		
Multi-person household	447 (75.1)		
Migrant status, N (%)		597	X^2 (5) = 4.5, p=0.5
Non-migrant	546 (91.5)		
Migrant	51 (8.5)		
Health status, N (%)		585	X^2 (20) = 22.6, p=0.3
Excellent/very good	139 (23.8)		
Good	293 (50.1)		
Fair/bad	153 (26.2)		
Psychological status, N (%)		585	X^2 (20) = 18.5, p=0.6
Excellent/very good	314 (53.7)		
Good	218 (37.3)		
Fair/bad	53 (9.1)		
Use of prescription medication(s), N (%)		604	X^2 (20) = 1.8 p=0.9
Yes	527 (87.2)		
Has at least one chronic condition, N (%)		604	X^2 (20) = 5.6, p=0.4
Yes	477 (79.0)		
Familiarity with MijnGiB, N (%)		599	X^2 (5) = 14.4, p=0.01
Have heard of MijnGiB	25 (4.2)		
Received MijnGiB from the pharmacy	18 (3.0)		
Never heard or received MijnGiB	556 (92.3)		
Health literacy score, N (%)		604	X^2 (5) = 7.8, p=0.2
Adequate health literacy (score >2)	579 (95.9)		
Inadequate health literacy (score 2 or lower)	25 (4.1)		

2x3 experimental design results

The effect of the instruction type, number of hypothetically prescribed medications, and the interaction effect between the increasing number of medications and instruction type were investigated. No statistically significant differences were found regarding number of medications (three, five, or eight), nor were interaction effects found between the number of medications and instruction type. There were statistically significant differences between the instruction type (non) exposed to the medication overview (Table 3).

Table 3. Differences in means (SD) between the groups of respondents exposed and non-exposed to MijnGiB (N=561)

Questions	Non- Exposure to MijnGiB (N=296) **Correct answers Mean (SD)**	Exposure to MijnGiB (N=308) **Correct answers Mean (SD)**	P-value
Levodopa/carbidopa			
How often should you take levodopa/carbidopa?	0.85 (0.4)	0.76 (0.4)	0.02
At what moment of the day should you take levodopa/carbidopa?	0.92 (0.3)	0.86 (0.4)	0.04
Is it clear for which condition, disease, or ailment you should use levodopa/carbidopa?	0.03 (0.2)	0.83 (0.4)	<0.001
Which of the following should you watch out for while taking levodopa/carbidopa?	0.91 (0.3)	0.89 (0.3)	0.5
Omeprazol			
How often should you take omeprazol?	0.96 (0.2)	0.96 (0.2)	0.9
At what moment of day should you take omeprazol?	0.80 (0.4)	0.80 (0.4)	1.0
Is it clear for which condition, disease, or ailment you should use omeprazol?	0.10 (0.3)	0.85 (0.4)	<0.001
Which of the following should you watch out for while taking omeprazol?	0.93 (0.3)	0.93 (0.3)	0.8
Medications received			
If you look at all PDLs, for which conditions, diseases or ailments have you received medications?	0.04 (0.2)	0.66 (0.5)	<0.001

Dosage instructions

How often one takes medication

In total, there was a high proportion of correct answers (mean 0.81, SD 0.4) for how often one should take L/C per day in the exposed (E) and non-exposed (NE) groups to MijnGiB (n=541). There was a significant difference in the proportion of correct answers amongst the two groups. The non-exposed group gave a slightly higher proportion of correct answers for how often (mean 0.85, SD 0.4 NE; mean 0.76, SD 0.4 E, p=0.02) one should take L/C per day. There were no significant differences for how often one should take omeprazol. In both groups of the respondents (n=535), there was the same proportion of respondents who gave the correct answer (mean 0.96, SD 0.2) for the exposed and non-exposed group to MijnGiB.

Moment of intake per day

There was also a high proportion (mean 0.89, SD 0.3) of the total respondents (n=542) who gave the correct answer on the question about at which moment of the day one should take L/C. The non-exposed group had a slightly higher proportion of correct answers (mean 0.92, SD 0.3 NE; mean 0.86 SD, E, p=0.04). Of the total group respondents (n=533) who answered the question on which moment of the day they should take omeprazol, there was an overall high proportion of correct answers given (mean 0.8, SD 0.4). This correct answer includes respondents in the PDL-only group who stated ''I do not know'' given that the information was not present on the PDL. There was no significant difference in the proportion of the correct answers between the two groups (mean 0.80, SD 0.4 E; mean 0.80, SD 0.4 NE, p=1.0).

Medication use for type of condition or disease

In total, respondents (n=539) gave a lower proportion of correct answers (mean 0.40, SD 0.5) for which condition or disease the medication is used. There was a significant difference in the proportion of correct answers between the two groups. The exposed respondents gave a higher proportion of right answers for which condition or disease they should use L/C (mean 0.83, SD 0.4 E; mean 0.03, SD 0.2 NE, p<0.001). In comparison, the respondents (n=540) also gave a lower proportion of right answers (mean 0.45, SD 0.5) regarding for which condition or disease omeprazol is used. There was a significant difference between the two groups. MijnGiB-exposed respondents gave a higher proportion of correct answers for which condition or disease they should use omeprazol (mean 0.85, SD 0.4 E; 0.10, SD 0.3 NE, p<0.001).

Medication usage advice and warnings

Overall, there was a high proportion (mean 0.9, SD 0.3) of correct answers amongst the respondents (n=409) who answered the question on what they should pay attention to when using L/C. Also, for omeprazol, of the total respondents (n=496) a high proportion gave the correct answer (mean 0.93, SD 0.3). No significant differences in the proportion of the correct answers between the exposed and non-exposed group were found.

Overview of medications respondents received

At the end of the experiment questions, respondents were asked for which conditions, diseases, or ailments they had received the instruction labels. A small proportion (mean 0.3, SD 0.5) of the total respondents (n=545) gave the right answer. There was a significant difference in the proportion of the correct answers between the exposed and non-exposed group. MijnGiB-exposed (E) respondents gave a higher proportion of correct answers for the questions regarding for which medications they received the instruction labels compared to the non-exposed group (mean 0.66, SD 0.5 E; mean 0.04, SD 0.2 NE, $p<0.001$).

Discussion

In this study, we reported on the added value of a personalized medication overview to support patients in their medication use compared to usual-care PDLs. Most of the respondents gave a high proportion of correct answers, despite the type of PDL instruction, indicating high comprehensibility of both the usual-care PDL instructions and on the personalized medication overview. Respondents exposed to the medication overview gave a higher proportion of correct answers compared to non-exposed respondents for instructions on usage advice (additional information presented on the medication overview) for both a medication simple and complex use instructions. Regarding dose timing (how much and at what moment) of the simple medication, both groups gave the same proportion of correct answers. A greater proportion of respondents exposed to the usual-care PDL only gave correct answers for how often and dose timing of the more complex medication. No differences were found regarding number of medications, nor were interaction effects found between the number of medications and information type. The results show that a medication overview can be a good addition (as it contains additional information) to support patients in their medication use compared to usual-care PDLs.

Problems understanding medical information seem to be more common in certain patient groups, such as the elderly, people with limited health literacy, and people with language barriers[14]. In this study, not all these factors were investigated. We had a selective population with older medication users with adequate health literacy skills, making it not comparable to the literature that up to 50% of the adult population incorrectly understands the dosage information on PDLs[4, 6-13].

The medication overview had beneficial effects on understanding for which condition or disease the medication should be used. This turned out to be the case regardless of whether it was a medication with simple or more complex instructions for use, and regardless of the number of other medications someone is taking according to the hypothetical scenario. It is thereby important to mention that on the PDL, there is only limited space, making it difficult to provide additional information[5].
Including specifically the medicine use information (intake, dosing moment) on the PDL is important for patient safety. An additional overview, such as the MijnGiB, is a good way to provide more information that does not fit on the prescription medication label.

The effects of the medication overview on understanding how to take the medication depended on whether it was a medication with simpler or more complex instructions for use. For the medication with simpler instructions for use (omeprazol), the addition of the medication overview had no effect for understanding how the medication should be taken. For the medication with more complex instructions for use (L/C), the addition of the medication overview had less of an effect than the PDL-

only, as the group respondents with the usual-care PDL-only had higher percentages of correct answers. It might be plausible that the participant has an information preference and chooses one information type over the other. Hence, in the situation that the participant received both types of information, it could have been possible that they choose the PDL over the medication overview.

There are different reasons that could explain why respondents with the usual-care PDL-only had a higher proportion of correct answers. For example, there is less information on the usual-care PDL, and thus less information to understand, whereby the core information is highlighted more easily. Respondents may also be used to using the usual-care PDLs as many of the respondents use medications in their own day-to-day lives. Thus, the usual-care PDLs may have been easier to use during the experiment than a medication overview like MijnGiB, as it is new. This latter may be specifically applicable to the older respondents, who were overrepresented in this study due to our sample stratification. Research conducted on how elderly think about change indicates that they often want things to stay the way they are[47]. Therefore, as long as an older person can still get away with their way of doing things, like the use of the usual-care PDLs, they will probably opt for this rather than a new development like a personalized medication overview.

Moreover, we hypothesized that patients better understand the medication instructions when they have a personalized medication overview rather than PDLs-only, and that this understanding increases with the number of medications. However, there were no significant differences found regarding number of medications, nor were interaction effects found between the number of medications and instruction type. A possible explanation might be linked to the setup of the experiment as all respondents were asked how well they understand the instructions for use (at what moment and how often) of one specific medication at a time and not all three, five or eight. The results show this is slightly easier to do with the PDL-only of this specific medication than when the personalized medication overview is added. This may be the case because the personalized medication overview provides information about the use of several medications at the same time, which may suggest that use of specifically one of these medications (omeprazol or L/C) becomes more omitted. When measuring how well people understand the use of one medication at a time, the medication overview may be less beneficial as opposed to only the PDL with one medication.

Strengths and limitations

A strength of this study is that we used a controlled experimental design, in which the respondents were randomly assigned across the six conditions, and the groups were equally spread regarding the background characteristics (i.e., age, education level) of the respondents. Another strength is the use of the Dutch Health Care Consumer Panel, which includes people who cannot register themselves, but must be invited to join the panel. In panels that are formed by people signing up on their own to join, there is higher risk of selection bias. Our panel includes people who do accept an invitation but would not register themselves.

There were also limitations to this study. A limitation of this study can be the hypothetical situation of this experiment. Respondents were asked to imagine a situation in which they are prescribed several medications. This might have been difficult for some respondents, especially since most of them already use medication in their own daily life, and answered the questions based on their own experiences. They might have responded differently if it was their own medication they were asked

about. Nevertheless, as shown in the meta-analysis by Van Vliet et al[48], results of actual patients would not have been stronger than using analog patients/fictive examples, as in this study.

Another limitation of this study is that there was little or no variation in the health literacy (on the health literacy scale used for this study) of the respondents in this sample. This sample was selected for limited health literacy, yet the vast majority self-identified adequate health literacy. The small group of people with inadequate health literacy may be related to ease or difficulty that people with a lower health literacy may experience when completing questionnaires.

In addition, a limitation is that respondents were not given an instruction on how to use the medication overview. In the pharmacy one does receive an explanation on how to use a medication overview, which might make it easier to use the overview, and prevent potential misunderstandings of medicine use information. Furthermore, a limitation is that it was not known whether people in the experiment sample took the specified medications as we present in the experiment.

Lastly, a limitation of this study could be reflected on the setup of the experiment and the outcomes on how well the participants understood the medicine use information for three, five, or eight medicines. All respondents were asked how well they understood the instructions for use (when and how often) of one specific medication at a time. Measuring how well people understand the use of one medication at a time, MijnGiB may be less beneficial as opposed to the prescription medication label only with one medication. However, more positive effects from MijnGiB may be expected from how well people understand the use of all medications together when comparing MijnGiB and the prescription medication label only.

Implications for research

The results of this study do not fully assess how the medication overview may help people with low literacy given the small group of respondents (4%) with low literacy. Future research can focus on better identifying patient groups for whom the personalized medication offers the most support. Also, the medication overview appears to be less beneficial when measuring how well people understand the use of one of the medications. However, more positive effects can be expected from how well people understand the use of all medications together. The latter has not been measured but is a suggestion for further research. For further research it is also important to test in real life conditions. For example, with patients using their own personalized medication overview, how do they understand the usage information and what are their impressions for their own medication use. Moreover, this study focused on oral medicines (tablets), and could be extended to dosage forms with more complex instructions (e.g., variable dosing) or mastery of technique for self-administration of the medicine in future studies.

Conclusion

Both the respondents who were shown the personalized medication overview and the respondents who only saw the PDLs showed a high level of comprehensibility of the use instructions for the hypothetically prescribed medications. However, the medication overview increased respondents' comprehension of the instructions regarding the usage advice and for which condition or disease one should use the medication, which is extra information on this overview. The overview can be a good addition to the prescription drug labels to support patients in their medication use. Future research

should focus on identifying patient groups who might benefit more, by testing the use of a medication overview among different patients.

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Appendix 1

Questionnaire with 3 medications, MijnGiB + PDLs

You have just read the prescription drug labels and MijnGiB. We would now like to ask you to answer the following questions for the medication levodopa/carbidopa. So, it is not about your own medication use!

1. How often should you take levodopa/carbidopa?
   - ❑ Once a day
   - ❑ I do not know

2. At what time of day should you take levodopa/carbidopa? (Multiple answers possible)
   - ❑ Morning
   - ❑ Noon
   - ❑ Evening
   - ❑ Before bed
   - ❑ I do not know

3. Is it clear for which condition, disease, or ailment you should use levodopa/carbidopa?
   - ❑ Yes, namely for ……
   - ❑ No, that is not clear

4. Which of the following aspects should you pay attention to when using levodopa/carbidopa? (Multiple answers possible)
   - ❑ I have to swallow the tablet in 1x completely (so do not chew)
   - ❑ I need to dissolve the tablet in water
   - ❑ I have to take the medication with plenty of water
   - ❑ I should not drink grapefruit juice now that I am taking this medication
   - ❑ I have to be careful when driving
   - ❑ I should not drink alcohol now that I am taking this medication
   - ❑ I need to take the medication with meals
   - ❑ I need to take the medication after meals
   - ❑ I need to take the medication before meals
   - ❑ My response may be delayed
   - ❑ I need to keep the medication in the refrigerator
   - ❑ I need to take all the tablets prescribed
   - ❑ The drug has a limited shelf life
   - ❑ Otherwise, namely ……
   - ❑ None of the above aspects

We would now like to ask you to answer the same questions for another medication, namely omeprazol These questions are therefore not about your own medicines, if any.

5. How often should you take omeprazol?
   - ❑ Once a day
   - ❑ I do not know

6. At what time of day should you take omeprazol? (Multiple answers possible)
   - ❑ Morning
   - ❑ Noon
   - ❑ Evening
   - ❑ Before bed
   - ❑ I do not know

7. Is it clear for which condition, disease, or ailment you should use omeprazol?
   - ❑ Yes, namely for ……
   - ❑ No, that is not clear

8. Which of the following things should you pay attention to when using omeprazol? (Multiple answers possible)
   - ❑ I have to swallow the tablet in 1x completely (so do not chew)
   - ❑ I need to dissolve the tablet in water
   - ❑ I have to take the medication with plenty of water
   - ❑ I should not drink grapefruit juice now that I am taking this medication
   - ❑ I have to be careful when driving
   - ❑ I should not drink alcohol now that I am taking this medication
   - ❑ I need to take the medication with meals
   - ❑ I need to take the medication after meals
   - ❑ I need to take the medication before meals
   - ❑ My response may be delayed
   - ❑ I need to keep the medication in the refrigerator
   - ❑ I need to take all the tablets prescribed
   - ❑ The drug has a limited shelf life
   - ❑ Otherwise, namely ……
   - ❑ None of the above aspects

9. If you look at all three labels and MijnGiB, for which conditions, diseases or ailments have you received medications? (Mark up to three answers)
   - ❑ High blood pressure
   - ❑ Increased cholesterol
   - ❑ Diabetes
   - ❑ Asthma/COPD
   - ❑ Rheumatism or joint problems
   - ❑ Osteoporosis
   - ❑ Stomach- of intestine problems
   - ❑ Depression
   - ❑ Parkinson's disease
   - ❑ Pain
   - ❑ Allergies
   - ❑ Skin complaints
   - ❑ Otherwise, namely ……
   - ❑ I do not know

CHAPTER 3

Provision of and trust in COVID-19 vaccines information: Perspectives of People who have had COVID-19

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Abstract

Objective: The aim of this study was to understand the provision and need, quality of, and trust in COVID-19 vaccines information from the perspectives of people who have had COVID-19 infection.

Methods: People who have had a COVID-19 infection were approached via their general practice and invited to participate in the Nivel Corona Cohort. They completed questionnaires at baseline (Q1), and at three months (Q2). Outcome measures were based on health information-seeking behavior, as used in the Comprehensive Model of Information Seeking. Antecedents (i.e., gender, age, education level, health literacy) were used from Q1, and one's beliefs and experiences (i.e., trust in the information and healthcare system, how applicable the information is), information carrier factors (i.e., information quality perceptions and via which sources), health-information seeking actions (i.e., decision to vaccinate and information sufficiency) and vaccination status from Q2. Data were analyzed using descriptive analyses, analysis of variance tests (F-tests) and χ^2 tests with the statistical software STATA.

Results: Of the respondents (*N*=314), 96% were vaccinated at least once, mostly after having had the virus. Most retrieved information about COVID-19 vaccines on the website of the National Institute for Public Health and the Environment (79%), broader via the internet (56%) or with family and friends (35%). Almost all had trust in the information (89%) and the healthcare system (94%). Most found the information applicable to their situation (67%). Moreover, most perceived the information as correct (71%) and did not perceive the information to be misleading (85%), while fewer people found the information reliable (59%) and clear (58%). Overall, the majority indicated that the information met their expectations to make a well-informed decision to vaccinate (89%).

Conclusion: Different characteristics of people who had COVID-19 and sought information were identified, which is important to offer tailored information. People who had COVID-19 in this study, mainly middle-aged, vaccinated and highly educated, were generally positive about the vaccines information, but overall, the reliability and clarity could be improved. This is important for a high vaccination uptake, booster programs and coming pandemics.

Patient or Public Contribution: The questionnaire was reviewed by patients who had COVID-19, one of whom is a health services researcher.

Key words: COVID-19 people, COVID-19 vaccines, information provision, trust, choice to vaccinate.

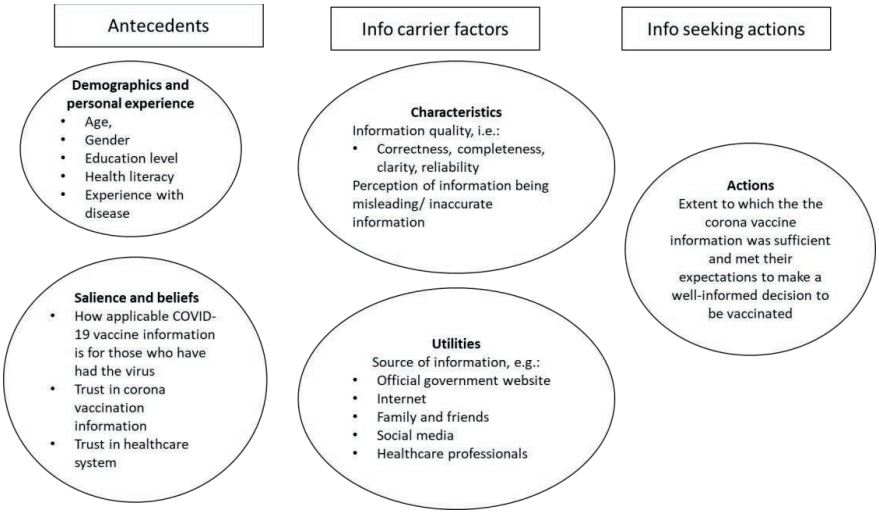
Introduction

Reliable and clear information is important for a high vaccination uptake[1], including booster programs and pandemics. To understand the provision of vaccines information and trust therein, the coronavirus disease 2019 (COVID-19) is used as a case study. An effective way to tackle the COVID-19 pandemic is through mass vaccination globally, though acceptance of the vaccines is often a major challenge[2]. The COVID-19 pandemic is a unique situation, where vaccines were developed more rapidly than usual. In the beginning, this may have had a negative impact on the trust that people had in the developed vaccines and could, therefore, negatively influence the choice to vaccinate[3,4]. Over the course of time, people have chosen to vaccinate, though, now with the emerging strains of COVID-19 and the need for booster[5], provisions of information and trust therein are key aspects in being well-informed to decide to vaccinate.

Specifically, the provision of COVID-19 vaccines information and trust therein amongst people who have COVID-19 is of interest. At the start of the COVID-19 pandemic, it is likely that there is a high-risk perception experienced by people as it is a new disease[6,7]. Preventative measures, such as vaccination programs, are steered by risk perception, as trends also show that uptake of the preventive measures was higher at the beginning of the pandemic than later on. As time passes, this risk perception may decrease as there is more information and experiences with the virus. People who have had COVID-19 may have a lower risk perception as they have had the virus and may be less inclined to vaccinate, or instead, they may be keener to vaccinate as they have experienced the virus severely and want to prevent being infected again. Hence, it is of interest to investigate this group's information-seeking behavior to tailor future vaccination campaigns, or the necessary COVID-19 boosters due to the emergence of new strains.

There are various constructs that help capture how people seek information, and to consolidate these various aspects, an adapted version of the Comprehensive Model of Information Seeking (CMIS) is used (Figure 1)[8,9].

Figure 1. CMIS adapted to fit the context of COVID-19 vaccines information-seeking behaviour



Factors that motivate (antecedents), one's background characteristics (demographics), how applicable or relevant the information need is (salience) and one's prior feelings regarding the need to seek information (beliefs) influence one to seek information[8]. In the case of COVID-19, trust in the information and healthcare system in relation to intention to vaccinate[10-12] is essential. Trust in vaccines information is key because the general public is often unable to fully assess the correctness of public health recommendations[13].

Moreover, potentially more than ever before, during a global pandemic, people wish to be well-informed and ask for more health-related information[14]. Important factors are, for example, users' perceptions of the information (characteristics). Previous studies show that people use different information sources, both offline and online, to access health-related information[15-18]. Healthcare providers are currently still the most trusted source of information, though, seeking online information via the internet has gained popularity and has become an important information source to the public[19,20]. Seeking online information allows for direct answers, readily available, and (mostly) accessible information in large quantities. Though this information may not be easily comprehensible to the wide public, the trustworthiness and objectivity of the information should also be examined carefully[21,22]. Due to the newness of the virus and uncertainties about the effectiveness of the vaccines, it is interesting to see where people who have had COVID-19 seek or receive their COVID-19 vaccines information and their perceptions of the quality of this information.

Lastly, information-seeking actions such as whether one decides to vaccinate based on the sought or received information is important. Provision of information that meets the expectations of the public is key for those to decide to vaccinate, specifically trust that COVID-19 vaccines are safe and effective[2,3,23]. However, the most common reasons for hesitation or refusal to be vaccinated with the COVID-19 vaccines were fear of side effects, safety, and effectiveness[24-27]. It is therefore important to understand whether the provision of the current information on the vaccines is tailored in such a way that people who have had COVID-19 decide to vaccinate.

Taking the different factors from the CMIS model into account, we investigated the characteristics of people who have had COVID-19, who sought or received COVID-19 vaccines information, where they sought the information, what they thought of the information, and which health information-seeking behaviors and actions they took. The aim of this study was to understand the provision and need, quality of and trust in COVID-19 vaccines information from the perspectives of people who have had COVID-19 infection. This is a unique target group as their views on the vaccines may be different than those who have not had the virus.

Methods

Study design

Nivel (Netherlands Institute for Health Services Research) has set up a cohort of people who have had COVID-19 to provide insight into the course, severity and short- and long-term consequences of COVID-19. This panel design provides for a wide range and large sample of people reflecting the heterogenous patient population in daily general practitioner care practice. In this study, we conducted a secondary analysis of the cohort data.

Setting

This study took place in the period when the Netherlands experienced the third wave, and the alpha, followed by the delta variant, were the most prevalent[28]. The participants in this study had COVID-19 in the first half of 2021. At that point in time, about two million Dutch inhabitants had been diagnosed and registered with COVID-19. Also, 32,438 people had died in the Netherlands with COVID-19, either registered or probable cause of death[28]. Further, during this time, the start of the country-wide vaccination rollout took place.

Nivel Corona Cohort recruitment process

In Table 1, the different recruitment phases of GPs and patients for the Nivel Corona Cohort are described.

Table 1. Nivel Corona Cohort recruitment process

Recruitment phase	Activity
1. Eligible general practitioners to participate in study	In May 2020, GPs participating in Nivel Primary Care Database (Nivel-PCD) were enquired to assess feasibility of the study. In total, 90 practices had shown interest in the study after a call from the research team. In February 2021, a selection of 25 GPs was invited via e-mail to participate in this study. GPs were selected based on completeness of morbidity data in 2019, having delivered weekly data in 2020, using R83.03 to code COVID-19 cases and having sufficient COVID-19 cases.
2. Recruiting general practitioners to participate in study	Of the 25 GPs invited to participate in the Nivel Corona Cohort, 18 practices participated. The selected 25 GPs showed interest in participation, had sufficient quality and completeness of routinely registered electronic health record (EHR data), and had a sufficient number of COVID-19 registrations.
3. Selecting patients from general practitioners to participate in study	People in the Nivel Corona Cohort were recruited from GPs that participate in the Nivel-PCD and could only participate after invitation. Nivel-PCD collects routinely registered EHR data from around 500 GPs spread throughout the Netherlands. Nivel-PCD receives data on a weekly basis from approximately 350 practices, with more than one million listed people, allowing to identify prevalent and incident COVID-19 cases. Data in Nivel-PCD is pseudonymized at the GP. Nivel does not receive directly identifying data such as name or address[29].
4. Diagnosis of COVID-19 for an individual patient	In the Netherlands, GPs use the International Classification of Primary Care to code the complaints and diseases their patients present to them. People with COVID-19 were detected based on ICPC-1 code R83.03 (COVID-19). The Dutch College of General Practitioners introduced this ICPC-code to register COVID-19 as of November 2020. The diagnosis of COVID-19 for an individual patient could be in their EHR when the patient consulted their GP directly, or when the patient contacted the Municipal Health services (GGD), who provided the national testing facilities. The GGD sent information on positive tests to GPs via automated coupling, using the R83.03 code, under the requirement that patients gave consent.
5. Generation of study pseudonym for each patient	A study pseudonym was generated for each patient, which allows for data linkage between Nivel-PCD and the patient's filled in questionnaires. In Nivel-PCD it is possible, but only via a trusted third party, to link the pseudonyms with a patient identification number that is known only in the practices' domain[29]. This allowed us to initially flag eligible people for the Nivel Corona Cohort and to let GPs subsequently conduct a check on whether they were indeed eligible for participation.
6. Inclusion/exclusion of patients	People were excluded from this study if the GP indicated that the patient was not eligible to participate (i.e., due to the burden of filling in the questionnaire for this person or cognitive or personal problems hindering participation, or due to not being proficient in the Dutch language).
7. Invitation of patient through trusted third party	The GP provided names and addresses of suitable people to the trusted third party who invited people on behalf of their practice. The invitation contained the patient's study pseudonym.

Participants

If a patient decided to participate, they were asked to register online with the study pseudonym. During the registration process, the patient was asked for informed consent for study participation and data linkage. Once registered, the patient received invitations per e-mail to questionnaires at enrolment and after three months.

Person inclusion for the Nivel Corona Cohort started in April 2021, and people were recruited both retrospectively and prospectively. At the start of the study, the GP invited all people with a known COVID-19 infection in the past six weeks, and then every two weeks after the start of the study, newly diagnosed people were invited to participate.

Data collection

For this particular study, we used data from the two first online questionnaires sent to people in the Nivel Corona Cohort (Q1, the start of participation and Q2, at three months). Since we used data from both questionnaires (Q1 and Q2), we only included the people in this study who filled out both the first and second questionnaires. A reminder was sent after one week. People who did not respond or refused to participate in the first questionnaire were marked in the database and were not approached for further participation. We used data from people who filled in their second questionnaire (Q2) before the 28th of January 2022. All data were stored on Nivel's protected server. The questionnaire data was pseudonymized.

See Appendix 1, for an overview of the questionnaire topics, outcome measures and types of responses possible, based on the CMIS. See Table 2 for the constructs of the adapted CMIS to fit the context of COVID-19 vaccines information-seeking behaviour.

Table 2. Study constructs in the context of the CMIS

CMIS construct	Description of measures
Antecedents	Background characteristics (Q1 questionnaire), first moment a participant filled in the questionnaire, were used: - gender - age - level of education (low, middle, high). *The categorization of the education level is in accordance with the Statistics Netherlands (Low: primary education, prevocational secondary education (VMBO), Middle: senior general secondary education (HAVO), pre-university education (VWO), senior secondary vocational education (MBO); High: higher vocational education (HBO) and university education (WO)[30].* In Q2, second filled in questionnaire, questions on health literacy (based on the Chew's Set of Brief Screening questions (SBSQ) [31-33] were posed. Personal relevance factors (salience and beliefs): - the degree in which people have trust in the sought/received information as well as trust in healthcare system - how applicable or relevant the vaccines information was for them.
Information carrier factors	In the Q2 questionnaire, we collected specific information on the COVID-19 vaccines information. All questions pertaining to COVID-19 vaccines information included the information people actively sought themselves as well as the information they received from a healthcare providers or other source. These two forms of receiving information (actively searching and passively receiving) are not split up in the questions asked. These questions included: - perceived quality of information - whether the information was misleading or inaccurate - type of information sources used to search for information on the COVID-19 vaccines. See Appendix 1, for the types of response
Information-seeking action	Based on whether the people who have had COVID-19 sought or received information (and which information), we asked whether the information met their expectations to make a choice to vaccinate (yes/no), and if no, an open question was posed about what they would have desired regarding the information provision.
Overall process	The original CMIS shows the information-seeking process as a linear process. The arrows, from left-to-right, in this model suggesting information seeking as a process that follows the factors from left-to-right. However, one can start and stop searching at different points based on beliefs and perceptions that may change over time. Hence, in the adapted model in this study (Figure 1) there are no arrows, but instead the factors presented with each important CMIS theme (antecedents, information carriers and actions).

Data analysis

We used descriptive analyses (frequencies [N, %], mean [SD]) to describe the population and outcomes. For the personal factors, we looked at differences in age, gender, level of education, health literacy, vaccination status, (in)sufficient trust in the COVID-19 vaccination information and trust in the healthcare system in relation to the outcomes. The outcomes included were whether (and where) the person sought/received information, perceptions of information quality, whether the information was misleading or inaccurate, and whether the information was sufficient/ met the person's expectations to make a well-informed decision to vaccinate.

The differences were analyzed using analysis of variance tests (F-tests) and χ^2 tests. We chose group comparisons as this is an explorative study looking at different facets of information-seeking behavior and how this differs amongst different types of COVID-19 people (e.g., younger vs. older people, higher educated vs. lower educated). Tukey post hoc tests revealed the difference in means in the groups of respondents with different background characteristics. A significance level of $p < .05$ was used. We used the statistical software STATA version 16 for the analysis of the questionnaires.

Ethical/privacy considerations

All participants gave informed consent before starting the questionnaire. Participation in the study included giving permission to link data from the questionnaire to the Nivel-PCD data of this person. The anonymity of all respondents is guaranteed. The Medical Ethics Committee (METc) of the Vrije University Academic Medical Centre (VUMC) approved the protocol and concluded that this study is not clinical research with human subjects as meant in the Medical Research Involving Human Subjects Act (WMO). The study was also approved according to the governance code of Nivel-PCD.

Results

We invited 1851 people for the Nivel Corona Cohort. In total, 442 people filled in the Q1 questionnaire, at the start of their participation in this study. Of these respondents, 314 also filled in the Q2 questionnaire (net response rate 70%).

COVID-19 exposure and vaccination

All people have had COVID-19, of which many (58%) had the virus one-three months before filling in the Q1 questionnaire. The majority (89%) of the respondents received the COVID-19 vaccines after they had COVID-19. Over the period of three months (Q1 and Q2), there was an increase in the number of respondents vaccinated with at least one vaccine (68% to 96%). An overview of sample characteristics is reported in Table 3.

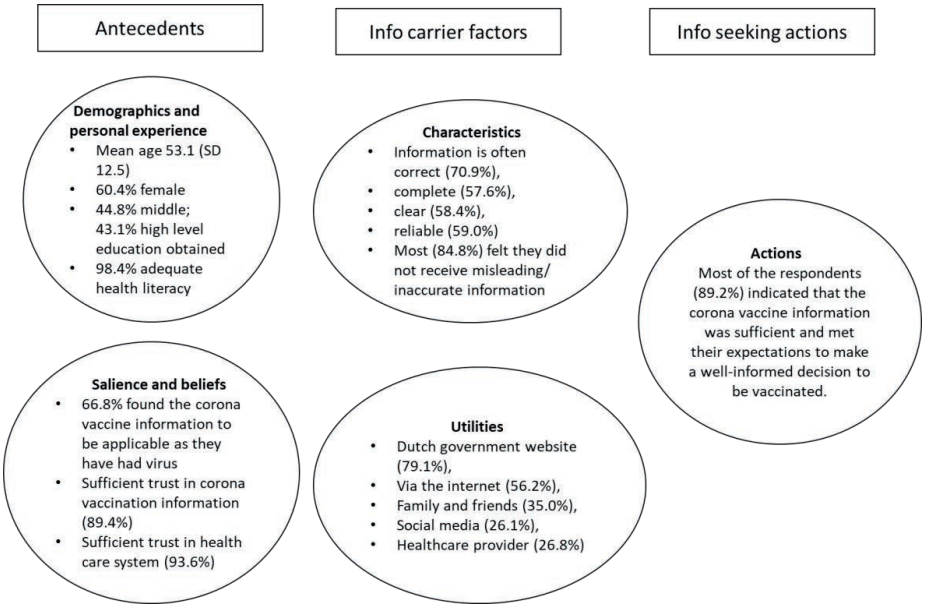
Table 3. Background characteristics of sample population

Characteristics	N (%)
Age (N=311) (years)	
<40	33 (11)
40-64	234 (75)
≥ 65	44 (14)
Gender (N=314)	
Male	118 (38)
Female	196 (62)
Country of birth (N=307)	
The Netherlands	292 (96)
Other	15 (4)
Education (N=290)	
Low	35 (12)
Middle	130 (45)
High	125 (43)
Health literacy score (N=314)	
Adequate health literacy	309 (98)
Inadequate health literacy	5 (2)
Vaccination status (N=311)	
Vaccinated with at least one vaccine	298 (96)
Not (yet) vaccinated	13 (4)
Trust in COVID-19 vaccines information (N=274)	
Sufficient	245 (89)
Insufficient	29 (11)
Trust in healthcare system (N=297)	
Sufficient	278 (94)
Insufficient	19 (6)

Adapted CMIS for COVID-vaccines related information

The factors that influence information-seeking behavior of people with COVID-19 selected in this study are presented according to the CMIS, as shown in Figure 2.

