

The CombiConsultation

Patient-centred pharmaceutical care
by interprofessional collaboration

Valérie Adrienne Marie Meijvis

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Patient-centred pharmaceutical care by interprofessional
collaboration

Het CombiConsult

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(met een samenvatting in het Nederlands)

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*“To the world you may be one person; but to one person
you may be the world.”*



Dr. Seuss

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Chapter 1

General Introduction

Authorship statement

The idea and structure of the general introduction were mine.

I conducted the literature search and composed the entire section. Throughout the entire process, I actively sought and incorporated input and feedback from my supervisory team.

INTRODUCTION

The aging of the global population contributes to a substantial increase in the worldwide prevalence of chronic diseases. Currently, approximately one in three adults is affected by multiple chronic conditions, underscoring the urgency of addressing noncommunicable disease prevention as a pressing global priority now and in the foreseeable future [1]. Due to population growth and aging, it is predicted that the number of people with at least 1 chronic condition will increase from 57% in 2018 to 60% in 2040 in the Netherlands. The percentage of people with a single chronic condition will decrease slightly. In particular, the percentage of people with three or more chronic conditions is increasing: from 17% in 2018 to 21% in 2040 [2].

The provision of care of most chronic conditions has shifted from secondary to primary care, mostly for cost effectiveness reasons [3]. However, these conditions often require prolonged medical attention and specialized care. In the Netherlands, healthcare for patients with Diabetes Mellitus (DM), chronic obstructive pulmonary disease (COPD) and (risk of) cardiovascular disease (CVD) is usually provided by practice nurses in general practice settings [4]. The prevalence of these chronic conditions has increased in recent years. Presently approximately 1 in 14 Dutch individuals is estimated to have DM [5], of whom more than 90% type 2. For individuals with CVD [6], the prevalence is approximately 1 in 10, and for COPD, it is approximately 1 in 31 [7]. Chronic conditions are associated with polypharmacy, defined as patients being prescribed numerous drugs simultaneously, typically five or more medications [8]. Figures from 2013 show that in an average community pharmacy in the Netherlands (7900 patients), approximately 500 patients are over 65 years old and use 5 or more medicines chronically [9]. More recent figures show that in the Netherlands almost 1.2 million people aged 65 or older currently use 5 or more medications chronically (on a population of over 17 million) [10]. While these medications may be necessary to control various health issues, polypharmacy can also pose risks, including adverse side effects, drug interactions and non-adherence. Moreover, drug related problems (DRPs) can potentially result in hospital admissions [11]. The aging population and the increasing prevalence of chronic diseases, requires appropriate pharmacotherapeutic management and innovative solutions [12]. As highly trained and easy approachable health care providers, pharmacists play a vital role in pharmaceutical care delivery. They have pharmacotherapeutic expertise that extends beyond medication dispensing. Their expanding role includes patient-centred healthcare delivery, making pharmacists integral partners in enhancing patient outcomes and overall community health [13, 14]. However, in many healthcare systems, interprofessional collaboration is suboptimal, leading to an underuse of professional expertise [15]. The lack of communication and coordination among the involved healthcare providers, leads to inefficient patient care.

Patients often contact pharmacists and general practitioners separately, leading to different treatment plans and inefficient medication management. Pharmacists offer a diverse array of patient-focused clinical services, such as anticoagulation management [16], asthma care programs [17], medication prescription [18], health screening [19], and medication reviews. These services have demonstrated their ability to enhance the quality of patient care and outcomes.

MEDICATION REVIEW

The Pharmaceutical Care Network Europe's (PCNE) definition of 'Medication Review' (MR) is "A structured evaluation of a patient's medicines with the aim of optimising medicines use and improving health outcomes. This entails detecting drug-related problems and recommending medication optimising interventions" [16]. Depending on the available information sources, the MR can be classified as simple (type 1: taking medication history), intermediate (type 2a and b: medication history and patient interview or review of clinical data) and advanced (type 3: medication history, patient interview and reviewing clinical data). A systematic review and meta-analysis including different types of medication reviews showed a beneficial effect on most drug-related outcome measures. However, there was a minimal effect on clinical outcomes: only a reduction of the number of falls per patient. No effect was found on quality of life [17]. In the Netherlands, the Clinical Medication Review (CMR) [18, 19] (type 3, advanced) is most often used [20]. The primary objective of a CMR is to optimize a patient's medication therapy by ensuring that medications are safe, effective, and appropriate for the individual patient's needs [21]. In the Netherlands, a CMR comprises a series of five distinct steps, as outlined in the multidisciplinary guideline 'Polypharmacy in the Elderly,' (Figure 1) [22, 23].

The effectiveness of a CMR depends on several factors, including the patient population, the healthcare provider's expertise, the conduction of the different steps of the intervention and specific goals of the review. Research into the effects of CMR shows that the number of potential DRPs and the number of medicines used often decreases due to CMR. Verdoorn et al. showed that a mean number of 1.5 drugs was ceased during a CMR. However, the effects on patient-relevant outcomes are constrained [24-32]. Over the years there have been various developments regarding CMRs. For example, the importance of physical consultation with the prescriber was demonstrated [24] as was the impact of the conversation with the patient. More than a quarter of all DRPs were identified during patient interviews and DRPs identified during patient interviews were more frequently assigned a higher clinical relevance [33]. Another relevant development was the importance of focus on personal goals, such as reducing pain,

improving mobility and reducing the number of medicines. Verdoorn et al. (DREAMER) showed that CMR focussed on personal goals can have a positive effect on reducing the perceived health complaints and self-reported quality of life of patients with polypharmacy (≥ 7 long-term medications) and ≥ 70 years of age [19].

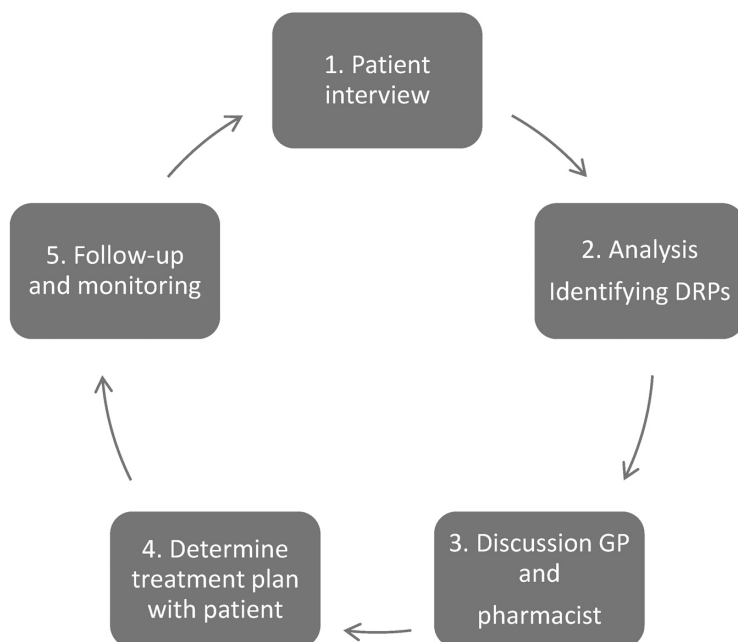


Figure 1. Five steps of a CMR

In addition, there is also a development of integrating the pharmacist in the primary care team. Hazen et al. have conducted research into the non-dispensing pharmacist (POINT-study). The primary focus was directed toward the pharmacist's workplace, the GP practice, and the associated strong degree of integration within the primary care team. This study showed a benefit on medication-related hospitalization compared to standard care [34, 35] and has shown to contribute to better patient outcomes and medication use [34]. These non-dispensing pharmacists can play a role in medication management, patient education and addressing medication-related issues, which holds considerable importance for patients managing chronic conditions [34]. However, despite the evident benefits, widespread integration of pharmacists into general practice remains a challenge due to various barriers, such as capacity problems, resource constraints, regulatory hurdles, lack of government support and variations in healthcare systems [36].

According to selection criteria of the former polypharmacy guideline of 2012 (≥ 65 years old and ≥ 5 medicines in use and ≥ 1 risk factor), not all eligible individuals, could be provided with a CMR [23]. It was also supposed that not all these patients needed a time-intensive CMR. Therefore, the advice on criteria has been adjusted in 2019 to ≥ 75 years old and ≥ 10 medicines in use (and/or frailty) being the patient group at greatest risk for serious outcomes from DRPs and to keep the number of eligible patients manageable. Next to this primary target group, patients can be invited for a CMR at the perception of the GP and/or pharmacist. However, this is a short-term view and leads to the exclusion of a significant portion of the patient population. Therefore, there is a pressing need for a new, less intensive, healthcare service that can address the needs of patients not eligible for a CMR or even patients at an earlier stage of their chronic conditions. Such a service could also focus on preventive measures, lifestyle interventions, and early medical management, thereby extending the potential benefits to a wider range of patients and improving long-term health outcomes. Development of innovative pharmacy services with more focus on the patients' health-related goals, prevention and collaboration with other primary care providers could help pharmacists to play a more integral role within primary care settings, ultimately leading to better patient outcomes [37, 38]. Achieving this necessitates a significant paradigm shift in the roles of pharmacists within primary care, along with a training aimed at equipping them with the necessary skills for more specialized clinical tasks [39, 40].

Due to the existence of selection criteria, pharmacists often rigidly categorize patients. However, healthcare providers truly understand the timing for a medication review and are actively exploring innovative approaches to assess this need. In the Netherlands, pharmacists have initiated the search for less intensive types of medication review, which are aimed at specific goals (e.g. deprescribing [25], pharmacogenetics [41]), or target groups (e.g. Parkinson [42])). A new pharmacotherapeutic intervention is the CombiConsultation. This is a clinical pharmacy service for patients with a chronic condition (DM, COPD and/or CVD) and is conducted by the community pharmacist in collaboration with the practice nurse (PN) and/or general practitioner (GP), preferentially from the general practice. The concept revolves around the notion that by implementing such a consultation, pharmacists become more integrated into the primary care team, enabling them to address the unmet needs of patients with a chronic disease. While GPs focus on diagnosing and prescribing treatment, and PNs adhere to strict protocols in their work, pharmacists specialize in medication management. They ensure that patients receive the most effective and appropriate medicine and take into account factors such as adverse effects, drug interactions and dosage adjustments. Collaboration between these professionals is essential to ensure that patients receive a holistic and well-coordinated care.

Also, the preferences of the patient hold significant importance. By focussing on personal health-related goals and using shared decision-making, patients become more involved in their own treatment, resulting in better patient-level outcomes [43, 44]. Additionally, pharmacists educate patients about their medications, fostering better understanding and adherence [45, 46].

OBJECTIVE

The expected escalating prevalence of chronic conditions within the growing population makes it imperative to guide patients in an early stage of their chronic disease. A CombiConsultation as a less intensive type of medication review allows for the possibility to consult more patients, although this underscores the significance of prioritization, emphasizing the need to carefully select the appropriate patient population. Therefore research is needed to investigate what the CombiConsultation yields and which patients can benefit most from such consultation.

The objective of this thesis is to implement and evaluate the CombiConsultation. We examine this model and investigate which patients can benefit most from this new intervention. This thesis also includes qualitative research to examine the perspectives of both healthcare providers and patients on this new clinical pharmacy service. The consultations focus on personal health related goals and pharmacists were trained in this aspect. Therefore, we aimed to examine their consultation skills and to describe the content of these consultations.

The general objective of this thesis is to evaluate the implementation of the CombiConsultation both from a quantitative and qualitative perspective.

OUTLINE

In Chapter 2 we introduce the ‘The CombiConsultation’: a new concept of sequential consultation with the pharmacist and practice nurse/general practitioner for patients with a chronic condition. We also report the findings of the prospective intervention study ‘The CombiConsultation for patients with diabetes, COPD and cardiovascular diseases’. We evaluate the interventions and personal health-related goals.

In Chapter 3 we report three studies about the perspective of the healthcare providers and patients on the CombiConsultation. The first study is a qualitative interview study with general practitioners, pharmacists and practice nurses who participated in the CombiConsultation study. In the second study we will take a closer look at the factors that influence implementation by means of a survey among the participating

pharmacists. In the third study, we demonstrate the results of the focus group study, which shows the patient's perspective.

In Chapter 4 we discuss the consultation skills of the pharmacists by video recordings. In conclusion, the research is discussed in Chapter 5.

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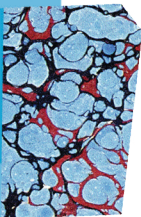
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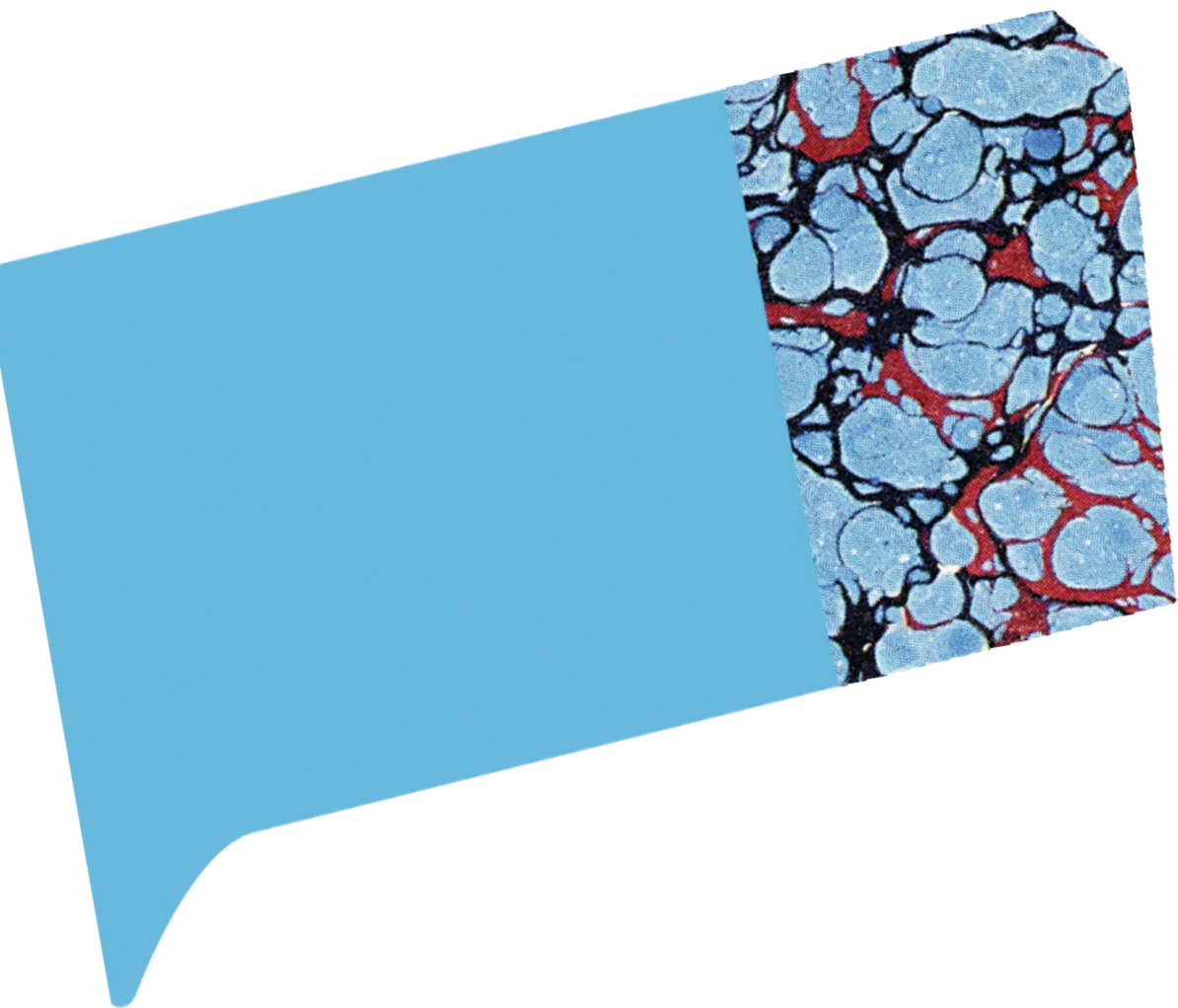
Chapter 2

The CombiConsultation: investigating a new concept of consultation with the pharmacist



Authorship statement

I designed the study together with the research group. I performed the data management, performed the data analysis, wrote the first version of the manuscript and implemented the contribution of the co-authors and external reviewers until final publication. Throughout the process I asked for and implemented input and feedback from my supervisors in this study.



Chapter 2.1

The CombiConsultation: a new concept of sequential consultation with the pharmacist and practice nurse/general practitioner for patients with a chronic condition

Valérie A. M. Meijvis
Mette Heringa
Henk-Frans Kwint
Niek J. de Wit
Marcel L. Bouvy

ABSTRACT

The primary health care system is generally well organized for dealing with chronic diseases, but comprehensive medication management is still a challenge. Studies suggest that pharmacists can contribute to effective and safe drug therapy by providing services like a clinical medication review (CMR). However, several factors limit the potential impact of a CMR. Therefore, we propose a new pharmaceutical care service for patients with a chronic condition: the CombiConsultation. The CombiConsultation is a medication evaluation service conducted by the (community) pharmacist and either the practice nurse or general practitioner. It consists of 3 steps: medication check, implementation and follow-up. The pharmacist primarily focusses on setting treatment goals for 1 or 2 drug-related problems in relation to a specific chronic condition. In this manuscript we describe the process and characteristics of the CombiConsultation. We compare the CombiConsultation with the CMR and explain the choices made and the implications for implementation.

BACKGROUND

Aging and the related increase in chronic conditions and multi-morbidity lead to an increased demand for care. In the Netherlands, the number of people with at least 1 chronic condition is predicted to increase from 8.5 million (of 17 million) in 2015 to 9.8 million in 2040 [1].

Chronic diseases require appropriate management. The provision of care for most chronic diseases has shifted from secondary to primary care, mainly for cost effectiveness reasons [2]. This has led to the development of new models for primary care for patients with chronic conditions, which share an integrated, patient-centred and pro-active approach [3]. Due to the increasing workload of general practitioners (GPs), the role of physician assistants and practice nurses (PNs) has become more important [4]. In the Netherlands, PN's provide chronic care to patients with Diabetes Mellitus (DM), chronic obstructive pulmonary disease (COPD) and (risk of) cardiovascular problems. Although the primary health care system is generally well organized for addressing chronic diseases, comprehensive medication management is still a challenge. Studies suggest that pharmacists may contribute to effective and safe drug therapy by providing clinical pharmacy services [5]. In the Netherlands, community pharmacists are actively involved in patient care and they are experienced in performing Clinical medication reviews (CMRs) together with GPs. Nevertheless, there are significant barriers to community pharmacists to implementing clinical services, including lack of mandate, effectiveness and readiness to embrace change [6].

CMRs are among the most studied and effective interventions performed by pharmacists. A CMR is a structured, critical examination of patient's drug therapy with the objective of optimising the beneficial effects of medicines, minimising the number of drug-related problems (DRPs) and increasing the efficiency of pharmacotherapy. A CMR consists of 5 steps: 1. Patient interview, 2. Analysis: identifying DRPs, 3. Discussion GP and pharmacist, 4. Implementation of actions, 5. Follow-up and monitoring [7]. In current practice, several factors limit the potential impact of CMR for patients with chronic conditions.

First, most pharmacists do not have the resources to offer a CMR to all patients with chronic conditions. Therefore, additional selection criteria (like higher age, number of medicines or frailty scores) are generally used to identify patients eligible for a CMR. In the Netherlands, the selection criteria of ≥ 65 years old and ≥ 5 medicines in use have recently been adjusted to ≥ 75 years old and ≥ 10 medicines in use (and/or frailty) to keep the number of eligible patients manageable. However, a medication review can be relevant for all patients with chronic conditions requiring chronic drug use in order to optimize the effectiveness of prescriptions and limit the risk of drug use in the long term [8].

Second, the implementation rate of recommendations can often be improved. Kwint et al. demonstrated that implementation rates of recommendations resulting from medication reviews vary from 17 to 86%. The implementation rate was strongly associated with the extent of collaboration between pharmacists and GPs [9].

There is a need to address the limitations in feasibility and efficiency of the model of CMR. Thus, in this manuscript we propose a new pharmaceutical care service for patients with chronic conditions, the CombiConsultation, and we describe its design and features.

Design of the concept

Comparable with a CMR (or medication review type 3), a CombiConsultation is based on medication history, patient information and clinical information [10]. However, in contrast to a full CMR the CombiConsultation focuses on the medication for a specific condition. The CombiConsultation is conducted by the (community) pharmacist and either the PN and/or GP. The patient visits the PN and/or GP immediately after the consultation with the pharmacist. We describe the process first (Fig. 1) and then the characteristics of the CombiConsultation (Table 1).

Process

The CombiConsultation consists of 3 steps (Fig. 1).

Step 1: Medication Check

- Consultation with the pharmacist
The patient first receives a medication consultation of 15–20 minutes with the pharmacist shortly before a consultation with the PN/GP concerning the chronic condition (Step 2). The pharmacist has access to the medication history and clinical information, like diagnoses and laboratory values. The focus of the pharmacist during the consultation is to identify 1 or 2 main health-related complaints in relation to the chronic condition. If there are several problems, the pharmacist and patient decide together which problem(s) has the highest priority. They set 1 or 2 specific treatment goals.
- Analysis: identifying DRPs
The pharmacist identifies DRPs based on the consultation as well as clinical information and medication history. Based on the identified DRPs and treatment goals, the pharmacist summarises the recommendations for action in a short pharmaceutical care plan.

- Discussion
The pharmacist discusses the pharmaceutical care plan with the PN/GP. Follow-up times are scheduled.

Step 2: Implementation

- Consultation with PN/GP
The patient next consults with the PN/GP concerning their chronic condition.
- Implementing actions
During the consultation with the PN/GP, the pharmaceutical care plan is discussed with the patient, and actions are implemented.

Step 3: Follow-up by the pharmacist or PN/GP

- Follow-up by pharmacist or PN/GP
Two to 4 weeks after the initial medication consultation, the pharmacist or PN/GP (depending on the agreement made in Step 1) has a follow-up consultation with the patient to evaluate the implemented actions. Monitoring is then continued for as long as necessary.

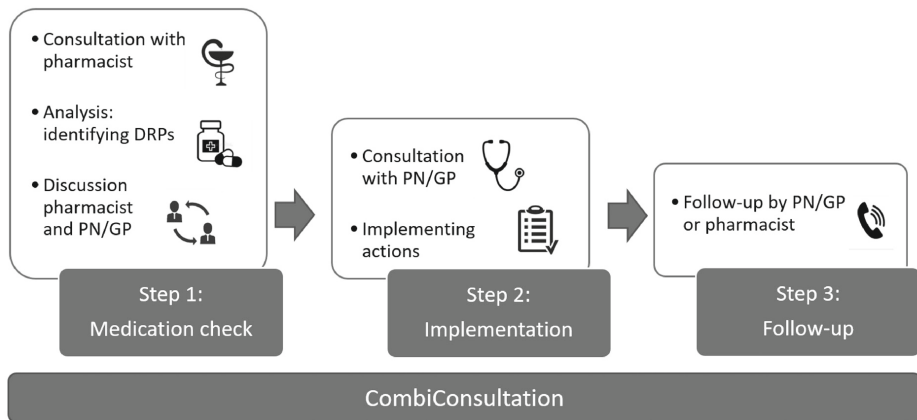


Fig. 1. Schematic representation of the 3 steps of the CombiConsultation
PN practice nurse, *GP* general practitioner, *DRPs* drug related problems

Characteristics

Table 1 compares the CombiConsultation with the CMR. We explain the choices made and the implications for implementation.

Table 1. Characteristics of the CMR and CombiConsultation

Characteristic	Traditional CMR*	CombiConsultation
Target population	65+ ≥ 5 medicines	18+ ≥ 1 medicine Patients with any chronic condition that requires chronic drug treatment
Aim	Complete medical history and drug history	1–2 health-related complaints in relation to the chronic condition
Duration of patient consultation with pharmacist	30–50 minutes	15–20 minutes
Setting	Pharmacy, patient's home, or at the general practice	General practice

* Stepwise approach of a CMR according to multidisciplinary guideline 'Polypharmacy in the Elderly': 1. Patient interview, 2. Analysis: identifying DRPs, 3. Discussion between GP and pharmacist, 4. Implementation of actions, 5. Follow-up and monitoring.

Target population: The CombiConsultation has been developed for adult patients with at least 1 chronic condition that requires ongoing drug treatment. This contrasts with the usual selection criteria for a CMR, which generally consist of a combination of higher age, polypharmacy, multimorbidity or frailty. However, all adult patients with a single chronic condition may experience problems with medication. Therefore, all patients who use at least 1 medication and receive primary care treatment for a chronic condition are eligible for a CombiConsultation.

Aim: The CombiConsultation focusses primarily on setting treatment goals for 1 or 2 health-related complaints in relation to a specific chronic condition (e.g., DM or COPD). In contrast, the CMR provides a full analysis of potential DRPs such as deviations from guidelines and inappropriate prescriptions. Several studies recommend shifting the focus of CMR to issues that the patient perceives as most relevant [11]. It has been demonstrated that specific attention to patients' individual health goals along with follow-up and monitoring of the suggested interventions leads to a higher implementation rate [12]. When the patient has multiple health related complaints, the pharmacist and patient agree which problem has the priority or agree to plan a CMR. The pharmacist primarily focusses on the medication for the chronic condition; however, it is also possible to discuss medication for other conditions if the patient wishes.

Duration of the patient consultation with pharmacist: In contrast with a CMR, a CombiConsultation targets less complex patients and specifically focusses on 1 or 2 problems. Based on an unpublished pilot study in 96 patients (analysis not included),

a consultation of 15-20 minutes is expected to be appropriate. Previous research has shown that a CMR patient interview took 35–50 minutes [13].

Setting: The medication check of the CombiConsultation is preferentially conducted by the pharmacist in the GP's practice, which emphasizes the cooperation with the PN/GP and allows for more direct communication between the pharmacist and PN/GP. It is not a requirement that the pharmacist is working in the GP practice as long as the pharmacist has access to clinical information. Integrating pharmacists into the patient care team within primary care practices leads to better patient outcomes and medication use [14]. Moreover, this integration can improve the acceptance of drug-related recommendations and optimise pharmacotherapy and drug safety. Studies assessing the impact of non-dispensing pharmacists working in a general practice have demonstrated the identification of a high number of DRPs and higher implementation rates during the process of CMR [14]. Besides, pharmacists can make better decisions when they have access to medical information from the GP upon which they can base their decisions [15].

As mentioned above, in a CombiConsultation the consultation with the pharmacist is directly followed by the consultation with the PN/GP: a one-stop-shop approach. Immediately after the consultation, the pharmacist communicates (in person or electronically) the 1 or 2 main recommendations to the PN/GP. Therefore, interventions can be implemented directly during the PN/GP consultation. Also, the patient can go directly to the next healthcare provider. This may lead to better perceived quality of care, especially in terms of accessibility and continuity of care [16].

DISCUSSION

We suggest the CombiConsultation as an alternative to improve pharmaceutical care for patients with chronic disease in primary care. By assessing their problems and concerns related to medication and by using shared decision-making to set personal treatment goals, patients become more involved in their own treatment. This is particularly important with chronic conditions to prevent complications over the long term [12]. A systematic review by Reynolds indicates that self-management support (improving the participation and self-reliance of the patient) most frequently results in improvements in patient-level outcomes, predominately for diabetes and hypertension [17].

Because of its limiting selection criteria, the CMR excludes a large group of patients, resulting in a need for other types of medication evaluation. In the Netherlands, the guideline for medication review recommend targeted medication consultations,

such as evaluation of correct use of medication, evaluation of a specific medication-related health problem or evaluation of the medication for a specific condition, like the CombiConsultation [18]. By focusing on patients with at least 1 chronic condition and 1 prescription (irrespective of age), it is possible to increase the target group. If there is not enough time for adequate discussion during the CombiConsultation, the pharmacist can invite the patient for a CMR; thus, the CombiConsultation can be used as a pre-selection tool for the CMR.

As mentioned before, in 2019 the selection criteria for a CMR in the Netherlands have been adjusted to select candidates most likely to benefit from a CMR. To prevent that implementation of the CombiConsultation will lead to numbers that exceed the pharmacy workforce capacity, it is desirable to start with a specific patient group, for example DM. In the Netherlands, patient groups with a single chronic condition (e.g. Diabetes Mellitus) are already monitored by the PN. This makes it easier to implement the CombiConsultation focused on these specific patient groups. Nevertheless, it is certainly feasible to select a patient group in other settings.

To perform the CombiConsultation properly, a basic level of interprofessional collaboration is required. Clear agreements about patient selection, planning, inviting patients and practical implementation are necessary. In the proposed process, the patient consults with the pharmacist before the PN/GP. However, in daily practice the reverse order could be considered. A potential advantage of the reverse order is the availability to the pharmacist of recent clinical data such as blood pressure following the PN/GP check-up. However, a significant disadvantage is that recommendations from the medication check cannot then be immediately implemented with the PN/GP, and the patient may still need to be informed about additional interventions after the CombiConsultation. The pharmacist has the expertise to perform the medication check. Further investigation is needed to explore the potential role of other healthcare providers (like pharmacy technicians) in the CombiConsultation.

As with a CMR, the pharmacist must be professionally trained to perform a CombiConsultation. Many health care providers, including pharmacists, offer patients advice and information about their medicine. However, when providers focus on identifying the patient's needs and concerns about medication, they are more likely to address the problems most relevant to the patient [19]. Historically, little attention was given to consultation skills in pre-graduate pharmacist training. Although training in consultation skills is more common today, some pharmacists, especially those who are older, may need additional training in patient-centred communication. Other important skills that may require training are clinical reasoning and shared decision making [20].

Before the CombiConsultation can be implemented on a large scale, it is necessary to demonstrate the added value of the intervention. Research is needed to assess which patients may benefit the most as well as to evaluate the experience of healthcare providers and patients regarding implementation barriers and facilitators. An intervention study is currently conducted.

CONCLUSION

The CombiConsultation is a new approach to improve the outcomes of pharmacotherapy in patients with a chronic condition by providing a medication evaluation service conducted in close collaboration between pharmacist and PN/GP. The concept relies on pharmacists to deliver patient-centred care, which requires consultation skills and the ability to cooperate with other care providers. Research is needed to evaluate the feasibility and possible effects of the CombiConsultation.

2.1

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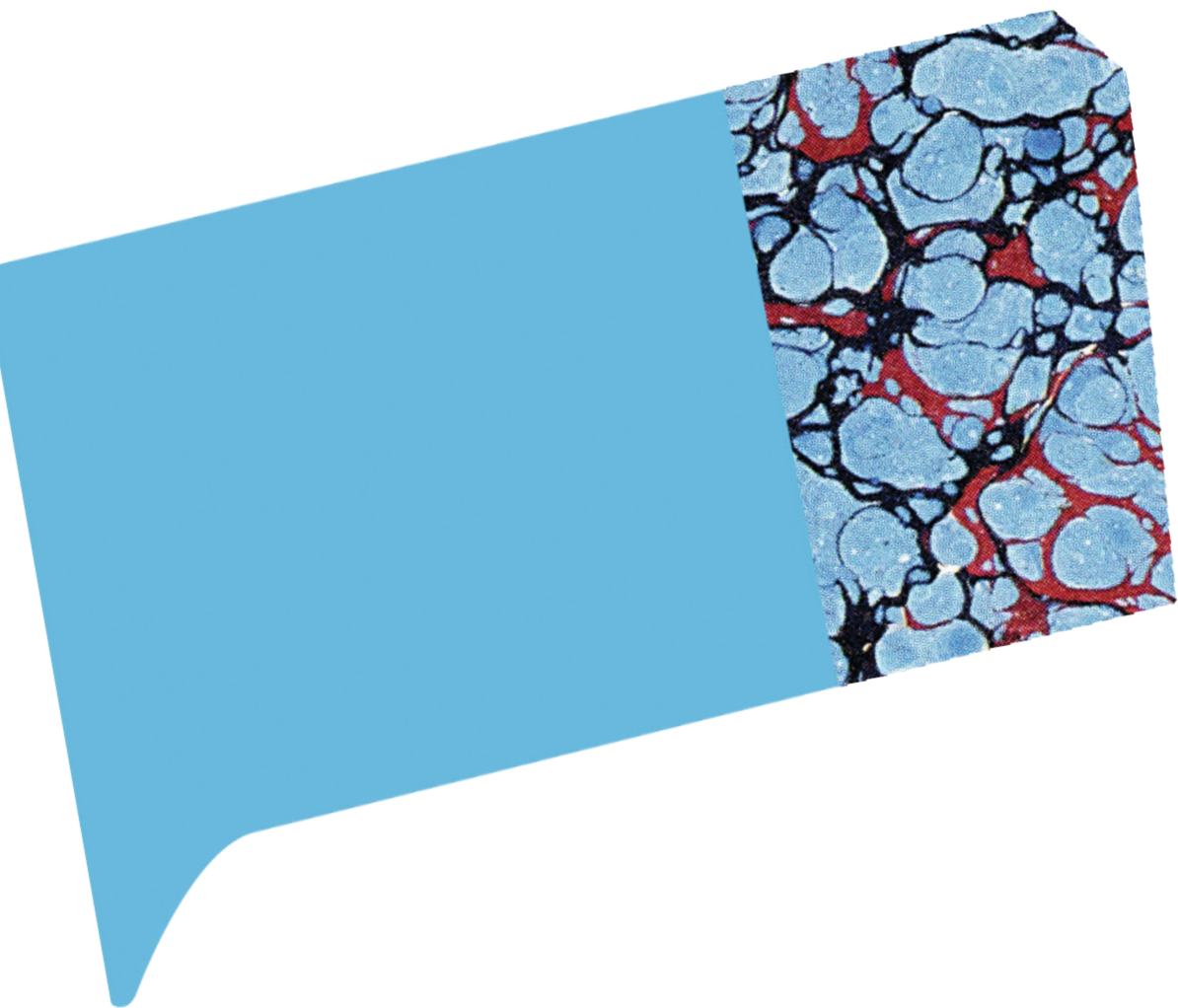
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Chapter 2.2

The CombiConsultation for patients with diabetes, COPD and cardiovascular diseases: evaluation of interventions and personal health-related goals

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ABSTRACT

Background

The CombiConsultation is a consultation with the community pharmacist for patients with diabetes, COPD and/or cardiovascular disease (CVD), aligned with the annual or quarterly consultation with the practice nurse (PN) or general practitioner (GP). The consultation is focused on the personal health-related goals of the patient.

Objectives

To assess the number and types of personal health-related goals, drug-related problems (DRPs) and interventions identified by pharmacists during a CombiConsultation and to investigate which patients can benefit most from such consultation.

Method

Twenty-one Dutch community pharmacies and associated GP practices were included in the CombiConsultation study. CombiConsultations were performed, involving patients with diabetes, COPD and/or (at risk of) CVD. The pharmacists set health-related goals together with the patients and identified DRPs. The number and types of personal health-related goals, DRPs and interventions were analysed. Associations between patient characteristics and the identification of at least one DRP were analysed by multivariate regression analysis.

Results

In 834 patients (49% men, mean age: 70 years), 939 DRPs were identified, mostly (potential) side effects (33%), undertreatment (18%) and overtreatment (14%). In 71% of the patients, one or more DRPs were found, with a median of one DRP per patient. Pharmacists proposed 935 recommendations, of which 72% were implemented. DRPs were found more often in patients using a higher number of drugs for chronic conditions. A total of 425 personal health-related goals were set, of which 53% were (partially) attained.

Conclusion

The CombiConsultation can be used as a compact health service contributing to safe and effective use of medication for patients with diabetes, COPD and/or (at risk of) CVD, also in patients under 65 or with less than 5 medications in use. The output of the CombiConsultation reflects its characteristics.

INTRODUCTION

Globally, chronic diseases and multimorbidity are increasing due to ageing of the population. Adequate management is a major challenge and increases healthcare demand in primary care. Patients with chronic conditions often use (multiple) drugs, and proper pharmacotherapeutic guidance is needed. Pharmacists can contribute to safe and effective drug therapy by providing clinical pharmacy services, such as a clinical medication review (CMR), for these patients [1-3].

To improve pharmaceutical care for patients with chronic diseases, the focus of care should be shifted from traditional disease-specific outcomes to patient-centred outcomes [4]. Therefore, it is important to assess these patients' problems and concerns related to their medication and to use shared decision-making to set personal health-related goals [5]. A CMR can contribute to the improvement of pharmacotherapy and outcomes relevant to well-being [6]. Although a full CMR is time-consuming and only relevant for high-risk patients, some form of medication review is also needed for patients with chronic conditions, requiring medication, that do not meet the criteria of a CMR. In addition, most pharmacists do not have the time to offer a CMR to all patients with chronic conditions, and a shorter consultation is needed. As an alternative to the medication review, the CombiConsultation was developed – a new pharmaceutical care service for patients with chronic conditions.

The CombiConsultation is a consultation by the pharmacist, aligned with the periodical check-up with a practice nurse (PN)/general practitioner (GP), for patients with chronic conditions. During this short consultation, the pharmacist focusses on the patient's problems and concerns regarding their medication used for their specific chronic condition and sets personal health-related goals together with the patient (step 1: Medication check). The pharmacist's recommendations to ensure safe and effective medication use are implemented during the check-up with the PN/GP (step 2: Implementation) and are evaluated a few weeks later (step 3: Follow-up) [7].

By focussing on a specific condition and because most patients will use less medication compared to patients eligible for a regular CMR, the CombiConsultation takes less time than a CMR and remains manageable for the pharmacist. In the Netherlands, patients with diabetes mellitus (DM), chronic obstructive pulmonary disease (COPD) and/or (at risk of) cardiovascular disease (CVD) are usually monitored in a chronic disease management programme. The monitoring process is performed by a PN in the GP practice, and it typically consists of regular (three- to six-monthly) check-ups with the PN, and an annual joint consultation with the GP and PN. So far, pharmacists have no structural role in chronic disease management in primary care. However, the

CombiConsultation integrates pharmacists into patients' chronic disease management programmes, thereby increasing pharmacists' involvement in the treatment of chronic conditions and providing the opportunity to counsel patients earlier in the process of chronic medication use. This study aims to assess the number and types of personal health-related goals, drug-related problems (DRPs) and interventions identified by pharmacists during a CombiConsultation and to investigate which patients can benefit most from such consultation.

METHODS

Study design and setting

This was a prospective intervention study performed in 21 Dutch community pharmacies and associated GP practices. The intervention consisted of a CombiConsultation performed by a community pharmacist in collaboration with a PN/GP [7]. Most pharmacists had access to complete medical data (clinical indications and laboratory values) after obtaining patients' consent. Pharmacists were recruited based on an existing good collaboration with local GPs. The participating pharmacies were located in both rural and urban areas. All pharmacists were experienced in conducting CMRs and during this study they received a 1.5 day training in consultation skills and study procedures. During the study, pharmacists participated in peer consultations centred on their experiences in practice and conference calls to discuss case reports.

Intervention

The CombiConsultation was conducted by the community pharmacist and either the PN and/or GP. During the 15–20 min consultation, the community pharmacist focused on potential health-related complaints in relation to the chronic condition for which the patient had an appointment with the PN/GP. Personal health-related goals were set together with the patient. After the consultation, the pharmacist identified DRPs and discussed them with the PN/GP. Either the pharmacist or GP/PN implemented the actions. A few weeks after the initial medication consultation, the pharmacist or PN/GP had a follow-up consultation with the patient to evaluate the implementation of suggested actions and whether the personal health-related goals had been attained. The timing of the evaluation strongly depended on the type of intervention [7].

Patients

In the participating practices, patients were invited by their pharmacists to participate in this study between January 1st, 2018, and July 31th, 2019. The inclusion criteria were

- patients with DM, COPD and/or (at risk of) CVD

- enrollment in a primary care chronic disease management programme
- 18 years or older
- use of at least one medicine

Eligible patients were invited by postal mail and/or telephone by either the pharmacist or GP (depending on local agreements).

Data collection

The pharmacists used an online data collection system to register demographics, personal health-related goals, DRPs and recommendations. The following were recorded: the date of the consultation, a description (free text) of the personal health-related goal and to what extent the goal was attained at follow-up, a description (free text) of the DRP, DRP type (based on the Hepler and Strand's [8] classification system), names and Anatomical Therapeutic Chemical classification codes of the drugs involved, description (free text) of recommendations (e.g. recommendation to stop a drug) proposed by the pharmacist, types of recommendations (e.g. cessation of the drug), acceptance of recommendations by the GP/PN and implementation status of the recommendation at follow-up and the date of follow-up. In addition, dispensing records and clinical records (such as laboratory values and blood pressure) for a period of five years prior to and six months after the date of the CombiConsultation were collected from the GP and pharmacy information system.

Outcomes

The outcome measures were

- the number and types of personal health-related goals and percentage of goals (partially) attained using a three-point scale (not attained, partially attained and attained) based on a 6-point (-3 to +2) goal attainment scaling (GAS) [5,9,10]. 'Partially' is defined as improvement compared to the starting position, but the goal has not yet been attained 100%.
- number and types of DRPs
- number and types of recommendations, as well as acceptance and implementation rates. A recommendation was considered accepted if the PN/GP (partially) agreed to the proposal. An intervention was considered implemented if the intervention was directly performed by the pharmacist during the CombiConsultation (e.g. start over-the-counter medication or change intake schedule) or was based on the registration of the pharmacist during follow-up, along with dispensing records and/or laboratory values.

Analysis

Two investigators (VM and AE) checked the completeness and consistency of documented DRPs, types of interventions and assessment of the personal health-related goals using the description in the free text box. Differences were resolved by consulting a third investigator (either MH or HFK). The types of personal health-related goals were classified by the researchers based on the free text in the registration system. Duplicates were excluded from analysis. Dispensing and clinical records were used to complete missing records on follow-up (of implementation of recommendations) and used to calculate the average number of chronic drugs per patient. Chronic medication use was defined as three or more prescriptions per ATC5 code in the last year, of which at least one prescription in the last six months.