Figure 2. Adapted Comprehensive Model of Information Seeking to information seeking behaviour for COVID vaccines related information based on the experiences of people who have had COVID-19



Antecedents

Most people were female (62%), obtained a middle (45%) or high level (43%) of education, and were middle-aged (mean: 53.1, SD: 12.5). The majority had a self-perceived adequate health literacy (98%), implying that the role of health literacy cannot further be analyzed as the number of respondents with an inadequate health literacy score was too small (Figure 2, *antecedents*).

Personal relevance factors (salience and beliefs)

About two thirds of the people (67%) found the information provided or sought on the COVID-19 vaccines to be applicable to them as they have had the COVID-19 virus, specifically people who have more trust in the information (p<.0001) and those with more trust in the healthcare system (p<.0001).

Moreover, the respondents who indicated that the information was applicable to them mainly indicated in an open question that the information they sought was complete, clear, and accurate. They also indicated that the information was applicable to their situation as they had only needed one vaccination as they are people who have had COVID-19. Those who did not think the information was applicable to them indicated in an open question that the information was too general and could be applicable to all people (not specific to those who have had the virus, that is, when to vaccinate after the recovery period), that the side effects, long-term effects and effect of natural immunity against the virus were not clearly indicated as much information had not been based on scientific evidence, and/or

that some information is contradictory (i.e., one or two vaccines necessary for people who have had COVID-19). Lastly, the majority of the respondents (89%) had a sufficient amount of trust in the information on the COVID-19 vaccines and trust in the healthcare system (94% of respondents).

Information carrier factors

Perceptions on information quality

Respondents were asked to assess the quality of the COVID-19 vaccines information (Table 4). The majority, 71%, of the respondents often found the information to be correct. Fewer respondents often found the information reliable (59%) or clear (58%). More than half (58%) indicated that the information was often complete, and two thirds of the respondents, 67%, sometimes found the information to be contradictory. Also, respondents were inquired how applicable they perceived the information to be for their situation. Less than half, 41%, indicated this to be the case.

Table 4. People who had COVID-19 perceptions on the information they received/sought about the COVID-19 vaccines

	Always	Often	Sometimes	Never
The information is correct (N=295), N (%)	23 (8)	209 (71)	63 (21)	-
The information is complete (N=297), N (%)	18 (6)	171 (58)	101 (34)	7 (2)
The information is clear (N=298), N (%)	27 (9)	174 (58)	93 (31)	4 (1)
The information is reliable (N=300), N (%)	37 (9)	177 (59)	94 (31)	2 (1)
The information is up to date (N=299), N (%)	26 (9)	177 (59)	91 (30)	5 (2)
The information applies to me (N=298), N (%)	13 (4)	122 (41)	155 (52)	8 (3)
The amount of information is just right (N=298), N (%)	11 (4)	152 (51)	125 (42)	10 (3)
Information from different sources contradicts each (N=293), N (%)	13 (4)	62 (21)	196 (67)	22 (8)

Perceptions on information quality in relation to background

People with different background characteristics had varying perceptions of information quality. Higher educated people, those who had sufficient trust in the COVID-19 information and in the healthcare system, and who were younger (primarily <40 years old) were primarily more positive about the information quality, see Appendix 2.

Misinformation regarding the COVID-19 vaccines

Most (85%) of the respondents (*N*=277) felt that they did not receive misleading or inaccurate information regarding the COVID-19 vaccines. The respondents (*N*=42) who did find the information on the COVID-19 vaccines to be misleading or inaccurate, mentioned various reasons in an open question. People who found the information misleading or inaccurate, specifically indicated the information about the side effects (*N*=3), (long-term) consequences, safety in use and effectiveness of the vaccines (*N*=9), but also regarding the related deaths (*N*=2). Also, people found the quality of the information poor (i.e., not reliable, misleading, inconsistent, contradictory, incomplete and/or not based on enough scientific evidence) (*N*=10). Some found the information based too much on political views (*N*=3), not suited for those who have already had the virus and the effects of natural immunity (*N*=3) and based on conspiracies and those who are against vaccinating (*N*=3).

Information source about the COVID-19 Vaccine

The most used information source was the central Dutch site on COVID-19 vaccination information, the National Institute for Public Health and the Environment (RIVM) website (Table 5). The majority of the respondents (79%) sought or received information about the COVID-19 vaccines on this website. Additionally, respondents sought or received information on the internet via different search engines (56%), via family and friends (35%), social media (26%) and healthcare providers (27%). About one-quarter of the respondents (22%) used the Dutch website with primary care information from the GP (thuisarts.nl). Lastly, a minority of the respondents searched for information on different websites (13%).

Table 5. Information sources where respondents found information on the COVID-19 vaccine

Information source	N (%)
On the central Dutch site on COVID-19 vaccination information	242 (79)
On the internet via a search engine, such as Google, Bing, or Yahoo	172 (56)
With family/friends/acquaintances	107 (35)
On social media	80 (26)
With a doctor or other healthcare provider	82 (27)
Other	29 (10)
On the website of Thuisarts.nl	66 (22)
On another website	39 (13)
At a hospital	27 (19)
In a patient organization	10 (3)
With a health insurer	2 (1)
I did not seek nor receive information	20 (7)

Primarily younger, higher educated, females were more likely to seek information on the RIVM website. Generally, older people and lower educated sought information on social media. For other comparisons of where people sought or received information and their background characteristics, see Appendix 3.

Those who did not seek nor receive information (7%) gave various reasons. Some indicated that they did not see the added value (*N*=2) nor the need (*N*=5). Others indicated that there was already enough presented in the media (*N*=1), or specifically in the newspaper (*N*=1). Some respondents already had enough trust in the information or in others/faith in science or had enough information (*N*=2). Some expressed being tired of the situation (*N*=3). Others mentioned they were already informed, or their situation was clear (*N=5*).

Information seeking action

Information provision and decision to vaccinate

Most of the people (89%), on the whole, agreed with the question about how sufficient the information was and whether this met their expectations, and whether to make a well-informed decision to vaccinate. People with sufficient trust (p<.0001) in the information on the vaccines and in the healthcare system (p<.0001) were more likely to believe that the information provided on the COVID-19 vaccines was sufficient to make a well-informed decision to vaccinate. At the same time, about one-third (32%) indicated that the information was sometimes-to-never reliable (41%) nor clear (32%).

In case the information was not sufficient (*N*=30), respondents gave the following points that could have been better with regard to the provision of information: more honesty/transparency, such as information based on facts and research, and the need for the potential consequences and disadvantages of the vaccines to be more openly discussed. Also, there is a desire for the pros and cons to be made more explicit. Moreover, respondents indicated that quite a lot is still unknown, and some respondents would want less emphasis on only the positive elements, and instead more transparency. Lastly, some expressed the need for more clarity and clear communication, for example, why the AstraZeneca vaccine was mainly limited to the 60-64-year-old group and what the added value is in comparison to natural immunity.

Discussion

The sample population who sought or received information about the COVID-19 vaccines on the major governmental-related website for this, via the internet, or via family and friends. Most people found the information correct and did not perceive the information to be misleading, while fewer people found the information reliable and clear.

Revisiting the CMIS model, the antecedents are important factors to start the information-seeking process. These are often motivators to start the search process, which can reduce uncertainty, confirm/disprove certain beliefs or ideas, or satisfy curiosity[34]. While most people were vaccinated with at least one vaccine at the moment of filling the second (Q2) questionnaire, we cannot conclude on the motivations to vaccinate. It is also important to note here that it is not necessarily everyone's decision to only take a vaccine after infection, but that this also has to do with the fact that vaccinations only started then. Nevertheless, we can comment on characteristic types of people who used which information sources and what their perceptions were on the (quality of the) information during their information-seeking process.

Certain types of people were more inclined to seek health information, such as women, those higher educated and younger people[35-37]. This also is in line with our sample population, primarily younger, higher educated, females and those who had sufficient trust in the healthcare system were more likely to seek information on the RIVM website, who sought information on the Dutch government website, a trustworthy and reliable website. The representativeness of the cohort was checked (unpublished manuscript, can be required by the author). Comparisons were made between the Nivel Corona Cohort and the groups of selected and invited patients that did not participate. The Nivel Corona Cohort particularly included specific types of people, generally older and more often female.

Trust, an important antecedent, is also a motivator to seek information. A large group of the respondents had trust in the COVID-19 vaccines information and healthcare system, while about one in ten found the information misleading and inaccurate. Based on the Integrative Model of Organizational, trustworthy information can be defined with traits such as technical knowledge, widely open and accessible, factual, reliable and consistent[38]. Lack of trust is also often associated with perceptions that the information is misleading or inaccurate. Also, this was shown in this study, in the partly tautological relationships (e.g., people who had less trust in the information were more likely to agree that information was misleading or inaccurate) as the three central dimensions of trust are benevolence, integrity and ability which are related to accuracy[38].

Moreover, during the information search process, the antecedent factors can still cause an individual to stop their search. Reasons for this may be that they become overwhelmed by the information. This is why it is important to enquire about the perceptions of information quality. Overall, the respondents found the information to be applicable and complete, whilst there were also respondents (more than half) who found the information to be contradictory on an occasional basis, and less reliable or clear. Evaluating one's perceptions of the quality of the information is a challenge, as these are based on subjective perspectives. However, these factors do function as a starting point to further enquire about what changes the information-seekers (or lack thereof) need and desire in terms of patient-tailored information. For example, despite the small proportion of the respondents who found the information misleading, or not applicable to them, we can follow up on their suggestions that the information could have been more transparent and clearer. Specifically, information can be clearer on whether people who have had the virus need one or two vaccine(s), what the long-term consequences are of the vaccine and the effects (i.e., herd immunity and build-up of antibodies) of the vaccines. Evidence shows that transparent communication may harm vaccines acceptance here and there, however, the transparency increases trust in health authorities[27]. On the contrary, vague and sometimes reassuring communication does not increase vaccines acceptance either. Ambiguity in communicating information may lead to lower trust and higher endorsement of the spread of misinformation[27]. In return, to vaccinate large amounts of people, it is crucial that people trust in the fact that COVID-19 vaccines are safe and effective[2,3,23], as well as the effectiveness of boosters in the future[5].

Lastly, information-seeking action, the majority of the study sample population indicated that the information about the COVID-19 vaccines was sufficient. Also, the information met their expectations to make a well-informed decision about whether or not to be vaccinated. For those who indicated no, we also enquired about reasons why, which in return helps to tailor the needs of people who both actively search information and the group who prefers not to. Reasons why people do not seek information or avoid information are because information can conflict with their prior knowledge, beliefs, and attitudes, or potentially causes heightened emotion such as anxiety or stress about the information[39].

Situations where uncertainty is present can cause increased anxiety and risk perception [40,41] amongst individuals seeking healthcare/treatment. As a result, this can decrease well-informed and optimal healthcare decisions as well as avoidance behaviors[40,41]. In the case of COVID-19, this is a unique situation, because there was more uncertainty regarding how fast the vaccines were developed, and there was an increased level of infection-related uncertainty, in the context of a global pandemic.

Due to rapidly emerging vaccines and without, at the time of development, sufficient evidence as to their effectiveness and health impact[40], this can cause uncertainty for people to vaccinate. Our study adds the perspective of people who have already had COVID-19 and their perceptions of the COVID-19 vaccines information, and whether this influences their decision to vaccinate. Their perceptions may be different to those who did not have an infection yet and choose to vaccinate as they had already had COVID-19, including views on risk-perception of the virus/need to vaccinate.

An important way to decrease the spread of the virus is by mass vaccination uptake[2]. Though, to realize this, people should be well-informed and feel confident to make a choice to vaccinate. Solely providing information about COVID-19 vaccines is not sufficient. More importantly, the information should be tailored to the needs of the people seeking vaccines information. One of those elements was whether

people who already had had a COVID infection and therefore might have other questions or information needs regarding vaccination than those who did not experience an infection. To be able to tailor information, it is important to be aware of the perceptions on and the trust in the information of different groups, and our study contributes to insights into the perceptions of those who already experienced an infection. The people with COVID-19 that found the information misleading/or inaccurate indicated that this was generally due to safety and efficacy reasons related to the vaccines. This is in line with research conducted in the United Kingdom (Freeman et al. 2021)[42] whereby people who were strongly hesitant towards the vaccine were less likely to see the collective benefit[42,43] of vaccination, and instead had more concerns about the safety and fast development of the vaccines. A way to manage uncertainty in health care is by communicative practices, whereby the information moderates the effect of the uncertainty[44]. Reliable and accurate information, as well as information about the safety and effectiveness of the vaccines can decrease the uncertainty about whether to vaccinate, also in those who already had an infection.

Over time, the need for effective communication strategies for uncertain healthcare-related situations has increased, as well as the nature of uncertain situations has become more complex. Therefore, there is a need to know how to tailor information to accommodate this uncertainty[45]. The lessons learned from this study give room to further tailor information about vaccines in future pandemics or vaccination campaigns. The communication strategies (i.e., using the perceptions about the quality and how/where people seek information about vaccines sought/received in those who might already feel immunized because they experienced an infection) are important to target patients more accurately about vaccines in future vaccination campaigns, booster programs or pandemics. Based on our results, to make sure to tailor the information to their needs, respondents indicated that more honesty and transparency in the information is needed, that information is backed up by facts and research, and there is more overall clarity in the communication and information (e.g., whether people need one or two vaccine(s) if they have had the virus).

Strengths and limitations

One of the strengths of this study included the varied sample of people, reflecting the general population. We recruited people from 18 practices, and people varied in the severity of COVID-19. We also included those with mild complaints. Another strength was using participants drawn from practices, providing a well-defined population, in which COVID-19 has really been diagnosed. If not drawn from a practice, then the sample population would have consisted of self-reported diagnoses.

An important limitation is the small number of people who had not had a vaccine in the sample. In our study, we have a relatively large number of people who were vaccinated; hence we cannot draw conclusions about unvaccinated people. The moment of the questionnaire could have played a role. In hindsight, including the information on COVID-19 vaccines questions in Q1 and Q2, both before and after being vaccinated, would have been more appropriate. Now we could only report on the group of people who have primarily already been vaccinated. According to the Dutch governmental website on COVID-19 vaccination, 89% of people aged 18 and older have now had at least 1 COVID-19 vaccines[46]. In our sample, the mean age was 53 years old, and people over 55 or 65 remain the most receptive group to vaccinate, which may explain the high vaccination rate[26,47].

Another limitation is the small group of people with inadequate health literacy (*N*=5), suggesting we could not study this sample. It is important to note that not all low-educated people have inadequate health literacy, as shown in our sample, only one person indicated inadequate self-reported health literacy and a low obtained education level. The small group of people with inadequate health literacy may be related to the ease or difficulty that people with a lower health literacy may experience when completing questionnaires. In our study, we also had a large group of people with, on average, a high education level. There are various reasons why this may not have such a large role. One particular reason is that there is not a big difference in vaccination coverage between low, middle, and highly educated people in the Netherlands. According to Statistics Netherlands, about three-fourths (77%) of the highly educated people 25 years and older indicated that they intend to vaccinate, while slightly fewer low educated (68%) and people who obtained a middle-level education (69%)[48].

Additionally, a large part of the questions is based on single-item and self-reported measures. We asked people who have had COVID-19 what they think of the COVID-19 vaccines information. The information we collected (whether something is reliable, clear, or trustworthy) is someone's opinion, however, it could be that these people read misleading information and did not realize it. Our approach was to see whether people have the feeling that the information is adequate and correct, and not whether this was actually the case. For example, we did not visit the information sources to test the accuracy or the trustworthiness of the information.

Lastly, participants were not explicitly asked about the information content they sought/received. They were only asked which information source they used to seek/receive COVID-19 vaccines information and their perceptions of the information.

Clinical implications

Tailoring COVID-19 vaccines information to specific people's characteristics, increasing clarity, and transparency are important for accommodating the information needs of different types of people. Primarily younger, higher educated, females and those who had sufficient trust in the healthcare system were more likely to seek information on the Dutch government website, a reliable and trustworthy source. More attention should go out to set up ways to make the COVID-19 vaccines information provision more inclusive, for example, males, lower-educated people, those that have less trust in the government/healthcare system. The reasons why people had (or lacked) trust in the information about vaccines and the healthcare system, as well as motives to vaccinate, could also be further investigated. Also, while we collected data on migration background, it proved that the vast majority of participants were of Dutch descent. Migration background might be an interesting aspect in relation to vaccine uptake decisions and trust in the vaccine for a future study. Potentially selecting GPs in communities with a higher population of migrants may result in a more heterogenous and diversified study population. These lessons learned can increase effective communicative strategies in future pandemics, vaccination campaigns or booster programs.

Conclusion

Different characteristics of people who had COVID-19 and sought information were identified, which is important to offer tailored information. Among this vaccinated, and generally higher educated, middle-aged, female population, people who had COVID-19 were generally positive about the vaccines information, but overall, the reliability and clarity could be improved. Reliable and clear information is important for a high vaccination uptake; for other vaccines programs, including booster programs and coming pandemics. More research is necessary to draw conclusions on the perceptions of the COVID-19 vaccines information in the group of unvaccinated people.

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Appendix 1

Table 1. Overview of the questionnaire topics, outcome measures, and types of responses possible, based on the Comprehensive Model of Information Seeking (CMIS)

Outcome measures/questions	Type of responses	Q1 or Q2
COVID-19 exposure and vaccination		
How many months prior to filling out the questionnaire the person had the virus	shorter than one month ago, one-three months ago, four-six months ago, longer than six months ago, I do not/do not want to answer	Q1
Vaccination status	whether the person is vaccinated with at least one vaccine (yes/no)	Q1
CMIS topics		
*Antecedents**		
Background		
Gender	Male/female	Q1
Age	<40 years old, 40-64, 65 and older	Q1
Level of education	low, middle, and high level	Q1
Health literacy	Chew's Set of Brief Screening questions (SBSQ) use used: the respondent's health literacy score was calculated by taking the sum of the three five-point Likert scale questions, a scale from zero to four; the average score of the three questions was taken[30]. An average score of two or less indicates inadequate health literacy, and a score above two indicates adequate health literacy[31-32]	Q2
Salience and beliefs		
Degree in which people have trust in the read/received information as well as trust in healthcare system	sufficient trust: greater than or equal to six, report score one-to-ten; insufficient trust: less than six, report score one-to-ten	Q2
How applicable or relevant the vaccines information was (yes, because and no, because)	yes, because… no, because… *The why answers were derived from open questions*	Q2

Table 1. (continued)

Outcome measures/questions	Type of responses	Q1 or Q2
Information carrier factors		
Perceived quality of information (i.e., how often the person found the information to correct, complete, clear, reliable, up to date, applicable, just right, and whether the information from different sources contradicted each other)	four-point scale (never, sometimes, often, always)	Q2
Whether the information was misleading or inaccurate	(yes/no)	Q2
What the respondent found misleading about the information	Open answer	Q2
Type of information sources used to search for information on the COVID-19 vaccines (i.e., via family/friends, social media, healthcare providers, via the internet, at a hospital, or from other sources such as a patient organization or health insurer)	yes/no	Q2
Information seeking action		
Whether the information met the expectations of these people to make a choice to vaccinate	Yes/no	Q2
If answered no on the above-mentioned question, respondents were asked what they would have desired regarding the information provision	Open question	Q2

* In the Q1 questionnaire several topics were asked, many not used in this study, such as: complaints experienced by COVID-19 over time and their severity, (self) care, lifestyle, quality of life, impact of COVID-19, social support, information provision on the COVID-19 virus, and understanding of health information and health literacy.

Appendix 2

Table 2. Comparisons between background characteristics and perceived quality of information

	Contrast, mean (SD)	p-value
Up-to-date information		
Education level		F (2, 281) = 3.0, p=0.05
Low	2.6 (.7)	
Middle	2.7 (.6)	
High	2.9 (.6)	
Trust in the vaccines information		F (1, 259) = 15.4, p=0.0001
Sufficient trust	2.8 (.6)	
Insufficient trust	2.3 (.7)	
Correct information		
Education level		F (2, 277) = 5.1, p<.01
Low	2.7 (.6)	
Middle	2.8 (.4)	
High	3.0 (.5)	
Trust in the vaccines information		F (1, 255) = 14.4, p<0.001
Sufficient trust	2.9 (.5)	
Insufficient trust	2.5 (.5)	
Trust in healthcare system		F (1, 278) = 3.9, p=0.05
Sufficient trust	2.9 (.5)	
Insufficient trust	2.6 (.5)	
Reliable information		
Education level		F (2, 282) = 4.3, p<0.05
Low	2.6 (.7)	
Middle	2.7 (.5)	
High	2.9 (.7)	

Table 2. (continued)

	Contrast, mean (SD)	p-value
Trust in the vaccines information		F (1, 261) = 31.0, p<0.0001
Sufficient trust	2.8 (.6)	
Insufficient trust	2.2 (.6)	
Trust in healthcare system		F (1, 284) = 9.5, p<0.01
Sufficient trust	2.7 (.6)	
Insufficient trust	2.3 (.6)	
Complete information		
Trust in the vaccines information		F (1, 257) = 13.4, p<0.001
Sufficient trust	2.7 (.6)	
Insufficient trust	2.3 (.7)	
Trust in healthcare system		F (1, 280) = 4.5, p<0.05
Sufficient trust	2.7 (.6)	
Insufficient trust	2.3 (.6)	
Age		F (2, 291) = 13.4, p<0.05
<40	2.8 (.8)	
40-64	2.7 (.6)	
≥65	2.5 (.7)	
Clear information		
Trust in the vaccines information		F (1, 259) = 16.0, p=0.0001
Sufficient trust	2.8 (.6)	
Insufficient trust	2.3 (.6)	
Found the information to be contradictory		
Age		F (2, 287) = 4.7, p<0.01
<40	2.2 (.7)	
40-64	2.2 (.6)	
≥65	2.5 (.8)	
Trust in the vaccines information		F (1, 255) = 20.0, p<0.0001
Sufficient trust	2.2 (.6)	
Insufficient trust	2.7 (.8)	

Table 2. (continued)

	Contrast, mean (SD)	p-value
Trust in healthcare system		F (1, 276) = 4.4, p<0.05
Sufficient trust	2.2 (.6)	
Insufficient trust	2.5 (.9)	
Just right amount of information		
Age		F (2, 292) = 4.2, p<0.05
<40	2.7 (.7)	
40-64	2.6 (.6)	
≥65	2.3 (.8)	
Trust in vaccines information		F (1, 258) = 9.4, p<0.01
Sufficient trust	2.6 (.6)	
Insufficient trust	2.2 (.6)	
Trust in healthcare system		F (1, 281) = 5.6, p<0.05
Sufficient trust	2.6 (.6)	
Insufficient trust	2.2 (.6)	
Information to be more applicable to them		
Age		F (2, 293) = 3.7, p<0.05
<40	2.7 (.7)	
40-64	2.5 (.6)	
≥65	2.3 (.7)	
Trust in vaccines information		F (1, 259) = 11.4, p<0.001
Sufficient trust	2.5 (.6)	
Insufficient trust	2.1 (.6)	

Appendix 3

Table 3. Comparisons between background characteristics and where the people who had COVID-19 in this study sought or received COVID-19 vaccines information

	Contrast	p-value
Sought information on the RIVM website		
Gender, N (%)		χ^2 (1) = 5.0, p<0.05
Male	84 (72)	
Female	158 (83)	
Education level, N (%)		χ^2 (1) = 15.5, p<0.0001
Low	20 (57)	
Middle	103 (79)	
High	109 (87)	
Age, n (%)		χ^2 (2) = 27.4, p<0.0001
<40	27 (87)	
40-64	191 (83)	
≥65	21 (49)	
Sought information on social media		
Education level, N (%)		χ^2 (2) = 11.3, p<0.01
Low	14 (40)	
Middle	39 (30)	
High	20 (16)	
Age, N (%)		χ^2 (1) = 6.8, p<0.01
<40 and 40-64	60 (23)	
≥65	18 (42)	
Sought information on the website of the Dutch website with primary care information from the general practitioner (thuisarts.nl)		
Education level, N (%)		χ^2 (1) = 3.9, p=0.05
Low and middle	29 (18)	
High	34 (27)	
Consult family and friends for information		
Trust in the vaccines information, N (%)		χ^2 (1) = 5.9, p<0.05
Sufficient trust	81 (34)	
Insufficient trust	16 (57)	

PART II

Ways to address challenging situations in pharmacy practice using patient-centered communication

CHAPTER 4

Communication during encounters about medication switching: self-reported experiences of pharmacy technicians and patients

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Abstract

Background: During conversations about medication switches, pharmacy staff often deliver a message to patients that may lead to negative emotions. In these situations, clear and patient-centered communication is important.

Aim: To gain insight into pharmacy technician-patient experiences regarding the communication during medication switching encounters, and in specific to map the needs and preferences of patients and whether pharmacy technicians (PTs) meet these.

Methods: PTs were invited to fill in a questionnaire via the Dutch Panel on practical research for Pharmacy Employees. Online questionnaires were distributed to adult chronic mediation users in two patient panels. Questionnaires contained questions on how PTs and patients experience the medication switch conversations at the moment (i.e. type of information patients need/receive, timing of information, channel, communication style), and whether the needs and preferences of patients are met.

Results: In total, 138 PTs and 4679 patients responded. PTs indicated that they regularly struggle with these conversations due to emotional or negative responses of patients. Most patients expressed the need for information about why the medication switch took place (68%) and about the (same) effect of the medication (61%), while fewer patients currently receive this information (21% and 39%, respectively). Patients also indicated they need verbal information during pick-up/delivery (45%), written information beforehand (29%) and during pick-up/delivery (25%), while patients more often receive verbal information during pick-up (58%), and less frequently receive written information beforehand (6%) and during pick-up/delivery (18%).

Conclusion: Communication during medication switch conversations generally goes well. However, there is a difference between what PTs claim they do and what patients experience, e.g., space for questions and patients' satisfaction about this aspect. Dealing with patient emotions is also difficult for PTs. Patients emphasize they need more information than they currently receive, preferably before switching. Matching these needs and preferences can improve patient-centered communication.

Key words: patient-centered communication, pharmacy technicians, patients, medication switching encounters, information provision, emotions, pharmacy practice.

Introduction

The role of the pharmacy team in delivering pharmaceutical care has changed over the past decades from a primarily therapy-based to a more patient-centered approach[1,2]. For example, there is more focus on guidance of proper medication use and attention to patient education and counselling, including patients' needs and preferences. In challenging situations, where negative news has to be brought, clear communication tailored to the patient's needs is even more important[3]. In particular, there should be a focus on the information content (i.e., message being communicated), medium (e.g., verbal or written information), and how the message is conveyed (i.e., communication style)[4]. In European countries such as the Netherlands and Denmark, pharmacy technicians (PTs) are often the first point of contact for patients at the pharmacy counter, and mostly take part in conversations with patients on a daily basis. PTs work in community and out-patient pharmacy settings. Their primary role is to prepare and supply medicines and healthcare products and to give advice and guidance to patients[5]. Previous studies show that communication during pharmacy encounters can be improved[6-12]. For example, pharmacy staff should more often ask about the needs and preferences of patients and actively seek the patient's perspective[6-9]. These aspects are crucial as they can help the PT address specific problems or concerns that patients may have[13,14].

Situations that increase stress or negative emotions can intervene and act as a distractor in the two-way communication process between the patient and provider[15]. It regularly happens in pharmacy practice that there are challenging situations, such as encounters about non-medical medication switches. Non-medical medication switches refer to changes in medications for reasons other than effectiveness, side effects or adherence, often related to changes in formularies to reduce costs[16, 17]. A potential stressful encounter, such as a medication switch conversation, can be difficult for both the PT or the patient. These conversations can be difficult because it can become more challenging to respond in a controlled and effective verbal manner. Conversations about these types of switches regularly result in the PT delivering a message to patients that lead to negative emotions, i.e., being confused, upset, angry, frustrated, surprised, and even aggressive at the pharmacy counter[17,18]. Some patients may also be worried or concerned about aspects of the new medication, such as effectiveness of the medicine or side effects[18]. These types of conversations can have negative consequences, both on proper medication use by the patient[1,19] and the PTs' job satisfaction. It is therefore important to investigate what is needed to support communication during these encounters.

During these difficult medication switch conversations, it is essential for PTs to take patient needs and preferences, e.g., which information is given, in what way, and also how the message is conveyed into account[4]. However, we are currently unaware whether the provided information suits the needs and preferences of patients. Also, it is vital for pharmacy staff members to be aware of how they experience these conversations to know how to act accordingly when they are in a similar situation, as stressful encounters influence one's cognition, e.g., ability to make decisions, judgement, ability to listen or to pay attention[20]. By investigating the experiences during these conversations from both parties involved, insights can be drawn into how the conversations are conducted, and whether the expectations of both parties involved match. The aim of this study was therefore to gain insight into pharmacy technician-patient experiences regarding the communication during medication switching encounters, and in specific to map the needs and preferences of patients and whether pharmacy technicians meet these.

Methods

Study design

A quantitative study with online questionnaires was conducted to explore self-reported experiences of PTs and patients regarding communication and information provision during conversations about medication switches.

Participants

As patient-centered communication involves two parties, PTs and patients were both asked to participate by inviting participants from three existing panels:

- Pharmacy technicians included in the Panel on practical research for Pharmacy Employees (PAM) consisting of circa 1,000 pharmacy employees. About 90% of the PAM panel consists of PTs and 10% of the respondents are other pharmacy staff members such as pharmacy managers and pharmacy consultants (specialized PTs). Previous panel consultations[18, 21, 22] indicate that the response rate for online questionnaires in the PAM panel is around 15%.
- Patients of the AMP, Pharmacy Monitoring Program panel, were included. AMP is a representative panel of patients who visit community pharmacies regularly. The AMP patient panel consists of about 40,000 members, of which about half (47.5%) are male and the majority (78%) use medication for chronic conditions[23]. The AMP panel provides a response from a heterogeneous population.
- Patients of the Dutch patient organization for cardiovascular diseases panel (which includes approximately 2,600 people with cardiovascular diseases). Compared to the AMP-panel, this panel provided a more in-depth insight into experiences of a specific group of patients who are often presented with medication switches. Previous research has shown that a 30% response rate is common.

Questionnaire design and data collection

The questionnaires were aimed at collecting self-perceived experiences in general with the communication and information provision during conversations about medication switches. The questions asked to PTs and patients were not identical. Hence, we cannot compare the data.

<u>Pharmacy technicians questionnaire</u>
Pharmacy technicians were asked what their experiences were with conducting conversations about medication switches, specifically the way of communication and information provision. The questionnaire was drawn up based on previous questionnaires used for research on conversations at the pharmacy counter[1,2, 24] and input from researchers and pharmacy staff by testing the questionnaires and providing feedback.

Three pharmacy employees tested the technician survey for clarity and feasibility. Only one minor adaptation was made based on their feedback. The pharmacy staff member questionnaire was originally in Dutch (see Appendix 1 for the translated English version).

Questions included: background characteristics of the PTs (i.e., age, education level, years of work experience, and how big the pharmacy is where they work), characteristics of the conversation (i.e., how the message is conveyed, what information is provided), experience with the conversation (negative/positive experience), and with delivering the message about the medication switch from the

perspective of both parties involved. Answers of PTs were collected on a 5-point Likert scale (frequently, often, sometimes, rarely, never). A link to the online survey was distributed to panel members via email. The PAM questionnaire was open from the 15th to the 25th of March 2021. No reminders were sent.

Patients

We sent out two patient questionnaires. Firstly, a short set of questions about medication switches to patients, as part of a larger survey scheduled to be administered in the AMP panel. Additionally, we sent out a more extensive questionnaire to the patient organization for cardiovascular diseases panel. This patient organization has medication switches as an important topic on their agenda, and these patients regularly complete questionnaires on different health-related topics.

Patients in both questionnaires were asked about the current information provision and experience with the communication with the PT during a conversation about a medication switch. Questions included their preferences in the ways of communicating and information provision (i.e., information type and content), and their background characteristics. For the study subject no validated questionnaires were available. We used pre-existing validated tools and questionnaires as a basis/inspiration for the questionnaires developed specifically for this study[24-27]. A questionnaire used was the Consumer Quality Index (CQ-index) Pharmacy, which is a questionnaire developed with all relevant field parties, thoroughly validated and that was used to evaluate patient experiences in all Dutch pharmacies[26]. Another questionnaire used was the validated MEDICODE, a coding tool created for medication discussions within medical encounters[27]. Additionally, we used the guideline "Consultation in the pharmacy" developed by the Royal Dutch Pharmacists Association,[1] to ensure our questions were related to what important aspects are according to the professional organization.

In Appendix 2, Table 1, for the two patient questionnaires is showed which questions were asked in which questionnaire and which scales/types of responses for the questions were used. The main topics were identical for both questionnaires, though more in-depth experiences (with additional questions) were asked via the patient organization questionnaire. The questionnaire was tested by two representatives of patient organizations, one of whom had much experience with drafting questionnaires for patients. The minor textual changes they posed were incorporated in the questionnaires.

In both questionnaires, patients were asked whether they had experienced a non-medical medication switch in the previous year. Patients could respond either yes, once; yes, more than once; or no (see Table 1, Appendix 2). If the respondents from the patient questionnaires did not experience a medication switch, they were re-routed to a different section of the questionnaire. This section was about what type of information these patients would prefer in the case of medication switches, and not based on their own experience with a recent switch.

The identical questions in both questionnaires, were background characteristics (i.e., birth year, gender, and highest obtained education level, previously experienced medication switch), currently received and needed information type and content by patients. The categorization of the education level (low, middle, high) is in accordance with the Dutch central office for statistics[28]. Questions only posed in the extensive questionnaire included: satisfaction regarding different communication and information aspects of the pharmacy staff member (5-point Likert scale ((very) satisfied to (very)

unsatisfied, and option not applicable and/or did not occur in conversation), how many patients received information, and which patients need information about medication switching.

The questionnaire for AMP was programmed by the Utrecht Institute of Pharmaceutical Sciences (UPPER) and a link to the online survey was distributed to panel members via a personal email. The AMP panel questionnaire was distributed on the 19th of March 2021 and closed on the 30th of March 2021. The extensive questionnaire for the patient organizations was programmed online by Nivel, Netherlands Institute for Health Services Research, and then a general link to the questionnaire was sent around in the newsletter of the patient organization. For the patient organization panel, the questionnaire was sent to the panelists on the 25th of February and closed on the 18th of March 2021. No reminders were sent.

Full patient questionnaires, originally in Dutch, can be requested from the corresponding author.

Data analysis

All pseudonymized data were stored on a protected server and processed. Pharmacy consultants and managers (mainly specialized PTs) were also included in the pharmacy technician sample, as all of them indicated that they experienced conversations about medication at least a few times per week. The frequency scale used for the responses was merged into three categories: 'frequently-often', 'sometimes', and 'rarely-never'. All fully completed questionnaires were used for the data analysis.

Regarding the patient panel questionnaires, when questions from both panel questionnaires were identical, the two sample populations were merged into one for data analysis. The additional questions from the panel with cardiovascular disease patients were analyzed separately.

Data analysis for the PT and patient samples first included descriptive statistics to describe the sample populations. For patients, the different background characteristics, gender, and level of education) were investigated separately for both panels in relation to which information content and type patients received and need during medication switch encounters (yes/no). The differences between patient groups were analyzed with chi-square tests. The reason being that there were two categorical variables, two or more categories (groups) for each variable, and independence of observations.

A significance level of $p < 0.05$ was used. The statistical software STATA version 16 was used for the data analysis.

Results

In total 138 PTs and 4,679 patients (3,962 AMP panelists and 717 panel members with cardiovascular disease) filled out the questionnaires. Of the 1167 (2021) pharmacy employees in the PAM panel, 138 completed the questionnaire fully (response rate (138/1167=12%). The AMP questionnaire was sent to the entire panel (n= 34,986). In total, 4,502 started the questionnaire, of whom 3962 respondents met our inclusion criteria (response rate 11%). Lastly, of the circa 2600 panel members in the patient organization for cardiovascular diseases panel, 782 members gave consent and completed the questionnaire. Of these 782 panel members, 65 were excluded based on the screening questions (28% response rate).

Background characteristics of three samples

The majority of PTs were female (97.1%), had more than 20 years of work experience (81.9%) and worked in a middle-sized city pharmacy (48.6%). In total, from both panels, most patients were aged older than 65 years. Specifically, for the patients from the cardiovascular disease panel, 75% experienced a medication switch once or multiple times before, while 25% had not. In the general pharmacy patient panel sample, 42% of the patients had experienced a medication switch once or multiple times before, while 58% had not. Table 1 shows the characteristics of the study samples.

Table 1. Background characteristics of pharmacy technicians from the PAM panel and patients from the AMP panel and the patient organization panel for cardiovascular diseases

Pharmacy technicians		**Patients**				
PAM panel members, Total N=138			*AMP panel (Total N=3962)*	*N (responses)*	*Cardiovascular diseases panel (Total N=717)*	*N (responses)*
Mean age (SD): range	51.0 (9.2): 27-68	Mean age (SD): range	68.5 (10.0): 24-98	3747	67.2 (10.1): 24-93	683
Years of work experience, N (%)		Male, N (%)	2242 (59.1)	3742	439 (62.2)	706
< 10 years	4 (2.9)	Education level, N (%)		3742		704
10-20 years	21 (15.2)	Low	417 (11.1)		68 (9.7)	
20 > years	113 (81.9)	Middle	1586 (42.4)		293 (41.6)	
Size of pharmacy, N (%)		High	1739 (46.5)		322 (45.7)	
Village (<20.000 inhabitants)	46 (33.3)	Other	-		21 (3.0)	
Middle-sized city (20.000-150.000 inhabitants)	67 (48.6)					
Big city (>150.000 inhabitants)	25 (18.1)					

Pharmacy technician experiences conducting conversations about medication switching

Pharmacy technicians frequently have conversations about medication switching: 54% on a daily and 30% hourly basis. About 40% of all PTs indicated that they regularly experience these conversations as difficult. For example, about three-fourths (72%) of all the PTs indicated that they experience anger by a patient, usually multiple times per week/month. As a result, 41% indicated that these difficult conversations often influence job satisfaction.

Pharmacy technicians also indicated that patients experience such conversations as difficult. Specifically, patients who have experienced a previous medication switch (89%), patients who use multiple medications (79%), older patients (59%), and patients who use medication for a longer time (41%) appear to have more difficulties with a medication switch. PTs less frequently mentioned that the following patient groups experience medication switches as a problem: patients who are confused (33%), patients with lower health literacy skills (26%), limited language proficiency (23%), or use a specific type of medication (17%).

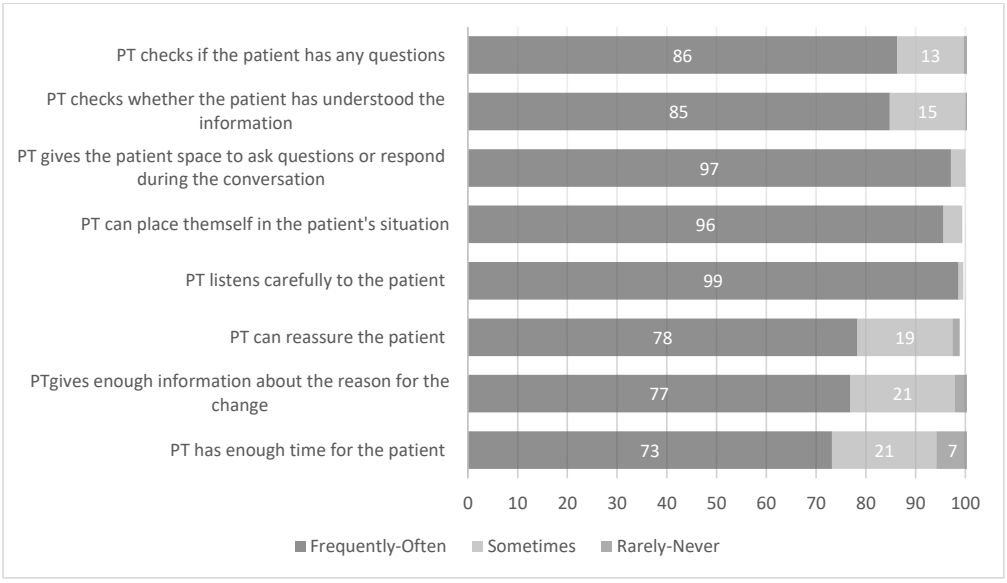
Pharmacy technician-patient communication about medication switching

The majority (81%) of the PTs indicated that they told the patient that the medication appearance or medication box has changed. Moreover, a majority (71%) of the PTs stated that they have to give a different medication brand as a result of the policy of health insurance companies.

Most pharmacy technicians (86%) indicated that there is a difference in how they bring the news regarding the medication switch per patient or situation. According to PTs, patients who have a previous experience with a medication switch (87%), have strong emotions (79%), are hurried (52%), and have a low language proficiency (48%) play a role in how the pharmacy technician delivers the message about a medication switch.

Almost all (99%) PTs indicated they listen actively to what the patient has to say on a frequent basis, and almost always give the patient room to ask questions (97%) (Figure 1).

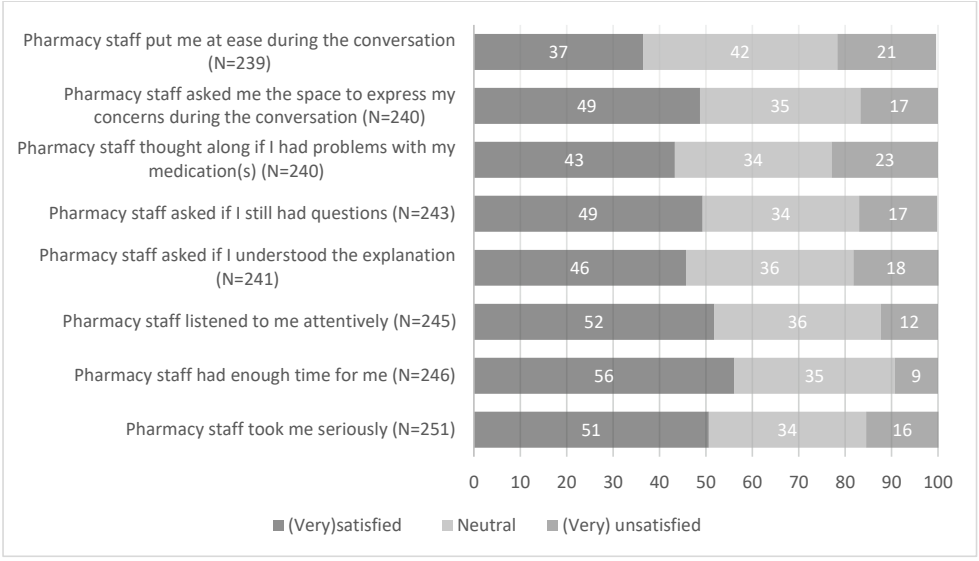
Figure 1. Frequency (% of respondents that indicated this option) in which pharmacy technicians (PTs) (N=138) indicated that they apply different communication aspects in a conversation about a medication switch*



* values under 5% are not reported as percentages in the figure

Patients from the cardiovascular disease panel, who were informed about the switch by the pharmacy, most often indicated that they are (very) satisfied about how much time the pharmacy staff had for them (56%) and how seriously the pharmacy staff took them (51%) (Figure 2). About three-fourths (73%) of the PTs indicated that they have enough time for the patient during a conversation regarding a medication switch (Figure 1). Patients also perceived this since this was the aspect where more than half of the patients (56%) were most satisfied about (Figure 2).

Figure 2. Extent to which patients from the cardiovascular disease panel, who were informed by the pharmacy about the switch, were satisfied (% of respondents indicated this option) with communication aspects regarding a medication switch*



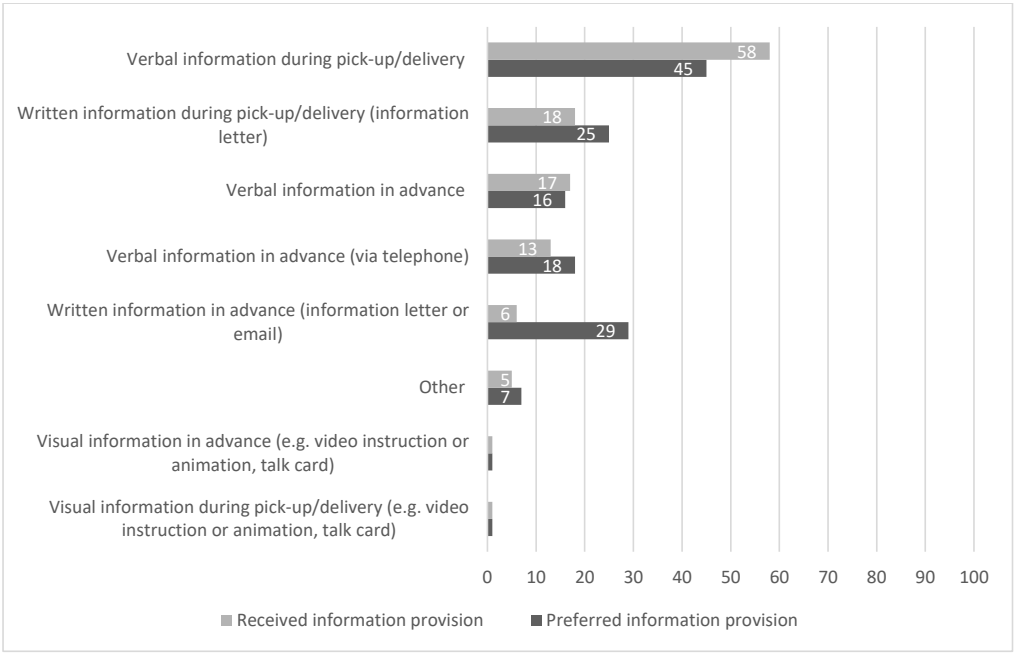
* excluding patients who indicated non-applicable as a response to this question

Patients from the pharmacy panel AMP were positive about pharmacy staff members' communication about the switch: 70% of these respondents were (very) positive, 27% had a neutral opinion and 3% was (very) negative. Moreover, one-third (33%) of the patients from the cardiovascular disease panel was (very) positive, 43% had a neutral opinion, and about one-fourth (24%) was (very) negative.

Received and preferred information content and type about medication switching

In total, half of the patients (51%) from both panels indicated that they were informed by the pharmacy (as opposed to another healthcare professional) during their previous medication switch. More than half (58%) of these patients indicated that they were informed verbally during pick-up or delivery by the pharmacy staff about the medication switch (Figure 3). More than three-fourths (77%) of the pharmacy technicians indicated that patients are not informed about the medication switch prior to picking up or receiving the new medication via delivery. While verbal information during pickup/delivery (45%) and written (i.e., information letter or email) or oral (i.e., via the telephone) before pickup/delivery (29% and 18%, respectively) are preferred by patients (Figure 3). Of the patients who have and who have not experienced a medication switch in the cardiovascular disease panel, 90% indicated that they do desire information about a medication switch from the pharmacy team.

Figure 3. Type of information patients from both panels combined received (N=1016) and preferred (N=2106, those who filled in the questionnaire and that did not experience a medication switch), (% of respondents indicated this option) about a medication switch*

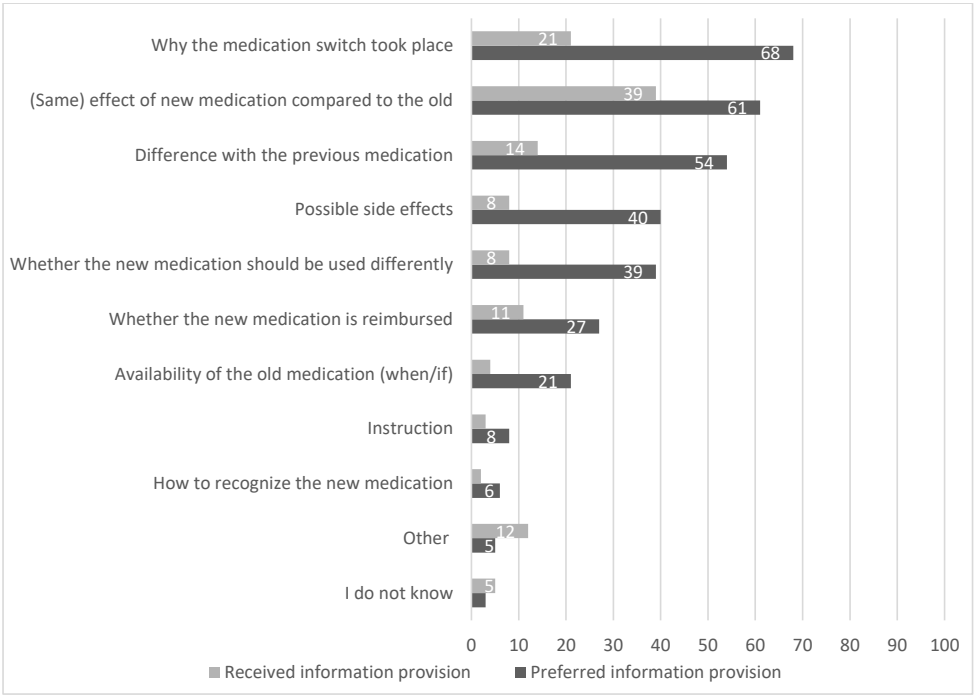


* Respondents could give more than one response to this question, and excluding patient who indicated 'non-applicable' on this question) - values under 5% are not reported as percentages in the figure

Specifically, in the group of patients from the AMP pharmacy panel, highly educated people more frequently indicated (27%) that they want to receive written information during pick-up/delivery (information letter) than people with a low educational level (19%) (P<0.05) (Appendix 3, Table 2). Women (22%) and people with a middle level of education (20%) more regularly indicated that they want to receive verbal information in advance of pick-up/delivery than men (14%) (P<0.001) and highly educated people (14%) (P<0.05) (Appendix 3, Table 2). These comparisons with background characteristics are similar to with those of the patients from the cardiovascular disease panel (Appendix 3, Table 2).

Overall, approximately half of the patients from the cardiovascular disease panel (54%) indicated that they received enough information during their previous medication switch. As shown in Figure 4, on all inquired topics, patients want more information than they receive. Patients prefer information about why the medication switch took place (68%) and about the (same) effect of the medication (61%), while fewer patients indicated they currently receive this information (21% and 39%, respectively) (Figure 4).

Figure 4. Type of information content patients from both panels combined received (N=1016) and preferred (N=2106, those who filled in the questionnaire and that did not experience a medication switch) (% of respondents indicated this option) during an encounter about a medication switch*



* values under 5% are not reported as percentages in the figure

Specifically, in the group of patients from the AMP pharmacy panel, women (67%) and younger people (<40 years old and 40-64 years, combined) more regularly indicated (70%) that they want information about why the switch occurs than men (61%) (P<0.05) and people aged 65 and older (61%) (P=0.001) (Appendix 3, Table 2). These comparisons with background characteristics show similar patterns with the patients from the cardiovascular disease panel (Appendix 3, Table 2). The slight differences in background characteristics in the patient group from the cardiovascular disease panel are that specifically people with a middle-level education indicated more often (78%) that they prefer information about the (same) effect than people with a higher (70%) and lower (65%) level of education (P<0.05) (Appendix 3, Table 2). Also, next to women (85%) who need information about why the switch took place in comparison to men (78%) (P<0.05), also people with a higher education level (84%) and younger patients (<40 and 40-64 years old) (86%) more often indicated they prefer this information compared to people with a lower educational level (69%) (P<0.05) and older patients (≥65 years old) (78%) (P<0.05) (Appendix 3, Table 2).

Discussion

The aim of this study was to gain insight in pharmacy technician-patient self-reported experiences regarding the communication during medication switching encounters, and in specific to map the needs and preferences of patients and whether pharmacy technicians meet these. Generally, the communication during conversations about medication switches goes well, though dealing with the emotions of patients for PTs is difficult. In general, patient satisfaction with the technicians' communication about the switch is divided, where the patient group from the pharmacy panel were more positive than the patient organization panelists who were more critical. Moreover, patients highlight that they wish for more information than they currently receive during medication switch encounters. In about half of the cases, patients received information about the medication switch (e.g., why the switch took place and the (same) effect of the new medicine) from the pharmacy. Though, when asking patients, both who have and who have not experienced a medication switch, almost all patients indicated that they desire information about the switch, and specifically the wish for information before the switch. Most PTs confirm that they do not give information beforehand. This is a gap in meeting patients' information needs about medication switches.

There may be a difference in perspective between technician perceptions and patient perceptions of switch conversations. For example, PTs perceive themselves as giving the patient space to ask questions and respond, whereas only about half of patient respondents were satisfied that they were given the space to express concerns. Similarly, the majority of PTs claimed to frequently or often check if the patient has questions, whereas again, only about half of the patients claimed they were satisfied that the pharmacy technicians had asked if they had questions. These observations seem to suggest that there is a difference in perspective between what PTs claim they do during conversations about medication switches and what the patient perceives happens in these conversations. However, it is possible that there is a bias in the included respondents, particularly that those who are satisfied with switches may be more inclined to complete the questionnaire. Nevertheless, aligning these insights on how well the communication is perceived by both parties involved and by sharing these with pharmacy staff, for example, in training on communication and consultation, can only improve communication during encounters at the pharmacy counter.

Dealing with the emotions in conversation about medication switches is often experienced as difficult by PTs. A conversation about a medication switch is different than for example a standard pharmacy counter conversation (e.g., about a first dispense or refill), as it is about bringing a message that cannot be changed. For example, the medication is simply not available, or the pharmacy technician cannot avoid the fact that the patient has to pay themselves if they want their preferred medication. For these reasons, conversations about medication switches can be seen as bringing negative news. This is because of the frequent emotion in these conversations and the need for finding solutions after addressing the patient's emotion. Due to the powerless position of the patient and the pharmacy technician, the impact of delivering negative news is high. Expression of negative emotions can be a way patients show underlying mechanisms such as fear of side effects or doubts about the effectiveness of the medication[18]. Patients who become desperate, for example, those who often experience medication switches, in return may more frequently show these negative emotions, such as being upset, angry, frustrated, surprised, and even aggressive[7,8]. These negative emotions have an impact on the job satisfaction of pharmacy technicians. PTs may not experience such difficult conversations daily, though these difficult conversations are usually the ones with the most impact.

Hence, it is important that the pharmacy technician understands the reason behind the emotional response. By pinpointing the reason, the PT and patient can more effectively address solutions for the root of the patient-experienced problem.

Moreover, patient's satisfaction about the communication during these conversations was divided based on the two patient populations. Specifically, there was a difference in satisfaction with communication in the conversation between the generic patient group and the patient organization group with cardiovascular disease. Reasons for this difference may be that patients from a patient organization are active members and are often also interested in completing a questionnaire and therefore willing to share their experiences. Perhaps these patients in the patient organization are more active patients who are more concerned with health and therefore have more expectations/needs with regard to healthcare providers. Also, these patients in the cardiovascular disease panel have more often experienced medication switches as opposed to the people in the other panel. Further, these patients may experience medication switches more sensitively. As a result, they may be more critical about their experiences regarding medication switches.

Looking at the information needs of patients, most patients receive information verbally while picking up/delivery of the medication, while there is also a group of patients that would like information on the medication switch before pick-up/delivery. Repetition of information to better uptake and remember information is a facilitating factor related to information provision and decision-making. These are crucial in patient care[29]. This is particularly important in difficult conversations, as emotions also block how the patient receives the information. Hence, patient concerns must first be taken away, otherwise the patient will not take in the information. The reason being that patient's recall of provided information is hampered as their information processing does not work optimally in such situations. Previous research indicated that affective communication of the healthcare provider, i.e., expression of feelings about things, others, and themselves, is important to decrease patients' uncertainties, and thereby improving information recall[30].

Also, according to previous research on breaking bad news, preparatory information is key in decreasing the experienced distress by patients[31]. In this study about conversations about medication switches, these conversations are on a different scale than, for example, a cancer diagnosis, but the principles used in the conversations may be the same[32]. As shown in previous research[19], providing information prior to the switch may already decrease potential negative emotions experienced by the patients. This idea is also echoed in literature as heightened emotion in bad news conversations highlights the need for patient preparation, mentally and emotionally, before the patient-provider interaction[20]. Therefore, one of the best ways to prepare patients for such conversations is by providing them with medication information that matches their needs. This supports patients, so they can make informed decisions[13,31, 33-36] where possible during these situations, and that they are better supported in understanding the information provided[1]. This is key as patients who are better informed about their medications, feel less uncertain about their medication use, which increases treatment benefits and adherence[37-38]. Henceforth, receiving written information beforehand, or even after the news has been brought is important so the patient can either prepare for the conversation or review the written information after the heightened emotion has returned to its normal state. The patient's need for written information prior to pick-up/delivery is also endorsed by the fact that the majority of the pharmacy technicians indicated that patients are not informed about the medication switch prior to pick-up. This gap in needs between the patient and what occurs in practice is important to fill.

Strengths and limitations

A strength of this study is that the experiences from both the patient and provider perspectives were investigated. Also, the use of anonymous questionnaires is a strength, as this creates a space where the respondents can be open and honest. Using questionnaires also allowed us to collate the experiences and opinions of many respondents in a short time frame, which was sufficient for the explorative nature of this study. Another strength is the use of two patient panels, which allowed for more variety of patients, and more generalizable results. The reason being, the AMP panel is representative of pharmacy visitors and using the additional population of chronic users from the cardiovascular disease panel allowed us to gain more in-depth views on their experiences regarding medication switches.

A limitation is that this study included self-reported experiences, however due to the variation in type of participants included in this study, these new insights provided a complete picture of the how the communication and information provision is during a conversation regarding medication switching. Another limitation is the representativeness of the samples, where the pharmacy technicians were relatively old, and the patients were relatively highly educated. The mean age of pharmacy staff in the Netherlands is 41.6 years[39], while the mean age was about ten years older in this sample. The high number of female respondents reflects staff working in Dutch pharmacy practice, as about 90% of the staff working in Dutch communities is female[40]. Regarding the representative of the patients, for the AMP panel this sample is representative for pharmacy visitors and chronic medication users in general. These are older compared to the general population. Though these differences are less relevant because the experiences of patients who have experienced a medication switch are described. The same goes for the sample from the patient organization. Moreover, a significant limitation is that we did not immediately send out the questionnaire after the medication switch, hence the potential recall bias on how well people remember what information was provided and recall between those with a positive and negative medication switch experience.

Implications for practice and research

It is important for pharmacy staff to continue to incorporate the (communication) aspects that are perceived as (very) satisfactory by the patients, as this increases tailored patient-centered communication in the pharmacy practice. Concrete examples are how seriously the pharmacy staff member treats the patient and how much time the pharmacy staff member has for the patient, which are aspects that are more focused on how well a patient is treated. Also, specific communication aspects, such as the room the pharmacy staff gives the patient to ask questions or the pharmacy staff member asking the patient if they understood the explanation, are important to incorporate in these types of conversations. These aspects can also be included in communication training and education programs for pharmacy staff. Making sure that the patient has understood what has been told is key to proper medication use, as these aspects can confirm the patient's understanding or reveal unanswered questions or uncertainties. Hence, by incorporating these aspects in pharmacy practice, this can lead to proper medication use and increased job satisfaction for pharmacy staff members.

Moreover, pharmacy staff can continue to give information during pick-up, but also call or provide written information before the switch, specifically about why the medication switch took place and if the effect of the (new) medication is the same. Time and occupancy remain a bottleneck, as well as the number of medicine switches and shortages, which do not seem to be decreasing yet. Informing

the patient in advance, via the telephone or an information letter, can save time at a later point during a medication switch. Also, an upset or even angry patient at the counter takes extra time. At first, this extra effort may take additional time. However, as this is an investment in the relationship with the patient, this will later give more trust and ease during conversations at the pharmacy counter. It is important to spread this knowledge to pharmacy staff via training/education, e.g., in the form of best practices as learning from practice examples is valuable.

Adapting the desired information content and type to specific types of patients is also a way to tailor the conversations to patients' needs and preferences. Previous literature shows that people have different preferences regarding patient-provider communication. Particularly, women often prefer a more active role during consultation than men[38], and so do younger people compared to older[41]. Our study shows that particularly women and middle-level education patients wish to receive verbal information before. In the pharmacy, the patient's education level is usually unknown. Hence, to focus on this patient trait is difficult. However, if the pharmacy staff member finds that the patient has trouble understanding or comprehending the information given, verbal information instead of written information may be preferred.

This study also serves as valuable input for a follow-up study, in which we give pharmacy team tools via a communication skill-based training on delivering the news during conversations about medication switches. In this way we ensure that the communication tools are in line with the experiences and needs from practice. It is important to address the needs and preferences in the training, as well as (further) develop tailored information to foster an understanding of switching in patients. Also, this study is a good starting point to further investigate how the emotions of both the pharmacy technicians and patients influence pharmacy-counter conversations in pharmacy practice.

Conclusion

Generally, pharmacy technicians believe that non-medical medication switch conversations are going well. However, there is a perspective difference between what pharmacy technicians claim they do during these conversations and what the patient perceives, e.g., providing space for questions and how satisfied patients are with this communication aspect, though this can partly be a sample selection matter. Additionally, dealing with the patients' emotions remains difficult. Regarding patients' needs and preferences, patients emphasize that they desire more information than they currently receive about a medication switch, preferably before the medication pick-up or delivery takes place. Most pharmacy technicians confirm that they do not provide information in advance. Matching these needs and preferences can improve patient-centered communication.

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Appendix 1

Pharmacy team member questionnaire

This questionnaire is about medication switches without medical reason. These are therefore:

- Switches due to health insurance policies or other contract agreements with health insurers
- Switches due to medicine shortages

GENERAL QUESTIONS ABOUT MEDICINE SWITCHES IN YOUR PHARMACY

1. How often do you have a conversation about a medication switch in the pharmacy where you work?
   - ❑ Almost never
   - ❑ Several times a month
   - ❑ Several times a week
   - ❑ Several times a day
   - ❑ Several times per hour
   - ❑ Other, namely ……

2. How often do you experience a conversation about a medication switch as difficult?
   - ❑ Never
   - ❑ Seldom
   - ❑ Sometimes
   - ❑ Regularly
   - ❑ Often
   - ❑ Other, namely ……

3. Is the patient in your pharmacy generally informed **in advance** of the medication switch, so before they pick up the medication (or gets it delivered)?

   - ❑ No
   - ❑ Yes, by phone
   - ❑ Yes, via an information letter
   - ❑ Yes, by mail
   - ❑ Yes different, namely: ……

4. How do you introduce the conversation about a medication switch to the patient? *(multiple answers possible):*
   - ❑ I say directly that the medicine is not available
   - ❑ I tell the patient that we have to give them another medicine due to the health insurer
   - ❑ I emphasize the possible benefits of the new medicine
   - ❑ I introduce the conversation by saying that something bothersome is going on
   - ❑ I tell the patient that the box/appearance of the medicine has changed
   - ❑ Other, namely ……

5. Is there a difference in how you bring the message about a medication switch per patient or situation?
   - ❑ Yes
   - ❑ No go to question 7→

6. What factors play a role in this?
   - ❑ (lack of) privacy at the counter
   - ❑ (increased) work pressure
   - ❑ Rushed patients
   - ❑ Emotions of the patient
   - ❑ Patient characteristics such as health skills
   - ❑ Patient characteristics as education level
   - ❑ Patient characteristics such as language proficiency
   - ❑ Experience with previous medication switch
   - ❑ Other, namely ……

7. In case of a conversation about a medication switch:

	Never	**Seldom**	**Sometimes**	**Regular**	**Often**	**Not applicable**
a. Do I have enough time for the patient						
b. Can I give enough information about the reason for the switch						
c. Can I reassure the patient						
d. I listen carefully to the patient						
e. Can I place myself in the patient's situation						
f. Do I give the patient space to ask questions or respond during the conversation						
g. I check whether the patient has understood the information						
h. Do I check if the patient has any questions						
i. Can I deal with patients who show strong emotions (anger, aggression)						

8. How often is your job satisfaction affected by a conversation about a medication switch?
   - ❑ Never
   - ❑ Seldom
   - ❑ Sometimes
   - ❑ Regular
   - ❑ Often
   - ❑ Other, namely ……

9. Has your pharmacy addressed the topic of conversations about a medication switch *(multiple answers possible)*?
   - ❑ Yes, a communication training
   - ❑ Yes, during work consultations
   - ❑ Yes, otherwise ……
   - ❑ No, never
   - ❑ I do not know if this has been addressed.