Descriptive statistics were used to describe patient characteristics and number and types of DRPs, recommendations and personal health-related goals. Frequencies and percentages were reported for categorical variables. Associations between patient characteristics and the identification of at least one DRP were analysed by multivariate regression analysis (generalized linear mixed model in SPSS version 25, binary logistic with a random intercept at pharmacy level, $p < 0.05$ significant).

Ethics and confidentiality

This project was exempted from formal medical ethical approval by the Medical Ethical Committee of the University Medical Centre Utrecht (METC protocol number 17-873/C). The research protocol was approved by the Institutional Review Board of UPPER, Division of Pharmacoepidemiology and Clinical Pharmacology, Utrecht University (UPF1706). Participation was voluntary, and all participants signed informed consent. To protect the patients' privacy, all data were anonymised by the community pharmacists using unique numbers.

RESULTS

Basic characteristics

Twenty-one pharmacies with associated general practices participated in the study. The median number of CombiConsultations per pharmacy was 29 (range: 2 to 106). Pharmacists of 11 pharmacies conducted CombiConsultations in the collaborating general practice, pharmacists of 5 pharmacies conducted these in their own pharmacy and the remaining 5 used both locations. Medical data (e.g. clinical indications and laboratory values) were directly accessible for pharmacists of 20 pharmacies. Eight hundred thirty-four patients received a CombiConsultation. Patient characteristics are shown in Table 1.

Table 1. Baseline characteristics of participants of the CombiConsultation study

Characteristics	n = 834*
Sociodemographic	
Age in years (SD)	69.5 (10.1)
Sex, female	423 (51%)
Care programme	
Cardiovascular risk management	447 (54%)
DM	334 (40%)
COPD	44 (5%)
Drug related	
Number of chronic drugs in use per patient, mean (SD)	5.9 (3.1)
Multidose drug dispensing system in use	88 (11%)
Chronic drug use, no. (%)	
Lipid-modifying agents	557 (72%)
Antithrombotic agents	395 (51%)
ACE inhibitors and angiotensin II receptor blockers	386 (50%)
Blood glucose-lowering drugs, excl. insulins	265 (34%)
Beta-blocking agents	330 (43%)
Drugs for peptic ulcer and GORD	320 (41%)
Selective calcium channel blockers	201 (26%)
Low-ceiling diuretics, thiazides	153 (20%)
Vitamin A and D, incl. combinations of the two	135 (17%)
Antidepressants	93 (12%)

* Multidose drug dispensing system: 16 missing; order of consultations: 18 missing; care programme: 9 missing; number and types of drugs in use: 59 missing

PN: practice nurse; DM: diabetes mellitus; COPD: chronic obstructive pulmonary disease; GORD: gastro-oesophageal reflux disease

Personal health-related goals

In 834 CombiConsultations, 425 personal health-related goals were set by the patients and pharmacists. The most frequently set personal health-related goal, based on the patients' wishes, was 'reduce number of drugs', followed by 'improve/reach target laboratory values'. Two hundred and twenty-five personal health-related goals were (partially) attained (53%), involving 198 patients. One hundred twenty-seven personal health-related goals were not attained (30%) and in 73 cases the follow-up or outcome was unknown (17%) (see Table 2). Three hundred twenty-seven goals were linked to a DRP.

Table 2. Type and attainment of personal health-related goals

Type of personal health-related goal	n	Goal (partially attained, n (%))	Goal not attained	Unknown
Reduce number of drugs	84	37 (44%)	35 (42%)	12 (14%)
Improve/reach target laboratory values	48	25 (52%)	12 (25%)	11 (23%)
Reduce muscle complaints	42	21 (50%)	13 (31%)	8 (19%)
Reduce dizziness	32	11 (34%)	12 (38%)	9 (28%)
Reduce problems with diarrhoea or constipation	22	15 (68%)	4 (18%)	3 (14%)
Improve medication compliance	21	17 (81%)	2 (10%)	2 (10%)
Reduce practical problems with administration or intake of medication	20	18 (90%)	1 (5%)	1 (5%)
Reduce itching	17	10 (59%)	4 (24%)	3 (18%)
Reduce fatigue	14	6 (43%)	5 (36%)	3 (21%)
Reduce pain	13	6 (46%)	4 (31%)	3 (23%)
Other	112	59 (53%)	35 (31%)	18 (16%)
Total	425	225 (53%)	127 (30%)	73 (17%)

Drug-related problems

Nine hundred thirty-nine DRPs were identified by pharmacists in the 834 participating patients (median: 1, range: 0–6). In 71% of the consultations, at least one DRP was found. The number and types of DRPs are shown in Table 3. Of the 939 identified DRPs, 363 DRPs (39%) were related to a personal health-related goal.

The pharmacists made 935 recommendations – 819 to another healthcare provider and 116 to the patient (giving information/advice about, for example, lifestyle or [side] effects of medication). Seventy-nine percent of the 819 recommendations were taken over by the PN/GP. Seventy-two percent of all recommendations were implemented (Figure 1 and Table 4), involving 476 patients. During follow-up, it was observed that 63 of the 647 accepted interventions had not been implemented. The reason for nonimplementation was the patient declined or the intervention was forgotten or postponed. Thirty-three of the 677 implemented interventions (5%) were quickly (before follow-up) reversed after implementation because, for example, the desired effect was not achieved.

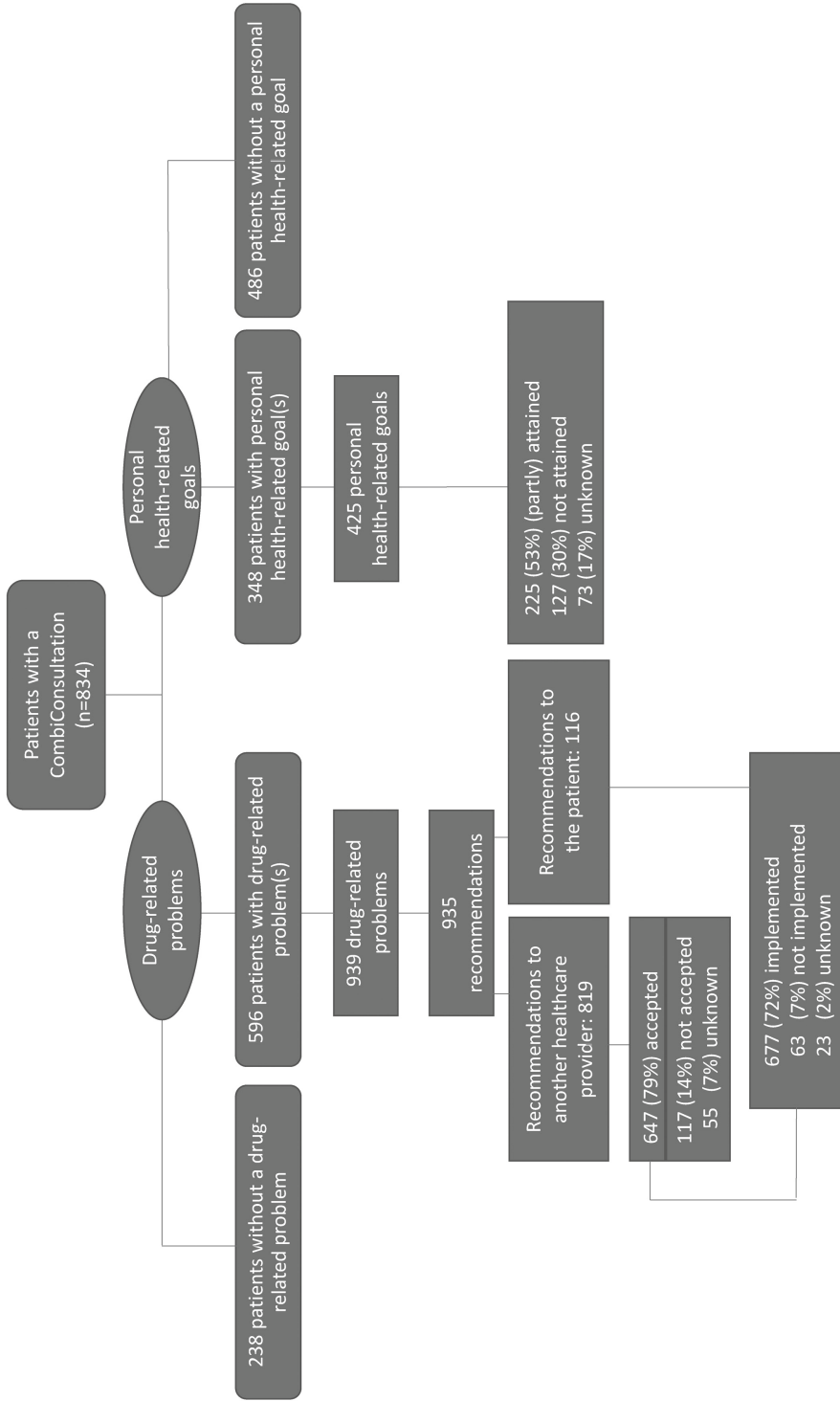


Figure 1. Study flowchart

Table 3. Identified drug-related problems

Drug-related problem type (n = 939)	Identified, n (%)
(Potential) adverse effect	311 (33%)
Undertreatment	169 (18%)
Overtreatment	146 (16%)
Medication not effective	65 (7%)
Useability problems	62 (7%)
Noncompliance	61 (6%)
Information/advice needed	41 (4%)
Additional monitoring required	22 (2%)
Incorrect dose	15 (2%)
Interaction/contraindication	12 (1%)
Other	35 (4%)
Total	939 (100%)

Table 4. Number, types and percentages of implemented recommendations

Type of recommendation	n	Accepted (%)	Not accepted (%)	Accepted status unknown (%)	Implemented (%)	Not implemented (%)	Implementation unknown (%)
Recommendation to another healthcare provider							
Dosage/usage change	242	189 (78%)	31 (13%)	22 (9%)	164 (68%)	18 (7%)	7 (3%)
Cessation of drug	189	146 (77%)	36 (19%)	4 (4%)	124 (66%)	18 (10%)	4 (2%)
Replacement of drug	136	104 (76%)	22 (16%)	10 (7%)	92 (68%)	11 (8%)	1 (1%)
Addition of drug	119	92 (77%)	17 (14%)	10 (8%)	83 (70%)	7 (6%)	2 (2%)
Performance of (laboratory) monitoring	91	76 (84%)	9 (10%)	6 (7%)	60 (66%)	8 (9%)	8 (9%)
Other	28	27 (96%)	1 (4%)	0 (0%)	26 (93%)	1 (4%)	0 (0%)
Start of a multidosage drug dispensing system	8	8 (100%)	0 (0%)	0 (0%)	8 (100%)	0 (0%)	0 (0%)
Dosage form change	6	5 (83%)	1 (17%)	0 (0%)	4 (67%)	0 (0%)	1 (17%)
Total	819	647 (79%)	117 (14%)	55 (7%)	561 (68)	63 (8%)	23 (3%)
Recommendation to the patient							
Provision of information/ advice	116	n/a	n/a	n/a	116 (100%)	0 (0%)	0 (0%)
Total	935*	n/a	n/a	n/a	677 (72%)	63 (7%)	23 (2%)

* For 4 of the 939 identified DRPs, no recommendation was made to the PN/GP

Patient characteristics associated with the presence of DRPs

DRPs were found more often in patients with a higher number of drugs used for chronic conditions. Adjusted odds ratios (aORs) were 3–5 (aOR 1.8, 95% CI [1.0–3.0]), 6–9 (aOR 2.5 95% CI [1.4–4.4]), >10 drugs (aOR 2.7, 95% CI [1.3–5.7]) (see Table 5). Other characteristics (age, gender, multidose drug dispensing system and disease) were not significantly associated with the presence of a DRP.

Table 5. Differences between patients with or without a DRP, multivariate analysis (n = 793)*

Characteristic		No DRP (n = 216) n (%)	DRP (n = 577) n (%)	Crude OR (95% CI)	Adjusted** OR (95% CI)	p-value
Sex	Female	106 (49%)	293 (51%)	0.9 (0.6–1.2)	1.1 (0.8–1.6)	0.445
Age	≤65	59 (27%)	182 (32%)	1	1	
	66–75	100 (46%)	234 (41%)	0.8 (0.6–1.2)	0.8 (0.5–1.1)	0.173
	>75	58 (27%)	160 (28%)	1.0 (0.7–1.6)	0.9 (0.6–1.4)	0.599
Multidose drug dispensing system	Yes	520 (90%)	197 (91%)	1.1 (0.7–2.0)	0.9 (0.5–1.6)	0.648
Care programme	CVD	125 (58%)	305 (53%)	1	1	
	COPD	10 (5%)	30 (5%)	1.5 (0.7–3.5)	1.3 (0.6–3.1)	0.497
	DM	82 (38%)	241 (42%)	1.2 (0.8–1.7)	1.0 (0.7–1.5)	0.844
Number of chronic drugs in use per patient	1–2	36 (17%)	57 (10%)	1	1	
	3–5	82 (38%)	210 (36%)	1.7 (1.0–2.9)	1.8 (1.0–3.0)	0.035
	6–9	63 (29%)	199 (35%)	2.4 (1.4–4.1)	2.5 (1.4–4.4)	0.001
	≥10	20 (9%)	69 (12%)	2.7 (1.4–5.5)	2.7 (1.3–5.7)	0.007
	Unknown	16 (7%)	41 (7%)	1.4 (0.7–3.0)	1.4 (0.7–3.1)	0.361

DRP: drug-related problem; OR: odds ratio; CI: confidence interval; COPD: chronic obstructive pulmonary disease; DM: diabetes mellitus; CVD: cardiovascular disease

* 41 patients excluded because of missing values

** adjusted for all other variables in the table

DISCUSSION

This study demonstrated that the CombiConsultation can be used by pharmacists as a compact health service contributing to safe and effective use of medication for patients with DM, COPD and/or (at risk of) CVD using at least one medicine. First, regarding more than half of the patients for whom a personal health-related goal was set, the goal was (partially) attained. Second, pharmacists identified one or more DRPs in most patients with a CombiConsultation, and their recommendations were generally well accepted and implemented.

In a CombiConsultation, a median of 1 DRP (mean: 1.1) was found. Reviews of CMR research showed that in CMR an average number of approximately 3-4 DRPs per patient is identified [2,11,12]. This is higher compared to the CombiConsultation, but a CMR usually involves older, more complex patients with a higher prior risk of DRPs using more drugs. The time investment in the CombiConsultation (consultation of 15–20 minutes) is also much smaller compared to a CMR (consultation of 30–50 minutes) [7,13,14]. Therefore, the overall efficiencies of the CombiConsultation and CMR in finding DRPs seem to be comparable. In addition, the CombiConsultation was deliberately designed as a short consultation with a focus on the most relevant problem(s) rather than an exhaustive identification of all potential DRPs.

The implementation rate of recommendations emerging from the CombiConsultation was high (72%) and within the range (17% to 86%) of implementation rates that have been reported in studies on CMR [15]. The design of the CombiConsultation may have contributed to this high implementation rate. First, the consultation with the pharmacist and the check-up with the PN/GP were aligned, enabling faster communication between healthcare providers, especially when the consultation with the pharmacist was located in the general practice [16-17]. Second, participating pharmacists had access to medical data. Therefore, the pharmacists had more insight into already performed interventions, allowing them to make more targeted recommendations [18]. Third, the pharmacists were trained to focus on DRPs with a high relevance for the patient and therefore felt an urgency to solve them, which may have contributed to a high implementation rate [19-21].

The pharmacist's focus on DRPs with a high relevance for the patient was realized by the design of the CombiConsultation, in which pharmacists and patients together set personal health-related goals.

Frequently mentioned types of the set personal health-related goals were muscle complaints, dizziness and problems with diarrhoea or constipation, which are possible

side effects of medication. This may explain why '(potential) side effect' was the most commonly identified DRP.

More than half of the personal health-related goals (53%) was (partially) attained. This is comparable to a previous study in which after six months, 52% of the personal health-related goals were improved and 43% were attained [5]. Using personal health-related goals and evaluating them by GAS has been shown to be effective in improving outcomes that are important for patients' well-being and can lead to a better quality of life [6]. However, in our study, in more than half of the patients, no personal health-related goal was set. Pharmacists may not yet be used to setting goals with patients. Although the participating pharmacists were offered a basic training in consultation skills, more training may be needed. To work with personal health-related goals, pharmacists need to explore the concerns, wishes and health situation of patients and translate them together with patients to realistic goals and related actions by shared decision-making. When the patient is insufficiently involved in the process, this may negatively affect the relevance of the goal. In the decision-making process, the pharmacist should also ensure that the personal health-related goals are potentially achievable. Therefore, training and experience in this type of consultations are vital.

Given time constraints of the pharmacists and the high prevalence of patients in a primary care chronic disease management programme, it is challenging to invite all patients for a CombiConsultation. To identify patients who may benefit from a CombiConsultation, the predictive value of age, gender, the use of a multidose drug dispensing system, the type of care programme and the number of medicines for chronic conditions in use for finding a DRP were investigated. The number of medicines in use was the only factor that was significantly associated with a higher risk on DRPs. The number of medicines has also been found to be a predictor of DRPs in other studies on CMR [22,23] and it is often used as a selection criterium for CMRs. However, in our study, one or more DRPs were found in 61% of the patients with two or less medicines for chronic conditions in use, versus 78% of the patients with 10 or more of these medicines in use. Hence, the chance of finding a DRP was still substantial in the patients using relatively few drugs and not quite different from the patients using more drugs. Therefore, the number of medicines in use seems unsuitable as a single selection criterion, and even for patients with few medicines, a CombiConsultation is useful in most cases. For common practice, two parallel solution directions are proposed. First, a shift in the pharmacist's task prioritization seems essential, paying more attention to clinical pharmacy services [24,25]. This gives the opportunity to also review the medication of patients who do not have polypharmacy of multimorbidity yet and for whom optimizing medication use can result in long-lasting prevention of potential problems. Although the need of this shift to clinical pharmacy services is widely

recognized, the necessary changes in the healthcare system have not been realized yet [26]. Second, in addition to selection by number of chronic drugs in use, other criteria may be needed to tailor care to patient's needs and to differentiate between CombiConsultations, CMR and other types of pharmaceutical care. Triage by healthcare providers can offer a solution, as their gut feeling may serve as a useful predictor [27]. For example, the pharmacy technician (at the counter) or the PN and GP can refer a patient to the pharmacist when they suspect a medication-related problem. In addition, self-triage by patients could be used [28]: patients could be informed about the CombiConsultation and encouraged to schedule an appointment with their pharmacist prior to their consultation with the PN or GP if the patients have questions or complaints about their medication. Optimizing the scope of the CombiConsultation requires further research into patients' experiences of the consultation, the perspective of healthcare providers and analyses of best practices.

Strengths and limitations

Our study has several strengths and limitations. First, the high number of CombiConsultations performed and the number of participating centres make the results reliable. Second, there was access to several types and sources of patient data (pharmacist coding, free text fields, clinical records and dispensing records), ensuring the opportunity good data consistency. This also contributed to data completeness – which was good for a study involving over 800 patients with data registration in daily clinical practice, although completeness was higher for the registration of the initial steps than for the follow-up.

It needs to be addressed that the study was designed without a control group. A controlled study is needed to investigate the effect of the CombiConsultation on clinical outcomes. Furthermore, despite the fact that the practices were located across the Netherlands, they were probably not representative of the Dutch daily clinical practice in primary care. The participating pharmacists were mainly forerunners in the field of patient care involving an existing good collaboration between pharmacists and general practitioners. However, the participation of healthcare providers open to innovation suited our study type, exploring (the potential of) a new intervention. For wide implementation in primary care, further research is needed.

In this study, two different outcome measures were used, that have both advantages and disadvantages. Although DRPs are process outcome measures, it is important to include them in order to compare with the existing literature in this area. In this study, a start has been made with determining clinical outcome measures. Although this is a more patient-oriented outcome, there are still some limitation. For example, not all pharmacists are used to setting goals together with the patient, which is reflected by

the data: 576 of the 939 DRPs were found that were not linked to a personal health-related goal. A personal health-related goal may have been set for some of these DRPs. However, some DRPs may also not be linked to a current goal. A drug may not be necessary anymore, but not have side effects yet (e.g. when blood pressure is very well controlled but the patient does not notice dizziness) or a patient may be in need of treatment that would prevent disease in the long run, but is not an issue for the patient now. Additional training in consultation skills and shared decision making could help pharmacists to formulate more health related goals with the patient.

Also, the other way around occurred: 137 of the 425 personal health-related goals were not linked to a DRP. The data showed that pharmacists also set goals that did not always require an adjustment in the medication, indicating that the tasks of pharmacists are becoming broader (e.g. focus on lifestyle and prevention).