10. Are there any other points you would like to make about your conversations with patients about medication switches?

Reaction patient/client about a medication switch

11. Do patients often experience medication switches due **to policies of the health insurer or other contract agreements with health insurers** as difficult?
    - ❑ Never
    - ❑ Seldom
    - ❑ Sometimes
    - ❑ Regular
    - ❑ Often
    - ❑ I do not know
    - ❑ Comments: ……

12. Do patients often experience a medication switch due to **medicine shortages** as difficult?
    - ❑ Never
    - ❑ Seldom
    - ❑ Sometimes
    - ❑ Regular
    - ❑ Often
    - ❑ I do not know
    - ❑ Comments: ……

13. In which type of medication switches do patients most often show misunderstanding or anger?
    - ❑ In case of shortages of medicines
    - ❑ At the policies of the health insurer/medicine brand switch due to insurer policy
    - ❑ No difference in medication switch
    - ❑ Other, namely: ……
    - ❑ I do not know

14. Which groups of patients have the most difficulty switching? *(multiple answers possible):*
    - ❑ Elderly patients
    - ❑ Patients with lower health literacy
    - ❑ Patients with a language barrier
    - ❑ Patients taking many different medications
    - ❑ Patients who are confused
    - ❑ Patients with a negative experience with a medication switch
    - ❑ Patients taking a certain type of medication, namely ……
    - ❑ Patients who have been taking a medicine for a long time
    - ❑ Otherwise, namely ……

15. Does it happen that patients indicate that your information about the medication switch differs from what the doctor has said?
    - ❑ Yes, please go to question 16→
    - ❑ No, please go to question 17→

16. What do you do then?

17. How often do you encounter the following emotions of patients when talking about a medication switch?

	Several times a month	Several times a week	Several times a day	Several times per hour	Not applicable
Anger					
Incomprehension					
Confusion					

Characteristics about yourself

18. What is your year of birth? ……

19. What is your gender?
    - ❑ Male
    - ❑ Female
    - ❑ Other

20. How many years have you been working in the pharmacy?
    - ❑ < 1 year
    - ❑ 1-5 years
    - ❑ 6-10 years
    - ❑ 11-15 years
    - ❑ 16-20 years
    - ❑ 20 > years

21. Is the pharmacy where you work affiliated with a chain?
    - ❑ Yes
    - ❑ No
    - ❑ Other, namely: ……

22. Do you work in a village or city pharmacy?
    - ❑ Village (up to 20,000 inhabitants)
    - ❑ Medium-sized city (20,000 – 150,000 inhabitants)
    - ❑ Large city (from 150,000 inhabitants)

23. What is the situation of the pharmacy where you work?
    - ❑ In a health center or pharmacists, general practitioners, and paramedics (AHOED)
    - ❑ Other

24. What is your function within the pharmacy?
    - ❑ Pharmacy technician
    - ❑ Pharmaceutical consultant
    - ❑ Pharmacist
    - ❑ Other, namely: ……

Appendix 2

Table 1. Questions asked per patient questionnaire and types of responses

	General pharmacy patient questionnaire	Patient organization for cardiovascular diseases questionnaire
Types (and #) of questions	3 screen questions^, 11 questions, 1 open remarks box	2 screen questions, 23 questions, 1 open remarks box
Screening question 1) Do you use one or more medicines prescribed by a doctor or nurse for a long time (more than a year)? *(response: yes or no; and if no, stop the questionnaire)*	Yes	Yes
Screening question 2) Do you have a use a multidose drug dispensing system? *(response: yes or no; and if yes, stop the questionnaire)*	Yes	Yes
Question whether patient has experienced a medication switch before *(multiple choice responses: yes, once; yes, more than once; no)*	Yes	Yes
Questions about last medication switch		
For which medication(s) the patient has a medication switch *(response open remark)*	Yes	Yes
Reason for switch *(response multiple choice, and other, namely option)*	Yes	Yes
Experience with new medicine *(5-point scale: (very)positive to (very)negative)*	Yes	Yes
Justification for experience with new medicine *(multiple choice, multiple answers possible and other, namely option)*	No	Yes
Whether the patient was informed about their last medication switch and from whom *(response multiple choice; yes, pharmacy; yes, general practitioner; yes, someone else, namely, no)*	Yes	Yes
How the patient was informed by the pharmacy during their last medication switch *(response multiple choice: type of information and when, and open remark for additional comments)*	Yes	Yes
Content of information the patient received by the pharmacy during their last medication switch *(response multiple choice and open remark for additional comments)*	Yes	Yes

Table 1. (continued)

	General pharmacy patient questionnaire	Patient organization for cardiovascular diseases questionnaire
Trust in the new medicine *(5-point scale (very)little to (very) much)*	No	Yes
Has it occurred that the patient has received contradictory information from the pharmacy and the general practitioner /specialist *(response: yes or no)*	No	Yes
Open remark to give explanation to question about contradictory information, mentioned above (if so, what did you do? *(open remark)*	No	Yes
Experiences about last medication switch conversation		
Experience regarding communication with pharmacy staff during last switch (5-point scale: (very)negative to (very) positive)	Yes	Yes
Open remark to justify experience with communication *(open remark, optional)*	Yes	Yes
Patient satisfaction about communication aspects regarding previous medication switch (5-point scale (very) satisfied to (very)unsatisfied, and not applicable option)	No	Yes
Patient satisfaction about information aspects regarding previous medication switch (5-point scale (very) satisfied to (very)unsatisfied, and not applicable option and did not occur in the conversation option)	No	Yes
Question whether the patient believe they receive sufficient information about the medication switch *(yes or no response)*	No	Yes
Need for information		
Whether the patient wants/does not want information from the pharmacy during a medication switch (yes or no, and If no, open remark asking which information they missed)	No	Yes
How the patient wants to be informed by the pharmacy during a medication switch *(response multiple choice: type of information and when, and open remark for additional comments)*	Yes	Yes

Table 1. (continued)

	General pharmacy patient questionnaire	Patient organization for cardiovascular diseases questionnaire
Content of information the patient wants to receive by the pharmacy during a medication switch *(response multiple choice and open remark for additional comments)*	Yes	
Patient characteristics*		
Birth year *(open remark)*	No	Yes
Gender *(multiple choice options; male, female, other)*	No	Yes
Highest obtained level of education *(8 multiple choice options, and other, namely option)*	No	Yes
Question about which prescription drugs the patient is taking *(multiple choice options, multiple answers possible)*	Yes	Yes
Open remark box, for any remaining comments or questions	Yes	Yes

^the question about whether the patient has experienced a medication switch previously is presented in the general pharmacy patient questionnaire as a screening question, and in the patient organization for cardiovascular diseases questionnaire as a regular question. If the respondents from the general patient questionnaire did not experience a medication switch, then they were asked to stop filling in the questionnaire. For the other respondents, from the cardiovascular diseases panel, in this case they were re-routed to a different section in the questionnaire

** for the general pharmacy patient questionnaire, this question was already known, and therefore not asked in this short questionnaire*

Appendix 3

Table 2. Differences between background characteristics and preferences for information type and content during a medication switch*

	Contrast AMP	P-value	Contrast cardiovascular disease panel	P-value
Information type				
Written information during pick-up/delivery (e.g., Information letter)				
Education level, N (%)		X^2 (2) = 6.8, p<0.05		X^2 (2) = 6.4, p<0.05
Low	28 (19)		11 (15)	
Middle	131 (22)		76 (28)	
High	178 (27)		87 (31)	
Verbal information in advance of pick-up/delivery (via the telephone)				
Gender, N (%)		X^2 (1) = 12.3, p<0.001		X^2 (1) = 8.6, p<0.01
Male	118(14)		61 (16)	
Female	122(22)		60 (25)	
Education level, N (%)		X^2 (2) = 8.2, p<0.05		X^2 (2) = 6.8, p<0.05
Low	28 (19)		19 (27)	
Middle	119 (20)		59 (22)	
High	93 (14)		43 (15)	
Information content				
Information about why the medication switch took place				
Gender, N (%)		X^2 (1) = 5.9, p<0.05		X^2 (1) = 5.2, p<0.05
Male	504 (61)		303 (78)	
Female	382 (67)		203 (85)	

Table 2. (continued)

	Contrast AMP	P-value	Contrast cardiovascular disease panel	P-value
Age ^, N (%)		X^2 (1) = 10.8, p=0.001		X^2 (1) = 5.9, p<0.05
<40 and 40-64	308 (70)		174 (86)	
≥65	578 (61)		339 (78)	
Education level, N (%)		X^2 (2) = 2.2, p=0.3		X^2 (2) = 8.5, p<0.05
Low	90 (60)		49 (69)	
Middle	367 (62)		217 (80)	
High	429 (65)		240 (84)	
Information about the (same) effect of the new medicine				
Education level, N (%)		X^2 (2) = 0.12, p=0.9		X^2 (2) = 7.3, p<0.05
Low	85 (57)		46 (65)	
Middle	329 (56)		212 (78)	
High	373 (57)		200 (70)	

^ The <40 years old group and 40-64 were combined because the <40 group was too small to otherwise include in the Chi-test.

* In this study, all background characteristics were tested with the outcome measures regarding the information type and content the patient received and needs during non-medical medication switches. Only a selection of the results is presented, namely the significant results. The non-significant results are not presented in this article, though these can be made available upon request by the corresponding author.

CHAPTER 5

Facilitating pharmacy staff's conversations about non-medical medication switches: development and testing of a communication training

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Abstract

Background: Non-medical medication switches, a change to another medicine or medication label not motivated by medical reasons, occur frequently. Switches often lead to negative patient emotions, such as confusion and anger. Pharmacy staff's communication, i.e., delivering the message and addressing patients' emotions is crucial, but experienced as difficult.

Objective: To develop and test a communication training for the pharmacy team to facilitate medication switch conversations.

Methods: A communication training was developed based on the 'breaking bad news model' and 'positive message framing' strategies, and incorporating needs and preferences from practice. The training consisted of an e-learning with theory and reflective exercises, a half-day live training session, and an online reflection session. The Kirkpatrick training evaluation model (levels one 'reaction' and two 'learning') was used to evaluate the training. Quantitative data were analyzed using descriptive statistics and interview data was transcribed verbatim and analyzed thematically.

Results: Twelve pharmacists and 27 pharmacy technicians from 15 Dutch pharmacies participated in the training. According to Kirkpatrick's model level one, the major learning outcome was to give space to patients to express their emotions and/or concerns (e.g., more silences in the conversations). For level two, most participants valued practicing the conversations, role-playing, and receiving feedback. The majority of the participants indicated that they had sufficient tools and practice during the live training to apply the strategies in daily practice. A few participants still needed time and practice, or missed examples to apply the strategies.

Conclusion: The communication training based on the two strategies was well-received and participants felt well-equipped post-training. The take-away for participants was to give space to patients to express their emotions. Using these strategies and skills, pharmacy teams can tailor their medication counseling to patients' emotions and concerns during non-medical medication switches to better support patients in proper medication use.

Key words: community pharmacy, communication skill-based training, non-medical medication switches, patient-centered communication, medication counseling.

Introduction

Non-medical medication switches occur frequently due to medicine shortages or policies of health insurers in order to reduce prescription medication costs[1]. A non-medical medication switch refers to a change to another medicine or medication label not motivated by medical reasons. The new medication is generally expected to have the same effects as the old medication[2,3]. Yet, patients often experience unintended consequences[4-6]. Switching can create practical barriers, for example, the medication looks different and is not recognized by the patient. This change can create confusion about the new medicine, which can lead to unintentional medication non-adherence. Additionally, poor expectations of the effect of the medicine, also known as the nocebo effect, may be due to distrust in the new medicine, or fear of new side effects[7]. The nocebo effect is a negative reaction that people experience such as side effects when they have negative expectations of a treatment, e.g., when switching medications[1]. Switching medicines without a medical reason can therefore also lead to intentional medication non-adherence and can result in patients feeling less confident in their ability to solve problems related to their medication use [8].

Pharmacy team member's communication about these switches, how they deliver the message and how they address patients' emotions and concerns regarding the switch and use of the new medicine is crucial. The majority of patients accept non-medical medication switches, though switching also regularly leads to a negative emotional response by the patient[9]. Medication switches occur often and have shown to create tension[10] in the pharmacy, both for the pharmacy team member as well as the patient because they have little or no influence on these health insurance policies or shortages. For example, about three-fourths (72%) of pharmacy technicians expressed that they experience anger by patients, usually multiple times per week or per month[10]. Moreover, pharmacy technicians also indicated that these difficult conversations regularly negatively influence job satisfaction[10]. Thus, effective patient-centered communication skills are needed to communicate well with patients who may have difficulty with a switch. This includes attention for how pharmacy team members can facilitate these conversations and address these emotions experienced by patients.

Studies show that pharmacy staff find it difficult to perform effective patient counseling and patient-centered communication[11-13]. Pharmacy staff members could thus potentially benefit from training and skills to conduct such conversations, especially in the case of difficult consultations about medication switches. Stress and arousal are common disruptors for effective communication. Medicine switches can be stressful due to the regularly experienced emotions of patients. In a stressful situation, the brain reacts automatically and the one in a heightened emotional state is less inclined to reflect on themselves and on others. For example, stressful encounters influence one's cognition, e.g., ability to make decisions, judgement, ability to listen, or to pay attention[14]. It is essential to address the emotion and what feelings and thoughts affect the self and other. Improving communication skills to converse about non-medical medication switch conversations may give the professional more self-efficacy and may prevent potential burnout due to the burden of the conversations[15-17]. At a patient level, improved communication may result in more trust in the medicine[7,18] and better acceptance of the medication switch and use of the new medicine[19], which ultimately also contributes to proper medication use. Hence, it is crucial to support pharmacy staff members in their counseling about medication switches in pharmacy practice.

There are several communication strategies that can be used to deliver a negative message. A commonly used communication strategy in medicine (e.g., field of oncology) when conducting conversations in which a negative message has to be conveyed is the 'breaking bad news model' [20,21]. This model aims to prevent pitfalls, such as diverting from the main message or delaying the delivery of the message. This conversation model consists of three phases: 1) delivering the bad news or negative message, 2) dealing with the reactions of the recipient, and 3) looking for a solution. As shown in previous research, having a pre-defined structure for a conversation where a health professional has to bring negative news can help them feel more prepared and confident to have the conversation[22].

Another possible communication strategy is 'positive message framing'. With this strategy, the advantages of the situation are emphasized in the message. In terms of prescription medication use, a recent study of patients with rheumatic diseases found that positively framing a switch from originator biological to biosimilar led to a greater willingness to switch[23]. Positive framing of possible side effects (e.g., experiencing a side effect indicates that the medicine is working) has also been shown to lead to a reduction of the nocebo effect[23,24]. Given these effects in other studies, and as similar principles apply to the context of our study (medication switches, perceived side effects, doubts, or concerns about the effectiveness), this strategy was chosen.

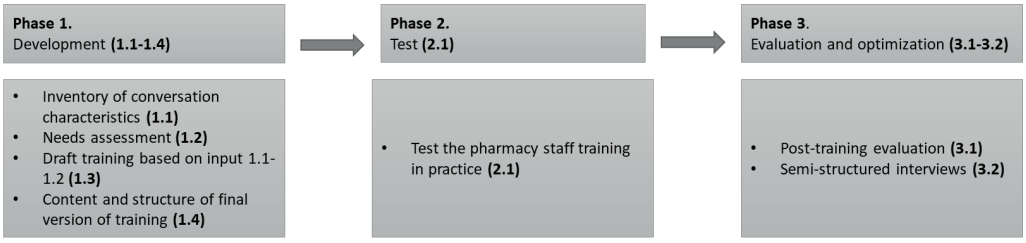
To date, these strategies are hardly applied in the pharmacy setting, while their use could possibly contribute to a better course of conversations in the pharmacy when communicating during difficult situations. This study aimed to develop and test a communication training for the pharmacy team to facilitate medication switch conversations, based on the 'breaking bad news model' and the 'positive message framing' strategies.

Methods

In this study, a communication training for pharmacy team members to facilitate conversations about non-medical medication switches was developed (phase 1), tested (phase 2), and evaluated (phase 3). The communication training was developed by the research team in collaboration with two trainers (MW and AF) based on the 'breaking bad news model' and 'positive message framing' strategies, and incorporating needs and preferences from practice (see parts 1.1 and 1.2, Figure 1). The developed e-learning and training materials were drafted (1.3), checked (1.4), and then tested (2.1) and evaluated (3.1-3.2).

The researchers and trainers have educational backgrounds in pharmacy practice, (bio)medical sciences, communication education, sociology, and in teaching both undergraduate pharmacy students, and postgraduate pharmacists and pharmacy technicians. The researchers and trainers were involved in the three aspects of the training. For the e-learning, the researchers organized the registration of conversation characteristics (1.1), needs assessment (1.2), and made an initial draft of the e-learning (1.3). The trainers gave their feedback on the e-learning. For the live-training and its materials, the trainers took the lead, and the researchers provided their feedback. For the reflection sessions (2.1), the researchers and trainers worked together to prepare and conduct these sessions.

Figure 1. Development, test, and evaluation of the communication training about non-medical medication switch conversations in three phases



Phase 1. Development

1.1 Inventory of conversation characteristics

To understand the challenges and success factors in the pharmacy regarding the communication during non-medical medication switch conversations, pharmacy staff members registered positive and negative characteristics of these conversations. Taking inventory of these characteristics (i.e., how the conversation went, reaction of the patient, positive and negative aspects of the conversation) in open and closed question form served as input for the e-learning part of the training, particularly as background information on non-medical medication switches.

Four different community pharmacies in the Netherlands were invited to participate. At the start of this study, a call for participation was made via newsletters, websites, and social media (Twitter, LinkedIn, Facebook) of the networks of the researchers. From the responses on this call, pharmacy teams were selected based on more/less experience with practice research and more/less experience with consultations and communication. In total, three pharmacy team members per pharmacy were asked to register characteristics of non-medical medication switch conversations using a registration form (Appendix 1), over a two-week period between November 2020 and January 2021. After this registration period, they were all interviewed by telephone to provide further explanation on how they experienced the conversations.

1.2 Needs assessment

Secondly, to ensure the training aligned with daily pharmacy practice (i.e., the experiences of the pharmacy staff members and the needs, wishes and preferences of patients), a needs assessment was conducted among 138 pharmacy technicians and 3,962 patients. Pharmacy technicians were invited to fill in a questionnaire via the Dutch Panel on practical research for Pharmacy Employees (PAM) (see Chapter 4, Appendix 1). Online questionnaires (see Chapter 4, Appendix 2) were distributed to adult chronic mediation users in two patient panels. Questionnaires contained questions on how pharmacy technicians and patients experience the conversations about medication switches at the moment (i.e., type of information patients need and receive, timing of information, channel, communication style), and whether the needs and preferences of patients are met. The needs assessment gave direction to the e-learning and live practice part of the training. Detailed methods are described elsewhere[10].

1.3 Training outline based on input registration period and needs assessment

The training is based on results from phase 1.1-1.2, literature[20-24], and meets the recommendations in the existing consultation guidelines about pharmaceutical consultations between the patient and pharmacy team members in Dutch pharmacy practice. It is known from the literature that when training students, a combination of practice and reflection works well[25], also in training pharmacy students and staff[26]. The combination of these learning methods was also used in the development of this training.

Daily pharmacy practice examples, gathered from the characteristics registration and questionnaires (1.1-1.2), were used as cases in which the strategies could be applied. The two existing communication strategies were not adapted or modified in terms of structure or content. Instead, we illustrated how application of the strategies would look like in pharmacy practice by using exemplary case studies gathered from practice. By using practical examples from the pharmacy setting to practice the strategies, it was ensured that the application of the two strategies fitted the pharmacy practice. Appendix 2 includes a visual summary of the use of the communication strategies.

An outline of the training was presented to an expert group, including communication experts and trainers, patient organization representatives, and pharmacy team members, during a 1.5-hour online meeting in June 2021. During this meeting the learning objectives, work forms, and time indication per component of the training were presented for the e-learning, live training, and reflection session. The members of the expert group gave feedback on the form and content of the training. Based on the feedback and suggestions given by the expert group, the content and form of the training was adapted.

1.4 Content and structure of the final version of the training

An outline of the e-learning was then tested by two pharmacy technicians (from the network of the research team) for the usability and feasibility of the training, and to see if the e-learning would fit into daily practice.

Phase 2. Test

2.1 Testing the pharmacy staff training

In total, 15 pharmacies were recruited through various channels (newsletters, social media, and networks of the project group and advisory board group, the latter including communication experts and trainers, pharmacy team members, and representatives from patient organizations) to participate in the training and to use the communication strategies in practice. A number of pharmacies had already expressed interest in participating in the training at the start of the study. At least one pharmacist and two (advanced) pharmacy technicians per pharmacy were asked to participate in the training (see Box 1, for backgrounds of pharmacy team members working in pharmacy practice). Thereafter, they were asked to use and test the communication strategies in their daily work based on what they had learned in the training.

Box 1. Background and training of pharmacy team members in Dutch pharmacy practice

In the Netherlands, pharmacists and (advanced) pharmacy technicians undergo different levels of education. Pharmacists follow a six-year university program. The pharmacist education has an emphasis on their responsibility towards patients to pursue the best therapeutic outcome and medication therapy for them[27]. Pharmacists are less often at the counter conversing with patients and are generally involved in medication switch conversations when the pharmacy technician requires assistance. Pharmacy technicians follow a three-year program at the vocational education level. The focus of their studies lies on patient care, i.e., dispensing medications to the patient, as well as giving guidance and advice to patients[28]. Specifically, (advanced) pharmacy technicians are often first point of contact for patients at the pharmacy counter, and mostly take part in medication switch conversations with patients on a daily basis. A pharmacy technician can have more qualifications and responsibilities, e.g., improving pharmaceutical patient care and guiding specific patient groups (i.e., patients with polypharmacy, patients with chronic diseases), when they followed additional post-graduate training. These types of technicians are then referred to as advanced pharmacy technician.

Two months after the training, in total five online reflection meetings (each about an hour) on various times/days were organized. During each session one researcher and one trainer were present. During these meetings, participants shared their experiences and thus had the opportunity to gain experience from other pharmacy team members about how they handle specific situations. The sessions were structured based on the main themes that were extracted from the course evaluation forms (Appendix 3), which pharmacy team members who partook in the training filled in directly post-training (see 3.1). These themes included intentions to apply the strategies, challenges indicated post-training, and specific cases or questions that the participants wanted to address or discuss with the group. Each topic was addressed by first asking participants to write down some thoughts and then sharing these with the group.

Phase 3. Evaluation and optimization

Pharmacy team members who participated in the training were split in three groups for the live-training part, and there were five groups of participants for the, in total five, reflection sessions.

Various activities took place to evaluate the training, explained below (3.1-3.2). In order to evaluate the training, the Kirkpatrick model[29] was used as a framework. This is an internationally recognized tool for evaluating and analyzing the results of educational, training, and learning programs. It consists of four levels of evaluation: reaction, learning, behavior, and results. For the scope of the evaluation described in this paper, level one and two were applied. Level one included the extent to which participants found the training engaging and relevant to their jobs[29]. Level two included the extent to which participants acquired the intended knowledge, skills, attitude, confidence, and commitment based on their participation in the training[29].

Additionally, to optimize the training, an online meeting (duration 1.5-hour, May 2022) with the research team and trainers was held. During this session, the trainers gave their input on which aspects of the training were most and least beneficial, and recommendations on how to optimize the training.

3.1 Post-training evaluation

At the end of the training, all participants were asked to fill in a one-minute training evaluation form (Appendix 4) to indicate what they intend to use in their daily work (to assess level one of the Kirkpatrick model). Additionally, directly post live-training, participants were asked to fill in a more extensive course evaluation form. Using the course evaluation forms, insights into the learned skills (level two of the Kirkpatrick model) of pharmacy staff members post- training were gained. In these forms participants were asked what they found most/least useful and were asked to give suggestions to improve the training.

3.2 Semi-structured interviews with pharmacy staff

To gain additional, more in-depth, insights into the learned skills (level 2 Kirkpatrick model) after applying these in their daily work during the months following the training (between November 2021 – February 2022), one participant per participating pharmacy was asked to partake in an interview. The aim of the interviews was to delve deeper into whether they had all necessary skills and tools to apply the strategies in practice. For example, the interviews were used to gain insight into what pharmacy team members missed/would have liked to receive in terms of information/skills and what they found most useful/beneficial during the training to apply their newly gained knowledge in practice (see Appendix 5, for interview topic guide). The interviews lasted 15-30 minutes and took place via telephone or digitally. The interview-recordings, recorded with consent from the participants, were transcribed verbatim and analyzed using inductive and deductive coding, by two independent coders.

The deductive codes were derived from the topics used in the interview guide, structured according to the topics of the COM-B model (capability, opportunity, motivation). The COM-B model is a widely used model in the field of behavioral science to understand behavioral change using the three domains[30].

Ethical considerations

The pharmacy team members who participated in the training gave written consent to participate in this study (i.e., filling in questionnaires and partaking in an interview). The study protocol was approved by the Institutional Review Board (IRB) of the division of Pharmacoepidemiology and Clinical Pharmacology, Utrecht University (file: UPF2013 and file: UPF2108).

Results

Phase 1. Development

1.1 Inventory of conversation characteristics

Eleven pharmacists/pharmacy technicians from four pharmacies registered characteristics of 31 conversations. Examples of positive experiences as described by the participants were: the patient shows understanding for the situation and medication switch, the patient lets the pharmacy staff finish their conversation without being interrupted, and the patient was able to think in solutions together with the pharmacy staff member. Negative experiences included: the patient was upset/angry during the conversation, the pharmacy staff member found it difficult to explain the medication switch/why the patient had to pay extra costs, or the patient noticed another medication package before the

pharmacy staff member could explain the switch. These experiences were included in the e-learning to provide background information and understanding of the relevance of the topic.

1.2 Needs assessment

In the questionnaire, pharmacy technicians indicated that they regularly struggle with these conversations due to emotional or negative responses of patients. The pharmacy technicians' experiences with non-medical medication switch conversations included in the e-learning were: 1) that they often (on a weekly to monthly basis) experience these conversations as difficult because of reactions such as anger, confusion, and incomprehension of patients, and that these conversations often negatively influence their job satisfaction.

The outcomes of the patient questionnaires that were incorporated in the e-learning were: 1) patients want information about the difference with the previous medication and why the switch took place, 2) patients want verbal or written information before pick-up/delivery of the medicines. This is a gap in meeting patients' information needs about medication switches, as most pharmacy technicians confirmed that they do not give information about the medication switch before pick-up/delivery of the medicines. The result about providing information about the medication switch before delivery/pick-up of the medicine was also included in the e-learning as a suggestion for pharmacy teams to implement.

1.3 First outline of training

Based on the input of the inventory of conversation characteristics (1.1) and needs assessment (1.2), as well as literature[20-24] and input from the research team, learning objectives were developed by the research team and trainers as well as an outline of the components of the training and the indicated amount of time per component.

The outline of the training was then further co-created with experts (communication experts and trainers, patient organization representatives, and pharmacy staff members) who gave their input on the draft version. For the main points of suggestion, as posed by the expert group, see Box 2. The suggestions in Box 2 were all included in the development of the training materials.

Box 2. Suggestions posed by experts in the field on the draft version of the training

- Provide more background information in the e-learning about emotions (i.e., what may cause these emotions, e.g., fear).
- Be considerate of the fact that if patients have already experienced a switch several times, they can/will react differently (neutrally, or with more emotion) than a patient who experiences a switch for the first time.
- Be careful with too many different theories, as the training may become too theory-packed for the time frame of the e-learning and live-training component.
- Give the possibility to practice with the possible reactions of patients during the live training.
- Be considerate of when in the conversation the message is brought, and that the same message is brought to patients by different pharmacy staff members.

Content and structure of final version of training

After the feedback from the expert group was incorporated in the next version of training, the developed training materials were tested by two pharmacy team members for feasibility and usability in practice. Both participants indicated that the e-learning part of the training was feasible in practice and only minor changes were posed.

In Box 3, an overview of the final version of the training is presented. This accredited, final version of the training was tested in pharmacy practice (*Phase 2. Test*).

Box 3. Overview of training for pharmacy staff about non-medical medication switch conversations

Learning objectives

- After the e-learning, the pharmacy team member is able to reflect on their own approach to conversations about medication switches: what is going well, what is difficult, when/how do they get the message across?
- At the end of the e-learning, the pharmacy team member can indicate which information and skills are necessary to conduct a non-medical medication switch conversation in which the patient receives information and attention as needed.
- The pharmacy team member knows both communication strategies: the breaking the bad news model and positive message framing.
- The pharmacy team member can apply the two communication strategies in an effective way**.**

E-learning (target duration: 1-1.5h)

- Includes theory, short video clips and (reflection) questions and assignments.
- Participants learn about the communication strategies and get background information about medication switches in pharmacy practice.

Live training (target duration: 3.5 h)

- Taught by two trainers and a simulated patient (training actress).
- Short summary of the e-learning, further explanation of when and how to deliver the message, how to respond to the patient's response and how to complete the conversation.
- Practice applying communication strategies in different situations in which a difficult message about a medicine switch has to be conveyed.
- Various forms of education are used, such as: explanation by the trainers, discussions in small groups, and practice with a simulated patient.

Reflection meeting (target duration: 1h)

- Approximately 6-8 weeks after the live training.
- Online meeting with trainer(s) and participants of the training.
- To reflect on the applied means of communication in practice: what does the pharmacy staff member encounter? What is going well? Specific cases to discuss with other participants?
- Tips and tricks given/received to/by other pharmacy team members from other participating pharmacies.

Phase 2. Test

In September 2021, twelve pharmacists and 27 pharmacy technicians from 15 pharmacies spread across the country were trained. Participants were evenly spread over three training day groups. All participants completed the e-learning on their own time within two weeks before the start of the live training. The e-learning took the participants about an hour to an hour and a half. The live practical part was given by two trainers (MW and AF) and a training actress. MW and AF have experience in developing and giving under-graduate education and post-graduate trainings in the field of pharmacy education and pharmacy counseling. In November 2021, five digital reflection sessions took place. In total, 27 of the 39 participants took part in one of the five reflection sessions.

Phase 3. Evaluation and optimization

3.1 Post-training evaluation

Overall, all participants indicated in the evaluation forms that the training met their expectations. Most participants valued practicing the conversations, role-playing, and receiving feedback during the training. The majority of the participants found parts of the 'breaking the bad news model' easier to apply than 'positive message framing', whereby how to apply positive message framing still remained a challenge directly after the training. During the reflection meetings, the majority of participants indicated that they did not have enough time to practice with their newly acquired skills. Participants were able to share their experiences, in particular with handling specific emotions and how they went about situations where certain policy agreements between the pharmacy and insurance companies were in place.

Regarding level one of the Kirkpatrick model (i.e., intentions), the majority of pharmacy staff members indicated that they would give more space to patients to express their emotions and/or concerns (e.g., more silences in the conversations) during these conversations. Also, several participants intended to incorporate specific elements of the communication strategies such as positive message framing (i.e., starting off on a positive note, being empathetic, and highlighting the similarities in the old and new medicine), as well as delivering the message in a factual, honest, empathetic, and direct manner. Other aspects the participants intended to use in practice were remain calm, listen actively, ask open-ended questions, and mirroring (e.g., skills on paraphrasing, reflection of feeling and summarizing). Also, some participants intended not to respond immediately and to communicate in a clear and concise way (i.e., not making the message heavier than it is). Lastly, some participants highlighted to allow the patient to think along with what the best solution is and to eliminate certain words such as: "*in principle*," "*unfortunately*," "*sorry*," "*unbranded*," and "*cheap*" during these conversations.

Regarding level two of the Kirkpatrick model (i.e., learned skills), the majority of the participants indicated that they had sufficient tools and practice during the live training to apply the strategies in daily practice, while a few participants still needed time and practice. Examples of situations in which participants wanted more practice were: addressing specific types of agreements between pharmacy and insurance; how to wrap up a conversation that has ended on a bad note; and, how to deal with negative emotions from the patient (anger, disappointment, aggressive, hurried). Suggestions for improvement of the training included having exemplary sentences to use in daily practice, portraying examples of a 'good' and 'bad' conversation, and having more time to practice various situations.

A few participants particularly desired recorded exemplary conversations of both good and bad examples of applying the strategies in practice.

3.2 Semi-structured interviews with pharmacy staff

In total 13 participants were interviewed. Pharmacy team members of two pharmacies did not respond on the call to participate in an interview. All interviewees indicated that they had received sufficient tools to apply the communication strategies in practice (level two of the Kirkpatrick model). In particular, the presentation/content, practical exercises, practicing with a simulated patient during the live-training day, and that the strategies helped provide structure/expectation management on how to address these types of conversations. One of the interviewees gave the example that, "*a positive message framing or such a breaking the bad news conversation model is a kind of backup. If it [the conversation] does not go well you can apply them, so to speak."*

Further, the majority of the interviewees indicated post-training that they had no additional needs or wishes from the training to be able to apply the strategies in practice. A few interviewees indicated that practicing more in the daily pharmacy practice is important and specified that exemplary (open) questions could further help the participants, and a conversation aid would be useful. For example, a participant stated that "*We did need to have some material, like a conversation aid, a one- or two-sided sheet, so you can look at what they [the strategies] were again – those steps in the conversation, …, what are example sentences."* Also, examples of specific case studies, such as when patients have been granted medical necessity by a doctor, but still have to switch due to a medicine shortage, or another example being specific pharmacy-insurance company regulations, which remain difficult for some of the participants.

Training optimization

As indicated in the evaluation, participants wanted examples of how to apply the strategies in practice. As part of the optimization of the training, four video-clips have been made for educational purposes and will be used as part of the training in the future. There are two exemplary videos of the breaking the bad news model, specifically a 'good' and a 'bad' example using the assets of the model. For positive message framing two video clips have been made where in one video the patient (actor) accepts the medication switch, and the second where the patient reacts with heightened emotion.

Recommendations made by the trainers for professionals in pharmacy practice to best use the training materials were collated. For the live-training part, the part about emotions plays a prominent part. During the live training part, less attention needs to be paid to the recap of the e-learning, so that there is more time for practice. Further, to better accommodate the need of the varying levels of basic communication skills amongst the participants, more (optional) background information on emotions (and how to deal with these) should be included in the e-learning. This was a suggestion from the trainers, and by doing so, the trainers can delve deeper into the strategies during the live-training day, than at the starting point on how to deal with emotions of patients. Without a good foundation of the basic communication skills, diving deeper into the communication strategies is also difficult, as highlighted by the trainers. Therefore, there should be a delicate balance between basic knowledge and specified knowledge in the training.

Discussion

In this study, a communication training for pharmacy team members to facilitate conversations about non-medical medication switches was developed, tested, and evaluated. According to Kirkpatrick Model level one, participants intend to give space to the patient to express their emotions. For Kirkpatrick Model level two, most participants valued practicing the conversations, role-playing, and receiving feedback. The majority of the participants indicated that they had sufficient tools and practice during the live training to apply the strategies in practice, while a few indicated they still need time and practice.

Most other communication trainings offered in pharmacy practice are more general. For example, trainings on how to use questions/topics in counter conversations to address the needs and wishes of patients[31], what patient-oriented communication means and how to incorporate this in consultations, and how to conduct consultations based on existing models, e.g., the Calgary Cambridge Model[32]. This training delves specifically into the scenario of non-medical medication switch conversations and how to apply specific communication strategies in these conversations. Adding these specific strategies to these conversations in pharmacy practice makes this a new and innovative training. These types of conversations are regularly perceived as difficult conversations due to the heightened emotions of patients by pharmacy staff members[10]. The communication training was well-received by pharmacy staff members, particularly because they felt well-equipped with the provided communication skills to address patients' emotions and concerns regarding the switch to better support patients in proper medication use.

Pharmacy team members became aware that giving the patient's emotion a place in the conversation is key and that giving space for the patient to react is also important. In particular, pharmacy team members realized that by doing so, incorporating these skills can give patients a sense of feeling heard, and being understood. Some of the basic skills in patient-oriented communication, e.g., listening actively to the patient and picking up patient cues are not yet completely standard in the repertoire of the pharmacy team members, and thus also not used in conversations about non-medical medication switches. Listening actively to the patient and picking up cues of the patient can help provide patient-tailored communication about the medication switch. By incorporating these communication skills, the pharmacy staff member can better address the patient's needs and wishes at an individual level[33 36].

Moreover, the participants seemed to grasp the concept of the 'breaking the bad news model' earlier/easier in the training than 'positive message framing,' which is still considered to be a challenge. Breaking the bad news model may more easily be perceived as a framework, with different steps to follow during a conversation, whereas positive message framing may still be more abstract. Positive message framing is not always clearly applicable in every situation, which can make it more abstract and difficult for pharmacy team members to use in practice. Identifying and sharing the benefits or positive aspects of a medication switch with the patient can at times not be relevant or appropriate during the conversation. Nevertheless, according to literature, a positive attitude regarding the provision of information and communication about a switch is essential as this can increase more trust in the medicine, proper medication use, and treatment adherence[1, 23, 37-40]. Hence, more attention may be necessary for this aspect early on during the education of pharmacy team members, as well as more emphasis with exemplary cases on how to incorporate this strategy during the e-learning and live-

training part of this developed training. In order to pinpoint what appears to be difficult when applying positive message framing, the applied skills in daily practice of the participants should first be evaluated. This further evaluation will be conducted as a follow-up study.

Strengths and limitations

A strength in the development of this training was using the perspectives of both patients and pharmacy staff members, as well as the active involvement of experts such as communication experts and trainers, patient organization representatives, and pharmacy staff members during the three phases of this study. Based on the current status quo (inventory of conversation characteristics) and the needs assessment, specific experiences, needs and preferences of pharmacy team members and patients were incorporated in the training. Another strength is that the testing and optimization is based on feedback from pharmacy staff members and the trainers. By involving pharmacy staff members, trainers, and communication experts from the expert and advisory group of the project team, this training incorporated elements that properly reflect daily pharmacy practice. Further, a strength of the testing of this training was that both pharmacists and (advanced) pharmacy technicians participated in the training. Lastly, given that non-medical medication switches are a specific recognizable theme in daily practice, this was an attractive training for the participants to take part in.

This study also had limitations. One is that the Kirkpatrick model was incorporated as an evaluative framework after data collection for the evaluation. Hence, maybe not all relevant topics have been asked. Additionally, bias in the reflection on the training and the use of the strategies could be present. The pharmacy team members who participated in the testing of the training, were also the ones conducting the conversations and evaluating the training, hence there may be social desirability in their opinions on the use of the strategies in practice. Also, the positive attitudes about this training may not necessarily reflect what all pharmacy team members in the Netherlands think of this training, as those who participated were motivated, and might be early adopters. Nevertheless, it is important for testing and implementation of new tools or interventions that the early adopters are positive about the training/intervention and contribute to the development and share these with their other colleagues in the field for a widespread up-take of the training. Another potential limitation is that the set-up of this study included two-to-three pharmacy staff members per training, due to feasibility reasons. However, the workflow in the pharmacy is centered around teamwork, hence a follow-up study may include testing the training as a team training. Lastly, the experiences of pharmacists and pharmacy technicians were not explicitly differentiated. This was not the purpose of the training evaluation, and we did not have enough pharmacists to make these comparisons, though for future research this can give more insights in how different members of the pharmacy team experience the training.

Implications for practice and research

This communication training, with the two communication strategies, has been developed specifically for non-medical medication switch encounters. However, there are basic elements in the training that are widely applicable in other pharmacy counter encounters, for example conversations where the pharmacy staff member has to bring the news that the patient has to pay an additional fee. Next to specific content where this training may be useful for, some of the basic elements of the communication strategies, such as giving the patient space to express their emotions or concerns, or making sure the patient has understood the explanation by literarily asking this or asking the patient

to recap what has been told, can also be included in other types of pharmacy encounters, not specific to medication switches.

For further implementation of this training, this is an accredited training, meaning that pharmacy team members can obtain accreditation points after competition of the training. These points are also obligatory in the Netherlands for further development of pharmacy professionals. This is also an incentive to take part of this training, in a topic which pharmacy team members have affinity with and recognize the relevance.

To understand the effect of the training in pharmacy practice, the training will be further evaluated. This further evaluation will be conducted as a follow-up study, whereby the pharmacy staff member and patient experiences with the non-medical medication switch conversations post-training will be investigated. In a future study, a larger randomized control trial (RCT) study could be set up around the applied skills in practice to see what the effect is on patient treatment adherence. Another suggestion for future research could be to test this training as a team training.

Conclusion

The communication training gave pharmacy staff members skills how they can deliver the message and how they can address patients' emotions and concerns regarding the switch. The training was well-received and pharmacy staff members felt well-equipped after the training. The key take-away for participants was to give space to the patient to express their emotions. Using these strategies and skills, pharmacy staff members can tailor their medication counseling to patients' emotions and concerns regarding the non-medical medication switch to better support patients in proper medication use. The next step is to investigate the degree to which pharmacy staff members apply their learned skills in daily practice.

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Appendix 1

Registration form when having a conversation around a medication switch

1. How did the conversation take place?
   - ❑ At the counter in the pharmacy, please go to question 2→
   - ❑ Via telephone, please go to question 3→

2. Was the patient informed about the medication switch prior to their arrival to the pharmacy?
   - ❑ Yes, via telephone
   - ❑ Yes, via e-mail
   - ❑ Yes, via information letter
   - ❑ Yes different, namely ……
   - ❑ No, because: ……

3. Name of the medicine switched: ……

4. Why did the medication switch take place?
   - ❑ Switch due to agreed preferred medicine by health insurer
   - ❑ Switch due to delivery problems/shortage
   - ❑ Switch due to alternative agreements with insurer
   - ❑ Other, namely ……

5. Had the patient switched medication(s) previously?
   - ❑ Yes
   - ❑ No

News about the switch sent/received by the pharmacy team member

6. With what wording did you convey the news about the switch?

7. Did you explain the reason for the medication switch?
   - ❑ Yes, because:

   - ❑ No, because:

8. Did you show the customer/patient the new medication?
   - ❑ Yes, because:

   - ❑ No, because:

9. Were you satisfied with the conversation, and why or why not?

10. What went well during the conversation?

11. What did not go so well in the conversation?

12. What would you do differently next time?

Patient's/client's reaction

13. How did the patient/client react when you delivered the news?

14. How did the patient/client response affect the conversation?

15. Did the patient/client leave satisfied after the conversation?
    - ❑ Yes, because:

    - ❑ No, because:

Patient characteristics

16. Does the person you talked to pick up the medication for them self or for someone else?
    - ❑ For them self
    - ❑ For someone else, if so, please go to question 17 →

17. Is the person who collected the medicine for the patient an acquaintance of the patient?
    - ❑ Yes
    - ❑ No

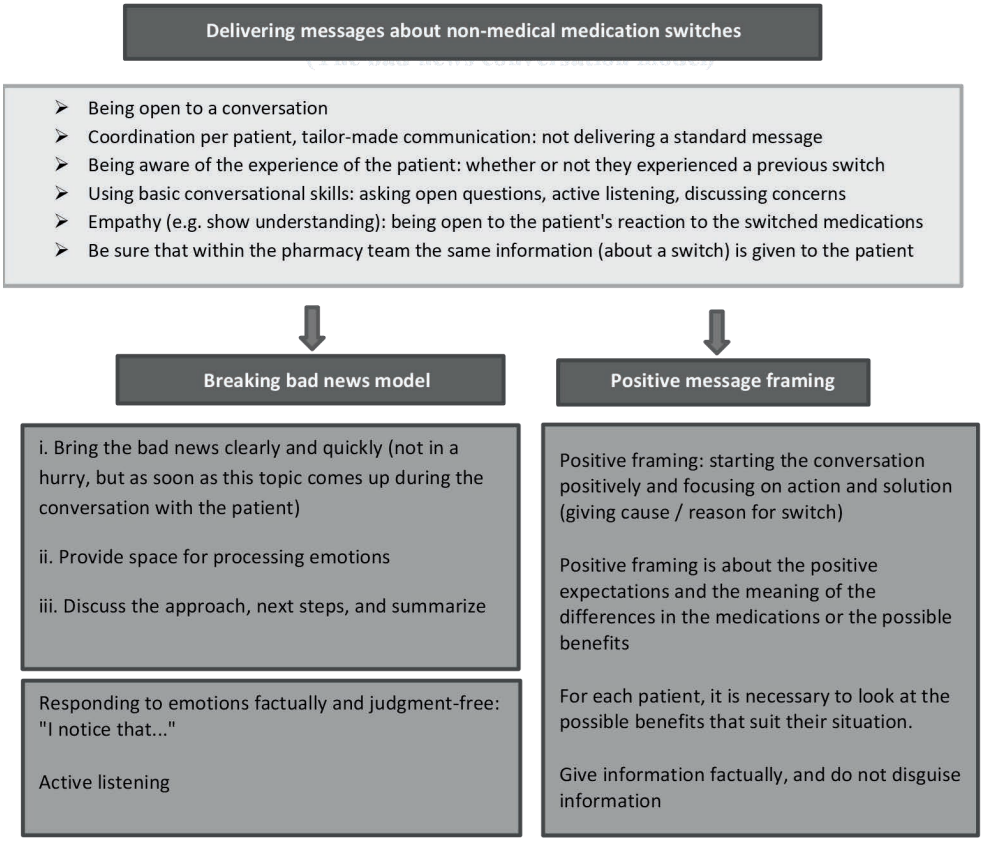
18. Year of birth (of patient) ……

19. Gender (of patient)
    - ❑ Female
    - ❑ Male
    - ❑ Other

Room for comments (if necessary):

Appendix 2

Figure 1. Visual summary of the use of the communication strategies



Appendix 3

Evaluation Training: Bringing Negative News About Medication Switches (September 2021)

General

1. The communication training met my expectations:

Completely disagree	Disagree	Neutral	Agree	Completely agree
☐	☐	☐	☐	☐

2. What would you have liked to learn more about/practice with?

E-learning

3. Which part of the e-learning did you find most meaningful, and why?

4. Which part of the e-learning did you find least meaningful, and why?

5. Which points for improvement do you have about the e-learning?

Live training

6. Which part of the live training did you find most meaningful, and why?

7. Which part of the live training did you find least meaningful, and why?

8. Which points for improvement do you have about the live training?

Thanks for filling in the evaluation form!

Appendix 4

One-minute evaluation form

Please hand in the form to the trainers after filling it in. Thank you!

1. What do you take away from the training that you want/intend to apply in practice?

2. What do you still find difficult or unclear? Check: have all questions since the beginning of the training been answered for you?

<u>Propositions on what has been learned:</u>

Finish one of the sentences or make up a sentence yourself.

- It is important to. ……
- In case of a medication switch, I will …… in the future
- It was nice that ……
- Next time it is better ……
- Own sentence: ……

Appendix 5

Topic guide for interviews with pharmacy staff members post-training

1. **Background characteristics**
    a. Gender
    b. Age
    c. Function in the pharmacy
    d. Number of years of work experience

Experience using communication strategies about a medication switch

2. How many conversations regarding medication switches have you had since the training (in total)?

3. How many conversations were difficult?

4. What strategy(s) have you applied in your conversations regarding these medication switches?

5. In the easier conversations, do you (also) use the strategies?

6. What do you do differently now than you used to when you think about how you deliver the message and how you deal with the patient's response?

7. What do you notice when using the communication strategies in the patients (whether/and how there is a difference)?

Ability to apply the strategies

8. Have you received enough tools in the training to be able to apply the strategies?

9. If not, what else would you like to know/need to know more about to be able to apply the strategies even more effectively?

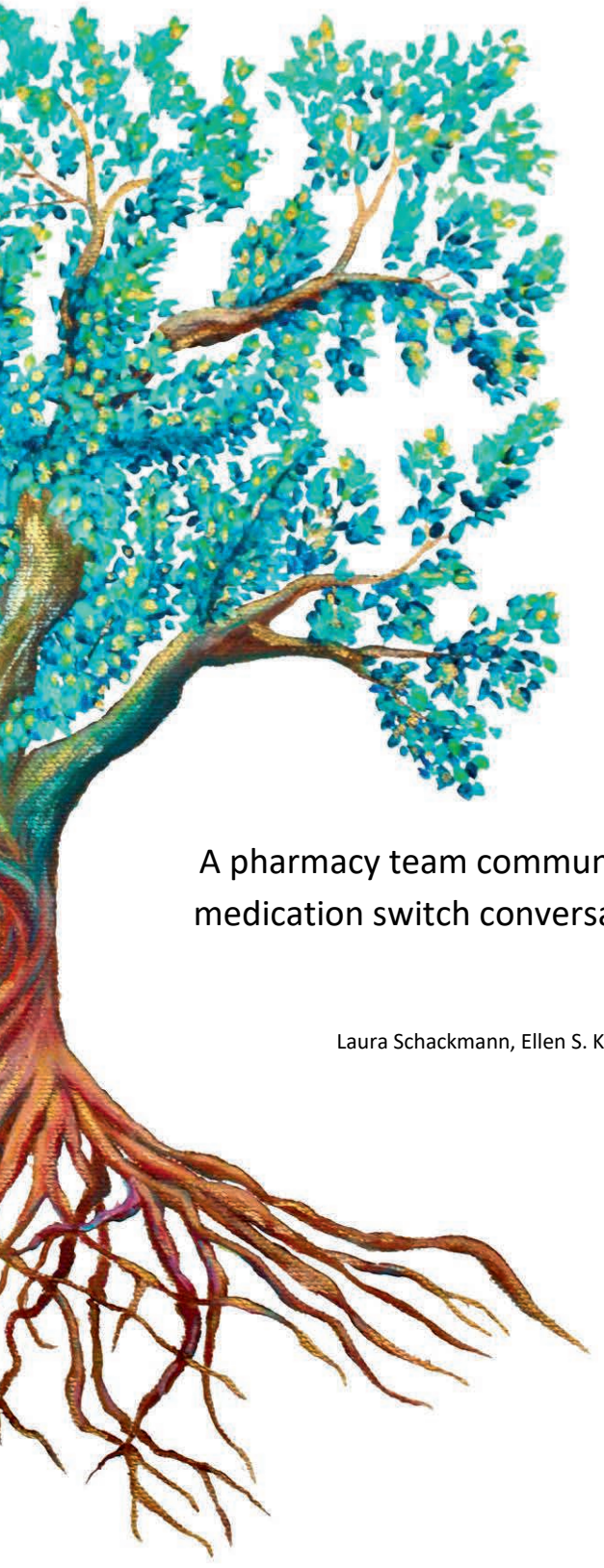
Ability to apply the strategies

10. What factors **make it possible** for you to apply the communication strategies in the workplace?

11. What factors **hinder** this ability to apply the strategies in the workplace?

Motivation to apply the strategies

12. What **motivates** you/**motivates less** to apply the strategies?



CHAPTER 6

A pharmacy team communication training for non-medical medication switch conversations: experiences of pharmacy team members and patients

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Submitted

Abstract

Background: Non-medical medication switches can lead to difficult conversations, e.g., resulting in unsafe or ineffective medication use and decreased pharmacy team job satisfaction. To support the pharmacy team in conducting these conversations, a communication training has been developed based on two strategies: (1) 'positive message framing' to emphasize positive elements of the message and (2) the 'breaking bad news model' to break the news immediately and give room for and address emotions.

Objective: To assess pharmacy team members' and patients' experiences with non-medical medication switch conversations after applying communication strategies that were learned in a dedicated training.

Methods: The Kirkpatrick training evaluation model (levels 3 'behavior' and 4 'results') was used. Trained pharmacy team members registered conversation characteristics and asked patients with whom they had this conversation to fill in a questionnaire. Semi-structured interviews with trained participants were conducted to assess experiences. Quantitative data were analyzed using descriptive statistics and interview data was transcribed verbatim and analyzed thematically.

Results: Out of the 39 trained participants, 21 registered characteristics of 71 conversations, 31 patient questionnaires were filled in, and 13 trained participants were interviewed. Participants self-reported that they applied (aspects of) the breaking bad news model (30%), positive message framing (18%), or both (22%), though indicated that this is not (yet) a standard process. Participants were satisfied with most of the conversations (89%) post-training, particularly with handling patient's emotions (74%). Interviewees indicated signs of increased patient contact and job satisfaction. First insights on patient experiences about the communication show they were (very) positive (77%), particularly with clear explanations about the switch.

Conclusion: Pharmacy team members' learned behavior includes being able to apply aspects of the taught strategies, though this is not (yet) standard practice. The results of the training show first signs of better patient-pharmacy staff relationships and increased job satisfaction.

Key words: patient-centered communication, medication switch encounters, pharmacy practice, experiences, patients, pharmacy team members, communication training.

Introduction

A non-medical medication switch refers to a change in patient's medication or medication label for logistic or economic reasons. These medication switches, caused by medicine shortages[1] or policies with health insurance companies to decrease medicine costs[2], are common[3,4]. Our previous study showed that more than half (54%) of the pharmacy technicians indicated they conduct medication switch conversations daily, and less than a third (30%) do this on an hourly basis[5]. The intention when switching for non-medical reasons is that the new medication has the same effects as the old medication[6,7]. Many patients accept a non-medical medication switch, though medicine switching regularly leads to negative reactions. Medication switches create tension in the pharmacy, both for the pharmacy team member as well as the patient. This tension can arise because medication switches are often experienced as difficult conversations. For example, patients feel insecure about (changes in) their medicine use[3]. This can be due to confusion or distrust about the medicine, as well as the nocebo effect, when one has negative expectations of the new medicine and feels worse after using the medicine[8]. Patients can experience new side-effects, problems with medication management, and decreased efficacy[9,10]. Thus, medication switches can lead to less effective use of medicines, including reduced treatment adherence[11].

Challenging situations that increase stress or negative emotions tend to disrupt effective communication[12,13]. Non-medical medication switch conversations, especially if they are not patient-oriented, are often perceived as difficult by pharmacy team members because of the negative reactions of patients. In our previous study, 40% of all pharmacy technicians indicated that they regularly experience these conversations as difficult[5]. About three-fourths (72%) of all the pharmacy technicians indicated that they experienced anger from a patient usually multiple times per week or month, which negatively influences job satisfaction[5]. Stressful encounters influence one's cognition, e.g., ability to make decisions, judgement, ability to listen, or to pay attention[14]. It is therefore essential to address the patient's emotions, thoughts, and feelings that can influence effective communication during medication switch conversations, as this the moment to take away any medication-related concerns and doubts patients may have about the switch[15-17]. By asking open-ended questions, not interrupting the patient, and engaging in focused active listening[18], the patient's perspective can be elicited. This can influence how the patient takes their medication and take away any medication-related concerns and doubts patients may have[19-21]. In return, this can positively influence patient's perceptions of the medicine, e.g., more trust[19,20], find the medicine safe and effective in use[19,21], and the patient may better accept the medication switch[17]. Therefore, it is important to support pharmacy team members in in how to best deliver the message and how to address patients' emotions in conversations about non-medical medication switches.

To this end, we developed a communication training consisting of an e-learning, live training, and reflection session[22]. The communication training was developed based on the 'breaking bad news model' and 'positive message framing' strategies, and incorporating needs and preferences from practice. The 'breaking bad news model' [23,24] consists of three phases: 1) delivering the bad news or negative message, 2) dealing with the reactions of the recipient, and 3) looking for a solution. With 'positive message framing' the advantages of the situation are emphasized in the message. Previous studies have shown that putting emphasis on the positive aspects (i.e., experiencing a side effect indicates that the medicine is working), has led to greater willingness to switch medication and to a reduction of the nocebo effect[25,26]. These strategies have shown positive effects in other contexts[25,26].

To date, these strategies are hardly applied in the pharmacy setting, while their use could possibly contribute to a better course of conversations in the pharmacy when communicating during difficult situations. Hence, the aim of this study was to assess pharmacy team members' and patients' experiences with non-medical medication switch conversations after applying communication strategies that were learned in a dedicated training.

Methods

Study setting

In September 2021, 39 pharmacy team members from 15 Dutch pharmacies participated in the communication training about non-medication medication switches (see Box 1, for training overview)[22].

Box 1. Communication training about non-medication medication switches

In this training, pharmacy team members were taught how to apply two communication strategies, 'positive message framing' to emphasize positive elements of the message[25,26] and the 'breaking bad news model' to bring the news immediately and give room for and address emotions[23,24]. During the training, there was a focus on strengthening skills by learning strategies to deal with emotions and reactions of patients during difficult conversations about non-medical medication switches. This included how to deliver the message in a factual, honest, empathetic, and direct manner, how to deal with the reaction of the patient, and how to move together to solutions in the conversation[22]. The training consisted of an e-learning with theory and reflective exercises, a half-day live training session with opportunity to practice conversations with a simulated patient, and an online reflection session. Thereafter, they were asked to use and test the communication strategies in their daily work based on what they had learned in the training.

In a period of two-to-four months post-training, pharmacy team members had the opportunity to apply the two communication strategies in daily pharmacy practice. The reflection sessions were held six-to-eight weeks post-training.

Design

As communication is a two-way process[27,28], experiences of both pharmacy team members and patients regarding the non-medical medication switch conversations post-training are important for this evaluation. This was a mixed-methods study in which quantitative and qualitative methods were used to assess pharmacy team member experiences and quantitative methods were used to gain insight into patient experiences.

The Kirkpatrick Model is used in this study, as a recognized method to evaluate the outcomes of a training, as it rates the training methods against four levels: 1) reaction (e.g., intention), 2) learning (e.g., skills learned), 3) behavior (e.g., how the learned skills are applied), and 4) results (e.g., the (learning) outcomes, experiences, and/or effectiveness of the training)[29]. In our previous study, the training was evaluated amongst participants, using the Kirkpatrick Model level one 'reaction' and two 'learning.' All details on the evaluation of these two levels are described elsewhere[22]. In brief, results from level one, pharmacy team members indicated post-training that they would give more space to patients to express their emotions and/or concerns (e.g., drop more silences) during these

conversations. Regarding level two, participants indicated that what made it possible to go ahead and apply the strategies in practice, was practicing the conversations, role-playing, and receiving feedback during the training [22]. In this study, Kirkpatrick model level 3 (applied behavior) and 4 (results of applying the strategies) are evaluated.

Table 1 shows an overview of the mixed methods study design we used. In order to assess the learning indicators on level 3 and 4 of the Kirkpatrick model, we collected three types of data: 1) interviews with pharmacy team members, 2) pharmacy team member's registered characteristics of non-medical medication switches (using a registration form), and 3) patient questionnaires about their experiences during a non-medical medication switch conversation (post-training for the pharmacy team member).

Table 1. Overview of the mixed methods study design

Kirkpatrick Level	Participant	Research question	Learning indicator	Data source(s)
Level 3 'behavior' (using theoretical framework COM-B to understand behavior change)	Pharmacy team member	How/when do pharmacy team members apply the communication strategies?	Application of strategies in practice - Chosen communication strategy - Difference per patient/situation	• Pharmacy team member interviews Pharmacy team member conversation characteristic registration form
			Barriers/Facilitators to applying the strategies - Capability - Opportunity - Motivation	• Pharmacy team member interviews
Level 4 'results'		What effects do applying the communication strategies have on pharmacy team members involved in the conversation?	Pharmacy team member satisfaction with the conversation	• Pharmacy team member conversation characteristic registration form • Pharmacy team member interviews
			Pharmacy team member job satisfaction	
			Pharmacy team member-patient relationship	
Level 4 'results'	Patient	What effects do applying the communication strategies have on patients involved in the conversation?	Patient satisfaction with the conversation	Patient questionnaire

Barriers/Facilitators to applying the strategies

To structure the behavior results (level 3 Kirkpatrick) of the training, the three-domain COM-B model (capability, opportunity, motivation) was used[30]. Capability includes the knowledge, skills, and abilities to engage in the behavior (i.e., mental/physical strength, skills, or stamina) [30]. Opportunity are the external factors which make doing a particular behavior possible, e.g., time, location, resources, as well as cultural norms and social cues[30]. Motivation includes the internal processes influencing one's decision-making and behavior, e.g., desires, impulses, inhibitions, as well as past experiences [30]. Pharmacy team members' experiences with barriers and facilitators for applying the two strategies in practice were assessed during semi-structured interviews based on these three COM-B domains.

Results of applying the strategies

For Kirkpatrick level 4, the results of applying the strategies were categorized at patient/pharmacy team member contact, satisfaction with the conversation, and specifically for pharmacy team members their job satisfaction. These indicators were chosen based on the effects, as mentioned in literature, and described in the introduction. The interviews, pharmacy team member conversation characteristic registration forms, and patient questionnaires were used to gather these experiences.

Data collection

Qualitative data

Pharmacy team member interviews

Per pharmacy, one team member who participated in the training was invited to take part in an in-depth interview. Interviews were guided by a topic list (see Chapter 5, Appendix 5) that included the following topics: background characteristics, the type and amount of medication switch conversations conducted post-training, experiences with applying the learned strategies (Kirkpatrick model level 3), the facilitators and barriers to applying the strategies based on the COM-B model (Kirkpatrick model level 3), and the effects of the applied strategies (Kirkpatrick model level 4).

Topics were identified based on literature, themes that arose out of the evaluation questionnaire, the previous needs assessment results[5], and developed and rolled out communication training[22]. The interviews took place online via Zoom or via telephone between November 2021 and February 2022. The interviews were audiotaped with permission of the participant.

Quantitative data

Topics for the registration forms and patient questionnaires were based on the outcomes of a needs assessment[5] and the content of the training[22]. Due to feasibility reasons, the data collection of the pharmacy team member conversation characteristic registration forms and patient questionnaires were collected independently and were not necessarily from the same conversations. Therefore, in this study, the conversations are not matched at pharmacy team member and patient level, though addressed separately.

Pharmacy team member conversation characteristic registration form

Pharmacy team members were asked to register characteristics per conversation about a non-medical medication switches post-training. The questions for the registration form (Appendix 1) included open and closed answered questions about the conversation, such as participant background and conversation characteristics. Conversation characteristics included the applied strategies and

experience(s) (Kirkpatrick model level 3). The conversation experiences focused on the message delivery and reaction to patient's emotions/concerns (e.g., how the pharmacy team member brought the message in the conversation). The questions on conversation characteristics also included the effects of applying the strategies in the registered conversations (Kirkpatrick model level 4).

The conversation characteristics registration form was tested by two pharmacy team members for the feasibility. Their feedback was included in the forms. Data collection took place between October 2021 and February 2022. Pharmacy teams were reminded on three occasions to fill in the registration forms post-training.

Patient questionnaire

The pharmacy team members invited patients who took part in a non-medical medication switch conversation post-training to fill in a questionnaire. Patients were asked after the conversation whether they wanted to fill in a questionnaire. Pharmacy team members could invite patients by email with a link to an online questionnaire within one week after the conversation or hand over a paper version of the questionnaire directly post-conversation.

The patient questionnaire (Appendix 2) included open and closed answered questions about the conversation and patient background characteristics. Patient background characteristics included birth year, gender, number of prescribed medications, and education level (categorized as low, middle, high in accordance with the Statistics Netherlands[31]). Conversation characteristics included where/how long the conversation took (place), reason for switch, for which medication the patient switched. The experience(s) with the registered conversation (Kirkpatrick model level 4) included questions about how overall satisfied the patient was with the conversation, and specifically about message delivery and reaction to patient's emotions/concerns.

The patient questionnaire was tested by two representatives of patient organizations, one of whom had much experience with drafting questionnaires for patients. They mainly proposed textual changes which were included in the questionnaire. Data collection took place between October 2021 and February 2022. Pharmacy team members were reminded to ask patients to fill in the questionnaires on three occasions post-training.

Data analysis

Qualitative data

The audiotaped interview recordings were transcribed verbatim. Two researchers (LS and MH) coded and then analyzed the interviews independently, using deductive and inductive coding. The deductive codes were derived from the topics used in the interview guide and structured according to the topics of the COM-B model. The COM-B was used as a theoretical model in Kirkpatrick level 3. Significant discrepancies were discussed between LS and MH. LS and MH formulated subthemes and overarching themes which were organized in a code tree. The interview data was managed and analyzed in MAXQDA (version 22).

Quantitative data

Descriptive statistics (mean (SD), frequencies (%)) were used to describe the study population, the general behavior of the pharmacy team members (Kirkpatrick model level 3) and the results on pharmacy team member and patient level (Kirkpatrick model level 4). The statistical analysis software STATA (version 16) was used to perform the statistical analysis. Regarding the open answered questions, the responses were collated and analyzed thematically, identifying similar/frequently mentioned reasons that pharmacy team members and patients gave to justify/explain learned behaviors and experiences. All partially filled in registration forms and patient questionnaires were used for the data analysis. Information about missing data is reported in the results.

Ethical/privacy considerations

All patients gave written informed consent before starting the questionnaire. Pharmacy team members signed an informed consent form at the start of the study, indicating that they give consent for registering conversations post-training and participating in an interview. All pseudonymized data were stored on a protected server.

Results

Sample populations of the three data sources

Of the 39 trained pharmacy team members, 21 (8 pharmacists and 13 (advanced) pharmacy technicians) from 11 pharmacies registered in total 71 conversations about non-medical medication switches post-training. In about two-thirds of the registered conversations (N=68), pharmacy team members indicated that conversations primarily took place at the pharmacy counter and lasted less than five minutes (65%). About two-thirds (66%) of these conversations were about non-medical medication switches due to healthcare insurance preference policy or agreements, followed by conversations about medicine shortages (28%).

In total, 49 patients received a questionnaire. The analysis included 31 filled-in patient questionnaires. The patients were middle aged (mean 51.7 SD 19.0), two-third was female, more than half (63%) obtained a middle level of education, and more than half (56%) had already experienced a medication switch before. The conversations patients had with the pharmacy team mostly (74%) took place at the pharmacy counter, lasted less than five minutes (61%), and the switch was often due to healthcare insurance policies or agreements (55%).

In total, 13 pharmacy team members took part in an interview, and data saturation was obtained as similar themes emerged throughout the interviews. Most of the interviewees were female (n=10, 77%) and (advanced) pharmacy technicians (n=9, 69%).

Level 3 Kirkpatrick model – behavior

Application of strategies in practice

Chosen strategy

Participants self-reported that they applied (aspects of) the breaking bad news model (30%), positive message framing (18%), or both (22%). In about two-thirds (65%) of the registered conversations (N=66), the pharmacy team members indicated they brought the message at the beginning of the conversation, showing they applied aspects of the breaking the bad news model. During these conversations (N=66), almost all pharmacy team members (94%) (completely) agreed that they clearly indicated why the patient had to switch. Some key communication elements that the pharmacy technicians indicated in their open answers when bringing the news was delivering the message in a factual, short, and clear manner. Moreover, in almost three-fourths (74%) of the registered conversations (N=65), the pharmacy team members (completely) agreed that they stated what the similarities were between the old and new medicine.

The pharmacy team member's responses to emotional responses of patients included being more aware of the emotions and giving patients space to express these. In about three-fourths (76%) of the registered conversations (N=66), pharmacy team members (completely) agreed that they showed understanding for the worries or other feelings around the switch that the patient expressed. In the majority (86%) of the conversations (N=65), pharmacy team members (completely) agreed that they gave patients space to express their concerns. In two-thirds (67%) of the conversations (N=66), pharmacy team members (completely) agreed that they were aware of their body language and non-verbal cues during the conversation.

These reflections were also highlighted in the interviews, as pharmacy team members described that they were more aware of the patient's emotions during the conversation. For example, they indicated that they listened more to the patient instead of immediately reacting, showing understanding by allowing the patient to share their story, and allowing more silent moments during the conversation.

Difference per patient/situation

Applying aspects of the strategy chosen, if applicable, was often more an intuitive choice or based on the situation whereby only one strategy was assumed to be more applicable than the other, or neither. Many of the interviewees indicated that they did not differentiate between patient groups in choosing a specific strategy. Nevertheless, in difficult conversations about non-medical medication switches, as opposed to easy conversations where the patient easily accepts the switch, pharmacy team members indicated that they more often applied (aspects of) a taught strategy, especially the breaking the bad news model. An interviewee gave an example that in conversations that are already perceived to be difficult, positive message framing is not/less applicable as patients are less inclined to listen to an explanation about the benefits of the new medicine. The interviewees that did not experience difficult conversations about medication switches post-training applied more basic communication skills rather than using the strategies, such as providing space for the patient to react, waiting for the patient's reaction, and/or showing understanding for the situation.

Barriers/Facilitators to applying the strategies (using COM-B theoretical model)

The COM-B domains are embedded in Kirkpatrick level 3, behavior. These domains were used to find out what the hindering and facilitating factors were for performing the trained behavior in practice. See Table 2 for exemplary pharmacy team member quotes for the COM-B domains presented below that arose from the pharmacy team member interviews.