CONCLUSIONS

The CombiConsultation can be used by pharmacists as a compact health service contributing to safe and effective use of medication for patients with diabetes, COPD and/or (at risk of) CVD, also in patients under 65 or with less than 5 medications in use. With a relatively small time investment, pharmacists identified DRPs in a large proportion of patients and successfully implemented a high number of recommendations. Personal health-related goals were set together with the patient in almost half of the consultations, and more than half of the goals were (partially) attained. The output of the CombiConsultation reflects its characteristics, particularly alignment with the PN/GP periodical check-up, access to medical data and a focus on potential health-related complaints.

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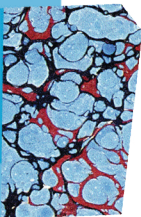


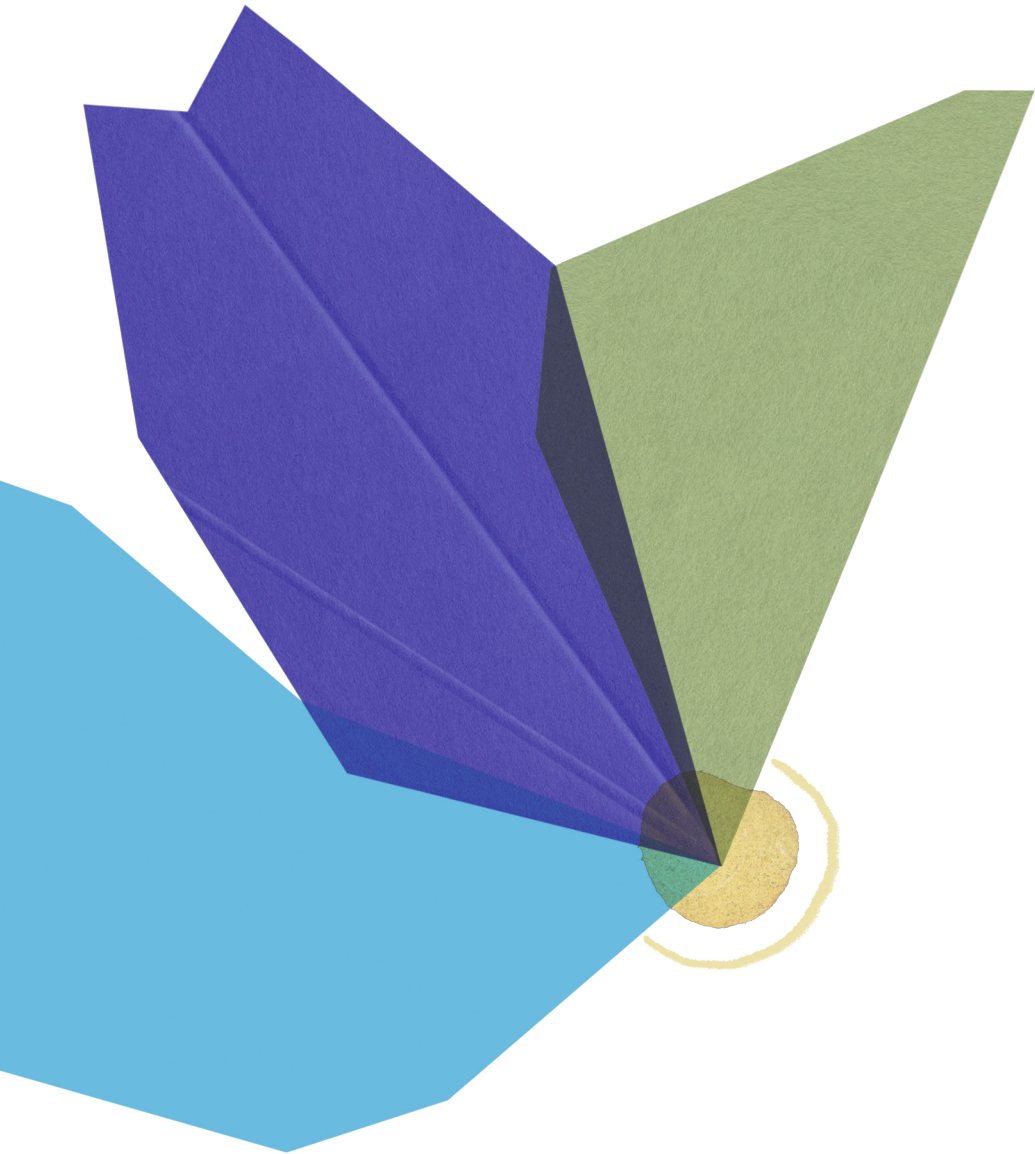
Chapter 3

The perspective of healthcare providers and patients on the CombiConsultation

Authorship statement

I designed the study together with the research group. I performed the data management, performed the data analysis, wrote the first version of the manuscript and implemented the contribution of the co-authors and external reviewers until final publication. Throughout the process I asked for and implemented input and feedback from my supervisors in this study.





Chapter 3.1

Barriers and facilitators for the implementation of the CombiConsultation by general practitioners, pharmacists and practice nurses: a qualitative interview study

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ABSTRACT

Background

The CombiConsultation is a consultation with the pharmacist for patients with a chronic condition, aligned with the periodic consultation with the practice nurse or general practitioner. Implementation requires adjustments in the working methods of these healthcare providers and therefore behavioural changes as well.

Aim

The aim of this study was to identify the barriers and facilitators that determine the behavioural changes by pharmacists, general practitioners and practice nurses required for the implementation of the CombiConsultation.

Method

Ten community pharmacists, 5 practice nurses and 5 general practitioners were sampled from practices enrolled in the CombiConsultation study. Their views regarding the implementation of this clinical pharmacy service were explored using interviews based on the 14 domains of the Theoretical Domains Framework (TDF), which are linked to the Capability-Opportunity-Motivation-Behaviour-model. Barriers and facilitators in the domains were assessed by content analysis.

Results

Twelve barriers and 23 facilitators were found within 13 TDF domains with high agreement between the healthcare providers. Important facilitators for implementation were the pharmacists' expertise in pharmacotherapy (capability), access to medical data and physical proximity between professional practices (opportunity). Barriers were pharmacists' insufficient consultation- and clinical-reasoning skills (capability), insufficient staff (opportunity) and reimbursement and lack of coordination among all involved healthcare providers (motivation).

Conclusion

All healthcare providers are motivated to implement the CombiConsultation. An existing collaborative practice, with a clear and accepted professional role of the pharmacist is essential. Training of pharmacists in consultation and clinical-reasoning skills can be beneficial, as well as arrangements on the consultation logistics, and reimbursement.

INTRODUCTION

Worldwide, approximately one in three of all adults suffer from multiple chronic conditions. Therefore, the prevention and management of these noncommunicable diseases has been made a global priority [1]. In the Netherlands, half of the population has at least one chronic disease and 3 out of 10 people have multiple chronic conditions. Due to aging of the population, these numbers are expected to increase in the coming years [2] and the issue of staffing shortages in healthcare will become one of the biggest challenges [3]. Patients with multiple chronic conditions often use multiple medications (polypharmacy). In patients with polypharmacy (defined as ≥ 5 medicines in long-term use [4]) the risk of adverse drug reactions, suboptimal use and effects of medication are substantially increased, resulting in increased risk of health care utilization [5, 6] and higher total healthcare expenditures [7]. For this reason, adequate medication management has become increasingly important [5, 8]. Several programmes have been developed to improve pharmacotherapy in older adult patients [9-11], and clinical medication review has been successfully implemented for older adult patients with polypharmacy in the Netherlands. However, for other patient groups, such as those who are younger and not (yet) polymedicated, no specific pharmaceutical services are presently offered.

3.1

We therefore have developed an alternative service for patients aged 18 or over, with a chronic condition and at least one medicine in use: the CombiConsultation. It involves a consultation with the patient lasting 15–20 minutes, aligned with the check-up with the practice nurse (PN) or the general practitioner (GP). During this consultation, the community pharmacist (CP) focusses primarily on setting personal health-related goals together with the patient and identifies drug-related problems; goals and interventions are evaluated after a few weeks (often 2–4 weeks, depending on the goal set) [12]. By consulting the patient about his complaints, a joint health-related goal can be set. This allows the CP to contribute in chronic care programs to provide patient oriented care regarding medication and thus supplements the care provided by the PN and GP.

Implementation of the CombiConsultation requires adjustments in the working methods of the CP, PN and GP, therefore involving behavioural change. Changing professional behaviour is complex and requires an understanding of the key factors that influence it, including capability, opportunity and motivation [13].

The aim of this study was to identify the barriers and facilitators that can influence the behavioural change of CPs, GPs and PNs in the implementation of the CombiConsultation.

ETHICS APPROVAL

This study was exempted from formal medical ethical approval by the Medical Ethical Committee of the University Medical Centre Utrecht (METC protocol number 17-873/C) and the research protocol was approved by the Institutional Review Board of UPPER, Division of Pharmacoepidemiology and Clinical Pharmacology, Utrecht University (UPF1706; January 2018). All participants provided informed consent for the use of the data collected for the purpose of this study. Videos and audio fragments were coded and stored on a secure server. We followed the reporting recommendations of the consolidated criteria for qualitative research (COREQ) [14].

METHOD

Setting

We performed a qualitative interview study within a prospective intervention study ‘the CombiConsultation’, which was performed between January 2017 and July 2019 in 21 community pharmacies and associated GP practices in the Netherlands.

The CombiConsultation study

The intervention consisted of a CombiConsultation performed by a CP in collaboration with a PN or GP. The CP focussed on potential health-related complaints related to the chronic condition for which the patient had an appointment with the PN or GP. All CPs had, with the patient’s consent, access to medical data (at least conditions and laboratory values). The CP set personal health-related goals together with the patient and identified drug related problems (DRPs). After the consultation, the CPs discussed the DRPs with the PN or GP and recommendations could be implemented. A few weeks later, the CP or PN/GP evaluated the implementation of suggested recommendations and whether the personal health-related goals had been attained [12]. During the study, 834 CombiConsultations were performed. The median number of consultations per pharmacy was 29 (range 2–106).

Study design

This qualitative study comprised semi-structured interviews with 10 CPs and 10 healthcare providers from the general practice (5 GPs and 5 PNs) who participated in the prospective evaluation of the CombiConsultation. The interviews aimed to explore their personal views regarding the barriers and facilitators that could affect the implementation of the CombiConsultation

Data collection and participants

Interview guides tailored for GPs, PNs and CPs were developed by 2 authors (VM and MH) who are pharmacists/researchers and had training in qualitative research. The interview guides were based on the Theoretical Domains Framework (TDF) (Supplementary information 1). The TDF contains 14 domains that allow a comprehensive theoretical assessment of implementation problems. To investigate behavioural change, these domains were linked to the components of the Capability–Opportunity–Motivation–Behaviour (COM-B) model [15]. The guides were discussed with the research team until a final version was compiled, consisting of 20 (CP), 21 (PN) and 20 (GP) main questions in all domains of the TDF. The initial interview guide was tested with initial pilot interview with a CP, GP and PN who participated in the intervention study the ‘CombiConsultation’. No major changes were necessary; therefore, these interviews were also included in the analysis. Data saturation was defined as the point at which no new main codes emerged and was checked after the tenth (CP) and fifth (GP and PN) interview. [16].

Data collection was performed between July and September of 2019. Ten CPs, 5 PNs and 5 GPs were recruited using purposive sampling based on their location and number of consultations performed (Table 1). All invited healthcare providers were willing to participate. Due to participation in the intervention study, most of them knew the researchers (VM and MH) and the purpose of their study. Participants received €50 for participation. Interviews were performed by VM (trained in conducting interviews) and/or Master student pharmacy (WN, conducted interviews after training and observation). Interviews were in Dutch and face to face (in the pharmacy, general practice or research institute) or by telephone, ensuring sufficient privacy.

Data analysis

All interviews were audio-recorded and transcribed verbatim. NVivo qualitative data analysis software (version 12 Pro, QSR International) was used for data analysis. Interview transcripts were analyzed using content analysis [17], and the barriers and facilitators perceived by CPs, GPs and PNs as being relevant for the implementation of the CombiConsultation were categorized within the TDF domains.

Initially separate analyses were performed for CPs, GPs and PNs. Transcripts were read repeatedly to ensure familiarization with the data. Thereafter, initial codes were assigned and linked to the TDF by VM and WN independently. Differences and uncertainties were resolved by consensus through discussions involving a third researcher (MH) with experience in using the TDF. This process resulted in a final coding scheme for the 3 groups of healthcare providers. The resulting barriers and facilitators were discussed with the research team to ensure consensus. Finally, the barriers and facilitators of the

different healthcare providers were compared, and overlapping factors were combined when possible. Barriers and facilitators were structured per TDF domain according to the COM-B model.

RESULTS

Including the pilot interview, a total of 20 interviews were conducted (10 CPs, 5 PNs and 5 GPs). Data saturation was reached after the 10th (CP) and 5th (GP and PN) interview. The 20 participants were primarily female (n= 16 (80%)) and possessed a mean clinical experience of 14.5 years (Table 1). The duration of the interviews ranged from 23 to 67 min. The median durations of interviews for CPs, GPs and PNs were 30, 30 and 23 min, respectively.

Using content analysis, the barriers and facilitators to the implementation of the CombiConsultation perceived by CPs, GPs and PNs were categorized within 13 of the 14 TDF domains. No codes were assigned to the domain 'Belief About Capability' (Table 2).

Capability

In the Capability domain of COM-B, barriers and facilitators were found within the 4 underlying TDF domains below:

'Behavioural Regulation' and Memory, Attention and Decision Processes'

The analysis showed that all healthcare providers indicated that daily clinical practice always has priority. This opinion suggests that in their perception the CombiConsultation is not yet common practice.

'When people have questions about medication, you think "that's great for the CombiConsultation". [...] It was not unwillingness, but it [the CombiConsultation] was not on top of mind during the consultation.' (PN 1)

The PNs and GPs indicated that reminders of the CombiConsultation, such as a prompt via the GP system ('patient is eligible for a consultation with the pharmacist'), would help to invite patients for a CombiConsultation:

'A pop-up from the GP system: this is a patient eligible for a polypharmacy consultation (...) helps to bring it to the attention of the doctor continuously.' (GP3)

Table 1. Characteristics of pharmacists, general practitioners and practice nurses. Collaborating couples: CP1 and GP5, CP6 and GP1, CP9 and GP4.

Gender	Years of experience in the same building?	GP practice and pharmacy (consultation with pharmacist)	Clinical setting of CombiConsultation Area	Mode of interview	Number of Combi-Consultations performed
Pharmacists					
1 Female	14 years	Co-located	Pharmacy	Rural	Face to face 10
2 Female	10 years	Co-located	GP practice	Urban	Face to face 76
3 Female	16 years	Co-located	GP practice	Urban	Face to face 81
4 Female	7 years	Co-located	Pharmacy and GP practice	Urban	Telephone 44
5 Female	20 years	Co-located	Pharmacy and GP practice	Urban	Face to face 11
6 Male	25 years	Co-located	Pharmacy	Rural	Telephone 37
7 Male	21 years	Co-located	GP practice	Urban	Telephone 98
8 Female	9 years	Co-located	Pharmacy	Rural	Telephone 2
9 Male	2 years	Co-located	Pharmacy	Urban	Face to face 32
10 Female	13 years	Separate	GP practice	Urban	Face to face 67
General practitioners					
1 Female	27 years	Co-located	Pharmacy	Rural	Telephone 37
2 Female	12 years	Co-located	GP practice	Rural	Telephone 29
3 Male	25 years	Separate	GP practice	Urban	Face to face 60
4 Female	11 years	Co-located	Pharmacy	Urban	Face to face 32
5 Female	12 years	Co-located	Pharmacy	Rural	Face to face 10
Practice nurses					
1 Female	20 years	Co-located	GP practice	Urban	Telephone 15
2 Female	12 years	Co-located	Pharmacy and GP practice	Urban	Telephone 20
3 Female	4 years	Separate	Pharmacy and GP practice	Urban	Telephone 18
4 Female	17 years	Co-located	Pharmacy	Urban	Telephone 61
5 Female	13 years	Co-located	GP practice	Rural	Telephone 22

'Knowledge' and 'Skills'

All healthcare providers considered CPs to have sufficient pharmaceutical knowledge. However, the GPs and CPs indicated that the pharmacists needed more consultation skills, and the GPs expressed some doubts regarding the clinical reasoning competence of the pharmacists:

'[The] pharmacist looks at certain complaints from a pharmacological perspective, while the GP may take a more generalist approach. [...] [The] pharmacist has a different background and certain knowledge that the PN lacks and the GP may not have immediately available either.' (GP 4)

Opportunity

In the Opportunity domain of COM-B, barriers and facilitators were found within the two underlying TDF domains:

'Environmental Context and Resources'

With regard to 'Environmental Context and Resources', the main barriers and facilitators were related to access to information and working places to efficiently plan and perform CombiConsultations. According to all healthcare providers, access to medical data is a facilitator for performing CombiConsultations. Medical data helps to propose interventions that match patients' needs. GPs also indicated that shielding certain conditions would be desirable:

'I think that what you need [to provide care] you should have access to.' (GP 3)

CPs and PNs found that access to each other's appointment ledger could facilitate scheduling consultations.

'ICT can also contribute to this if you have a joint appointment ledger in which you can schedule [the consultations] and that is also simple and clear; that could make a difference.' (CP 9)

The interviewed CPs, GPs and PNs thought that the planning of consecutive consultations was a challenge, mainly due to different working hours, part-time work and insufficient staff:

'I couldn't manage to schedule that [consultation with the pharmacist] consecutively. That was purely related to both providers' working part-time.' (PN 1)

Some pharmacists indicated that access to a consultation room in the general practice ensures easy communication between healthcare providers and is a trusted environment for patients:

'I think it would be better if the pharmacist works in the GP setting. There are more contact moments [between healthcare providers].' (CP 5)

However, the PNs and GPs indicated that it takes considerable effort to find a suitable consultation room for the pharmacist in the GP's practice due to lack of space. In addition, some pharmacists indicated that conducting the consultations in the pharmacy is also a good option, especially if the PN or GP works in the same building.

'Social Influences'

The interviews showed that according to CPs, GPs and PNs, an existing collaborative practice facilitates the implementation of the CombiConsultation.

'In my opinion, having a confidential working relationship contributes to the confidence that things will work out [implementing the CombiConsultation]. That [trust] is fundamental.' (GP4)

A single PN indicated that lack of alignment between PN and CP regarding expectations of the CombiConsultation can be a barrier to performing CombiConsultations. The PNs and GPs indicated that patients were very satisfied with the extra attention for their medication:

'The patients to whom I introduced the CombiConsultation were very enthusiastic. Glad that someone takes a critical look at their medication and that there is special attention for it. It was really appreciated.' (PN 1)

Motivation

In the Motivation domain of COM-B, barriers and facilitators were found within 7 TDF domains, which are described below.

'Social/Professional Role and Identity':

The interviewed pharmacists stated that answering questions regarding medication as part of their professional role and performing the CombiConsultations strengthened their roles as providers of pharmaceutical care. The data suggest that the GP certainly views the CP as a partner, with their own expertise, whom they can approach mainly for (practical) questions regarding medication. Although the participating GPs appreciated

the pharmacists' contributions to the pharmacotherapy, they expected that not every GP would be open to cooperation with a pharmacist:

'I notice that my colleagues sometimes think, "Stick to what you know." The old idea of the traditional pharmacist, that he should not interfere with our work. [...] While I see us very clearly as partners in a safe medication world. He provides his part of the whole and we do our part.' (GP 1)

'Optimism'

The GPs, PNs and CPs expressed confidence in the care-providing role of the pharmacist and expected that the content of the profession would continue to develop in the future:

'I suspect that in the future the pharmacist will indeed be a pharmacotherapeutic consultant in the general practice rather than in the pharmacy itself. I would consider that as a good development.' (GP 3)

'Beliefs About Consequences'

The analysis showed that CPs, GPs and PNs believed that the CombiConsultation had strengthened interprofessional collaboration and interprofessional learning. As a result, all interviewed healthcare providers believed that the pharmacotherapeutic interventions proposed by the CP during the CombiConsultation had improved the quality of pharmacotherapy.

'It is clear to me that it [the CombiConsultation] improves the quality [of care] [...] one patient is still very clear in my mind. [...] He feels much better and is less at risk. He uses a lot less medication.' (GP1)

However, GPs sometimes questioned the clinical relevance of proposals and realized that an additional healthcare provider also required more coordination. In addition, the CPs and PNs thought that not all selected patients had benefitted from a CombiConsultation. The CPs experienced that the CombiConsultation had helped to build a stronger treatment relationship with the patient by allowing time to discuss their concerns and complaints regarding the medication. These opinions were in line with those of the PNs, who believed that patients had attached great value to the pharmacist's medication advice:

'By having the conversation, you can build a relationship [...] you develop a relationship that gives them confidence. Not necessarily in you, but also in the drugs they take. And if there's something they don't trust, they'll come to us [the pharmacists].' (CP 5)

The CPs experienced that performing the CombiConsultation took less time than a clinical medication review. The PNs also experienced time savings through the CombiConsultation (they spent less time on questions about medication), although planning of consultations could take more time:

‘Sometimes they have so many questions, then you have to devote an extra consultation to the rest of the questions [...]. So yes, it certainly fills a need.’ (PN 5)

‘Reinforcement’

Pharmacists and PNs reported receiving ‘interprofessional’ energy from conducting the CombiConsultation together.

‘And everyone [all healthcare providers] is satisfied afterwards [of working together on a CombiConsultation], it was useful again.’ (PN4)

However, GPs and CPs saw insufficient reimbursement as a large barrier for implementing the CombiConsultation:

‘It’s very strange that when you do this job, you don’t get paid for it. [...] you can’t do it for free, I think. I would like it if there would be reimbursement from the health insurer.’ (CP 6)

‘Intentions and Goals’

The GPs and PNs indicated that they wished the CombiConsultation to become routine in 5 years, and the CPs were prepared to give high priority to the implementation of CombiConsultation:

‘I hope that in 5 years all our patients in chronic-disease-management programmes will have an annual CombiConsultation.’ (GP 1)

‘Emotion’

The data showed that the healthcare providers were enthusiastic about the CombiConsultation. The GPs appreciated that the CombiConsultation had lifted the PNs to a higher level. The PNs stated that it was satisfying to get the patient on the correct medication, and CPs were satisfied that they could contribute to the well-being of the patients. These emotions contributed to the motivation to conduct CombiConsultations:

‘Especially what it [the CombiConsultation] has done to my PN. The fact that it has really lifted her to a much higher level, in terms of the enormous learning curve she went through there, I think that is the best outcome [...].’ (GP 1)

Table 2. Barriers (-) and facilitators (+) per TDF domain.

CAPABILITY			
Behavioural Regulation and Memory, Attention and Decision Processes	PN	GP	CP
Reminders of the CombiConsultation during work	+	+	
Daily routine tasks take precedence	-	-	-
Knowledge and Skills	PN	GP	CP
Sufficient pharmacotherapeutic knowledge of the pharmacist	+	+	+
Insufficient consultation skills of the pharmacist		-	-
Insufficient clinical reasoning skills of the pharmacist		-	
OPPORTUNITY			
Environmental Context and Resources	PN	GP	CP
The pharmacist's consultation room is in the general practice	+	+	+
The pharmacist has access to medical data	+	+	+
The healthcare providers have access to each other's appointment ledger	+		+
Dependence on each other's appointment ledger for scheduling consecutive consultations	-	-	-
Understaffed for scheduling consultations		-	-
Lack of consultation room for the pharmacist in the general practice	-	-	
Social Influences	PN	GP	CP
A good existing collaboration between healthcare providers	+	+	+
Patients appreciate extra attention about their medication	+	+	
Lack of alignment between PN and pharmacist regarding expectations of the CombiConsultation	-		
MOTIVATION			
Social/Professional Role and Identity	PN	GP	CP
The pharmacist's role is to answer questions about medication			+
The CombiConsultation improves the visibility of the pharmacist			+
The pharmacist is a partner of the GP, with their own expertise		+	
Optimism	PN	GP	CP
Belief in the care-providing role of the pharmacist	+	+	+
Beliefs About Consequences	PN	GP	CP
An improved contact between the pharmacist and the GP/PN	+	+	+
The established relationship with the patient			+
The time saved compared to CMR			+
The interventions identified by the pharmacist improves the quality of care	+	+	+
The time saved for the PN during the periodic check-up		+	

Table 2. Continued

Healthcare providers learn from each other	+	+	
The patients' acceptance of medication advice from the pharmacist	+		
The selected patients do not all benefit from a CombiConsultation	-		-
An extra healthcare provider (pharmacist) requires more coordination			-
The GP sometimes doubts the added value of the intervention proposals			-
Reinforcement	PN	GP	CP
The CombiConsultation provides satisfaction	+		+
The reimbursement of the consultations is insufficient			-
Intentions and Goals	PN	GP	CP
Healthcare providers desire the CombiConsultation to become routine in the future	+	+	+
Difficulties in the continuation of the CombiConsultation in current daily practice			-
Emotion	PN	GP	CP
The CombiConsultation raises the PN to a higher level			+
It is satisfying to get the patient on correct medication	+		
The pharmacist derives job satisfaction from contributing to the well-being of the patient			+

PN: practice nurse; GP: general practitioner; CP: community pharmacist; CMR: clinical medication review; +: facilitator; -: barrier

DISCUSSION

Although the CombiConsultation is a promising intervention to improve safety and effectiveness of pharmacotherapy, implementation has proven difficult. The present study has identified 12 barriers and 23 facilitators that may influence the preparedness and willingness of healthcare providers to implement the CombiConsultation.

The CombiConsultation with the CP is integrated into the patient's chronic disease management programme, which increases the involvement of the pharmacist in the treatment of the patient's chronic condition. Our analysis found that all healthcare providers agreed that the CP is the appropriate professional to provide the CombiConsultation based on their expertise in medication. However, many also stated that the CP lacks sufficient consultation- and clinical-reasoning skills to perform the CombiConsultation optimally. This is consistent with conclusions of Hazen et al. They showed that pharmacists who work completely 'embedded' in a general practice experience difficulties with the transition from community-based, medication-focussed

care to taking responsibility for the patient's pharmacotherapy [18]. To prepare the pharmacist for this position, training in patient-centred care and clinical decision-making are therefore essential [19]. The non-dispensing pharmacists in the study of Hazen et al were extensively trained [18]. However, The CombiConsultation study focussed on CPs, for whom extensive training was not feasible. It is important to investigate how pharmacists can be trained in this area. An example is adapting academic education by developing teaching strategies, like deliberate practice and feedback [20-22].

Our study also found that for all healthcare providers, their daily routine had retained priority over performing CombiConsultations. With regard to CPs, a previous study has shown that a substantial proportion of their time is dedicated to tasks that either are obligatory (checking prescriptions) or need to be performed due to lack of sufficient staffing (e.g. the dispensing process) [23]. Understaffing is currently a persistent problem in the entire healthcare sector [24, 25]. In order to normalize the CombiConsultation (and consultations in general), the CP might therefore consider reorganizing processes in the community pharmacy, such as separating logistics from the CP's role of providing patient care [23]. An example is the 'Dutch hub and spoke' model in which a central dispensing pharmacy (hub) supplies labelled medicines directly to satellite pharmacies (spokes) to allow the pharmacist to focus on pharmaceutical care [27]. GPs and PNs indicated that they needed to be reminded of the CombiConsultation, otherwise they would not think of referring patients to a pharmacist. Therefore, delegating tasks such as selecting and inviting patients is also essential and ensures more scheduled consultations.

Important preconditions for implementation of the CombiConsultation are access to medical data (at least conditions and laboratory values) [28] and access to each other's appointment ledger. The latter is especially important for planning the consultations and communicating with the other healthcare providers (e.g. posting notes). In the current age of rapidly evolving information technology, ensuring the security, privacy and protection of patients' healthcare data is critical [28, 29]. CPs and GPs should investigate the possibilities for shared access and possibly shielding of irrelevant (confidential) information from the pharmacist. As the Health Insurance Portability and Accountability Act and General Data Protection Regulation become stricter, this might cause more fear among healthcare providers related to 'breaking the rules' [29, 30]. However, limited access to patient medical data restricts the pharmacists' ability to optimally contribute to the quality of pharmaceutical care [31]. Online access to medical data from the pharmacy might be more suitable; although it is challenging, it can often be arranged [32].

A consultation room in the general practice for the pharmacist can be a facilitator, as the pharmacists can work directly from the GP system (provided that clear agreements

are made regarding patient confidentiality), and it might be a safer environment for the patient to discuss their medication in the clinic. However, performing consultations at the GP's site was also seen as a barrier because of limited space. Therefore, some CPs had conducted the CombiConsultations in the consultation room of the pharmacy; CPs whose pharmacies were located in the same building as the GP practices especially saw no obstacle in this regard. Co-location appeared to facilitate a greater level of integration into the primary health care team, and the benefits of co-location could also be achieved through regular face-to-face contact between health care professionals [33]. A workplace in practice is therefore not a strict requirement for being able to perform CombiConsultations. However, effective coordination related to the CP's workplace and consultation availability with other healthcare providers is certainly crucial. In addition, professional respect and understanding of each other's role in providing patient care is an important factor in facilitating collaboration [34, 35]. By implementing CombiConsultations, CPs can fulfil a new role within primary care, providing a new professional identity. A general practice that values and accepts the new roles for the CP would likely enhance the process of role incorporation [36].

In addition, a healthcare institution in which all healthcare professionals work together enhances the professional image presented to patients and could make an additional contribution to build a relationship with the patient [37].

With respect to motivation, reimbursement is an important factor for both CPs and GPs. CPs are still predominantly reimbursed for dispensing, and in most countries there is no consistent way for pharmacists to obtain reimbursement for clinical pharmacy services [25]. However, reimbursement is essential for the widespread implementation of a clinical pharmacy service. Reimbursement for the provision of care will gradually increase, but in most countries this development is a slow process [38, 39].

Strengths and limitations

A major strength of this study is the use of a theoretical model to underpin our data analysis. Another strength is that all categories of healthcare providers involved in the CombiConsultation were interviewed, resulting in a wide range of perspectives with high agreement between the healthcare providers. Since all invited healthcare providers agreed to participate, the use of incentives (voucher) to motivate the participants did not lead to selection bias.

Although focus groups might have given more interaction between the participants, interviews were opted to achieve more depth and to collect experiences in a specific setting.

It should be noted that only healthcare providers participating in the CombiConsultation intervention study were interviewed. They are generally highly motivated and therefore not representative for all healthcare providers. However, in order to give a good representation of the experienced barriers and facilitators during the implementation of the CombiConsultation, experience with the CombiConsultation was essential. Also, we conducted the interviews both face-to-face as by telephone. Despite the fact that face-to-face interviews can theoretically provide more depth, this was not always feasible in terms of distance and time. In these cases, a telephone interview was conducted. However, we took this into account during analysis and we have no indications that there was a relevant difference between the two methods in our study.

A limitation of this study is that the interviewer and investigators were pharmacist or pharmacy student. This condition might have made other healthcare providers reluctant to share negative experiences with pharmacists. However, they still shared these experiences with the researchers.

CONCLUSION

The current study has shed light on the high agreement of perspectives of healthcare providers regarding the implementation of the CombiConsultation. An existing collaborative practice, with a clear and accepted professional role of the pharmacist is essential for implementation. Training of pharmacists in consultation- and clinical-reasoning skills can be beneficial, as well as arrangements on the consultation logistics, sufficient staff and reimbursement.

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APPENDIX

Supplementary information 1: Interview Guides

Pharmacist

Introduction

Introduction, interview goal, approach, anonymity, voice recorder, duration

General questions

- How did the last CombiConsultations go?
 - Positive/negative
 - If it's been a long time: Do you miss it? Why/why not?
-

Knowledge/Skills

Did you have sufficient expertise to carry out CombiConsultations?

Were you sufficiently prepared/trained to carry out CombiConsultations?

- Procedure/organization
 - Sufficient training?
 - Pharmacotherapeutic knowledge/clinical reasoning
 - Communication/consultation
 - Collaboration and organization
-

Role/Identity

- Do you think performing CombiConsultations is an appropriate task for the community pharmacist? Why/why not?
 - Is performing CombiConsultations part of your expertise?
 - Can someone else also do this?
 - How did the CombiConsultation affect your relationship with other healthcare providers?
 - What is your role in relation to the PN? And the GP?
-

Beliefs About Consequences/Reinforcement

- When did you think you had helped a patient?
 - For which group of patients have you been able to mean the most?
 - What does the CombiConsultation offer you?
-

Environmental Context and Resources

- What do you need from the environment [stakeholders: health insurance, organization, etc.] to implement the CombiConsultation?
 - Funding was available. Why then did we not manage to reach the inclusion number?
 - Organization/time
 - Other care providers
 - What do you think is the added value of conducting the consultations in the GP practice or pharmacy?
-

Social Influences

- Were you supported by others in implementing/performing the CombiConsultation?
 - Fellow pharmacists
 - Pharmacy technicians
 - PN
 - GP
 - Patients
-

Emotions

- What were your high points in this project (executing CombiConsultations)?
 - What were your low points in this project (executing CombiConsultations)?
 - How did you feel when you had to schedule consultations?
 - How did you feel when you knew that a CombiConsultation was scheduled for that day?
-

Intentions/Goals

- What is the main reason for you to perform CombiConsultations?
 - If you had to rank all your activities by priority, where would you rank the CombiConsultation?
 - Are there any intentions to continue the CombiConsultation?
 - If so, in what form?
 - Time to invest? Frequency? Which patient group? With which healthcare providers?
 - If not, why not?
 - What would you like to achieve in 5 years with the CombiConsultation?
-

Beliefs About Capabilities/Optimism

- Are you confident that you can put the CombiConsultation into practice on a structural basis?
 - What contributes to that confidence?
 - Who or what hinders that trust?
 - Patients/care providers/organization
-

Practice nurse

Introduction

- Introduction, interview goal, approach, anonymity, voice recorder, duration
-

General questions

- What is your general impression of the CombiConsultation?
-

Knowledge/Skills

- Do you pay attention to medication during your consultation? To what extent can you participate in the advice that the pharmacist provided about the medication?
 - How did you structure the consultation with the pharmacist before/after the consultation?
-

Role/Identity

- What were your first thoughts about your role (practice nurse) when you heard about the CombiConsultation?
 - To what extent did those thoughts come true?
 - What do you think is the value of the pharmacist in this collaboration?
-

Beliefs About Consequences/Reinforcement

- Does the quality of the pharmacotherapy improve as a result of the combination consultation? Can you provide an example?
- In what way does the CombiConsultation contribute to the treatment of the patient or to his/her quality of life?
- To what extent has the collaboration with the pharmacist changed during the CombiConsultation?
- Has your consultation been changed by the CombiConsultation? Do you conduct your consultations differently now? Can you provide an example?

Environmental Context and Resources

- What do you need from your environment (Time, organization, ICT)?

Social Influences

- Do you feel supported by others when implementing/executing the CombiConsultation in practice?
 - Fellow PNs: Were colleagues enthusiastic about starting the CombiConsultation?
 - Pharmacist
 - Pharmacy technicians
 - Patients
- How does the CombiConsultation affect your relationship with other healthcare providers, especially the pharmacist?
- What was the influence of the previous collaboration with the pharmacist on the implementation of the CombiConsultation?

Emotions

- What were your high points in this project (executing CombiConsultations)?
- What were your low points in this project (executing CombiConsultations)?
- How did you feel when you had to schedule consultations?
- How did you feel when you knew that a CombiConsultation was scheduled for that day?

Intentions/Goals

- What is the main reason for you to perform CombiConsultations/that the practice is involved in the CombiConsultation? (Collaboration/helping the patient)
- Are there any intentions to continue with the CombiConsultation?
 - If so, in what form?
 - How much time to invest? Frequency? Which patient group? Which healthcare providers?
 - If not, why not?
- What would you like to achieve in 5 years with the CombiConsultation?

Beliefs About Capabilities/Optimism

- Are you confident that you can put the CombiConsultation into practice on a structural basis?
 - What contributes to that confidence?
 - Who or what hinders that trust?
 - Patients/care providers/organization

General practitioner

Introduction

- Introduction, interview goal, approach, anonymity, voice recorder, duration
-

General question

- What is your general impression of the CombiConsultation?
-

Knowledge/Skills

- Did you feel that pharmacist, general practitioner and practice nurse had the knowledge and skills needed to successfully implement the CombiConsultation?
 - What knowledge do you lack? Can the pharmacist contribute to this?
-

Role/Identity

- Has the CombiConsultation changed your view of ‘the pharmacist as a healthcare provider’? If so, how?
 - What do you think is the role of the pharmacist in the CombiConsultation?
 - Focussed on pharmacotherapy/adherence/medication use?
 - Will the role of the GP change due to the CombiConsultation (pharmacist as healthcare provider)? If so, how?
 - What other possibilities do you see for closer collaboration between pharmacist and GP?
-

Beliefs About Consequences/Reinforcement

- In what way does the CombiConsultation contribute to the treatment of the patient or to his/her quality of life?
 - Was the investment in collaboration with the pharmacist worthwhile during the CombiConsultation? Can you provide an example?
 - How should pharmacists be valued for these activities?
-

Environmental Context and Resources

- What do you need from your environment (stakeholders: health insurance, organization, etc.) to continue the CombiConsultation in practice?
 - (Finance, organization/time, other caregivers, etc.)
 - What’s your view of the pharmacist who has access to medical data?
 - What data should the pharmacist be able to view?
-

Social Influences

- Do you feel supported by others when implementing/executing the CombiConsultation in practice?
 - Fellow GPs: Were colleagues enthusiastic about starting the CombiConsultation?
 - PNs/technicians/patients
 - How does the CombiConsultation affect your relationship with other healthcare providers, especially the pharmacist?
 - What was the influence of the previous collaboration with the pharmacist on the implementation of the CombiConsultation?
-

Emotions

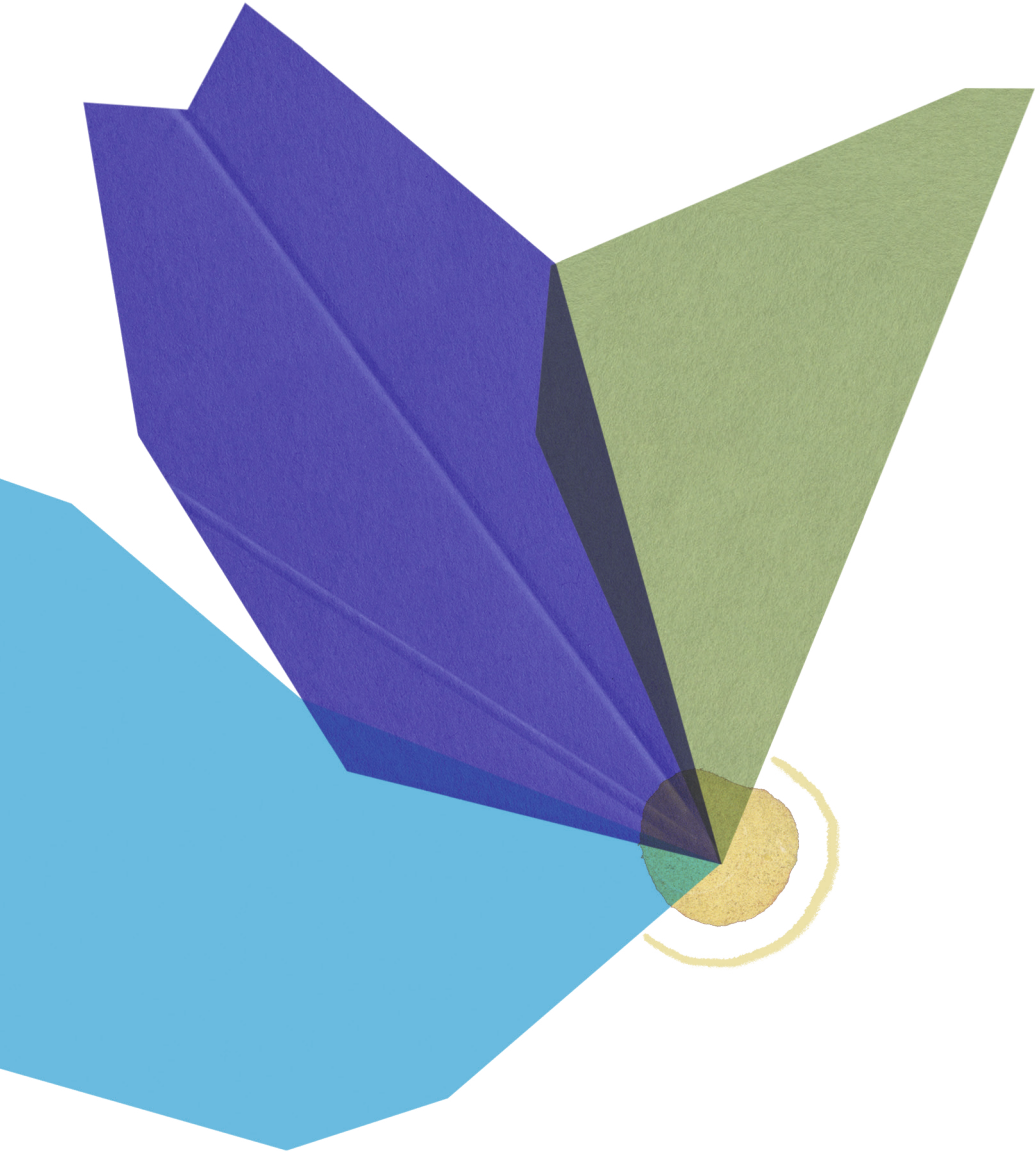
- What were your high points in this project (executing CombiConsultations)?
- What were your low points in this project (executing CombiConsultations)?
- How did you feel when you knew a CombiConsultation was scheduled for that day?

Beliefs About Capabilities/Optimism

- Are you confident that you can put the CombiConsultation into practice on a structural basis?
 - What contributes to that confidence?
 - Who or what hinders that trust?
 - Patients/care providers/organization/etc.