Table 2. Barriers and facilitators applying the strategies

COM-B	Barrier/ facilitator	Quote	Quote #
Capability	No habit/ routine process, more practice needed (barrier)	"… Because it does not happen very often, yes, it is still a little less in your system, ... It is not in my head because I do too little of [these conversations], so it is not completely automatic then" (female pharmacist).	Q1
		It is mainly doing, gradually it will get easier yes, but I still think I am putting it off" (male pharmacist).	Q2
		"Emotions take time and having someone come up with a solution, you have to practice that more often in practice, but maybe also in terms of training" (male pharmacist).	Q3
	Own emotion, e.g., irritation or lack of energy (barrier)	"I do not know what it is, but when people get irritated, I find myself getting irritated too. I would like to learn the secret of getting rid of that. I must be careful not to overreact to that" (female pharmacy technician).	Q4
		"… sometimes it happens that you have several such conversations on such a day and then you think yes, it is enough for now. It will cost you some energy. You have to have energy to start those kinds of conversations" (male pharmacy technician).	Q5
	Difficulty conducting non-medical medication switch conversation (barrier)	"… [It] hinders me very much when someone is hurried" (female pharmacy technician).	Q6
		"Well, it requires two sides of course, I have also had a conversation with a patient that just walked away, … eh yes, if [the] patient is not open to [the conversation] or wants to talk then it also stops" (male pharmacist).	Q7
	Consciously apply strategy successfully (facilitator)	"You also feel more confident, like I know what to say and how to recognize those emotions" (male pharmacy technician).	Q8
		[That I] can add something positive, for example that another medicine is available, so that [the patient] can get something and that it also has the same effect as they are used to" (female pharmacy technician).	Q9
Opportunity	Conversations via telephone (barrier)	"We do not have a lot of people at the counter, so we also do a lot via telephone. That is sometimes more difficult to convey the message properly and to see how the patient reacts to it because you miss the non-verbal communication. I think via the phone, it is just a bit more difficult" (female pharmacist).	Q10
	Physical space not readily available/easily accessible (barrier)	If the consulting room is at the front [of the pharmacy], that is easier. That is an obstacle for us now. Then if you have a few of these conversations you have to take them to the back through the pharmacy." (male pharmacy technician).	Q11
	Limited time (barrier)	"Especially time. It is really the biggest thing you run into…, in any case my biggest problem" (female pharmacy technician).	Q12
	Support from colleagues (facilitator)	"If I had a very difficult conversation…yes, you want to share that with colleagues. I could do that with those two pharmacy technicians, but not with the team because they did not know what we heard during the training. So, I think how broadly informed the team is, that that is a driving factor" (male pharmacist).	Q13

Table 2. (continued)

COM-B	Barrier/ facilitator	Quote	Quote #
Opportunity (continued)	Time, appropriate communication channel, and space for conversation (facilitator)	If it is a very busy day and there are 10 people waiting and you have to have the conversation, that is not really the right moment. If it is busy, you cannot explain that quickly, no. So, take them aside, and have [the] conversation [with them]" (male pharmacy technician).	Q14
		I must say the conversations in the consultation room or just face-to-face are easier conversations than those telephone conversations ... That is my experience, because over the telephone it is just more difficult to end that conversation in a positive way" (male pharmacist).	Q15
	Set agreements within the pharmacy (facilitator)	"We also have a calendar where we stick the barcode for every conversation, we have about this [a medication switch]" (female pharmacy technician).	Q16
Motivation	Resistance or negativity expressed by patient (barrier)	"… if [the] patient is not open to [the conversation] or wants to talk then it also stops, of course" (male pharmacist).	Q17
	Having to explain the policies put in place by others (barrier)	"People who have had medical necessity [for a medicine] in the past, for example, they put the blame on us… Then you feel somewhat guilty while it is not your fault" (female pharmacy technician).	Q18
	Job satisfaction (facilitator)	"I have very few grumpy patients, so I think I do something right. I also notice that lately I just have more fun in my work" (female pharmacy technician).	Q19
		"You see that in the end that you can sometimes have a very nice conversation with such a person. Now they can share something like I am afraid, or I do not trust it. Then you have some more in-depth conversations than before" (male pharmacy technician).	Q20
		"If you deliver the message and it comes across well, using the tools you have, that it then becomes easier, and the conversation is automatically more fun" (female pharmaceutical consultant).	Q21
	Successful medication switch (facilitator)	If people want to try [the medicine] or if they understand [the situation] from our side. That we do not decide it either and that we did not come up with it, and that we find it bothersome as well. That the patient says, I will try it first and if it is nothing for them that they will let you know. That after a few weeks we ask how it went, and it is going well anyway. That is nice and that they have confidence in [using the medicine]" (female pharmacy technician).	Q22
		"If you start a conversation and the patient leaves satisfied, that is the most important thing for me. That the patient understands what they have to take instead that the patient received something completely new, and they do not dare to use it" (male pharmacy technician).	Q23
	Contact with the patient (facilitator)	"I think you have a better relationship between you and the patient, you get more person-centered care because you explain - what does this mean for you, the patient, … you dive into the conversation much deeper" (female pharmaceutical consultant).	Q24
		"Yes, then they call or come to the counter and then they ask for me and I think that's pretty nice." (female pharmacy technician).	Q25
	Appreciation/satisfaction expressed by the patient (facilitator)	"Well, what motivates is that the patient is satisfied, even if it may not be the result that the patient wanted in advance" (male pharmacist).	Q26

Capability

Applying strategies is not (yet) a routine process

Pharmacy team members indicated that applying (aspects of) the strategies was at times still difficult as it was not yet a habit or standard process. In these cases, pharmacy team members indicated that more practice is still needed to make this more automated (Q1-3). Barriers in applying the strategies include interference of one's own emotion or a lack of energy to conduct a medication switch conversation (Q4-5). Also, cooperation of the patient is deemed essential to be able to apply the strategies, i.e., patient is not hurried and is open to have a conversation (Q6-7).

Consciously apply a strategy successfully

Being able to consciously apply (aspects of) a strategy successfully was indicated as a facilitator. By doing so, pharmacy team members indicated that they felt more confident, for example being able to recognize which emotional state the patient is in and how to handle accordingly (Q8). Another example includes being able to add a positive aspect to the conversation, such as being able to deliver a medication that is available and that has the same effect as the patient is used to (Q9).

Opportunity

Necessary conditions in place to apply the strategies in practice

A key condition to being able to successfully conduct a difficult conversation, as described by the interviewees, is when the pharmacy team member was able to have the conversation face-to-face and/or in a consultation room in the pharmacy, compared to telephone conversations (Q10,11,14,15). Also, most of the interviewees indicated how easily they can apply (aspects of) the strategies in practice is dependent on time, workload, and team occupancy (Q12, 14). Support and set agreements within the team were perceived as important aspects to be able to apply these strategies in practice (Q16). For example, being able to consult with another colleague who also took part in the training (Q13), and with whom the pharmacy team member can share their successes and queries.

Motivation

Appreciation/satisfaction expressed by the patient

For most pharmacy team members, satisfied patients included those that felt heard, that their wishes had been met, those who responded better to the switch, and those that showed understanding for the situation (Q22,23,26). These aspects of satisfied patients are key motivators for pharmacy team members to facilitate them in conducting these conversations.

Resistance or negativity expressed by patient

As described by a few pharmacy team members, if the patient was not open to engage in a medication switch conversation this was perceived as a barrier. This included that the patient, for example, was hurried or walked away due to heightened emotion (Q17). Other examples included that patients would blame pharmacy team members for the switch, and that the pharmacy team members would then have to explain the policies put in place by others to patients (Q18).

Level 4 KirkPatrick model – results

The results of applying aspects of the strategies are presented at pharmacy team member and patient level using the learning indicators (Table 1), i.e., pharmacy team member satisfaction with the conversation, pharmacy team member job satisfaction, pharmacy team member-patient relationship, and patient satisfaction with the conversation.

Pharmacy team member satisfaction with the conversation

Overall, for the majority (89%) of the 66 registered conversations, the pharmacy team members (completely) agreed that they were satisfied with how the conversation went. In about three-fourths (74%) of the conversations (N=66), pharmacy team members indicated that they were (very) satisfied with how they could deal with patient's emotions.

Pharmacy team members registered to be often (very) positive about a non-medication switch conversation post-training (77%). They also perceived patients to be (very) positive with the conversations (62%). The provided explanations for when they experienced a conversation as positive included, satisfied patients (e.g., when patients accepted the new medicine), when they had the feeling that they could bring the message in a pleasant way or being able to create more space for the patient's reaction in the conversation. In about half (55%) of the registered conversations, pharmacy team members (completely) agreed that they were able to think along about solutions.

Pharmacy team member job satisfaction

Interviewees shared self-reported experiences of increased job satisfaction (Q19-21), for example when the message about a medication switch was successfully delivered in a positive manner. Aspects that did not stimulate job satisfaction were when the patient remained rigid or high in emotion, or the patient blamed the pharmacy for the switch (Q6,7,18).

Pharmacy team member-patient relationship

Interviewees also expressed self-reported experiences of improved contact/relationship between the pharmacy team member and patient (Q24,25). Several team members indicated that they took more time for the patient post-training, and they dived deeper into the conversation with the patient. For example, the pharmacy team member would try to find out what substances were in the new medicine or investigate the similarities to reassure the patient. Also, pharmacy team members indicated that they more often investigated why a patient did not want to switch if this was the case.

Patient satisfaction with the conversation

Of the 31 patients who filled in the questionnaire, 27 patients answered the question about how positive they were about the communication during the medication switch conversation. More than three-fourths (78%) indicated that they were (very) positive, 19% was neutral, and 4% was (very) negative. High scoring aspects were how much time the pharmacy team had for them (93% satisfied) and how seriously the pharmacy team took them (89%). Patients were also satisfied about how the pharmacy team listened carefully (81%), showed understanding for the patient's concerns, and giving patients the space (78%). The lowest score was given for how reassured the patients felt about the treatment as a similar treatment or alternative (63% satisfied).

Communication aspects such as a clear explanation about why the switch took place (85%), and an explanation about the similarities between the old and new medication (74%) were aspects that patients were (very) satisfied about. Moreover, about three-fourths (74%) of patients were content about the fact that they had been told right at the beginning of the conversation about the switch. Patients were also positive (78%) about being asked by the pharmacy team member whether they understood the explanation about the medicine switch. Fewer patients (59%) were satisfied about how the pharmacy team members thought along with solutions, and about the explanation about potential side effects of the new medicine (52%).

Discussion

In this study, pharmacy team members' and patients' experiences with non-medical medication switch conversations after applying communication strategies that were learned in a dedicated training were assessed. According to self-reported data, pharmacy team members indicated they were able to apply different aspects of the learned communication strategies, 'positive message framing' and the 'breaking bad news model' in practice, but also made clear that applying these strategy aspects is not yet routinized in conducted conversations. The training made pharmacy team members feel that they were better able to deal with patient's emotions (Kirkpatrick level 3). Pharmacy team members noticed first signs of improved relationships with patients and increased job satisfaction (Kirkpatrick model level 4). They were also satisfied with how the conversation went and how well they could deal with patient's emotions (Kirkpatrick model level 4). Patients – although a small sample - were satisfied with the communication during non-medical medication switch conversations (Kirkpatrick model level 4).

A central element in this communication training was strengthening skills by learning strategies to deal with emotions and reactions of patients during difficult conversations about non-medical medication switches. The aspects that pharmacy team members paid most attention to during the difficult non-medical medication switches conversations, e.g., room for emotion, and providing information about the similarities between the new and old medicine, were often also the aspects patients were most satisfied about. The aspects of the communication strategies applied are mainly general communication skills. This confirms the need for attention on and repetition of basic communication skills in education and training, as described in our previously conducted study[22]. For example, to better accommodate the need of the varying levels of basic communication skills amongst the participants, more (optional) background information on emotions (and how to deal with these) is useful for pharmacy staff. Without a good foundation of the basic communication skills, diving deeper into the communication strategies is also difficult. Regarding the pharmacy team member's information provision about non-medical medication switches, particularly information about the similarities between the new and old medicine, is in line with the needs of patients, as described in our previously conducted needs assessment[5]. This is also supported by the positive patient experiences with receiving this information during the conducted conversations in this study.

It is important to highlight that there are also first signs of increased patient-pharmacy team member relationship. As made evident in previous research, addressing patients' emotions is targeted at establishing a good health care provider–patient relationship, which can improve outcomes such as patient satisfaction and adherence[21,32]. As shown in our study, in the situations where aspects of the strategies were consciously applied, pharmacy team members noticed that they took more time for the patient and dived deeper into the conversation. Patients felt understood and heard, which are

important aspects in improving the therapeutic relationship between pharmacy team member and patient. Specifically, in the case of non-medical medication switches, this can result in more patient trust in the medicine[19,20], and better acceptance of the medication switch/use of the medicine[26] ultimately improving patient treatment adherence.

Applying aspects of the strategies during these non-medical medication switch conversations also show first signs of positive effects on pharmacy team member's job satisfaction. These results are promising in an effort to facilitate these types of conversations. Pharmacy team members indicated in the interviews that patients asked for them specifically during a next encounter or that these types of conversations become easier to conduct. In return, this may give the pharmacy team member more self-efficacy, and may prevent lower job satisfaction, or even potential burnout due to the, often experienced, burden of these conversations[5,33].

Strengths and limitations

Investigating both pharmacy team member's and patient's experiences with non-medical switch conversations is a strength, as this gives a reflection of the pharmacy team member's behavior in practice from both perspectives, and what potential gaps are in practice. A major strength of this study is the combination of both quantitative and qualitative methods for data collection allowing for in-depth insights into the pharmacy team member experiences with non-medical medication switch conversations (after the pharmacy team followed the training).

A first limitation of the study is that the behaviors and results (level 3 and 4 of the Kirkpatrick model) of the training are not generalizable given the small sample size and due to the nature of the responses. Particularly, the patient perspective has not been studied very in-depth given the small sample of 31 patients. Moreover, we cannot prove an effect of the training, as there are no pre-intervention data measurements. Although self-reported changes are not always reliable, this type of data can still provide insight into the experiences of both parties involved in non-medical switch conversations. Pharmacy team members can say for themselves whether they notice any change. The insights gained show how both parties perceive the communication and which aspects play a role in effective communication during these conversations. A second limitation is potential selection bias. Pharmacy team members and patients could volunteer to partake in the interview or filling in the questionnaire. Potentially the more motivated/ positive pharmacy team members/ patients participated in the interviews or filled in the questionnaires. In addition, it could be that pharmacy team members gave questionnaires to patients who experienced a positive conversation.

Implications for practice and research

Incorporating aspects of the communication strategies that seem to facilitate the conversation and increase patient/pharmacy team member satisfaction in non-medical medication switch encounters is important. This includes bringing the news directly, giving room for emotions, and clear explanation about similarities/that the medicine has the same substance. It is important to spread this know-how about how to incorporate these basic communication skills to pharmacy teams via education, for example through the means of following the developed communication training about non-medication switches[22].

The effects of applying aspects of these strategies on patient level should be further explored. To do this, implementing the training on a larger scale, and testing and evaluating the intervention in more pharmacies on patient views and experience level is required. This includes whether patient's views on the medication improve, and whether they use the mediation better as a result. This input can be useful for pharmacy team members so they can tailor how they address patient-experienced challenges regarding medication switches.

Furthermore, observations or conversation recordings of the strategies in non-medical medical switch conversations can be made in future research, as well as being used as a training tool for pharmacy team members to discuss their behaviors in a learning environment. As shown in previous research, video-feedback is an effective method to improve healthcare professional's basic communication skills[34]. By doing so, pharmacy team members can evaluate how they apply aspects of the strategies in practice, and they could receive feedback, e.g., in the form of self-reflection, from peers, colleagues, researchers, and/or trainers. Moreover, to maintain the acquired skills, it is important that pharmacy team members continue to practice with their acquired skills, as they also indicated themselves. As suggested in previous research, this can be done in the form of a refresher training, where theory and practicing of their learned skills is refreshed[35]. In the case of this training, this could be in the form of refreshing the learned materials in a work-meeting with colleagues in pharmacy practice. These cases could be used to strengthen the learning process on how to apply the strategies, such as what is going well and what can still be improved. This can make applying the aspects of these strategies more embedded in daily practice.

Conclusion

According to self-reported data, pharmacy team members were able to apply different aspects of the learned communication strategies, 'positive message framing' and the 'breaking bad news model' in practice. However, pharmacy team member also made clear that applying these strategy aspects is not yet standard practice in medication switch conversations. The training made pharmacy team members have the feeling that they were able to better deal with patient's emotions. First insights on patient experiences with the communication during non-medical medical switch conversations show they were (very) positive, particularly with how seriously they were treated, as well as the clear explanations given about the switch. When the aspects of the strategies are consciously applied, first signs of better patient-pharmacy staff relationships and increased job satisfaction were noticed. This study shows promising signs of the post-graduate communication training to be useful in learning how to deal with and address patient emotions in pharmacy practice.

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Appendix 1

Pharmacy team member conversation characteristic registration form

Pharmacist (assistants) code: …… (code assigned by the researcher)

Conversation number: (1 to 5): ……

Characteristics of the conversation

1. How did the conversation about the medication switch take place?
   - ❑ At the counter in the pharmacy
   - ❑ In the consultation room of the pharmacy
   - ❑ Via the telephone
   - ❑ Other, namely ……

2. How long did the conversation about the medication switch last?
   - ❑ < 5 min
   - ❑ 5-10 min
   - ❑ >10 min

3. For which medicine(s) did the patient have to switch?

   ……

4. Why did the patient have to switch medication(s)?
   - ❑ The medicine the patient previously used was not available (drug shortage)
   - ❑ The medicine was no longer reimbursed (policy or agreements health insurer)
   - ❑ Otherwise, namely ……

Applied communication strategies

5. What communication strategy(s) did you apply during the conversation about the medication switch?
   - ❑ Breaking the bad news model
   - ❑ Positive message framing
   - ❑ Both
   - ❑ Neither
   - ❑ I am no longer aware of what strategy I have used
   - ❑ Otherwise, namely ……

6. Can you explain this answer?

   ……

Experiences with the conversation

7. Can you indicate to what extent you agree with the statements below

	Completely disagree	disagree	neutral	agree	Completely agree	I do not remember	N/a
Delivering the message							
I told them right at the beginning of the conversation that the patient needed to switch							
I clearly explained why the patient had to switch							
I explained what similarities there were between the old and new medicine							
I explained the benefits of the new medicine							
I explained the disadvantages of the new medicine							
I explained what the possible side effects of the new medicine were							
I asked at the end if the patient had understood the explanation							
Responding to the patient's response							
I was able to reassure the patient that the new medicine is a similar treatment/a good alternative							
I was satisfied with how the conversation went							
I took the patient seriously							
I gave the patient the space to express concerns or other feelings regarding the switch							
I showed understanding for the concerns or other feelings regarding the switch the patient expressed							
I was able to deal well with the patient's emotions							
I was aware of my body language and nonverbal cues							
I listened carefully to the patient							
I took the time for the patient							
I reassured the patient that the new medicine was a good alternative							
I thought along about solutions							

8. How did you experience the conversation with the patient (regarding the use of the communication strategy(s))?
   - ❑ Very positive
   - ❑ Positive
   - ❑ Neutral
   - ❑ Negative
   - ❑ Very negative

9. Can you explain your answer to question 8?

   ……

10. How did the patient experience the conversation, in your opinion (about the use of the communication strategy(s))?
    - ❑ Very positive
    - ❑ Positive
    - ❑ Neutral
    - ❑ Negative
    - ❑ Very negative

11. Can you explain your answer to question 10?

    ……

Room for comments (if necessary):

……

Background characteristics

What is your year of birth? ……

What is your gender?

- ❑ Male
- ❑ Female
- ❑ Other

Years of work experience in the pharmacy?

- ❑ < 1 year
- ❑ 1-5 years
- ❑ 6-10 years
- ❑ 11-15 years
- ❑ 16-20 years
- ❑ >20 years

Is the pharmacy where you work affiliated with a chain or formula?

- ❑ Yes, BENU pharmacies
- ❑ Yes, Service Pharmacies
- ❑ Yes, Alphega pharmacies
- ❑ Yes, other chain or formula, namely: ……
- ❑ No

What is your function within the pharmacy?

- ❑ Pharmacy technician
- ❑ Pharmaceutical consultant
- ❑ Pharmacist
- ❑ Other, namely: ……

Appendix 2

Patient questionnaires about medication switch conversation experiences post-training

1. How did the conversation about the medication switch take place?
   - ❑ At the counter in the pharmacy
   - ❑ In the consultation room of the pharmacy
   - ❑ Via the telephone
   - ❑ Other, namely ……

2. How long did the conversation about the medication change last?
   - ❑ 1-5 min
   - ❑ 5-10 min
   - ❑ >10 min

3. The product for which you have been switched (this may be several):
   ……
   ……
   ……
   ……

4. What was the reason for the medication switch?
   - ❑ The medicine I used before was not available
   - ❑ The medicine I used before was no longer reimbursed
   - ❑ I suffered from side effects
   - ❑ The medicine I used before did not work properly anymore
   - ❑ I have not been told
   - ❑ I do not remember
   - ❑ Otherwise, namely ……

5. How did you experience the conversation with the pharmacy staff member about the medication switch?
   - ❑ Very positive
   - ❑ Positive
   - ❑ Neutral
   - ❑ Negative
   - ❑ Very negative

6. Would you like to indicate in the table below how satisfied you are with the following aspects? These aspects relate to the pharmacy staff member during the conversation about your medication switch

The pharmacy staff member ...	Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied	I do not remember	Not applicable
Delivering a message							
Told me right at the beginning of the conversation that I needed to switch							
Explained to me clearly why I had to switch							
Explained to me clearly what similarities there were between the old and new medicine							
Explained to me clearly what the benefits of the new medicine were							
Explained to me clearly possible side effects of the new medicine							
Asked me if I had understood the explanation							
Reaction							
Took me seriously							
Gave me the space to express concerns or other feelings around the switch							
Understood my concerns or other feelings around the switch							
Listened attentively							
Took the time for me							
Reassured me							
Thought along with me about solutions							

7. Have you experienced a medication switch before (in the past year)?
   - ❑ Yes, once
   - ❑ Yes, several times
   - ❑ No

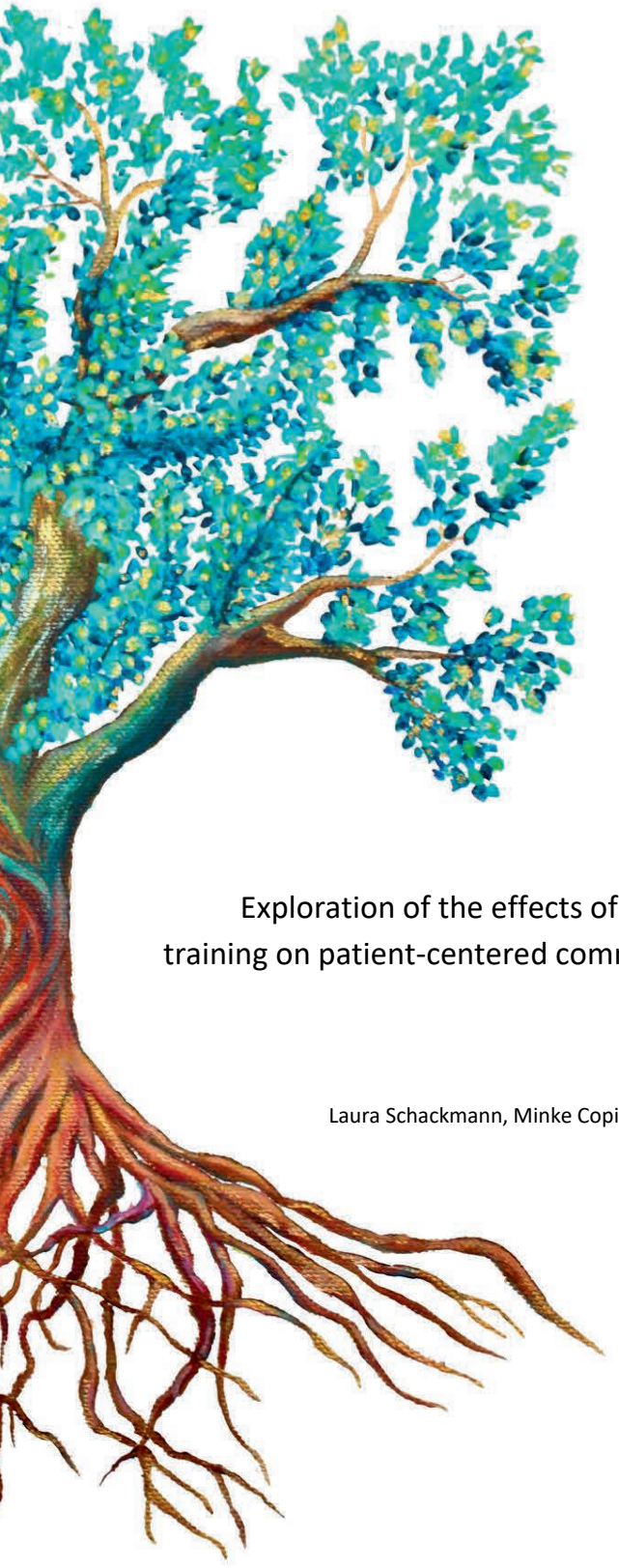
Background Characteristics

8. What is your year of birth? ……

9. What is your gender:
   - ❑ Female
   - ❑ Male
   - ❑ Other

10. What is your highest completed education?
    - ❑ Primary school
    - ❑ Preparatory or lower vocational education
    - ❑ Secondary vocational education
    - ❑ Secondary school
    - ❑ Higher vocational education
    - ❑ University education

11. How many different prescription medicines (medicines prescribed by a doctor or nurse) do you use chronically (for more than 3 consecutive months):
    - ❑ 1-2
    - ❑ 3-5
    - ❑ 6-9
    - ❑ 10 or more
    - ❑ Other, namely……



CHAPTER 7

Exploration of the effects of an innovative mentalization-based training on patient-centered communication skills of pharmacy staff: a video-observation study

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Submitted

Abstract

Objective: The aim of this study was to explore whether a mentalization-based communication training for pharmacy staff impacts their ability to provoke and recognize patients' implicit and explicit medication-related needs and concerns.

Methods: A single-arm intervention pilot study was conducted, in which pre-post video-recordings of pharmacy counter-conversations on dispensed-medication (N=50 and N=34, respectively; pharmacy staff: N=22) were coded. Outcome measures included: detecting needs and concerns and implicitly and explicitly provoking and recognizing them. Descriptive statistics and a multi-level logistic regression were conducted. Excerpts of videos with needs or concerns were analyzed thematically on mentalizing attitude aspects.

Results: Indications show that patients more often express their concerns in an explicit way post-measurement, just as pharmacy staffs' explicit recognition and provocation of needs and concerns. This was not seen for patients' needs. No statistically significant differences were found for determinants for detecting needs or concerns (i.e., measurement-, professional-type, or interaction). Differences in mentalizing attitude were observed between pre-post-measurements, e.g., more attention for patients.

Conclusion: This mentalizing training shows the potential of mentalizing to improve pharmacy staff members' explicit provocation and recognition of patients' medication-related needs and concerns. The training seems promising for improving patient-oriented communication skills in pharmacy staff. Future studies should confirm this result.

Key words: patient-centered communication, pharmacy practice, perceptual barriers, mentalizing, skill-based communication training, community pharmacy.

Introduction

Pharmacy staff members have important tasks in counselling and educating patients. For example, providing support and advice to patients about potential medication use hinderances[1]. These may include misunderstanding of essential medication use information (practical barriers) or the hesitancy patients may have to take their medication due to certain needs and concerns (perceptual barriers), e.g., fear of side effects[2-4]. Talking about perceptual barriers is difficult when patients are stressed or have negative emotions, as these can disrupt effective communication. It is important to deal with the emotions and stress patients experience, so that there is room to have a conversation about possible barriers. Pharmacy staff mainly gives technical instruction and often retreats as soon as patients show emotions[5]. It is key to support pharmacy staff with communication tools and training to detect and address patient perceptual barriers, in a manner whereby the emotions and reactions of the patient are dealt with in a sensitive manner.

Pharmacy staff can react, by provoking or recognizing a perceptual barrier, by using instrumental and affective communication. Instrumental communication is goal-oriented and sender-focused, such as information provision about a concern or need[6,7]. Affective communication is process-oriented and listener focused, dealing with empathy and emotions[6,7]. Both types are needed for effective communication. A promising method to improve recognition of perceptual barriers, whereby both instrumental and affective communication are present, is by training mentalizing skills of pharmacy staff. Mentalizing is established as a human-specific capacity to be able to recognize and engage curiously with one's own feelings, thoughts, desires, and emotions and that of others in order to facilitate effective cooperation and communication in social environments[8-10].

To mentalize effectively, basic aspects of a mentalizing attitude should be used, including being flexible, tolerant, judgement-free, honest, open, curious, asking (open) questions, mirroring the reactions of the other, and being aware of imbalances between the self and other[11]. Stress and arousal are common disruptors for effective mentalization as the brain switches to the fight-or-flight response[8-10]. In fact, automatic mentalizing instead of controlled makes someone more prone to biased views on themselves and others[8-10]. Hence, it is essential to recognize the emotions, feelings, and thoughts, which affect the self and the other. By doing so, a person who is mentalizing, regains attention to openly focus on the other. In the case of pharmacy staff and patient interaction, the pharmacy staff member then mentalizes effectively, and will be able to make substantiated, rational choices in conversation with the patient[8], which can facilitate the detection of perceptual medication-related patient barriers.

Mentalization- based skills can be trained, and programs have been successfully used in other healthcare sectors, targeted at nurses and physicians[12,13] psychologists, and professionals/caregivers in the care of people with intellectual disabilities[14]. Healthcare professionals have shown increased knowledge and application of mentalizing in healthcare interactions, indicating that mentalizing contributes to professional development[13]. Also, they show better reflective functioning[14]. In pharmacy practice, mentalization is not yet applied. Pharmacy staff, specifically pharmacy technicians (PTs), are often first point of contact for patients at the pharmacy counter, and mostly take part in conversations with patients daily. PTs' primary role is to prepare and supply medicines, and to give advice and guidance to patients[15]. A group of Danish researchers developed a mentalization-based skill training to improve patient-oriented communication in community pharmacies[16]. This training was

tested both in Denmark and the Netherlands, of which this study evaluates part of the Dutch training. The aim of this study was to explore whether a mentalization-based communication training for pharmacy staff members impacts their ability to provoke and recognize patients' implicit and explicit medication related needs and concerns.

Methods

Study design

In this study, a single-arm pilot intervention study was conducted. This is an explorative pre-post intervention study, not powered on investigating impact in a statistically significant way. To understand potential behavioral differences, pre-and post the mentalization-based skilled training (Box 1), conversations at the pharmacy counter between pharmacy staff members (pharmacists, pts, and pharmaceutical consultants) and patients were video-recorded.

Box 1. Mentalization-based skilled training[16]

The mentalization training was a blended learning course which lasted four months, which consisted of six (off- and online) modules (see elaborate overview of course content and structure in the course development article[16]). The modules included theoretical and practical lectures from an expert and lecturer in the field of mentalization (registered MBT-therapist and clinical psychologist), as well as communication trainers and/or lecturers from both the University of Groningen and Nivel (Netherlands Institute for Health Services Research, the Netherlands), of which some had a pharmacy background. The communication trainers had various backgrounds, e.g., Pharmacist, psychologist, sociologist, whom all now teach pharmacy students and some also specifically courses about communication in pharmacy practice. The training also included practicing with a simulated patient (training actress) and receiving feedback on video-recorded conversations on dispensed medication at the pharmacy counter, homework assignments, and a final reflection portfolio.

Participants

Training participants, as well as patients, gave written consent to participate in this study.

Pharmacy staff

Pharmacists, pts, and pharmaceutical consultants from nine Dutch pharmacies (one outpatient, eight community pharmacies) were included in this study. Participants were recruited for the training via recruitment flyers and social media, as well as by inviting pharmacies in the extensive networks of the trainers and research team.

Patients

Patients who came to collect their medications were asked by the pharmacy staff member or research assistant whether they would like to participate in this study. Their participation included being filmed during their encounter with the pharmacy staff member. To ensure privacy of other persons in the pharmacy, only the pharmacy staff member and patient, who each gave consent to be filmed, were filmed. Patient inclusion criteria included: being 18 years or older, collecting own medications, being proficient in the Dutch language.

Data collection

Video-recordings

Participants had to record three to five videos of counter-conversations with their patients collecting medication, prior to the start of the training and before the final module of the training. Pharmacy staff members who participated in the mentalizing training recorded the counter-conversations themselves or with the help of the researchers. If the participant recorded pre-intervention and no post-intervention video recording, or vice versa, the video recording was still included in the sample.

Pre-intervention data were collected in September 2021. Post-intervention data were collected between November 19 and 26, 2021. The video-recordings were sent via a password-protected SURFfilesender link to the researchers and downloaded on a password-protected server. Participants were required to discard the videos from their own devices.

Observational coding

The data from the video-recordings (N=84) were coded using a coding framework for analyzing perceptual barriers, including implicit and explicit concerns, needs, and implicitly and explicitly provoking and recognizing these. The combination of the categories from the Beliefs about Medicines Questionnaire (BMQ) [17,18] and Verona Coding Definitions of Emotional Sequences (VR-codes) [19-21] led to the development of the protocol Implicit and Explicit Beliefs in Medicine Protocol – Specific (IEBMP-S), used as coding framework in this study (see Table 1, for types of information combined to develop the IEBMP-S).

Table 1. Types information combined to develop the IEBMP-S

	BMQ	**VR-codes**
Explicit or implicit expression patient needs or concerns	Explicit	Implicit
Type data present, examples	Need 1: Patient's health is not dependent on the medication. Need 2: Patient's life would not be difficult without medication. Need 3: Patient would not be (very) ill without medication. Need 4: Patient future health does not depend on the medication. Need 5: Patient medication does not prevent him or her from further deteriorating. Need 6: Patient indicates something else that relates to a need. Concern 1: Patient is concerned about taking medication. Concern 2: Patient is concerned about the long-term effects of the medication. Concern 3: Patient is insufficiently aware of what medication does. Concern 4: The medication disrupts the patient's life. Concern 5: Patient is afraid of becoming too dependent on the medication. Concern 6: The medication has unpleasant side effects. Concern 7: Patient indicates something else that relates to a concern.	Categories of cues (implicit concerns) from VR-codes A-G: A: Vague, unspecified words B: Hidden concerns C: Physiologic and cognitive correlations D: Neutral expression E: Repetition F: Non-verbal signal G: Past emotion (more than 1 month ago)
IEBMP-S protocol		
IEBMP-S protocol is divided in categories A-F, where A-D contains a division of explicit and implicit needs and beliefs. The six types of needs and seven types of concerns are mentioned in A-D. Section E provides space for extra comments and F contains an overview of the possible implicit signals from the VR-codes. Using the coding IEBMP-S protocol, the researchers coded the following aspects: 1. The type of need or concern mentioned by the patient, and whether it was implicit or explicit. 2. Whether the patient took the initiative to mention the need or concern. 3. Whether the pharmacy staff member provoked the cue of the patient, implicitly or explicitly. 4. Whether the pharmacy staff member recognized the need or concern, implicitly or explicitly.		

Observational coding process

First, two coders (MC and LS) analyzed six randomly selected videos from the pre-intervention measurements to test the IEBMP-S protocol and to improve it, where necessary. In case of disagreement, videos were discussed with a third researcher (LvD). The two main coders continuously discussed the coding process and how to optimally observe and code the videos during the entire research process. Thus, given the explorative nature of this study, an inter-reliability test between coders was not conducted. Rather, the researchers strived for consensus via thorough discussions within the team.

Coding of qualitative and quantitative data

Then, all recorded videos were observed and coded twice. Firstly, MC observed all videos and transcribed excerpts verbatim in a logbook where a need or concern occurred, and whereby the pharmacy staff reacted. All needs and concerns were coded. Furthermore, non-verbal signals in the video recording that were coded with category F from the VR-codes were noted in the logbook and mentioned, but not categorized due to subjectivity.

Secondly, MC coded all video-recordings in the program Behavioral Observation Research Interactive Software (BORIS) for Windows 64-bit Portable v.7.12.2. In BORIS, codes were made that corresponded with the IEBMP-S. The second coding round was to ensure validity of the first round of coding, and to facilitate the qualitative data analysis of the coded observations.

Data analysis

Quantitative data

The observations in BORIS were exported and imported in STATA version 16 for the data analysis. Descriptive statistics, such as frequencies on provocation and recognition of needs and concerns, were conducted to describe the impact of the mentalization training. The outcomes included: frequencies on implicit and explicit expressions of needs and concerns from patients and implicit and explicit reactions from pharmacy staff towards the patients. Also, differences between job function and the outcome measures were investigated.