Intentions/Goals

- What is the main reason for you to perform CombiConsultations/that the practice is involved in the CombiConsultation? (Collaboration/helping the patient/etc.)
- How has your acceptance of the CombiConsultation changed during the project? How did that happen?
- Are there any intentions to continue with the CombiConsultation?
 - If so, in what form?
 - How much time to invest? Frequency? Which patient group? Which healthcare providers?
 - If not, why not?
- What would you like to achieve in 5 years with the CombiConsultation?



Chapter 3.2

Factors influencing the implementation of the CombiConsultation in Dutch clinical practice: a survey study

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Submitted for publication

ABSTRACT

Objective

The CombiConsultation is an innovative concise medication evaluation by the community pharmacist for patients with a chronic condition. We aimed to identify relevant factors influencing the implementation of the CombiConsultation in Dutch clinical practice.

Methods

An interview study was used to construct a questionnaire. By content analysis topics within TDF domains were derived from the interview data and were related to the COM-B-model (capability, opportunity, motivation). The relevance of the resulting topics was explored using a questionnaire with 19 statements administered to all 27 pharmacists who performed CombiConsultations.

Results

Eighteen topics emerged from the interviews. The questionnaire was completed by 23 of the 27 pharmacists. In the domain 'capability', a small number of participants indicated that they need more expertise in pharmacotherapy (13%) and training in consultation skills (35%). In the domain 'opportunity', all participants indicated that an existing good collaboration with the general practitioner/practice nurse and access to all relevant medical data were necessary to implement the CombiConsultation. In terms of motivation, job satisfaction was most important to all participants, followed by adequate reimbursement (83%) and improving the collaboration with other healthcare providers and the relationship with patients (78%).

Conclusion

Capability, opportunity and motivation were all considered relevant for implementation of the CombiConsultation. There were crucial factors on the level of the individual pharmacist, on the level of the local collaboration and organisation, and on the health system level.

INTRODUCTION

Over the last few decades, the role of the community pharmacist (CP) has expanded from traditional tasks of dispensing medications and providing basic medication counselling to the more patient-centered provision of clinical pharmacy services. These services are designed to improve a patient's quality of life by promoting safe, effective and optimal medication use. The global literature has highlighted its beneficial impact of improving patient adherence and overall health outcomes [1, 2].

One of the most studied and effective interventions performed by pharmacists are clinical medication reviews (CMRs) [3, 4], however, due to time constraints and capacity problems, many patients are not considered suitable for a CMR. Less time-consuming medication reviews may be an alternative. Therefore, a new clinical pharmacy service has been developed: the CombiConsultation.

The CombiConsultation is a consultation with the community pharmacist (CP) for patients with a chronic condition that requires chronic drug treatment. This consultation is aligned with the periodic check-up for this chronic condition by the practice nurse (PN) or general practitioner (GP). During the consultation, the CP focuses on the patient's health-related goals and advises medication changes, which are evaluated after a few weeks [5]. The prospective intervention study 'CombiConsultation' was conducted in the Netherlands and has been evaluated in a non-randomised implementation study [6].

The CombiConsultation's key strength lies in its efficacy, where approximately 72% of the suggested interventions have been successfully implemented. Furthermore, the CombiConsultation takes less time compared to a CMR and fosters enhanced collaboration with other healthcare providers [6, 7].

Pharmacists are generally positive about expanding clinical services. The advantages of this role include helping patients, increasing their competence, and garnering recognition of both patients and healthcare providers. However, pharmacists may struggle to use clinical services in practice [8, 9]. They perceive barriers to implementation [10], including organisational factors (such as competing tasks, inadequate time and insufficient staff), pharmacist-related factors (such as a lack of confidence and the fear of new responsibility) and external factors (such as the required collaboration with the GP and reimbursement) [11-13]. Pharmacists often deliver clinical pharmacy services complementary to dispensing services, which are often provided under time pressure and vary in level of quality [14, 15]. For maximal impact on pharmaceutical care, and to improve population-level health, large-scale implementation of clinical pharmacy services is needed [16]. Factors influencing widespread implementation of

an innovation within the community pharmacy setting are internal (pharmacy staff) and external (patients and healthcare professionals) commitment to the innovation and operationalisation of it in clinical practice (such as adequate resources) [17]. Using pilot strategies, promoting whole-team involvement and engaging stakeholders could be helpful for widespread implementation [15, 17]. The aim of this study was to identify relevant factors influencing the implementation of the CombiConsultation in Dutch clinical practice.

METHODS

Design

This research involves a qualitative approach (interviews) to identify topics relevant for implementation of the CombiConsultation (step 1) and a quantitative approach (questionnaire) to score the statements derived from the identified topics (step 2).

Setting

For the sampling of participants we used the existing framework of an implementation study of the CombiConsultation. The CombiConsultation is conducted by the CP and either the PN or GP. The CombiConsultation takes place in the general practice. The patient visits the PN or GP before or after the consultation with the CP. The focus of the CP during the consultation (15-20 minutes) is to identify 1 or 2 main health-related complaints in relation to the chronic condition. Based on the identified drug related problems (DRPs) and personal health-related goals, the CP proposes recommendations to improve pharmacotherapy to the PN/GP.

A prospective study was performed in 21 Dutch pharmacies (with 27 CPs) and associated GP practices and included over 800 patients with diabetes mellitus, chronic pulmonary obstructive disease and/or (risk of) cardiovascular disease. The median number of CombiConsultations performed per pharmacy was 29 (range: 2–106; Interquartile range (IQR): 48) [18].

Step 1: Interviews

Development of the interview guide

A semi-structured interview guide was drafted by VM and MH (pharmacists). VM and MH had training in qualitative research, including content analysis. The interview guide consisted of 19 questions to interview 10 participating pharmacists. Topics for the interviews were derived from the theoretical domains framework (TDF), which describes important factors underlying implementation issues [19]. The interview guide was discussed within the research group till a final version was compiled. The

initial interview guide was pilot tested with the first interview and refined as needed (Supplementary file 1).

Recruitment and data collection

Purposive sampling was used to recruit at least ten CPs from the implementation study, based on the following characteristics: their location, clinical setting and the number of CombiConsultations performed (table 1). Data saturation was defined as the point at which no new main codes emerged and was checked after the tenth interview [20]. Due to participation in the intervention study, the CPs knew the researchers and the purpose of their study. Interviews were conducted by telephone or face to face. Participants received €50 for participation. Prior to questioning, participants provided informed consent.

Interview analysis

All interviews were audio-recorded and transcribed verbatim (WN). NVivo qualitative data analysis software (version 12 pro, QSR International) was used for analysis. Content analysis was conducted to identify new topics [21]. Coding was performed independently by VM and WN. Initially, four interviews were double coded (VM and WN). The initial codes were grouped into a main code. Differences and uncertainties in coding were resolved by consensus through discussions involving a third researcher (MH) with expertise in using the TDF. Main codes were linked to a matching TDF domain. Within the domains, main codes have been integrated to form overarching topics, which was discussed within the research group until consensus was reached. This resulted in a final coding scheme and topics per TDF domain which were reported with accompanying quotes (table 2).

Step 2: Questionnaire

Questionnaire construction

The topics derived from the interviews were used to construct a questionnaire. The questionnaire was designed to assess the relevance and generalisability of the identified topics among all 27 CPs who had performed CombiConsultations. Within each TDF domain, statements covering the topics were generated by VM and MH and agreed by the research group. The phrasing of the statements is in accordance with the TDF-overarching domains of the COM-B model (see Figure 1), aimed at behavioural change. The questionnaire, based on a 5-point Likert scale, consisted of 19 statements. The topic “Improved collaboration between healthcare providers” was divided into two separate statements: ‘it improves the collaboration with the GP’ and ‘it improves the collaboration with the PN’ .

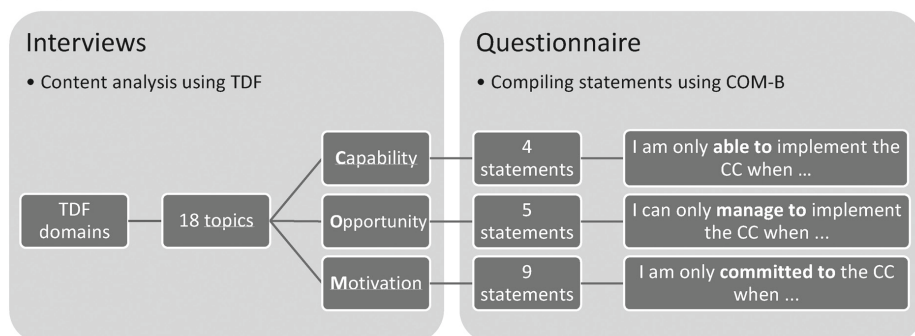


Figure 1. Schematic representation of the study
CC: CombiConsultation, TDF: theoretical domains framework, GP: general practitioner

The questionnaire was pilot tested by a CP who was familiar with the CombiConsultation but did not participate in the study.

Recruitment and data collection

The questionnaire was distributed among all 27 CPs who participated in the CombiConsultation intervention study (of whom 10 CPs were also interviewed). CPs were invited by email with a link to a survey. Surveys were completed online via Survalyzer, a secure web-based application. Reminder emails were sent after three weeks and questionnaires could only be completed once per participant.

Data analysis

Quantitative survey data were analysed with descriptive statistics. Only complete questionnaires were included.

ETHICS AND CONFIDENTIALITY

This study was exempted from formal medical ethical approval by the Medical Ethical Committee of the University Medical Centre Utrecht (METC protocol number 17-873/C) and approved by the Institutional Review Board of UPPER, Division of Pharmacoepidemiology and Clinical Pharmacology, Utrecht University (UPF1706; January 2018). All interviewed CPs gave informed consent for the use of the collected data. No data was collected that could link questionnaire data to individual participants. Audio fragments were coded and stored on a secure server. We followed the reporting recommendations for a survey study (CROSS) [22].

RESULTS

Step 1: Interviews

Ten CPs were invited and they were all willing to participate. Saturation was defined as the point at which no new main codes emerged and was reached after the ninth interview. The pilot participant interview was included in the analysis because no adjustments were needed in the interview guide. The median durations of interviews for CPs was 30 minutes (range: 24 – 66 minutes; IQR: 17.5min) Table 1 shows the participants' demographics.

Table 1: Interviewed pharmacists' characteristics

	Gender	Years of experience	Area of pharmacy	Clinical setting of CC	Mode of interview	No. of performed CC
1	Female	14 years	Rural	Pharmacy	Face to face	10
2	Female	10 years	Urban	GP practice	Face to face	76
3	Female	16 years	Urban	GP practice	Face to face	81
4	Female	7 years	Urban	Pharmacy and GP practice	Telephone	44
5	Female	20 years	Urban	Pharmacy and GP practice	Face to face	11
6	Male	25 years	Rural	Pharmacy	Telephone	37
7	Male	21 years	Urban	GP practice	Telephone	98
8	Female	9 years	Rural	Pharmacy	Telephone	2
9	Male	2 years	Urban	Pharmacy	Face to face	32
10	Female	13 years	Urban	GP practice	Face to face	67

GP: general practitioner

CC: CombiConsultation

Eighteen topics emerged from the interviews. All topics originated from 12 of the 13 domains of the TDF (Table 2). The domain 'Beliefs about capabilities' did not emerge from the interviews.

Four topics were related to the CPs' capabilities (C), five topics were related to the CPs' opportunities (O) and nine topics were related to the CPs' motivation (M) (table 2). For each topic, a significant quote was presented in Table 2.

Table 2: Topics that emerged from the interviews related to COM-B and the theoretical domains framework

COM-B component	TDF domain	Topics	Selected quotes from interviewees
CAPABILITY	Knowledge	Pharmacotherapeutic expertise	'[...] You can expect from a professional (pharmacist) that they are particularly well trained in the field of DM [diabetes mellitus] and CVRM [cardiovascular risk management] and that type of common disorders' (<i>Pharmacist 7</i>).
	Skills	Trained in consultation	'I think consultation is in itself a separate profession. I say that I am doing it automatically, but I still can develop my consultation skills. So it doesn't seem like something you can easily learn' (<i>Pharmacist 3</i>).
	Behavioural regulation	Scheduling consultations	'Because there was not one person who felt responsible for that [concerning scheduling patients]' (<i>Pharmacist 9</i>).
	Memory, attention and decision processes	Ability to prioritise within daily activities	'You have to ensure you have trained personnel, you have proper in-house emergency service, that you pass your audits every year, you make sure your supplies are right, [and] you don't have an increased waiting time. As a pharmacist, you're managing all those things all day. Therefore, pharmacists see the CombiConsultation as a burden rather than an added value' (<i>Pharmacist 7</i>).
OPPORTUNITY	Social influences	An existing collaboration with other care providers	'Because there's very good contact, the project is running better, as they accept things from me, they know my expertise' (<i>Pharmacist 8</i>).

Table 2: Continued

COM-B component	TDF domain	Topics	Selected quotes from interviewees
	Environmental context and resources	Access to medical data Workplace of the pharmacist Consecutive consultations Sufficient staff	'The ideal situation would be if you can mainly work in the GP system, because you can make notes and view the patient's medical file. That's not the case now, but I think it would be a huge improvement' (<i>Pharmacist 6</i>). 'I think the pharmacy is fine. And the general practitioner is located in the same health care centre, so I don't think it makes much difference to the patient if they come to our consulting room or the doctors' office. It's practically the same area. So I'd like to keep this in my own pharmacy' (<i>Pharmacist 8</i>). 'We put our questions in the GP system. The practice nurse saw these questions, and after her consultation, we immediately received the answers. So it works really fast' (<i>Pharmacist 10</i>). 'Last time, we were understaffed, so it became of secondary importance' (<i>Pharmacist 4</i>).
	Social/professional role and identity	Visibility of the pharmacist	'[...] We absolutely must show this is our expertise and we are good at it [providing care]. We should conquer a position' (<i>Pharmacist 2</i>).
	Beliefs about capabilities	–	–
MOTIVATION	Optimism	The future of pharmacy practice	'I did it mostly in my own time, but is it a negative? I don't know. No, it makes me very happy because it gives our profession an opportunity, hope, a boost' (<i>Pharmacist 5</i>).

Table 2: Continued

COM-B component	TDF domain	Topics	Selected quotes from interviewees
Beliefs about consequences	Other target group compared to medication review	Improved collaboration between healthcare providers	'It's a different target group than you would have with a regular medication review. It's a relatively young target group, patients you otherwise wouldn't speak to. And it [the consultation] yields quite a lot' (<i>Pharmacist 10</i>).
			'I visit them [practice nurses] much easier, but also the other way around. Even the GPs are much easier to approach. Before it was always like 'there's the pharmacist.' But now they call me by my name. Yes, it brought me something' (<i>Pharmacist 4</i>).
Improved patient relationship	Identifying DRPs	Reinforcement	'Well, I think one of the most important things is also the contact with your patients. Maybe that's not quite the first goal of the CombiConsultation, but you notice that, after a CombiConsultation or medication review, you're more accessible to patients who have a problem. Actually, I think that's one of the important things' (<i>Pharmacist 1</i>).
			'[...] You always want to find something [a DRP], but you don't always find something. But that does not mean that you didn't help the patient' (<i>Pharmacist 1</i>).
Intentions/goals	Make time for CombiConsultations	Reimbursement	'Particularly, the reimbursement is something that can make the CombiConsultation more difficult to implement in the future. Because if you don't get paid for it and you don't dispense [medicine], it's difficult to do a lot of work for nothing' (<i>Pharmacist 10</i>).
			'Sometimes I think I want to plan it more tightly. I would like to allocate two mornings a week for CombiConsultations and medication reviews and completely separate that from the rest of my work' (<i>Pharmacist 1</i>).
Emotion	Job satisfaction		'That you work together with GPs, practice nurses and the patient, that forms a harmonious whole. That you work together, one team, one task, that is a fantastic feeling' (<i>Pharmacist 5</i>).

COM-B: capability, opportunity and motivation behaviour; TDF: theoretical domains framework; DRP: drug-related problem

Step 2: Questionnaire

Twenty-three of the 27 invited CPs completed the questionnaire.

Within the domain 'Capability', most of the participants stated that the CombiConsultations should be scheduled by another employee (70%) and that they needed to be able to separate themselves from daily work in the pharmacy (74%) (Scores 1 and 2 [strongly disagree and disagree, respectively] and 4 and 5 [agree and strongly agree, respectively] were combined) (Table 3). One-third (35%) of the participants stated that they need more consultation skills to be able to conduct the CombiConsultation optimally, whereas merely thirteen percent of the participants indicated that they need more pharmacotherapeutic expertise to be able to implement the CombiConsultation.

In the domain of 'Opportunity', all participants (100%) believed that an existing good collaboration with the GP/PN and access to all relevant medical data are necessary to implement the CombiConsultation. Access to a consultation room in the general practice and consecutive consultations were considered less important (43% and 30%, respectively). Seventy-eight percent of the CPs thought adequate staffing is necessary to implement and continue the CombiConsultation.

The COM-B model shows that, within the domain 'Motivation', emotions can drive performance. The topic 'job satisfaction' emerged from the 'emotion' domain and the data showed that the participants only want to commit to the CombiConsultation if it gives them job satisfaction (100%). In addition, most participants indicated that they only want to commit to the CombiConsultation if they become more visible to patients (57%), they are reimbursed (82%), it improves the relationship of trust with the patient (78%) and it improves the collaboration with the GP/PN (both 78%). Forty-eight percent of the participants indicated that they would be more dedicated to the CombiConsultation if they have a specific day available. Furthermore, only 21% of the participants considered identifying DRPs as a major motivation for conducting CombiConsultations and a minority (39%) of the participants were motivated because they could consult with patients who do not qualify for a CMR.

Table 3: Number (n) and scores (%) of the statements by the participating pharmacists

	Pharmacists (n = 23)				
	1. Strongly Disagree n (%)	2. Disagree n (%)	3. Undecided n (%)	4. Agree n (%)	5. Strongly Agree n (%)
I am only able to implement the CombiConsultation when ...					
I receive more training in consultation skills	0 (0.0)	7 (30.4)	8 (34.8)	8 (34.8)	0 (0.0)
I have more pharmacotherapeutic expertise	1 (4.3)	9 (39.1)	10 (43.5)	3 (13.0)	0 (0.0)
the CombiConsultations are scheduled by another employee	0 (0.0)	3 (13.0)	4 (17.4)	9 (39.1)	7 (30.4)
I can separate myself from daily work in the pharmacy	0 (0.0)	2 (8.7)	4 (17.4)	14 (60.9)	3 (13.0)
I can only manage to implement the CombiConsultation when ...					
I have an existing good collaboration with the GP/PN	0 (0.0)	0 (0.0)	0 (0.0)	11 (47.8)	12 (52.2)
I have access to all relevant medical data	0 (0.0)	0 (0.0)	0 (0.0)	11 (47.8)	12 (52.2)
I have access to a consultation room in the general practice at all times	1 (4.3)	7 (30.4)	5 (21.7)	7 (30.4)	3 (13.0)
appointments do not have to be consecutive to those of the GP/PN	0 (0.0)	6 (26.1)	10 (43.5)	5 (21.7)	5 (8.7)
the staffing in the pharmacy is adequate	0 (0.0)	1 (4.3)	4 (17.4)	11 (47.8)	7 (30.4)
I am only committed to the CombiConsultation when ...					
I am more visible to patients	1 (4.3)	2 (8.7)	7 (30.4)	10 (43.5)	3 (13.0)
I am allowed to consult with patients who do not qualify for a CMR	2 (8.7)	5 (21.7)	7 (30.4)	6 (26.1)	3 (13.0)
I believe this is the future of pharmacy practice	0 (0.0)	0 (0.0)	4 (17.4)	9 (39.1)	10 (43.5)
I am reimbursed	0 (0.0)	2 (8.7)	2 (8.7)	14 (60.9)	5 (21.7)
it gives me job satisfaction	0 (0.0)	0 (0.0)	0 (0.0)	11 (47.8)	12 (52.2)
it improves the collaboration with the GP	0 (0.0)	1 (4.3)	4 (17.4)	13 (56.5)	5 (21.7)
it improves the collaboration with the PN	0 (0.0)	2 (8.7)	3 (13.0)	13 (56.5)	5 (21.7)
I have (a part of) the day available to carry out CombiConsultations	0 (0.0)	2 (8.7)	10 (43.5)	10 (43.5)	1 (4.3)
the relationship of trust with the patient improves	0 (0.0)	0 (0.0)	5 (21.7)	11 (47.8)	7 (30.4)
I identify drug-related problems at each CombiConsultation	3 (13.0)	11 (47.8)	4 (17.4)	5 (21.7)	0 (0.0)

GP: general practitioner; PN: practice nurse; CMR: clinical medication review

DISCUSSION

This study identified a wide range of factors relevant to the widespread implementation of the CombiConsultation in clinical practice according to CPs who had experience with performing CombiConsultations. Most participants agreed on the high relevance of good collaboration with the GP/PN, access to medical data and the impact of performing a consult on job satisfaction. They attach less importance to finding drug-related problems, access to a consultation room in general practice and consultations being consecutive.

Strengths and Limitations

The CombiConsultation study was conducted in 21 pharmacies across the Netherlands. By using purposive sampling for the interviews, we achieved a comprehensive representation of the study's participants. We were also able to question almost all participating pharmacists (23 of 27) with the questionnaire. However, investigating the opinion on factors relevant for the implementation of the CombiConsultation among the 27 participants may be not representative for Dutch pharmacy practice because they were all forerunners in the field of pharmaceutical care. So it might create a biased perception of the feasibility of implementing the CombiConsultation on a larger scale. However, CPs who do not have experience with CombiConsultations themselves would not have been able to adequately assess the relevance of the identified factors.

On a local level, the participants consider an existing good collaboration with the GP/PN as a critical factor for implementation. They also indicated that the CombiConsultation could further contribute to collaborative practice. Pharmacists who have worked with physicians for a longer period have had more opportunities to demonstrate their competence. This contributes to mutual trust and confidence in the relationship and makes physicians more likely to rely on the CP's expertise [23]. Likewise, physicians who have an established relationship with specific pharmacists have positive perceptions of the pharmacist's role, although this does not necessarily transfer to their perceptions of other pharmacists [24]. For the implementation of the CombiConsultation, an existing collaborative practice is essential. Subsequently, the implementation can further improve this collaboration. In order to stimulate collaborative practice among GPs and pharmacists, widespread implementation of interprofessional learning for primary care clinicians should be considered [25].

The participants were divided regarding the sequential planning of the CombiConsultation. Although consultations with the CP and GP/PN should preferably take place consecutively, scheduling as such is often not feasible. Based on the interviews, it appears that CPs can also carry out the CombiConsultation if there is

more time between the consultations. Due to planning issues, some of the participants even indicated that they can only perform the CombiConsultation if the consultations do not have to be consecutive.

The participants considered access to a consultation room in general practice as less important. Due to a lack of space, it is difficult to organise a consultation room in the general practice. There may be a difference in opinions between the CPs practising in the same health care centre as the GP and CPs who do not, because of the generally more frequent face-to-face contact in a health care centre. What must be considered is that access to a consultation room in general practice could facilitate the access to medical data.

At an individual level, job satisfaction appears to be an important motivator for all CPs. Pharmacists' involvement in clinical services is associated with increased job satisfaction [26, 27]. Pharmacists are usually not (sufficiently) paid for extra care tasks they provide. Pharmacy services are often in addition to pharmacists' regular work, increasing their workload, which has been associated with decreased job satisfaction [28]. Concurrently CP should also make adjustments to certain processes in the pharmacy to create more time for clinical services. Fourteen percent of the pharmacist's time is spent on cognitive pharmaceutical services, which seems to especially compete with dispensing activities and final prescription checks [29]. It seems necessary that CPs delegate or automate some of their traditional tasks to implement the CombiConsultation. However, CPs are facing growing staff shortages. Therefore delegation of their tasks is complicated.

At the level of the health system, reimbursement, access to medical data and sufficient training in consultation skills are important for widespread implementation. Appropriate reimbursement ensures motivation among the CPs and will increase the likelihood of implementation of CombiConsultations. All participants indicated that access to relevant medical data is a critical precondition. This access is needed to properly assess the quality of pharmacotherapy, potentially facilitating more recommendations tailored to the needs of individual patients [30, 31]. Gernant et al. showed that CPs who had access to a patient's medical history identified more DRPs and omissions than pharmacists without such access [32]. During this study, most CPs had access to medical data. However, relevant medical data, such as diagnoses, medical history and laboratory results, is unavailable in most community pharmacies [33] and this might be a barrier for further implementation.

The participants perceived themselves as adequately trained in pharmacotherapy and reasonably proficient in consultation skills. This can be explained by the fact that CPs who signed up for this study are mainly forerunners, who have affinity with

pharmaceutical care and who generally were trained to conduct medication reviews. During the CombiConsultation, the CPs initially focussed on patients' needs and concerns, and this requires certain communication skills that many pharmacists are not trained in [34]. During this study, CPs received consultation training and case-based learning during monthly online meetings. This is likely to have increased their confidence in their own knowledge and skills. Still one-third of the participants thinks that they need more training in this area, indicating that they found such a training useful. As the role of the pharmacist as a healthcare provider is becoming increasingly important, investment in training in consultation and clinical reasoning is key.

Also, the participants were not primarily driven by the identification of DRPs during the CombiConsultation. Building a relationship with the patient was equally important to them.

In addition, adjustments are needed on the level of health system. Together with stakeholders, reimbursement for consultations, access to medical data and training in consultation skills should be considered. At a local level, pharmacists should invest in cooperation.

CONCLUSIONS

This study identified relevant factors that determine successful implementation of the CombiConsultation. Capability, opportunity and motivation were considered crucial for the implementation of the CombiConsultation on the level of the individual CP, on the level of the local collaboration and organisation, and on the health system level. Widespread implementation will have to focus on interprofessional collaboration, access to medical data and training in consultation skills.

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APPENDIX

SUPPLEMENTARY FILE 1

Interview guide based on the theoretical domains framework

Introduction

Introduction, interview goal, approach, anonymity, voice recorder, duration

General questions

- How did the last CombiConsultations go?
 - Positive/negative
 - If it's been a long time: Do you miss it? Why/why not?
-

Knowledge/Skills

Did you have sufficient expertise to carry out CombiConsultations?

Were you sufficiently prepared/trained to carry out CombiConsultations?

- Procedure/organization
 - Sufficient training?
 - Pharmacotherapeutic knowledge/clinical reasoning
 - Communication/consultation
 - Collaboration and organization
-

Role/Identity

- Do you think performing CombiConsultations is an appropriate task for the community pharmacist? Why/why not?
 - Is performing CombiConsultations part of your expertise?
 - Can someone else also do this?
 - How did the CombiConsultation affect your relationship with other healthcare providers?
 - What is your role in relation to the PN? And the GP?
-

Beliefs About Consequences/Reinforcement

- When did you think you had helped a patient?
 - For which group of patients have you been able to mean the most?
 - What does the CombiConsultation offer you?
-

Environmental Context and Resources

- What do you need from the environment [stakeholders: health insurance, organization, etc.] to implement the CombiConsultation?
 - Funding was available. Why then did we not manage to reach the inclusion number?
 - Organization/time
 - Other care providers
 - What do you think is the added value of conducting the consultations in the GP practice or pharmacy?
-

Social Influences

- Were you supported by others in implementing/performing the CombiConsultation?
 - Fellow pharmacists
 - Pharmacy technicians
 - PN
 - GP
 - Patients

Emotions

- What were your high points in this project (executing CombiConsultations)?
- What were your low points in this project (executing CombiConsultations)?
- How did you feel when you had to schedule consultations?
- How did you feel when you knew that a CombiConsultation was scheduled for that day?

Intentions/Goals

- What is the main reason for you to perform CombiConsultations?
- If you had to rank all your activities by priority, where would you rank the CombiConsultation?
- Are there any intentions to continue the CombiConsultation?
 - If so, in what form?
 - Time to invest? Frequency? Which patient group? With which healthcare providers?
 - If not, why not?
- What would you like to achieve in 5 years with the CombiConsultation?

Beliefs About Capabilities/Optimism

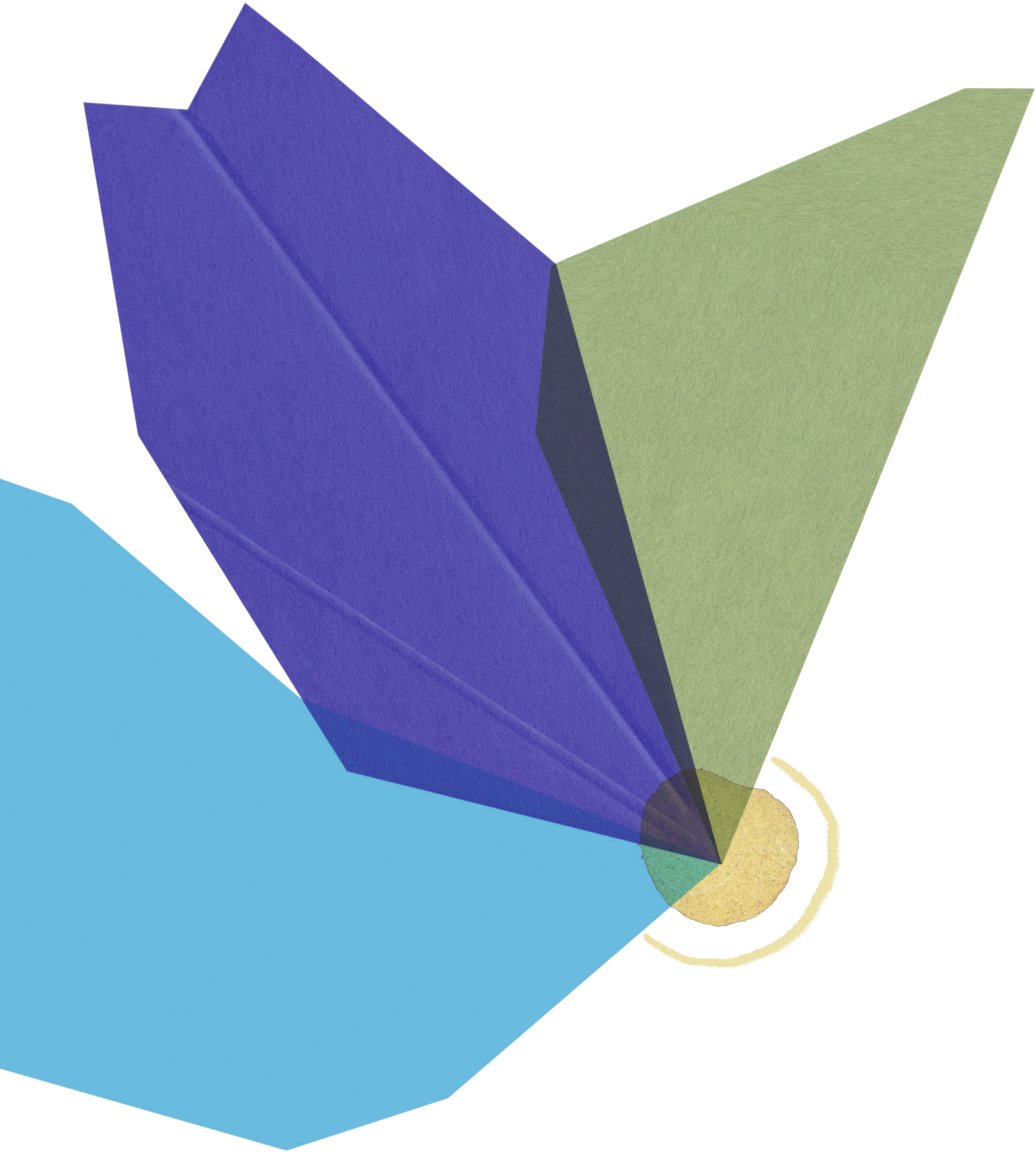
- Are you confident that you can put the CombiConsultation into practice on a structural basis?
 - What contributes to that confidence?
 - Who or what hinders that trust?
 - Patients/care providers/organization
-

SUPPLEMENTARY FILE 2

Capability, opportunity and motivation behaviour model/theoretical domains framework–informed questionnaire

COM-B +	TDF domain	Statement participant
Capability		<u>I am only able to implement the CC when ...</u>
	Knowledge	... I have more pharmacotherapeutic expertise
	Skills	... I receive more consultation skills training
	Memory, attention and decision processes	... I can separate myself from daily work in the pharmacy
	Behavioural regulation	... The CombiConsultations are scheduled by another employee
Opportunity		<u>I can only manage to implement the CC when ...</u>
	Social influences	... I have an existing good collaboration with the GP/ practice nurse
	Environmental context and resources	... I have access to all relevant medical data
		... I have a consultation room in the general practice at all times
		... My CombiConsultation appointments do not have to be consecutive to those of the practice nurse/GP
... The staffing in the pharmacy is adequate		
Motivation		<u>I am only committed to the CC if ...</u>
	Social/professional role and identity	... I become more visible to patients
	Optimism	... I believe this is the future of pharmacy
	Beliefs about consequences	... I can consult with patients who do not qualify for a medication review
		... It improves the collaboration with the GP
		... It improves the collaboration with the practice nurse
		... it improves the relationship of trust with the patient
		... I identify pharmacotherapeutic problems with each CombiConsultation
	Intentions/goals	... I have a day (part) available to perform the CombiConsultation
Reinforcement	... I receive reimbursement	
Emotion	... It gives me job satisfaction	

CC: CombiConsultation, TDF: theoretical domains framework, GP: general practitioner



Chapter 3.3

Patients' acceptability of the CombiConsultation: a focus group study

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ABSTRACT

Objective

The CombiConsultation is a consultation with the community pharmacist for patients with diabetes, COPD and / or CVRM, after or before the annual- or quarterly consultation with the practice nurse or general practitioner. The aim of this study is to get insight into the patients' experiences regarding the CombiConsultation.

Methods

Patients who had a CombiConsultation were invited to a focus group. The focus groups were recorded, transcribed ad verbatim and thematically analysed using NVivo. A semi-structured topic guide, based on a Patient-Reported Experience Measure survey, was followed and focussed on acceptability of the intervention. Interview transcripts were analysed using content analysis. Within the domains of the Theoretical Framework of Acceptability (TFA), main codes were integrated to form overarching topics perceived by patients as being relevant for the acceptability of the CombiConsultation.

Results

Five focus groups with in total 29 patients were conducted. Data was coded in six of the seven domains of the TFA. Participants were generally satisfied with the CombiConsultation. They valued the opportunity to consult the pharmacist and were pleased with the advice they received. The location and timing of the consultations are not of utmost importance as long as healthcare providers effectively communicate. Regarding the focus of the consultation, participants expressed a desire to discuss all the medication they take. Although they experienced the pharmacist as readily approachable and acknowledged, they may not necessarily perceive them as deeply engaged in the comprehensive treatment plan or decision-making process.

Conclusion

This study demonstrates a general acceptance of the CombiConsultation by participants. They appreciate the chance to engage with the pharmacist and express satisfaction with the guidance provided. It's crucial to ensure that patients have a clear understanding of the precise role of the pharmacist, as well as their position in relation to the GP and PN. By closely aligning with the individual needs of each patient, pharmacists can enhance the acceptability of the CombiConsultation and make a meaningful contribution to the broader healthcare team.

INTRODUCTION

With the global population rapidly aging, there is a need to address the complex healthcare challenges faced by the elderly population. Aging is often accompanied by an increased risk of developing multiple chronic conditions, known as multimorbidity, and the subsequent need for polypharmacy [1].

The presence of multimorbidity and polypharmacy introduces complex challenges in clinical practice and management. This may have significant impact on the safety and effectiveness of medication use and subsequently may lead to poorer health outcomes [2-5].

Pharmacists can contribute to safe and effective drug therapy by providing clinical pharmacy services such as clinical medication reviews (CMR) [6-8]. Although intensively studied and proven effective CMR is time consuming. Therefore strict selection criteria (e.g. age and polypharmacy) are often applied for patients to be eligible for a CMR. In addition, it seems advantageous to proactively optimize the medication at an earlier stage of the disease, particularly for younger patients with limited medication in use.

We therefore developed the CombiConsultation: a clinical pharmacy service for patients aged 18 or over, with Diabetes Mellitus, COPD and/or (risk of) cardiovascular disease and at least one medicine in use. It involves a 15–20 minutes consultation with the community pharmacist (CP), aligned with the periodical check-up with the practice nurse (PN) or the general practitioner (GP). During this consultation, the community pharmacist (CP) focusses primarily on setting personal health-related goals together with the patient and identifying drug-related problems. After a few weeks, progress on the implementation of the interventions is evaluated by the CP, PN or GP [9].

We recently demonstrated that 72% of the interventions that were proposed during the CombiConsultation were actually implemented and that 53% of the goals set had been (partially) attained [10]. Also, interviews showed that healthcare providers are generally positive about the intervention, although certain preconditions must be met for further implementation [11].

However, a healthcare service should not only be evaluated on clinical outcome and professional acceptance but also from a patients' perspective [12]. Patients are more likely to experience clinical benefits when they accept the intervention, as increased understanding leads to better adherence to medical recommendations [13]. The Patient-Reported Experience Measure (PREM) questionnaire (administered directly after the consultation with the pharmacist) showed that the participants were very satisfied with

the CombiConsultation (see supplementary file 1). However, these types of surveys are generally assessed very positively. Therefore we have chosen to deepen the information through focus groups. The aim of this study is to investigate the acceptability of the CombiConsultation by patients.

METHOD

Setting

This qualitative focus group study was performed within a prospective intervention study ‘the CombiConsultation’, which was performed between January 2017 and July 2019 in 21 community pharmacies and associated GP practices in the Netherlands [10, 14].

The CombiConsultation study

The intervention consisted of a consultation (15-20 minutes) performed by a CP aligned with the periodical check-up with a PN or GP. The focus of the CP during the consultation is to identify health-related complaints in relation to the chronic condition (Diabetes Mellitus (DM), COPD and/or (risk of) cardiovascular disease (CVD)) for which the patient had an appointment with the PN or GP. Based on the identified drug related problems (DRPs) and personal health-related goals, the CP proposes recommendations to improve pharmacotherapy to the PN/GP. A few weeks after the consultation, the CP or PN/GP evaluated the implementation of the suggested recommendations and the attainment of personal health goals [14]. During the study, 834 CombiConsultations were performed. The median number of consultations per pharmacy was 29 (range 2–106) [10].

Study design

We performed 5 focus groups with patients who had had a CombiConsultation. We aimed at including 6-10 patients who had experienced the CombiConsultation in each focus group. During the focus group we aimed at elucidating experiences and perceptions of patients’ on the CombiConsultation [15]. The research team consisted of four pharmacists (VM: MSc; MH: PhD; MB: PhD HK: PhD) and one pharmacy student (FG). VM and MH had training in qualitative research and MH, MB and HK had experience with focus groups.

Recruitment and study population of the focus groups

Purposive sampling was used to recruit five pharmacies who performed CombiConsultation throughout the Netherlands, preferably from both urban and rural areas. Participating CPs were asked to invite 6-8 patients for a focus group. We aimed to select pharmacies from different areas in the Netherlands. The inclusion criteria for

the participating patients were: a CombiConsultation in the previous three months to ensure a clear recollection of the consultation, sufficient mobility to attend the meeting and proficiency in Dutch. Invitations to participate in the focus group were sent by their own pharmacist. If no response was obtained, the patients were contacted by phone by the pharmacist. The focus group took place if at least six participants agreed. Prior to the focus group the purpose of the study was explained to all participants by phone (FG). Patients received a confirmation letter, an informed consent, and a short questionnaire. The short questionnaire concerned their gender, age, illness, number of medicines in use, highest level of education and origin. All participants received a 20-euro gift card afterwards.

Data collection

Three focus groups took place in the participating pharmacies, one focus group was in a local cultural centre and one focus group was in a general practice. All focus groups were recorded with a voice recorder.

Each focus group was conducted by two or three individuals, a moderator (VM), a technical leader responsible for time management and maintaining structure (FG, MH & MB) and an observer responsible for taking field notes on non-verbal and verbal communication (FG). The observer was also responsible for welcoming the participants and comforting them prior to the meeting. At least one of the present researchers was experienced in focus groups, either MH or MB, except for the first focus group.

Topic guide

A semi-structured topic guide was followed in each focus group (Supplementary file 2; table 1 provides an overview of the main topics). The topic guide focussed on acceptability of the intervention and was based on a Patient-Reported Experience Measure (5-minute survey) which patients completed directly after the CombiConsultation and a review of literature [16-18]. The topic guide was repeatedly revised and discussed among the research group until a final version was composed (Supplementary file 2; table 1 provides an abbreviated version).

The first focus group was used to test whether the topic guide was appropriate for the target audience. No significant changes were made to the topic guide after the first focus group.

Table 1. Main topics

Overall experience with the CombiConsultation
Reason for visiting the CombiConsultation
Importance of a consultation with the pharmacist
Added value compared to regular care
Role of the pharmacist as a care provider
Intervention
Follow-up
Monitoring
COPD, CVRM or DM medication versus complete medication list
Collaboration between different care providers
Pharmacist in general practice
Continuation of the CombiConsultation in current form

Data analysis

NVivo qualitative data analysis software (version 12 Pro, QSR International) was used for data analysis. The recordings were transcribed verbatim (FG). Transcripts were read repeatedly to ensure familiarization with the data. Interview transcripts were analysed using content analysis [19]. Open coding was performed independent by VM and FG. The initial codes were merged into main codes. Differences and uncertainties were resolved by consensus through discussions involving a third researcher (MH) with expertise in qualitative research. Within the domains of the Theoretical Framework of Acceptability (TFA), main codes have been integrated to form overarching topics perceived by patients as being relevant for the acceptability of the CombiConsultation [13]. Data saturation was defined as the point at which no new main codes emerged and was checked after the fifth focus group [20].

RESULTS

Five focus groups with 4, 8, 6, 5 and 6 participants were performed (two participants from focus group 1 and one participant from focus group 4 were unable to attend last minute). Fifty-two percent of the participants were female and the mean age 72 years old. Details of the participants are included in Supplementary file 3. Data saturation was reached after the fourth focus group. Three pharmacies were located in urban areas and two in rural areas. The mean duration of the focus groups was 82 minutes (range 64-96 minutes). The distribution of the participants was adequate, regarding age and gender, and most chronic diseases were represent.