Additionally, a multilevel logistic regression analysis was used to test for potential determinants for detecting need and concerns by professionals. Due to non-significant differences after the null model, no other models were tested.

Qualitative data

The excerpts from the logbook were thematically analyzed using a deductive approach, see Box 2. This overview was co-created with an expert in the field of attachment and mentalization (PS). The videos in which needs and concerns were expressed (N=17), were re-watched, observed, and analyzed (LS). As mentalizing is about implicit and explicit cues (non-verbal and verbal actions), the verbatim excerpts were analyzed for verbal cues and actions. Therefore, these 17 recordings were re-watched for the non-verbal and implicit cues.

Box 2. Overview of the basic principles of the mentalizing basic attitude

- Check if you are calm from 'inside'
- Open attitude; do not judge; being? Yourself/being honest
- Curious, interested in the other
- You cannot be sure what the other person is thinking
- Flexible, willing to revise your opinion
- More focused on 'inside' (thinking, feeling, wishing) than on 'outside' (= behavior)
- The relationship with your client is important; you pay attention to disturbances
- Try to solve misconceptions; pharmacy staff takes the responsibility
- Stimulating skills that promote mentalization both in yourself and in your client
- Mirroring the other
- Asking questions
- Naming emotions
- Active listening
- Epistemic trust:
  I. Mention the name of the other person
  II. Indicate that the pharmacy staff member wants to tell something important
  III. Asking the attention of the other

Ethical considerations

The study protocol was assessed and accepted by the Medical Ethical Review Committee (METC) of the University Medical Centre of Groningen (UMCG) (reference number 202100510). The METC concluded that this study is not a clinical research with human subjects as meant in the Medical Research Involving Human Subjects Act (WMO).

Results

Sample characteristics

In total, 24 participants signed up for the mentalization training, of which 22 participants from nine different pharmacies gave consent to use video-recordings for this study. All participants were females. Most participants (68.2%) were aged between 25-44 years, and about half (54.5%) of the participants were patients (Table 2). Regarding the patient characteristics, these were not collected.

Table 2. Pharmacy staff characteristics (N=22)

Characteristics	N (%)
Gender	
Female	22 (100)
Age	
<25 years	2 (9.1)
25-34 years	6 (27.3)
35-44 years	9 (40.9)
45-54 years	3 (13.6)
>54 years	1 (4.5)
Unknown	1 (4.5)
Job function	
Pharmacy technician	12 (54.5)
Pharmacist	5 (22.7)
Other	5 (22.7)

General characteristics observations

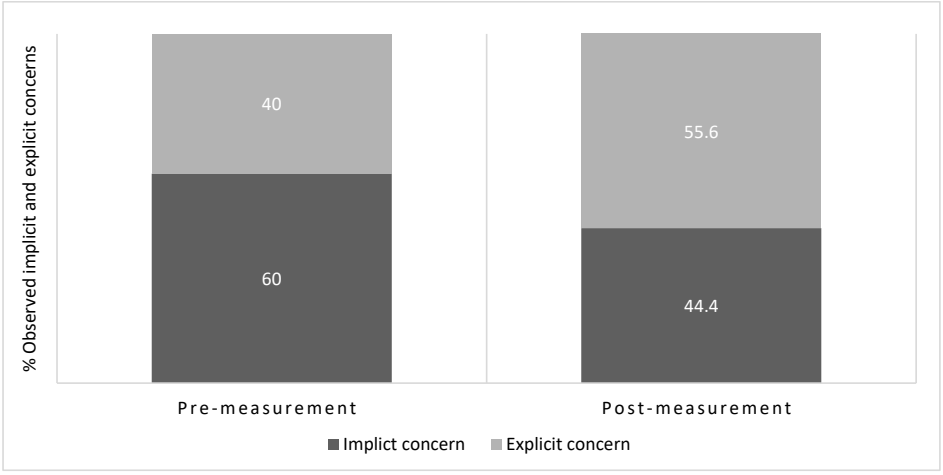
In total, 84 videos were recorded, of which 50 pre-intervention and 34 post- intervention videos. Videos from eight of the nine pharmacies were observed, as participants from the ninth pharmacy did not submit video-recordings. In total, in 17 out of 84 video-recordings needs and concerns were observed (nine of the 50 pre- intervention; eight of the 34 post- intervention videos).

Patient needs and concerns

In the 17 videos where patient perceptual barriers were present, there were 34 coded concerns (25 pre-intervention and nine post-intervention) and 15 coded needs (four pre-intervention and 11 post-intervention). The implicit needs and concerns were most often characterized by VR-codes A, which is implicitly mentioning vague, unspecified words (53.3% pre-intervention, 50.0% post-intervention).

Patients took more initiative to express a need in the post-intervention, a shift from 11.1% to 56.3% (n=2 and 9), whereby for concerns were less common (shift 88.9% to 43.8% (N=16 and 7). Moreover, patients more often explicitly expressed concerns during post-intervention counter-conversations (shift 40.0% to 55.6% (N=10 and 5) (Figure 1), while the expressed needs decreased (100.0% to 45.5% (N=4 and 5).

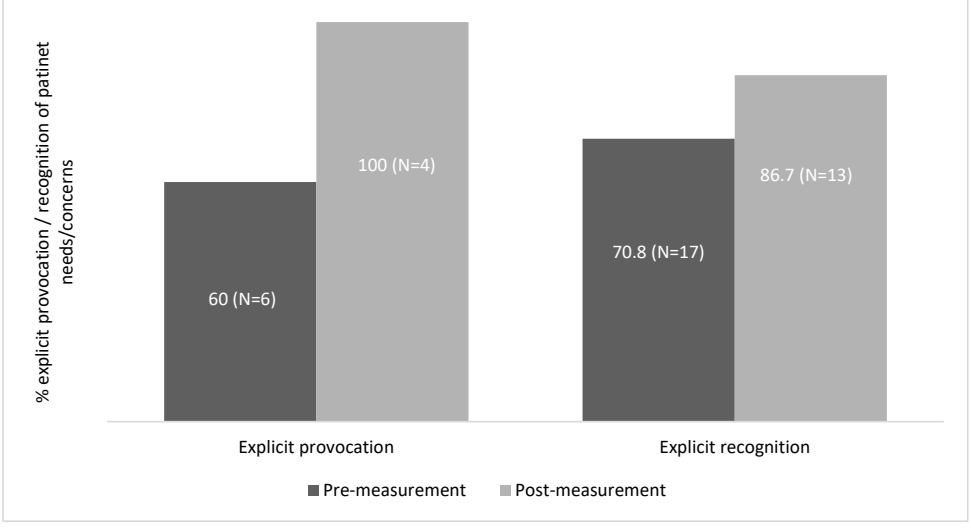
Figure 1. Shift in the patient's concerns expressed as observed in the pre-and post-intervention video-recordings (N=17)



Pharmacy staff provocation and recognition of needs and concerns

Participants seemed to provoke and recognize explicit needs and concerns more often after the training (shift 60.0% to 100.0% (N=6 and 4) and 70.8% to 86.7% (N=17 and 13)) (Figure 2). There is a decrease in implicit recognition, a shift from 29.2 to 13.3% (N=7 and 2). Regarding implicit provocation, there were four observations in the pre-intervention and no observations in the post-intervention.

Figure 2. Trends of explicit provocation and recognition of the patient's needs and concerns



Amongst PTs, there was an explicit shift towards provoking and recognition, while this is not the case for pharmacists or the other pharmacy staff members (i.e., Pharmacy consultants). PTs provoked needs and concerns five times in the pre-intervention, while four times in the post-intervention. Here, all four times were explicit. Recognition of needs and concerns occurred six times in the pre-intervention and 13 times in the post-intervention. Here, 11 of the 13 times a need or concern were explicitly recognized. Pharmacists provoked needs and concerns five times in the pre-intervention and zero times in the post-intervention. There were no observations for the 'other' pharmacy staff members.

Examples of implicit and explicit provocation and recognition as observed in the pre-post video-recordings are illustrated in Table 3.

Table 3. Examples of pharmacy staff member's recognition or provocation of patient needs or concerns in the pre-post intervention video-recordings

	Provocation	**Recognition**
Implicit	• Reference to previous experiences, but not the specified current concern • Explanation from Pharmacy staff member provokes patient's reaction • Vague/general clarifying questions/terms from Pharmacy staff member provokes patient's reaction, e.g., 'Everything is clear to you?' or 'Do you have any questions?'	• Uses vague words which imply the recognition of a need or concern, e.g. "I can't give you any guarantees [about the side effects]". • Reacts with something like 'Oh ok' • Does not give the patient room to tell more, e.g. "Yes, yes, I'm going to grab it for you [the medicine]'; implicit recognition because the pharmacy team member does not let the patient talk further and does not ask about it.
Explicit	• Asks a specific/ rhetorical question, e.g., 'Oh is that so? What do you think...?' or 'What do you mean?' or 'Do you also feel like you're benefiting from it?' or 'yes, but if you take the tablets, you have no complaints?'	• Mentions something like 'I notice you …' or 'I hear you say' (example of repetition use) • Mirrors/repeats what the patient say, e.g., 'Eh that it made me so nauseous', pharmacy staff member's reaction: 'okay so you got very nauseous from those other tablets' • Recognizes the need or concern in clear words, e.g. You find that you have had more trouble breathing since using the [type of inhalation medication] • Recognizes emotion/experience of patient, e.g. 'Yes, that was a bit of a shock' • Reassures patients, e.g., Pharmacy staff member states they would have told this if this had been the case' • Place yourself in the situation of another, e.g. 'I can imagine' or 'Oh, yes, that's less fun huh.' • Give clear explanation to patient about need or concern • Acts on the need or concern, e.g., Pharmacy employee explicitly recognizes the concern by giving possibilities/solutions/taking action: 'yes if you want, I can check if [the medicine] is the same'. • Asks further clarifying questions based on the need or concern, e.g., 'Okay and do you have...? ' or 'Have you ever had an instruction for ehm...?' or 'So, is it regularly that you suffer from this?

Potential determinants for detecting need and concerns by pharmacy staff members

A multilevel logistic regression analysis was performed to test for statistically significant differences between the videos observed (N=84) for needs and concerns and the pharmacy staff member. The output of the null model, Model 1, without predictors, (Log likelihood -40.12; OR .19, SE .08 (95% CI [.08-.45]); ICC (SE): .18(.20)), showed no significant difference (chibar2(01) = 1.06 Prob >= chibar2 = 0.1518) meaning clustering did not have to be taken into consideration in the data analysis.

Overall basic principles of a mentalizing attitude

Video-observations for the implicit cues gave insight into how the pharmacy staff members developed their mentalizing attitude in pharmacy practice.

Open attitude, calm, and focus on the 'other'

The pharmacy team members appeared calm, used a calm tone, and did not appear stressed in the before-and-after measurements. In the pre-intervention, we observed that a pharmacy team member diverted the conversation in which a patient wanted a medication switch to the point where the patient agreed that they would first wait for the appointment with the specialist. This was made possible by the staff member's calm tone, clear explanations, and asking whether the patient understood the explanation. Post-intervention, there was an example where the pharmacy staff member explicitly made space and time for the patient. The pharmacy staff member interrupted the patient, then apologized for interrupting, and gave the patient the space to finish their story.

Engagement with patient

Also, in both pre-post measurements, pharmacy team members regularly showed interest in the patient, by means of an open body language, such as bending towards the patient and the use of hand movements when explaining. This was made evident as the pharmacy staff members looked away from their computer screen and towards the patient, while the patient is talking. A noticeable observation post-intervention was that pharmacy team members were longer engaged with the patient, instead of focused on their computer screen. Pre-intervention, pharmacy team members sometimes looked at the patient, but then also were talking with the patient, while working on the computer or preparing the medicines. Post-intervention, it appears that more explicit attention is given to the patient, e.g., more attentively looking at the patient.

Mirroring

Pre-and-post intervention, pharmacy staff members made an empathetic appearance. They often mirrored the patient's laugh in both pre and post measurements. Also, pharmacy staff used non-verbal mirroring in both measurements. For example, in the pre-intervention measurement, a patient asked whether they had to take one tablet, and for that, they stuck out their finger with a one, and the pharmacy team member responded yes verbally and stuck out one finger. Also, in the post-intervention measurement, a patient had portrayed that she had to vomit, and the pharmacy team member verbally mirrored "It came up immediately" and mirrored non-verbally the urge to vomit.

Explicit recognition

An observation in the post-intervention observations was that pharmacy staff members more often mentioned an emotion or asking explicit questions. For example, stating emotions, such as: "Yes, that must have been a bit of a shock," and checking the facts with the patient and not making assumptions,

as depicted in the following example: “I saw that you are also taking calcium?” asked the pharmacy staff member, and the patient responded “Yes, yes.”

Inside versus outside behaviors

Furthermore, post-intervention, it seemed that pharmacy staff are somewhat more focused on the 'inside' (thinking, feeling, wishes) than on the 'outside' (observed behavior). For example, a pharmacy team member tried to comfort the patient about their concern, saying: “I can reassure you that this is not necessary.” A second example is the use of non-judgmental questions to find out how the patient was feeling, e.g. “Do you think that would benefit you too?”

Epistemic trust

Lastly, there were examples of epistemic trust post-intervention: specifically, the pharmacy staff member who addressed the patient by their name during the conversation. Interestingly, two separate pharmacy team members mentioned the patient's name during the conversation with the patient post-intervention, "Okay, Mr. XXX, I just checked your patient file", and “So, Mr. XXX, I got them [the medications] for you.”

Discussion

The mentalizing training shows the potential of mentalizing to improve pharmacy staff members’ explicit provocation and recognition of patients’ medication-related needs and concerns. The training could have positive effects to improve patient-oriented communication in the pharmacy. By applying mentalization in patient encounters, pharmacy staff can better understand patient's thoughts and needs and thus build a better therapeutic relationship.

Patient needs and concerns

Patients appear to express their concerns more explicitly and pharmacy staff members appear to provoke and recognize needs and concerns explicitly more often. In 20% of the videos (17 of the 84 observed videos), patients expressed needs or concerns. This is likely to be representative of pharmacy practice, given that these counter-conversations have a short duration and people may already be used to picking up medications repeatedly. This is also reflective of pharmacy staff work conducted on a routine basis, particularly standard pharmacy-counter interactions regarding dispensing of medications and medication monitoring[22].

The mentalization training can lead to patients having less barriers to explicitly mention their needs on medication use and can increase the relative number of explicit concerns. In previous research, it has been found that pharmacy staff who did not recognize their own mental state were also not sufficient in being concerned with the patients’ needs and concerns towards medication use[5,16]. Thus, the combination of these findings suggests that the mentalization training teaches pharmacy staff to recognize their own mental states, while not taking the patient’s mental state personally. This will enable pharmacy staff to pay active attention to the patients’ needs and concerns towards medication use. This could explain the increase in needs in general and explicit concerns.

Provocation and recognition of patient needs and concerns

This study suggests that there is a shift from implicit to explicit provocation and recognition of patient's needs and concerns. This can be explained by the overall training in mentalization and the additional focus on active listening and mirroring during conversations with patients. Additionally, subtle differences in the mentalizing attitude pre-and post-intervention are seen, e.g., more direct attention towards the patient. A reason could be that this aspect, looking more attentively at the patient, was discussed extensively in the feedback on the video-recordings of counter conversations, as part of the training by communication experts to the participants. These aspects contribute to patient-centered communication in pharmacy practice.

Also, a training on mentalization seems to lead to more explicit communication about perceptual barriers in pts, but not pharmacists and 'other' staff (e.g., Pharmaceutical consultants). Amongst pts, there is an explicit shift towards provoking and recognition of needs and concerns from pre- to post-intervention. Reasons why may include that they were the largest group, as well as the group that can immediately put what they have learned into practice, as they have more daily patient contact[23]. It must be stated that the division of needs and concerns provoked and recognized among the different types of pharmacy staff members resulted in small groups.

Strengths and limitations

A main strength of this study is that it is the first study to investigate the effect of mentalizing on communication in pharmacy practice by using video observations. These first results suggest a potential positive effect of mentalizing in pharmacy practice. Video-recordings provide more data/information than audio-recordings as they provide the opportunity to observe non-verbal communication. Together with this strength, the recordings were filmed in the same time frame, namely a week before the first course day (pre-intervention) and before the second-to-last module (post-intervention). This created similar videos in the field of mentalizing knowledge, which gave the possibility to compare the video-recordings reliably with each other. Another strength was the analysis method used and developed framework to observe the video-observations. This analysis method and observation framework can also be used as a model in future studies.

A limitation is that the participants were likely already motivated to start this training. The positive results of this study therefore do not necessarily demonstrate that every participant will show progress. Nevertheless, it will probably also only be motivated people who are early adopters of a new communication concept in pharmacy practice. By sharing experiences of the early adopters, this may make other pharmacy staff members enthusiastic to participate in a future training. Moreover, related to pharmacy staff characteristics, all participants were female. In general, the proportion of females in Dutch pharmacy practice is high[24]. According to the Dutch foundation of pharmaceutical key figures, in 2018, 90% of the staff working in Dutch community pharmacies was female. Hence, our sample reflects an accurate representation of the pharmacy staff working in the Dutch pharmacy practice.

Another limitation is the low number of recorded videos for the study, as not all participants sent in the requested number three-to-five videos in both the pre- and post-intervention, which could have introduced a selection bias. Also, the proportion of videos in the pre-measurement (59.5%) was larger than the post-measurement (40.5%). A reason there were fewer video's post-measurement could be the intensity of the course-load combined with a high workload in the pharmacy.

Practice implications

The first, yet promising, results from this explorative study indicate that a training in mentalization may be beneficial to detect and respond to patients' concerns and needs. This is a motive for the implementation of this training with accreditation for Dutch pharmacy staff members. Such training is an innovative way to learn communication strategy and move towards patient-centered care. Furthermore, this study offers a solid basis for a new study into the mentalizing capacity of pharmacy staff, as this training can help pharmacy staff members better recognize and detect patient medicine-related barriers and support proper medicine use.

Future research could examine if an increase in needs and concerns and the provocation and recognition thereof is related to specific types of pharmacy staff members. In this study, the number of participants per function resulted in small numbers, and a larger study is needed to further investigate the differences in job function. Also, other types of studies such as a RCT study or single case studies with multiple baseline designs could be set-up to further explore the effects of mentalization in pharmacy practice. In such a design, behavior is measured across either multiple individuals, behaviors, or settings, and outcomes are irreversible due to learning effects. Furthermore, more research is needed to understand other situations where these skills may be applicable and useful, e.g., medication review or medication switch conversations, and the case of deprescribing medication (i.e., attempt is made to stop the use of medication). Moreover, a distinction between the type of dispensed medicines could be made for example, first time dispensed medicines or repeated prescriptions and the types of conversations pharmacy staff members have with the patients about their medicine use. Lastly, more focus on outcome measures related to mentalizing abilities should be incorporated in future studies, e.g., measuring reflective functioning, perspective-taking, emotion recognition, and the attribution of mental states.

Conclusion

This study indicates the great potential of an innovative training for pharmacy staff to improve their communication skills. Patients seemed to make their concerns more explicit, and pharmacy staff seemed to provoke and recognize needs and concerns explicitly more often. The training appears to be valuable to improve patient-oriented communication in the pharmacy. This initial exploratory study warrants a larger study on the effect of the mentalization-based communication skill training in pharmacy practice.

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CHAPTER 8

General Discussion

The aim of this thesis was to understand how the pharmacy team can support patients in challenging situations using patient-tailored information provision and patient-centered communication. A challenging situation can lead to a lack of mutual understanding between pharmacy staff and patients, increased uncertainty, and strong emotion. Challenging situations in pharmacy practice, as defined in this thesis, are situations outside the influence of the pharmacy team member or patient and where someone's ability or determination to perform a task are tested. An example of such a challenging situation is a non-medical medication switch due to set agreements and policies by health insurers or medicine shortages. To support patients in these situations, it is important that pharmacy team members properly inform, educate and counsel patients. In order to do so, pharmacy team members should be equipped with the right tools and skills such as communication skill-based education and trainings. This includes learning how to properly inform patients **(chapter 2-4)** and how the pharmacy team member conveys a message as well as interprets and reacts to the patient during a pharmacy encounter **(chapter 5-7).**

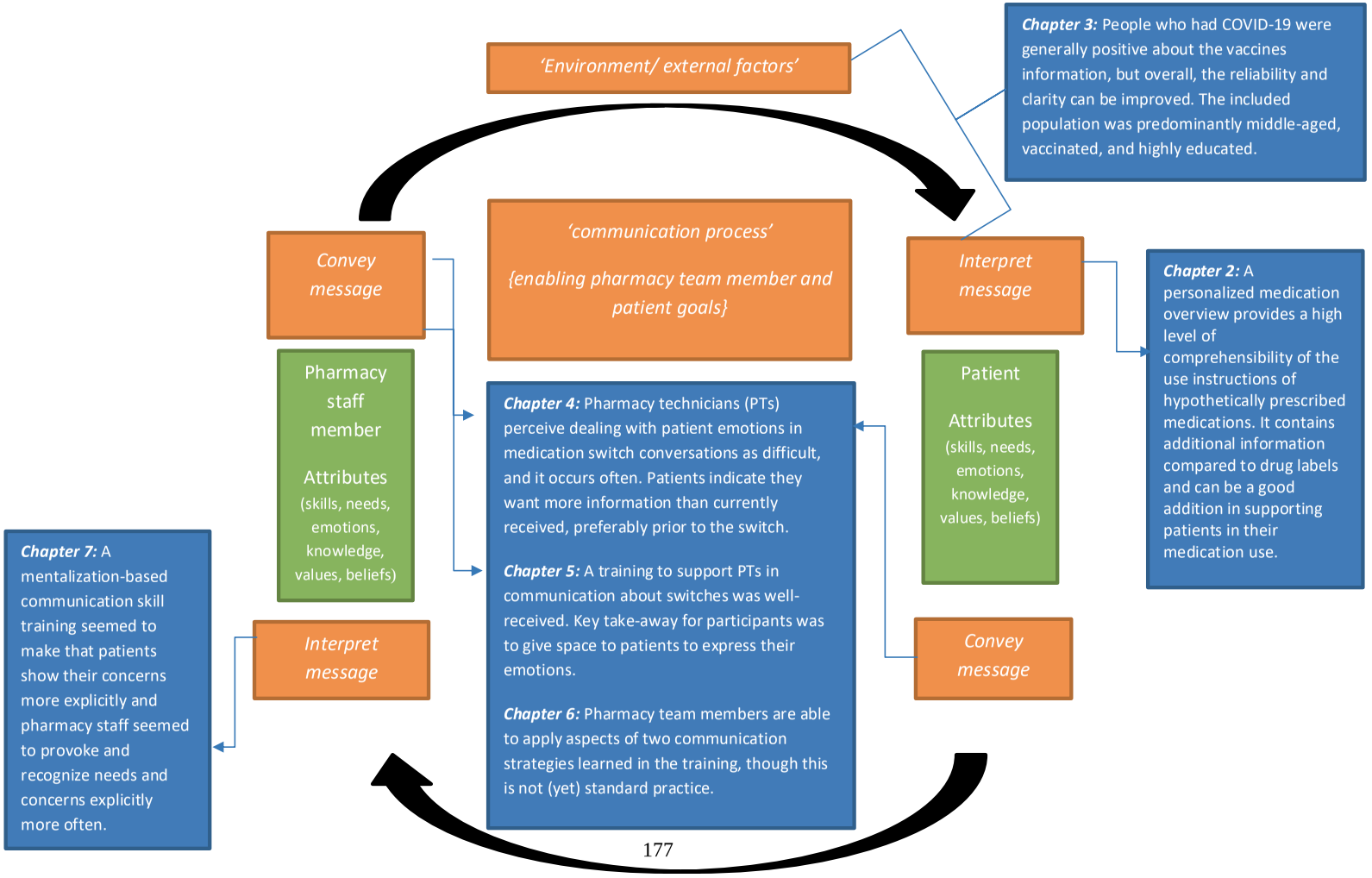
In this chapter, the main findings of **chapters 2-7** are addressed and reflected upon. Furthermore, implications for formal education, life-long learning in practice, and future research are formulated.

8.1 Reflection on main findings

In Figure 1, an adapted version of the Feldman-Stewart theoretical communication framework[1,2] is presented. It includes the main findings of this thesis at the four levels of this framework, which are reflected upon in this chapter:

- Primary patient-provider goals concerning medication switches.
- Factors influencing pharmacy staff-patient communication in challenging situations.
- Patient-centered communication in challenging situations.
- Communication skills training and education in relation to external factors.

Figure 1. Adapted Feldman-Stewart communication framework[1,2]



Primary patient-provider goals concerning medication switches

Being aware of (differences between) patient and pharmacy team member goals and desired results or needs in a conversation is important. Taking patients' and pharmacy team members' goals into consideration during the interaction can ensure that both parties are on one line and sending and receiving the right signals. For example, based on the patient's goals in the conversation, i.e., simply retrieving their medications, seeking information on how to use their medicine, or to resolve certain doubts about their medicine use, the pharmacy team member can tailor their information provision and communication style. To communicate effectively, in respect to the patient's goals, it is vital that these come to surface during a conversation. Pharmacy team members need to explore patients' needs and preferences in order to provide patients with tailored information so that they can make informed treatment-related decisions[3-8]. In **chapter 4,** the experiences, needs and preferences of patients and pharmacy team members regarding conversations about non-medical medication switches were explored. When it comes to medication switches, patients' emotions are often mentioned by pharmacy technicians as challenging to handle. In the same chapter, patients express their need for information about the medication switch. They desire more information than they currently receive about a medication switch, preferably also before the medication pick-up or delivery takes place. In respect to the case described in **chapter 1,** where the daughter of the patient insisted that her mother would receive the brand losartan again, as generic variant led to a rash, the pharmacy team member can give a clear explanation specifically about why the medication switch took place and that the expected effect of both brands of the medication is the same while also paying respect to her worries. Giving a clear explanation can result in more understanding and/or acceptance from the patient about the situation. Studies have shown that patients who are better informed about their medication feel less uncertain about medication use, which increases the treatment benefits and adherence[11,12].

Factors influencing pharmacy staff-patient communication in challenging situations

Pharmacy staff-patient communication can be influenced by patients' and pharmacy team members' beliefs, emotions, needs, knowledge, skills, and values[1,2]. These aspects can facilitate and hinder the communication process[13-15]. For example, increasing knowledge by providing information can contribute to empowering patients to make decisions about their medication use[16]. In an empowered state, patients for example know which questions to ask and how to ask them[17]. Nevertheless, not all patients reach this state, as patients' skills and previous experiences can hinder their ability. For instance, understanding information about medicines seems to be even more challenging for certain patient groups, such as the elderly, people with low health literacy skills, and people with language barriers, increasing the need for patients to trust the pharmacy team member in comprehensible information provision[18]. More attention in the form of personalized communication can support them in being (more) involved in their treatment decisions[17-19].

In this thesis, in **chapter 2**, we studied personalization in one specific area of information provision, namely medication label use instructions. Instructions on the medication labels should be clear, concise, and comprehensible. However, instructions on these labels are often too complex and ambiguous for the patient to understand[20-24], especially for people with low health literacy skills. Up to 50% of the adult population[25,26] shows limited understanding of the instructions, precautions, and medication warnings on the medication labels[20-24]. As a result, the (in)comprehensibility of these

instructions are a common cause of medication errors[27]. We therefore explored how comprehensible people found information about medicines on a personalized medication overview in a hypothetical scenario. Both prescription medication label texts on medication boxes and the personalized medication overview communicate dosage instructions and usage advice and warnings. The personalized medication overview gives more information on the moment of intake, for which condition or disease the medication is taken, as well as photographs of the prescribed medications and tablets/capsules. In practice, the hard-copy personalized medication overview is given in addition to the medication label texts. The additional information on the personalized medication overview is intended to help patients better process the information on prescription medication label instructions, particularly patients with low health literacy skills.

The comprehensibility of the use instructions, in our study, was high in both the group who received the overview in addition to the medication labels and the group who only received the usual-care medication labels. The group who also received the medication overview better comprehended the additional information presented on the overview. This additional information included for which condition one uses the medication and the medication-related advice/warning. The necessity of providing such a personalized medication overview might be higher in groups of patients, such as people with low health literacy skills, for whom understanding information about medicines is more challenging[28]. In our research, these patient groups are most probably underrepresented as those who are low literate will not take part in survey research.

Another challenging situation with respect to information provision occurred during the COVID-19 pandemic. Potentially more than ever before, during a global pandemic, people wish to be well informed as well as ask and seek for more health-related information[29]. This also holds true for the vaccines that came onto the market merely a year after the pandemic started. Therefore, we conducted a study **(chapter 3)** on where people who have had COVID-19 found or received their information about vaccinating against COVID-19. In addition, we also focused on the perceptions and trust these people had in the vaccines information. The people in our study were generally positive about the information they received or sought about COVID-19 vaccines. The small minority who considered the information inadequate believed that its reliability and clarity could be improved. To better accommodate the information needs of people who found the information less reliable or clear, increasing the clarity and transparency is important. Specifically, information can be clearer on whether people who have had the virus need one or two vaccine(s), what the long-term consequences are of the vaccine, and the effects (i.e., herd immunity and build-up of antibodies) of the vaccines. Evidence shows that transparent communication may harm vaccines acceptance here and there, however the transparency increases trust in health authorities[30]. On the contrary, vague and sometimes reassuring communication does not increase vaccines acceptance either. Ambiguity in communicating information may lead to lower trust and higher endorsement of the spread of misinformation[30]. In return, to vaccinate large amounts of people, it is crucial that people trust in the fact that COVID-19 vaccines are safe and effective[31-35], as well as the effectiveness of boosters in the future[36]. These aspects, safety and effectiveness, also influence perception about other medications, which can be addressed by the pharmacy team. These can be addressed, for example, by providing patient-tailored information and by discussing concerns and doubts using patient-centered communication.

Patient-centered communication in challenging situations

Next to comprehensible and tailored information provision, patient-centered communication, i.e., way of conveying and reacting to a message, is important. In pharmacy practice, patient-centered communication entails that pharmacy team members give patients advice (i.e., in verbal or written form), address specific topics relevant to the patient, and exchange information transparently[37]. In patient-centered communication, the information is tailored to the needs and preferences of patients and their level of understanding [37,38]. Earlier conducted observational research showed that patient-centered communication in the pharmacy is difficult[39,40], but can be trained[41]. In challenging situations such as a non-medical medication switch, though, there could be more focus on the affective communication (i.e., acknowledging and addressing patient emotions) **(as shown in chapter 4).** As a result, pharmacy team members can then better guide patients during these situations. Although addressing patients' emotions remains a frequently experienced challenge for pharmacy team members **(chapter 4)**, they indicated that the medication switch training we developed helps them with addressing these emotions **(chapter 5,6).**

During this dedicated medication switch communication training, there was a focus on strengthening skills by learning two strategies, the 'breaking the bad news model' and 'positive message framing', to deal with emotions and reactions of patients during difficult conversations about non-medical medication switches. The training included how to deliver the message in a factual, honest, empathetic, and direct manner, how to deal with the reaction of the patient, and how to move together to solutions in the conversation **(chapter 5)**. Using these strategies in practice as learned in the training can support pharmacy team members in addressing patient emotions. This supports pharmacy team members as they have the tools to act accordingly, feeling more prepared and confident during challenging situations in pharmacy[42,43]. Both pharmacists and pharmacy technicians in training as well as pharmacy team members working in practice should be prepared for challenging situations. As shown in our study, more attention for pharmacy team members working in practice is needed regarding their basic communication skills in challenging situations. For example, listening actively to the patient and picking up patient cues are not yet completely usual care **(chapter 5-7)**. By focusing first on basic communication skills in challenging situations such as medication switch conversations, pharmacy team members can better address the patients' needs and wishes and potentially avoid complicated situations at the pharmacy counter[44-46].

Another way to support pharmacy staff in addressing patients' needs and concerns, emotions and reactions, is by training mentalizing skills of pharmacy staff. Mentalizing is the ability to reflect on the behavior of oneself and others in terms of mental states[47-49]. Mentalization-based programs have been successfully used in other healthcare sectors[47-49]. Healthcare professionals have shown increased knowledge and application of mentalizing in healthcare interactions. It was also shown that mentalizing contributes to professional development[48], and that professionals show better reflective functioning[49]. Our study about the mentalization based communication skills training **(chapter 7)** shows promising first signs that such training helps to address and recognize emotions of patients in pharmacy practice. This is made evident by the fact that pharmacy team members more often explicitly recognized and provoked patient medication-related concerns post-training. Patients also more often expressed their concerns explicitly post-training. Mentalizing might also help in non-medical medication switch conversations, specifically on the reflective functioning of pharmacy team members on how they act based on their own feelings, thoughts, and emotions, as well as those of the patient.

By focusing on these communication skills, pharmacy team members can more effectively communicate with patients in pharmacy encounters, including the more challenging situations.

Communication skills training and education in relation to external factors

External factors, e.g., social, cultural, legal, and physical aspects, can facilitate or limit the communication process. For example, as described in this thesis, the imposed policies from health insurers and medicine shortages can limit effective communication. To effectively communicate in situations, which are outside the influence of the one's involved, it is important for pharmacy team members to be equipped with the right skills and tools. This might become all the more important given the further evolving role of the pharmacist as a health care professional. This is a process that is ongoing for some time now[50], and is also acknowledged in the future visions in the new 2022 Dutch care agreement [Dutch translation: Integraal zorgakkoord][51]. In this agreement, key aspects such as task-shifting in primary care and giving a more central role in avoiding medication-related issues to the pharmacy profession are mentioned[51]. This can decrease the work burden for other health care staff (e.g., general practitioners), as well as lower healthcare costs[52], and prevent hospitalizations[53]. It is important that pharmacy education programs and post-graduate trainings complement the shift of the dynamic and evolving healthcare system, as supporting pharmacy team members with tools and skills can increase sustainable and efficient deployment of pharmacy staff and support the evolving role of the pharmacist[54]. This thesis shows two examples of such tools and training in skills. As highlighted in our research, pharmacy team members can be trained in early detection of medication-related needs and concerns, as this is not always done in practice (**chapter 7**). This thesis also shows that it is possible to train pharmacy staff in applying aspects of communication strategies, in our case the 'breaking the bad news model' and 'positive message framing.' These strategies are suitable for more challenging situations, and applying aspects of these strategies can have positive effects on their job satisfaction and patient-provider relationship **(chapter 6).**

8.2. Implications

The presented implications in this section are about patient-centered communication in challenging situations. In challenging situations, it is important to communicate effectively, where pharmacy team members create an open and safe space for the patient to share their (potential) medication-related needs and concerns. In return, this improves the patient-pharmacy team member relationship, patient adherence[55], patient satisfaction[56] and creates a sense of trust in the advice provided[57] and in future encounters. To communicate effectively, and in particular in challenging situations, proper skills and training are required. The necessary skills and training can be acquired in the form of early exposure in pharmacy education for pharmacists and pharmacy technicians in training, as well as life-long learning for professionals.

Formal education

Theory-based communication skills training for challenging situations should be incorporated in formal education. This allows for pharmacy and pharmacy technician students to gain early experience how to address challenging situations in pharmacy practice. In these situations where often strong emotions are present, the focus should be on effective communication skills, as stress and arousal can influence one's cognition, e.g., ability to make decisions, judgement, ability to listen, or to pay attention[58]. By addressing this early on, pharmacists and pharmacy technicians in training become familiarized with those situations, feeling more confident and prepared with tools and skills to better guide patients. The conditions to incorporate (aspects of) the post-graduate communication trainings are further explained in this sub-section. The following recommendations for educators and pharmacy team members working in practice can be made:

- Being mindful of the roles and responsibilities of pharmacists and pharmacy technicians in training.
- Creating awareness early on of the importance of addressing patient emotions and how to be self-aware of emotions in pharmacy practice.
- Making use of effective healthcare communication teaching methods in communication-based skills training.
- Being considerate that more focus on emotion recognition might need a culture shift in formal pharmacy education and practice.

When incorporating (aspects of) the post-graduate communication trainings that we developed and tested in this thesis to formal education, the different roles and responsibilities of pharmacists and pharmacy technicians in training should be considered. In the Netherlands, pharmacists and pharmacy technicians undergo different education and training. Pharmacists follow a six-year university program. The pharmacist education has an emphasis on their responsibility towards patients to pursue the best therapeutic outcome and medication therapy[59]. Pharmacists are less often at the counter conversing with patients and are generally only involved in medication switch or other conversations when the situation is more complex. Pharmacists should also function as a role model for pharmacy technicians, meaning they are a key figure in stimulating the taught behaviors from communication education and trainings in practice. Pharmacy technicians follow a three-year program at the vocational education level. The focus of their studies lies on patient care, i.e., dispensing medications to the patient, as well as giving guidance and advice to patients[60]. Specifically, pharmacy technicians are often the first point of contact for patients in the pharmacy, and often take part in medication switch conversations with patients daily. Both the pharmacist's and pharmacy technician's work is centered around the patient, and they should both have the necessary communication skills to effectively conduct pharmacy encounters, also in challenging situations. Despite the different roles and responsibilities of pharmacists and pharmacy technicians, they should both (still) be able to make adequate medication use-related decisions, listen properly and attentively to the patient, and address the patients' needs and preferences in challenging situations. Effective communication in these situations can in return result in a satisfied patient, who is well-informed to make decisions to take their medication. In return, this can prevent medication errors and treatment non-adherence.

To accommodate patient needs and preferences in challenging situations, pharmacists and pharmacy technicians in training should continue to receive early exposure to basic communication skills in their education programs. The importance of early exposure of communication skills is also echoed in a study specifically on the pharmacist in training education program[42]. In this study, it is stated that development and application of these skills early in pharmacy student educational careers is crucial. It is important to start with more basic communication skills, e.g., listening properly and attentively, as these are also important in challenging situations. A practical example on how to expose the element of emotions and strengthening basic communication skills in formal education is that students regularly come into contact with patients during training. An example is a buddy project such as taught at Utrecht University in the Netherlands where students get into contact with older patients, so that they can learn from them and see more of the person behind the medicine. By doing so, students can also learn to build a relationship with the patient, which is even more important in challenging situations in practice, for the patient to feel more secure about their medication use. Therefore, early exposure during formal education is good preparation for patient interactions in daily practice.

Professionals already working in pharmacy practice are expected to have more affinity with addressing patient emotions because they often have to deal with it in their daily work. As a result, it can be assumed that pharmacy team members in practice can better relate to why applying communication strategies have its advantages (and/or disadvantages), and that they can better recognize and apply these learned skills directly in practice. For students, this may be more challenging as the theoretical concepts can still be quite abstract and challenging to grasp without sufficient exposure and experience in practice to reflect on. The more advanced communication skills based on theoretical concepts, such as positive message framing or mentalizing might still be quite abstract for students. For example, learning and strengthening mentalizing skills might require more time and practice, due to the more complex nature of the theory. Hence, a more in-depth background and application of mentalizing can be given in the form of an extracurricular course for pharmacy technicians. For the pharmacists, the more advanced communication skills can be incorporated in their master's program, later in their studies as they then have had more practical experience and have acquired the basic communication skills. Having more practical experience, such as exposure to the pharmacy practice in the form of internships, is valuable for acquiring the more advanced communication skills. This is because students at the beginning of their studies are not yet formed by their pharmacy practice exposure nor yet able to (fully) reflect on their behaviors. In contrast, more advanced students may be more defined in their behaviors. Being confronted with real situations is effective, and sometimes even considered to be more effective than role-playing with simulated patients[61]. With that being said, the real-life setting is an important trigger for learning[61].

Next to using the real-life pharmacy practice setting as a learning environment, making use of effective healthcare communication teaching methods in the classroom setting is also key. To acquire and further develop these skills, experiential learning and feedback are effective methods. These methods are important for behavior change, as they activate prior learned knowledge, allow for practice and interaction with peers[62-64]. It is known from the literature that when training students, a combination of practice and reflection works well[65,66], also in training pharmacy students and staff[67]. The combination of these learning methods was also used in the development of both the communication trainings in this research and was positively evaluated by participants **(chapter 5, 7)**.

In respect to dealing with one's own thoughts, feelings, and emotions as well as those of the patient, one's reflective ability is important[49]. Being reflective and self-aware in pharmacy encounters is imperative to acknowledge emotions, thoughts, and feelings. It is therefore necessary for students to become aware of how they act during pharmacy encounters (i.e., non-verbal communication). As shown in earlier conducted research, reflecting on own videotaped encounters has been used to improve self-awareness[68,69]. Video-feedback has also been shown to be a potentially effective method to improve healthcare professional's generic communication skills[70]. The use of video-recordings for review or feedback is a tool that already is used in education programs, though can receive even more attention in respect to acknowledging and addressing emotions specifically in challenging situations.

Despite the need for more focus on emotion recognition in challenging situations in pharmacy practice, this can be perceived as a challenge for students. More focus on this aspect might call for a culture shift amongst students, the educators, as well as the pharmacy team members already working in practice. Taking small steps and increasing the awareness of why there should be more focus on these aspects in education and pharmacy practice is essential. For example, sharing insights of how impactful medication switch conversations can be for pharmacy team members and how often they occur **(chapter 4)**, is a first step. Next, in the education programs, it is vital that pharmacy team members in training consider patients from a bio-psycho-social perspective rather than solely from a biomedical perspective[71-75]. A condition for meaningful practice in the learning environment is routinely incorporating psycho-social cues and concerns (e.g., patient is afraid of the experienced side effects) to practical exercises. A reason this is important, as described in previous research, is that patients often express cues as hints, which are more challenging for pharmacy staff to detect given their implicit nature[76]. These emotional cues are also often responded to with a factual response, suggesting room for more attention in detection and handling of such emotional cues[76]. By doing so, students become exposed and familiarized with patient emotions and reactions and how to react accordingly early on.

Life-long learning in practice

Lifelong learning[77] entails that pharmacy team members maintain and improve the quality of their work in the pharmacy practice by ensuring that their specific practice-related knowledge and skills are up to date. As in every profession, there are the early adopters, and these groups of professionals are also often the ones who are the first to participate in communication trainings, as in this research **(chapter 5-7).** Hence, steps should be taken in providing these programs to larger groups of the pharmacy profession. To do this, a train-the-trainer approach can help further roll out the training on larger scale. This approach has been shown to be an effective method to broadly disseminate evidence-based health-related principles and practices[78], also in the pharmacy context[79]. Previous research in pharmacy practice shows that the train-the-trainer approach gives trainers confidence in teaching and providing clinical services to patients, as well as positive effects on sustainability and implementation of the curriculum[79]. The train-the-trainer approach can therefore be a viable way to scale up the communication skills trainings developed in this research.

When training pharmacy team members working in practice, there should be focus on the existing skills and knowledge of the trainee, accommodating the needs and preferences of patients, as well as the communication style used during encounters in challenging situations. To foster this, training focused on the gaps in knowledge and skills is needed, as well as being aware of logistical and practical aspects on how to facilitate these encounters. An example of a logistical or practical aspect that can

accommodate patient needs and preferences include informing patients about medicine switches before pick-up/delivery of the medicine **(chapter 4).** An example of accommodating the patient's communication preferences is by providing good explanations about the switch, such as the reason for the switch and the similarities of the new and old medicine **(chapter 6).** In addition to following post-graduate trainings, as those presented in **chapter 5 and 7**, support from colleagues and sharing experiences with peers are essential aspects for gaining and maintaining communication skills for challenging situations. For example, as presented in **chapter 6**, colleague support and sharing insights with their colleagues are motivators to applying aspects of the learned strategies. Discussing problems and solutions with peers is of added value[80,81] because this can be a more collaborative way to learn and can feel less intimidating to share experiences. A safe learning environment in the pharmacy whereby people are not judged for (potentially) making mistakes is important to foster learning of communication skills[61].

Future Research

Lastly, recommendations for further investigation of the effects of patient-tailored information and patient-centered communication in challenging situations in the pharmacy setting can be done based on this thesis.

Tailoring patient information

Future research should be conducted to understand and assess whether the personalized and tailored information, as presented in this research, is also clear, comprehensible, and meets the expectations of the groups missed in our research. In **chapter 2 and 3**, important groups of patients for whom clear and comprehensible information are essential to make informed decisions about their health and medication use were not included. These groups of patients consist of, for example, those who more often have a lower education level, people with low health literacy skills, and people with a migrant background. Tailored information for these people, for whom understanding information about medicines is more challenging[28], should be different. For example, this may include differences in communication style, medium, and form in recruiting and involving these missed groups.

In order to recruit and include those who were missed in our research, tailored recruitment and research methods should be used[82,83]. For example, people with low health literacy skills may be better reached when recruitment avoids written information where possible, as well as making use of personal contact[82,84]. A successful recruitment strategy, used in previous research, included directly contacting eligible patients via telephone and discuss their potential participation in the study[84]. In future research, patients from the specific patient groups we missed, can be contacted with the help of, for example, health care providers and patient organizations. In this case, health care providers and representatives of patient organizations can first ask consent from patients if they wish to be approached for research purposes. In this type of recruitment strategy, good collaboration with health care providers and patient organizations is necessary.

When in contact with patients, sharing information about the research, using simple and understandable language can increase comprehension, which can positively influence enrollment of those groups of participants with lower health literacy skills[85]. As in our study **(chapter 2),** and as used in previous conducted research[86,87], visual cues and clear and non-complex language are useful, and especially for the more hard-to-reach groups.

Moreover, in the data collection phase, proactively using user-friendly data collection methods can also increase participation. To ensure that the research materials and tools are clear, comprehensible, and user-friendly, assessing the materials and tools with the target group before conducting the study is of importance. For instance, filling in questionnaires can be challenging, or these patient groups lack digital skills[85]. By offering the option of oral administration of the questionnaire can be an effective way to increase the enrollment of participants with lower education or literacy skills[85]. Another way to tailor data collection methods to the target group includes co-creation. For example, a research tool developed and used in previous research, the body map tool, was made by and for young people with a chronic condition[88]. Involving the target group in the question of how they can best be reached and how to best collect their data is an inclusive manner to involve these patient groups. Similar strategies could be used in follow-up research to recruit and involve the missed patient groups in our research.

Measures to evaluate effects of applying communication strategies and skills

Pharmacy practice

In future research, more focus should be on evaluating the communication trainings we developed on a larger scale on patient and pharmacy team member level, as well as the context in which the skills are learned, transferred, and integrated.

Patient outcomes can be evaluated in the form of various research designs. For example, in the form of a real-world evidence (RWE) study or a clustered randomized control trial (RCT). Using different designs can allow for a broader evaluation of the training, e.g., RCT allows for more a targeted intervention, whereas RWE studies may allow for a broader, more contextual and observational study[89]. In these study designs, the effects of applying the communication skills in pharmacy encounters in those pharmacies that participated in a training compared to control pharmacies without training can be investigated. Patient outcomes could include medication intake behavior, beliefs and attitudes about the medicine, trust in medicine, patient satisfaction, patient-pharmacy team relationship, and quality of life[90]. Observational coding of video-recordings can be a valuable way[91,92] to investigate how mentalizing skills or the two communication strategies learned in the medication switch training can be used to identify potential (negative) patient needs, beliefs, and emotions. Furthermore, in a future research set-up, sub-group analysis can made to understand variation in effects based on background characteristics of pharmacy team members (i.e., job function, years of work experience), and which skills and strategies have been applied.

To examine the effectiveness of communication skills learned and applied in practice, the influence of the medical context should be taken into account[93]. In the case of this research, this includes the pharmacy work environment, in which the communication skills are learned, transferred, and integrated. For example, understanding how students learn communication skills on site during internships is important, or how pharmacy team members learn and take-over behaviors from colleagues when already working in the field. Taking these factors into account will give a more accurate and complete picture of how communications skills are learned and transferred, instead of assuming that the skills are acquired and transferred from training to the workplace. By doing so, this can provide a more accurate, fair, and informative assessment of the effects of the training[93,94]. As described in earlier conducted research, this may be even more important in medical environments given that learning of communication skills is often done on site, through processes of socialization

and role modelling. These factors can dominant what is learned in more formal training and education[94].

Pharmacy education

Next to measuring the effects in pharmacy practice, it is also recommended to further investigate the effects of these trainings in formal education. By doing so, we can investigate whether the training needs to be adjusted if we change the target group from pharmacists and pharmacy technicians who are already working (and have experience) to students. Common ways to assess methods of communication skills in education include self, peer, faculty, 360-feedback[95], and/or the use of standardized questionnaires[96]. Another way to assess communication skills is video reflection. It is important to use a combination of these assessment methods given that students often overestimate their achievement in communication skills when compared to those by external raters, such as peers, experts, or faculty members[67,97]. Keeping practical considerations in mind, i.e. lack of time, budget, or administrative aspects regarding the feasibility of conducting these assessments, the use of self-reported methods is a frequently used evaluation method for the effectiveness of a newly implemented program. Therefore, for evaluating the effects of the learned and applied communication skills, it is advised to use a combination of potentially more subjective and objective assessment methods[98].

Wider application of communication strategies and skills in the pharmacy setting

Furthermore, research is needed to understand other situations where the communication-based skills learned in the two communication trainings may be applicable. Future research on the application of the strategies in cases such as yearly medication reviews and deprescribing of medication (i.e., process of reducing or stopping medications that might not be useful) can be a first step to wider application of the strategies and skills in the pharmacy setting.

Conclusion

Focus on how the pharmacy team can support patients in challenging situations using patient-tailored information provision and patient-centered communication is of utmost importance. Communicating and informing patients well in challenging situations can result in better use of medicines, as patients have more confidence in the medicine and a better understanding of the need to take their medication. Additionally, patient-tailored information provision and patient-centered communication in challenging situations can also positively affect job satisfaction of both pharmacists and pharmacy technicians. In pharmacy practice, there is increasingly attention for patient-centeredness in education and training, though even more attention on the affective communication in pharmacy practice is recommended. The theory-based pharmacy practice post-graduate trainings developed in this research show that pharmacy team members feel well-equipped after the training and can apply (aspects of) their learned skills in practice. However, particularly in the field of emotion recognition and addressing patient's emotions and feelings, there is still room for growth within the field of pharmacy practice and need for more training and education regarding this aspect. This can be done in the form of incorporating these aspects early on in pharmacy education for pharmacists and pharmacy technicians, as well as life-long learning for professionals. Both are vital for further professionalization of the pharmacy profession.

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APPENDICES

Nederlandse samenvatting

List of publications

Dankwoord

Curriculum vitae

Nederlandse samenvatting

In Nederland gebruiken veel mensen dagelijks medicijnen. Ongeveer een derde van alle medicijnen die apothekers verstrekken, wordt verkeerd of helemaal niet gebruikt door patiënten. Verkeerd medicijngebruik kan leiden tot bijwerkingen, een verminderde werking van het medicijn en in sommige gevallen zelfs tot ziekenhuisopnames. Om deze negatieve gevolgen te voorkomen, is het belangrijk om patiënten te ondersteunen met goede informatie en duidelijke communicatie bij het gebruik van medicijnen, vooral in uitdagende situaties. Uitdagende situaties in de apotheekpraktijk, zoals gedefinieerd in dit proefschrift, zijn situaties die buiten de invloedssfeer van het apotheekteamlid of de patiënt liggen en die van invloed kunnen zijn op het geneesmiddelgebruik. Bijvoorbeeld, onverwachte situaties zoals COVID-19, wisselingen in medicatie door leveringsproblemen of het preferentiebeleid. Ook kunnen patiëntkenmerken die niet snel te veranderen zijn zoals beperkte gezondheidsvaardigheden en laaggeletterdheid invloed hebben op het geneesmiddelgebruik. Een uitdagende situatie kan aan de apotheekbalie leiden tot een gebrek aan wederzijds begrip tussen het apotheekteamlid en de patiënt, met daarbij meer onzekerheid en sterke emoties. Daarom vragen dit soort situaties bij uitstek om heldere informatie voor patiënten en duidelijke communicatie tussen het apotheekteamlid en patiënt.

Het doel van dit proefschrift is inzicht te krijgen in de vraag hoe het apotheekteam patiënten kan ondersteunen in verschillende uitdagende situaties met behulp van patiëntgerichte informatievoorziening en communicatie **(hoofdstuk 1)**. Dit houdt bijvoorbeeld in dat apotheekteamleden patiënten goed informeren **(hoofdstuk 2-4)** en weten hoe ze kunnen inspelen op de (mogelijk emotionele) reactie van een patiënt tijdens een baliegesprek **(hoofdstuk 5-7).**

Hoofdstuk 2 en 3 geven inzicht in mogelijkheden om de informatievoorziening over medicijnen en vaccins te verbeteren zodat dit beter bij patiënten aansluit. In **hoofdstuk 2** hebben we de begrijpelijkheid van gebruiksinstructies voor receptgeneesmiddelen zoals weergegeven op een gepersonaliseerd medicatieoverzicht vergeleken met de reguliere etiketteksten zoals deze gebruikt worden op de medicijnverpakking. Het medicatieoverzicht geeft meer informatie over het moment van inname en voor welke aandoening of ziekte het medicijn wordt gebruikt dan de etikettekst. Ook laat het foto's zien van de verpakking van de voorgeschreven medicijnen en van de tabletten/capsules zelf. De aanvullende informatie op het overzicht is bedoeld om met name patiënten met beperkte gezondheidsvaardigheden te helpen de informatie over gebruiksinstructies beter te begrijpen. We hebben een online experiment opgezet waarbij we twee groepen respondenten vergeleken. Beide groepen kregen reguliere etiketteksten van een aantal geneesmiddelen voorgelegd waarvan zij zich moesten voorstellen dat een arts deze had voorgeschreven. Eén van de groepen kreeg daarnaast ook het medicatieoverzicht te zien. Respondenten in beide groepen toonden goed begrip van de gebruikersinstructies van de hypothetisch voorgeschreven medicijnen. De groep die ook het medicatieoverzicht kreeg, had beter begrip van de instructies over het gebruiksadvies en voor welke aandoening of ziekte de medicatie bedoeld was. Het gepersonaliseerde medicatieoverzicht kan dus een goede aanvulling zijn op de etiketteksten om patiënten te ondersteunen bij hun medicatiegebruik.

In **hoofdstuk 3** keken we naar de informatievoorziening tijdens de COVID-19 pandemie. Tijdens een wereldwijde pandemie willen mensen, meer nog dan anders, goed geïnformeerd zijn en zoeken ze naar gezondheid-gerelateerde informatie. Dat geldt ook voor de vaccins die snel na het begin van de

pandemie op de markt kwamen. In **hoofdstuk 3** hebben we onderzocht wat mensen die COVID-19 hebben gehad, vonden van de informatie over de COVID-19 vaccins. Daarbij hebben we ons ook gericht op de percepties en het vertrouwen in de informatie over de vaccins. Met name vrouwen, mensen van middelbare leeftijd en hoger opgeleiden waren positief over de informatie over de COVID-19-vaccins. Wel vonden de respondenten dat de betrouwbaarheid en duidelijkheid van de informatie in het algemeen beter kan. Het beter toespitsen op de persoonlijke situatie van de patiënt is hier een voorbeeld van. Voor mensen die al COVID-19 hebben gehad, was het bijvoorbeeld belangrijk te weten hoeveel tijd er tussen de besmetting en het moment dat ze de vaccinatie konden halen moest zijn.

De **hoofdstukken 4, 5 en 6** richten zich op communicatie in één specifieke uitdagende situatie, namelijk medicijnwisselingen. Medicijnwisselingen zijn een veelvoorkomend voorbeeld van een uitdagende situatie in de apotheek. Zij ontstaan bijvoorbeeld door afspraken en beleid van zorgverzekeraars (zoals het preferentiebeleid) of medicijntekorten. Medicijnwisselingen leiden tot verwarring bij patiënten, verminderd vertrouwen in het medicijn of angst voor nieuwe bijwerkingen. Dit kan leiden tot slechter medicatiegebruik. Medicijnwisselingen kunnen de communicatie tussen apotheekteamlid en patiënt beïnvloeden door negatieve emoties van beide kanten.

In **hoofdstuk 4** zijn de ervaringen, behoeften en voorkeuren van ongeveer 150 apotheekteamleden en bijna 4000 patiënten met betrekking tot medicijnwisselgesprekken in kaart gebracht. Over het algemeen lijkt de communicatie tijdens gesprekken over medicijnwisselingen goed te verlopen, al is het omgaan met de emoties van patiënten voor apothekersassistenten lastig. Apothekersassistenten ervaren regelmatig boosheid van de patiënt tijdens een dergelijk gesprek. Zodoende hebben deze gesprekken regelmatig een negatieve invloed op hun werkplezier. Ongeveer de helft van de patiënten gaf aan informatie te hebben gekregen over de medicijnwissel, met name over de reden van de wissel en het effect van het nieuwe medicijn. Patiënten hebben behoefte aan het ontvangen van informatie over de wissel voor de uitgifte aan de apotheekbalie plaatsvindt. Dit gebeurt nog niet altijd in de praktijk.

Hoofdstuk 5 beschrijft de ontwikkeling van een communicatietraining voor lastige gesprekken over medicijnwisselingen. Centraal in deze communicatietraining staat het omgaan met emoties en reacties van patiënten tijdens deze gesprekken. De training bevat drie onderdelen: een e-learning, een live-training en een reflectiebijeenkomst. Apotheekteamleden leren in de training om twee communicatiestrategieën toe te passen tijdens gesprekken over medicijnwisselingen. Dat zijn het positief brengen van de boodschap (positive message framing), waarbij de positieve elementen van de boodschap worden benadrukt, en het slechtnieuwsgespreksmodel, waarbij de boodschap direct wordt gebracht, waarna er ruimte is voor (het inspelen op) emoties. Door het inzetten van deze strategieën kunnen apotheekteamleden hun gesprekken afstemmen op de behoeftes van patiënten met betrekking tot de wissel en goed omgaan met emoties en de zorgen die patiënten uiten.

De ontwikkelde communicatietraining is door 39 apotheekteamleden (12 apothekers en 27 apothekersassistenten) uit 15 apotheken gevolgd **(hoofdstuk 5).** Uit de evaluatieformulieren, ingevuld direct na het afronden van de training, bleek dat apotheekteamleden de intentie hadden om patiënten meer de ruimte te geven hun emoties en/of zorgen te uiten. Dit wilden zij bijvoorbeeld doen door meer stiltes te laten vallen tijdens de gesprekken. De meeste deelnemers waardeerden het oefenen van de gesprekken, het rollenspel en het ontvangen van feedback tijdens de training.

Deelnemers gaven aan voldoende handvatten en oefening te hebben om de strategieën toe te gaan passen in de dagelijkse praktijk. Enkele deelnemers misten concrete voorbeeldzinnen om de strategieën toe te passen.

In **hoofdstuk 6** staan de ervaringen met het toepassen van het geleerde uit de communicatietraining vanuit het perspectief van apotheekteamleden en patiënten beschreven. Uit diepte-interviews met 13 apotheekteamleden twee tot vier maanden na de training, bleek dat zij in de praktijk het slechtnieuwsgespreksmodel iets vaker gebruikten dan het positief framen van de boodschap of een combinatie van beide strategieën. De meeste apotheekteamleden waren tevreden over de wijze waarop het medicijnwisselgesprek na de training verliep en hoe ze met de emoties van de patiënt om konden gaan. Uit vragenlijstonderzoek onder 31 patiënten bleek dat ook zij tevreden waren over het gesprek, vooral over hoe zij bejegend werden tijdens het gesprek en over de duidelijke uitleg die het apotheekteamlid gaf over de medicijnwissel. Het toepassen van de twee communicatiestrategieën lijkt positief te werken voor het verbeteren van het contact tussen de patiënt en het apotheekteamlid en het werkplezier van apotheekteamleden.

Ten slotte beschrijven we in **hoofdstuk 7** de effecten van een communicatietraining gebaseerd op het concept mentaliseren. Mentaliseren gaat over het begrijpen van het gedrag en gedachtes van jezelf en de ander. Op basis van video-opnames van gesprekken aan de apotheekbalie hebben we onderzocht of de training invloed had op het vermogen van apotheekteamleden om de impliciet en expliciet geuite medicatie-gerelateerde behoeften en zorgen van patiënten te herkennen. Dit bleek het geval. Apotheekteamleden deden dit bijvoorbeeld door het doorvragen, de reactie van de patiënt te benoemen, of gerichte vragen te stellen over de behoeften of zorgen. Er waren verschillen in mentaliserende houding voor en na de training. Zo was er bijvoorbeeld meer aandacht voor de patiënt, zoals aandachtiger naar de patiënt kijken, na de training. We zagen dan ook dat patiënten hun zorgen vaker op een expliciete manier uitten in gesprekken met een apotheekteamlid dat de training had gevolgd. Een op mentaliseren gebaseerde communicatietraining voor apotheekteamleden kan dus patiëntgerichte communicatie in de apotheek verbeteren.

Hoofdstuk 8 bevat een reflectie op de belangrijkste bevindingen en aanbevelingen voor onderwijs, bij-en-nascholing voor apotheekteamleden en voor toekomstig onderzoek. Er is steeds meer aandacht voor patiëntgerichtheid in opleidingen en trainingen voor apothekers en het apotheekteam. Een belangrijk element in patiëntgerichte communicatie in uitdagende situaties is het herkennen en kunnen omgaan met emoties. De studies in dit proefschrift laten zien dat apotheekteamleden zich, na het volgen van trainingen die hierop gericht zijn, goed in staat voelen om (aspecten van) de aangeleerde communicatievaardigheden in de praktijk te kunnen toepassen. Echter, binnen de apotheekpraktijk is op het gebied van emotieherkenning en het omgaan met emoties van de patiënt nog ruimte voor groei. Dit kan in de vorm van vroegtijdige integratie van deze aspecten in het onderwijs voor apothekers en apothekersassistenten, maar ook in de vorm van bij- en nascholing voor apotheekteamleden werkzaam in de praktijk.

Communicatie en informatievoorziening in uitdagende situaties gaan vaak gepaard met emoties zoals boosheid over een medicijnwissel en onzekerheid over de werking van een nieuw vaccin. Het goed omgaan met emoties kan leiden tot beter gebruik van medicijnen. Dit houdt bijvoorbeeld in dat patiënten meer vertrouwen hebben in hun medicijnen en de noodzaak om hun medicijnen in te nemen beter begrijpen. Ook kan het wegnemen van zorgen van de patiënt leiden tot beter gebruik

van hun medicijnen. Daarnaast kunnen patiëntgerichte informatievoorziening en communicatie in uitdagende situaties ook het werkplezier van zowel apothekers als apothekersassistenten positief beïnvloeden. Meer aandacht voor (h)erkenning van en omgaan met emoties in de apotheekpraktijk en opleidingen is aan te bevelen. Dit is essentieel voor verdere professionalisering van de beroepsgroep.

List of publications

Included in this thesis:

Schackmann L, Vervloet M, van Dijk L, Heringa M, Koster ES. Communication during encounters about medication switching: Self-reported experiences of pharmacy technicians and patients. Exploratory Research in Clinical and Social Pharmacy. 2023;9:100259. doi: https://doi.org/10.1016/j.rcsop.2023.100259

Schackmann L, Heringa M, Wolters M, et al. Facilitating pharmacy staff's conversations about non-medical medication switches: Development and testing of a communication training. Research in Social and Administrative Pharmacy. Published online January 2023. doi: https://doi.org/10.1016/j.sapharm.2023.01.014

Schackmann L, Hek K, Vervloet M, Koster ES, van Dijk L. Provision of and trust in COVID-19 vaccines information: Perspectives of people who have had COVID-19. Health Expectations. Published online February 3, 2023. doi: https://doi.org/10.1111/hex.13706

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Publications related to this thesis:

Schackmann, L., Koster, E., Heringa, M., Vervloet, M. Training helpt apotheekteam bij lastig gesprek over medicijnwisseling: goede communicatie voorkomt onveilig en ineffectief medicijngebruik. Pharmaceutisch Weekblad: 2022, 157(45), p. 22-24

Communicatietraining - Apotheekteam Magazine Winter 2022. apotheekteammagazine.knmp.nl. Accessed January 31, 2023. https://apotheekteammagazine.knmp.nl/apotheekteam-magazine-winter-2022/communicatietraining

Schackmann, L., Vervloet, M., Tomic, M., Dijk, L. van. Personalized medication overview (MijnGiB): insights from patients and (in)formal caregivers after first encounter and after one-month patient use. Part B) Qualitative study. Utrecht: Nivel, 2022

Schackmann, L., Dijk, L. van, Brabers, A., Vervloet, M. Comprehensibility of usage instructions on a personalized medication overview (MijnGiB), compared to the usual-care prescription medication labels: a 2x3 between-subjects experiment. Part A) Quantitative study. Utrecht: Nivel, 2022

Conference abstracts related to this thesis:

Schackmann, L., Heringa, M., Koster, E., Dijk, L. van, Vervloet, M. Communication and information about non-medical medication switches by the pharmacy team: patient's needs and preferences. International Journal of Clinical Pharmacy: 2022, 44(1) p. 287. Abstract of the 25th Annual Meeting of ESPACOMP, the International Society for Medication Adherence, 08–19 November 2021

Publications not related to this thesis:

Dijk, L. van, **Schackmann, L.,** Heringa, M., Vervloet, M. Infographic. Burgerperspectief op extramurale farmaceutische zorg. Utrecht: Nivel, 2023

Dijk, L. van, **Schackmann, L**., Heringa, M., Vervloet, M. Burgerperspectief op extramurale farmacie: quickscan van Nederlandse literatuur. Utrecht: Nivel, 2023

Veldkamp, R., **Schackmann, L.,** Horsselenberg, M., Vervloet, M., Dijk, L. van, Hek, K. Inhalatiemedicatie en overwegingen van milieu-impact in de eerste lijn: een kwantitatieve analyse van toedieningsvormen en een kwalitatieve studie naar motivatie voor het meewegen van milieu-impact van geneesmiddelen door patiënten en zorgverleners. Utrecht: Nivel, 2022

Dijk, L. van, Vervloet, M., **Schackmann, L**. Staat van de zelfzorg bij de drogist: kennissynthese. Utrecht: Nivel, 2022

Schackmann, L., Vervloet, M. Netwerk van websites met informatie over geneesmiddelen. Webrapportage: de toegankelijkheid, begrijpelijkheid en gebruiksvriendelijkheid van de verbindingen tussen vier websites vanuit het perspectief van de websitebezoeker. Utrecht: Nivel, 2020

Fermin, A., **Schackmann, L.,** Boer, R. de, Bouwman, R., Bruning, M.R., Friele, R.D. Ex ante effectbeoordeling opname schadevergoeding in de Jeugdwet. Utrecht: Nivel, 2020

Schackmann, L., Sankatsing, V.D.V., Boer, R. de, Bruning, M., Friele, R.D. Evaluatie 5 jaar tuchtrecht in de jeugdzorg Utrecht: Nivel, 2020

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Laura,

April 2023

Curriculum vitae

Laura Schackmann was born in 1996, in Apeldoorn, the Netherlands. After many international moves to Indiana, Mexico City, and Arizona, she moved back to the Netherlands in 2012. In 2014, she completed her International Bachelorette program in Hilversum, the Netherlands. Then she obtained her bachelor's degree in 2017 at the University College Roosevelt (UCR) in Middelburg, the Netherlands. During her time at UCR she completed her major in the pre-medical track consisting of (bio)-medical courses, as well as a minor in (health) psychology. During her bachelor's she conducted research in hospitals in the Netherlands and the US. Also, she followed a summer course at the University of Malaga, Spain to further develop her Spanish-speaking skills. Following, in 2019, she obtained her research master's degree in Global Health at the Vrije University in Amsterdam, the Netherlands. During her master's degree she completed two research internships abroad, in Sri Lanka and Bonaire.

In 2019 Laura started as a junior researcher at Nivel, the Netherlands Institute for Health Services Research, in the research program Impact of Legislation and Oversight in Healthcare. In September 2020 she started working in the research program Pharmaceutical Care. This position led to her PhD research which she completed in February 2023. Next to her research work, she presented at various national and international conferences and symposiums.

After obtaining her PhD degree, she will continue her postdoctoral research work at Nivel, in the Pharmaceutical Care research program.

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