Table 2. Theoretical framework of acceptability

Domains TFA	Description	Themes that emerged in focus groups
Affective attitude	How an individual feels about taking part in the intervention	<ul style="list-style-type: none"> • General opinion of the CombiConsultation • Approachability of the pharmacist • Trust in the healthcare professionals
Burden	The perceived amount of effort that is required to participate in the intervention	<ul style="list-style-type: none"> • Frequency of the CombiConsultation • Time investment
Ethicality	The extent to which the intervention has good fit with an individual's value system	<ul style="list-style-type: none"> • Privacy • Permission for medical access • Wastage of medicine
Intervention coherence	The extent to which the participant understands the intervention, and how the intervention works	<ul style="list-style-type: none"> • Location of the CombiConsultation • Division of roles • Suggestions for topics to discuss • Sequence of consultations • Form of the consultation • Type of medication
Opportunity costs	The extent to which benefits, profits, or values must be given up to engage in the intervention	
Perceived Effectiveness	The extent to which the intervention is perceived as likely to achieve its purpose	<ul style="list-style-type: none"> • Advice of the pharmacist • Referral • Laboratory values • Reducing medicine • Following recommendations by the pharmacist • Collaboration healthcare providers • Source of information
Self-efficacy	The participants confidence that they can perform the behaviour required to participate in the intervention	<ul style="list-style-type: none"> • Patient's own insight • Patient's own preparation of the consultation • Insufficient knowledge about medication

TFA = Theoretical Framework of Acceptability

Theoretical Framework of Acceptability

Data was coded in six of the seven domains of the TFA. No themes emerged that were related to the domain 'Opportunity costs'. Table 2 displays a description of each of the

TFA domains in the context of this study and the key themes generated from the TFA analysis reflecting participants retrospective acceptability of the CombiConsultation. The themes within each domain are discussed below.

Affective attitude

In general, participants were positive about this new intervention, especially with an aging population. They felt taken seriously and found the advice of the pharmacist valuable.

'I thought: what can she (the pharmacist) tell me that I don't know already? But, she gave me a tip I didn't know at all, about using medication. And then I thought: Oh, if only I had known that before.' (F4P2)

Some participants, however, indicated that they thought the CombiConsultation had little added value and/or contributes to an unnecessary escalation in healthcare costs.

'But just purely the conversation, as it's arranged now, I don't think it adds much for me in this form.' (F4P5)

In general the participants experienced the pharmacist as very approachable, especially compared to the GP.

'At the GP you first get to speak to the assistant [...] and then she wants to know what you are here for [...] Then I actually spend half an hour on the phone before I finally get an appointment. [...] It's much easier to just run in here. [...] he [the pharmacist] answers right away, and then you are ready in 3 minutes.' (F1P4)

Trust in the healthcare provider is an important aspect for patients and determines the role they assign to the healthcare provider.

'At a certain point it is also a kind of trust that you build. Of course that won't work if you speak to someone once every two years [...] If I just want to share things, I don't do that with the first person I come across.' (F4P5)

Several factors can undermine trust in the pharmacist, such as a medication error in the past, lack of professional attitude, a negative experience after a switch of medication, or an intervention during the CombiConsultation that yields unfavourable outcomes.

'I think in the future that I will be a little more careful with that [pharmacist's recommendation to the PN], that I will at least discuss everything with the PN or GP

and let them decide. Because I won't say so quickly anymore: I want to participate in that [the CombiConsultation].' (F2P4)

Although trust in GPs is fostered because of the longstanding relation and an integral knowledge of the patient incidentally the relation with the GP can also be damaged, for instance because of a misdiagnosis.

'I had completely lost trust in my GP, I told her that too. She was completely wrong, I ended up in the hospital.' (F1P4)

Conversely, trust in the pharmacist increases due to the knowledge of the pharmacist about medication, the time he takes for the conversation and listening carefully to the patient.

'Absolutely, I have complete trust in his [the pharmacists] knowledge of medication and how to apply it.' (F1P3)

The good advice and approachability of the PN fosters their trust. However, trust in the PN is also variable and often depends on how independently they work. It helps to build trust if they implement interventions themselves instead of discussing everything with the doctor.

'If the practice nurse has to consult the GP. Then I think, I can also do that myself. His [the GP's] advice is sometimes slightly different. [...] When she says to me 'your blood pressure medication should actually be increased'. Then I say, okay, I'll call the doctor.' (F4P2).

Burden

Opinions differed about the frequency of the consultation. Many patients appreciate a periodic check-up by the pharmacist. However, some of them felt burdened by the time investment of the pharmacist and would be reluctant to schedule an appointment independently. Some also found the consultation unnecessary, for example if they are well adjusted on medicine.

'Once you have your medication working properly, you do not have to go to the pharmacist every time.' (F1P4)

Participants often mentioned that they are interested in a CombiConsultation 'if necessary'. For example if there has been a change in medication.

'Or if something very specific really changes very much [in the medication]. Then an interactive attitude of the pharmacy is sometimes nice.' (F4P2)

It is a facilitator if they are invited to this consultation.

'If you are invited then you go sooner' (F5P6)

Ethicality

The participants appreciated that the pharmacist requested permission for medical access and that the conversations took place in a separate room, with sufficient privacy.

An area of significant concern for the participants was the unnecessary use and waste of medication. Certain participants valued the fact that discontinuing medication had been deliberated upon during the CombiConsultation, while others expressed a desire for such discussion to have taken place.

'Actually, it might be good if the pharmacist discusses: how long have you been taking it, do you keep taking it, what does the neurologist think about that? Because I believe that a lot of money is spent on medicines that are discarded.' (F4P2)

Intervention coherence

The CombiConsultation is developed as two sequential consultations: one with the CP and one with the PN/GP. Although patients would not mind to visit the pharmacist and GP/PN on separate moments, they did appreciate sequential consultations particularly because they were better able to recollect the information from the different health care providers.

'No, I don't care if I have to come over two or three times. Not that, but rather that the [conversation] is still fresh in your mind.' (F3P1)

Participants did not have a strong opinion about the location of the consultation with the pharmacist (GP practice or pharmacy), although it is desirable if the pharmacy and practice are close to each other. The possibility of a combined consultation was also mentioned:

'The practice nurse probably knows something about it [medicine], but if the pharmacist is there also and you talk about your medicine and your side effects and everything that comes with it; he can explain this much better than the practice nurse.....' (F3P6)

The majority indicated that they did not want to limit the CombiConsultation to the medication prescribed for DM, COPD and/or CVD. They preferred to discuss any medication that they have questions about at that moment:

'What if I use sleep medication and I want to talk about it and he [the pharmacist] would say: "No, just talk about the cardiovascular medication." I would find that odd.' (F3P1)

During the focus groups, participants regularly suggested topics for discussion: advice about devices, packages and side effects and new released medicine for their indication.

'Maybe there is another medicine that is better [...] I don't know if that doctor thinks about that. [...] He [the pharmacist] could be the first to say: "There is a new medicine, think about that."' (F3P6)

When it comes to the division of roles, the PN or GP is often the first contact person, but the GP clearly has the decisive role. The GP is seen as the one who has the complete picture and who knows the patient best. The pharmacist has, with his knowledge of medicine, an additional role. The pharmacist is often seen as the person who monitors medication and not so much as the person who will decide on medication changes:

'I think it [the consultation with the pharmacist] is also a certain check if your medicine are matching. That is also very important. That's what pharmacists do.' (F1P1)

Nevertheless, there are also participants who prefer a more prominent role of the pharmacist:

'No, I did not go back to the doctor. I just discussed that with him [the pharmacist]. And I think if there's anything about my meds, I might as well go back to him, if it's just about the meds. He knows much more than that doctor. I don't feel like I have to go back to that doctor.' (F1P4)

'The doctor concludes: cholesterol is too high. And then you get a pill for it. He [the pharmacist] concluded that 1 pill does not work. "We just have to switch to another pill, [...] or a combination of 2 and maybe then we will get fewer side effects and still a better result." I thought that was a completely different approach than the GP who says: you have this and use these pills.' (F1P3)

The participants appreciated the time investment by the pharmacist and do not feel rushed during the consultation:

'When you go to the doctor, he only has 10 minutes for you and afterwards you have many more questions and your time is up [...]. And that conversation with the pharmacist, that went very smoothly. You had the feeling that they had plenty of time for you. You could talk about all your questions, [...] without feeling that there is a whole waiting room waiting for the doctor.' (F5P1)

Perceived Effectiveness

The data showed that participants benefitted from the pharmacist's advice on medication(usage), over-the-counter medication and lifestyle.

'That [advice] was about the effect of thyroid medication. She said: you have to take that in the morning, more than half an hour before your breakfast. [...] and you just take the rest all together in the evening [...] then you don't forget that either. [...] I found that incredibly helpful.' (F4P2)

In addition, the participants experienced that they had the opportunity to ask questions during the consultation, that pharmacists contributed ideas about lab results, reducing pills and, if necessary, could refer them to another healthcare provider. Also, the participants hold the assumption of strong collaboration among healthcare providers. Although this was not always visible to them, but they expected this to happen behind the scenes.

Regarding the pharmacist's recommendations, there were different experiences. In general, patients were satisfied with the pharmacist's advice. However, a few had a bad experience, for example due to an adverse reaction to a medication recommended by the pharmacist:

'The pharmacist figured out what the options were and what combination [of drugs] was good for my stomach. The doctor agreed. So far it has all gone well.' (F1P3)

Self-efficacy

The comments of the participants showed that the participants did not always have a clear understanding of the concept of the CombiConsultation. They sometimes mentioned experiences with the pharmacy or pharmacist outside the CombiConsultation. Nevertheless, during the conversation with the pharmacist, participants were able to raise a topic and to mention their own concerns and ideas:

'And then I announced on my own initiative during the conversation, I want to stop the cholesterol [tablet].' (F3P2)

'So I also asked her: "Why do I have to take that? I'm not suffering from it [high cholesterol], am I?"' (F1P2)

'I said: leave it that way, because it [the medication] has been like that for fifteen years and it should stay that way.' (F1P1)

'All in all, less weight, neat values and I feel fine, then I think why can't I take less drugs?' (F2P5)

The participants were of the opinion that the preparation for the consultation (completing a short questionnaire about their complaints and concerns) was useful. It made them think about the questions you want to ask the pharmacist:

'When you're home again after the consultation you don't think: oh I should have asked that. Because you had already put it on paper. That [the preparation] was helpful.' (F1P2)

It was also mentioned that the conversation with the pharmacist made the participant dare to ask more questions. Their self-confidence had increased.

'I become more able to express myself to the pharmacist. [...], you dare to ask more. [...], you just get more self-confidence, like: I'm a customer, I'm just asking.' (F2P1)

DISCUSSION

This study shows that participants are generally satisfied with the CombiConsultation. They value the opportunity to consult with the pharmacist and are pleased with the advice they receive. The pharmacist is easy to approach, and the participants consider the pharmacist knowledgeable. This aligns with prior research investigating patient's experiences with CMRs [16, 21].

However, patients have diverging opinions about the optimal implementation of the CombiConsultation. The location and timing of the consultations are not of utmost importance as long as healthcare providers effectively communicate and there is not too much time between the consultation with the pharmacist and check-up with the PN/GP. Regarding the focus of the consultation, participants express a desire not to

confine the consultation solely to medications for DM, COPD, or CVR. Instead, they aspire to have freedom to discuss about all the medication they take. Since the time reserved for the CombiConsultation is limited compared to a Clinical Medication Review (CMR), discussing all medication is probably not always feasible. Moreover, the CombiConsultation is also designed for patients with a limited number of medications, reducing the impact of this problem. In cases where patients take multiple medications and/or face numerous health issues, a CMR may be offered.

The CombiConsultation is designed to align the pharmacist's consultation with the PN/GP's check-up (the focus on a particular condition). However, the participants indicated that they expect their questions to be answered (including questions unrelated to this specific condition). If there is an urgent question about sleeping medication, they expect it to be addressed. This is also reflected in "Intervention coherence": participants have their own ideas about the topics that are relevant and meaningful to them. However, identifying the patient's main concerns or needs is often still a challenge [22] and requires consultation skills [23, 24].

Patients differ in the enthusiasm with which they embrace the CombiConsultation. The participants did not always perceive the pharmacist as extensively involved in the overall pharmacotherapeutic treatment process. Although they experience the pharmacist as readily approachable and acknowledged their expertise concerning medications, they may not necessarily perceive them as deeply engaged in the comprehensive treatment plan or decision-making process. Instead, most tend to link pharmacists more with dispensing medications, providing advice on proper dosage, addressing concerns related to specific medications, rather than being involved in broader medical treatment decisions. Often, the GP and PN are seen as the primary point of contact for patients, with the GP holding the overarching responsibility for pharmacotherapy and maintaining a comprehensive overview of treatment. These findings are consistent with the research of Lambert et al [25]. The participants indicated that establishing full trust in healthcare providers, specifically concerning pharmacotherapy, typically requires more than a brief annual conversation with the pharmacist [26, 27]. Keshishian et al showed that pharmacists have room for improvement in being recognized as healthcare providers who fully address patients' healthcare needs. In order for patients to experience a higher quality relationship with their pharmacists, pharmacists should redefine their role as true patient-centred healthcare providers and increase their visibility to patients [28]. Participants who consulted the pharmacist more frequently and had already established a relationship, assigned a greater role to the pharmacist.

In the area of pharmacotherapeutic treatment, patients' trust in the pharmacist and the role of the pharmacist compared to the GP are crucial aspects to consider. Patients

often develop a significant level of trust in their pharmacist due to their expertise in medications and their accessibility in community settings. While GPs typically have a broader scope of medical knowledge, pharmacists knowledge is limited to medication related treatment, making them valuable allies in optimizing patient outcomes. The complementary relationship between patients, pharmacists, and GPs can lead to enhanced medication adherence, improved therapeutic outcomes, and a higher level of patient satisfaction. Therefore, recognizing and leveraging the pharmacist's role alongside the GP in the context of pharmacotherapeutic treatment can contribute to the overall quality of patient care [29, 30].

Strengths and limitations

The strengths of the study lies in the conduct of five focus groups at five different locations. Another strength is the utilization of a theoretical framework to support our data analysis. No codes were found in the domain 'Opportunity costs'. This can be attributed to the fact that the focus groups were predominantly composed of retired patients. Their participation in the CombiConsultation required minimal sacrifices, such as taking time off from work. This domain may have emerged if a younger group of patients had been included in the focus groups.

Since all invited patients agreed to participate, the use of incentives (voucher) to motivate the participants did not led to selection bias. Also, sufficient patients with DM, COPD and (risk of) CVD were represented in the focus groups, and the level of education was representative of the population. The fact that patients received a voucher or that the researchers were all pharmacists might have led to reluctance to share negative experiences. However, this was not apparent from the data.

CONCLUSION

This study demonstrates a general acceptance of the CombiConsultation by participants. They appreciate the chance to engage with the pharmacist and express satisfaction with the guidance provided. It's crucial to ensure that patients have a clear understanding of the precise role of the pharmacist, as well as their position in relation to the GP and PN. By closely aligning with the individual needs of each patient, pharmacists can enhance the acceptability of the CombiConsultation and make a meaningful contribution to the broader healthcare team. Continued efforts to refine the selection process, enhance patient awareness, and foster personalized care will ultimately contribute to increased patient acceptance of the CombiConsultation.

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APPENDIX

SUPPLEMENTARY FILE 1: PREM QUESTIONNAIRE

Following the CombiConsultation, all patients were requested to fill out a questionnaire based on the Patient-Reported Experience Measure (PREM). The obtained results from the questionnaire served as the foundation for preparation of the focus groups. The questionnaires were administered in writing or via iPads.

Results

The questionnaire was completed by 683 out of the 834 patients who underwent a CombiConsultation, resulting in a response rate of 75%.

1. Please indicate below for each line to what extent you agree with the statement.

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Unknown
The pharmacist listened carefully to me	0.7%	0.0%	1.0%	31.8%	66.4%	0.0%
The pharmacist understood my questions/concerns about the medicines	0.6%	0.0%	2.7%	36.5%	60.0%	0.3%
The pharmacist gave understandable information	0.7%	0.0%	3.1%	33.8%	62.4%	0.0%
The pharmacist gave advice about the medicines.	0.7%	0.1%	8.0%	35.9%	55.2%	0.0%
The pharmacist takes my wishes into account when determining the treatment	0.7%	0.1%	11.3%	34.2%	53.6%	0.0%

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	n/a	Unknown
I can ask the pharmacist the questions I want	1.6%	0.0%	0.4%	25.3%	68.5%	4.0%	0.1%
I have trust in the pharmacist	1.6%	0.1%	0.9%	28.3%	66.2%	2.8%	0.0%
The pharmacist gives me a treatment and/or advice that I can use	1.5%	0.3%	6.4%	30.1%	50.9%	10.7%	0.1%
With the help of the pharmacist. I can cope better with my chronic illness	1.2%	0.4%	19.8%	21.6%	28.6%	28.1%	0.3%
The treatment provided by the pharmacist is in line with the treatment provided by the general practitioner and/or practice nurse.	1.3%	0.1%	7.4%	34.4%	47.8%	8.6%	0.3%
The conversation with the pharmacist was helpful	1.6%	0.3%	3.6%	27.5%	63.7%	3.3%	0.0%

2. What is important for you to discuss with the pharmacist during the consultation?

	Very unimportant	Unimportant	Neutral	Important	Very important	Unknown
The intake/use of the medicines.	0.7%	1.8%	13.8%	57.1%	25.9%	0.6%
My satisfaction with the medicines.	0.3%	1.2%	16.1%	57.6%	24.3%	0.6%
The questions I have about the medicines.	0.1%	0.7%	12.9%	60.1%	25.4%	0.6%
The concerns I have about my medications.	0.9%	4.0%	21.4%	49.7%	23.4%	0.6%
What I would like to change about my medication.	3.6%	6.1%	27.7%	43.2%	18.8%	0.7%

3. What did you think of the duration of the consultation?

	%
Excessively short	0.4%
Too short	0.9%
Good	97.8%
Too long	0.3%
Excessively long	0.1%
Unknown	0.4%

4. Would you recommend talking to the pharmacist to other people with a chronic illness?

(0 means you would definitely not recommend the conversation, 10 means that you would definitely recommend the interview)

Mean (sd)	min	max	Median (IQR)
8.7 (1.2)	0	10	9 (2)

5. Who do you prefer to ask questions about your medicines?

	%
GP	41%
Pharmacist	32%
Specialist	7%
Practice nurse	13%
Other	8%

SUPPLEMENTARY FILE 2: TOPIC LIST

Opening question (15 min) – a short introduction

Please introduce yourself: name, (age optional) and what you do in daily life.

What is your experience with your own CombiConsult?

Was the experience positive/negative?

- Did it bring you anything? If so, what?
- Why was that important for you?

What did you decide to take part in the CombiConsult?

Content of the conversation with the pharmacist

Main question 1: What do you find important to discuss with the pharmacist during the CombiConsult?

Sub questions:

- Why do you think this is important?
 - Is there sufficient attention for health care?
 - Is it important that the pharmacist gives advice? Or could another care provider have done the job?
 - Do you see a role for the pharmacist as a care provider? (is it confusing?)
 - How did you experience the questionnaire for complaints prior to the CombiConsult?
 - Conversation about the medication: information/explanation about intake time/ side effects/ ...?
 - Or does the pharmacist also needs to think about the pharmacotherapy? Advice to GP/practice nurse? (see further questions 2&3)
-

Carry out interventions / trust

Main question 2: With whom have changes been made during the CombiConsult?

- How and by whom would you like to be guided by changes in your medication?
- If little response: an example:

Imagine you have a high blood pressure and you use three medicines. The pharmacist asks you during the CombiConsult if you are dizzy when standing up and you confirms this. The pharmacist explains to you that this can occur with your medication and that this can be overcome by changing medication.

Further questioning:

- Is there enough trust in the pharmacist for this care providing role? Is this sufficient for carrying out interventions and monitoring the patient?
-

Organisation CombiConsult/ collaboration between health care providers

The CombiConsult is a combination of a consultation with the practice nurse and a consultation at the pharmacist.

Main question 3: How did you experience the collaboration with health care providers?

Sub questions:

- Was there, to your experience, any overlap between your conversation with the pharmacist and the GP/practice nurse?
 - What do you think of that?
- Do you think it is important that the pharmacist is in the general practice?
 - How was that at your own consultation?
- The main focus of the CombiConsult lays with DM/CVRM? COPD: does this apply to your situation?
- Two consultations in a row: does this take too long?

Implementation

Main question 4: Why would you keep the CombiConsult in the current form?

Completion (5 min)

- Tell this is the end of the focus group
 - What did you think of the focus group? Are there any questions or comments?
 - If someone still wants to discuss something outside of the group, that is possible
 - One-time meeting
 - Thanks again
 - Gift voucher and travel allowance
 - Have a safe trip home!
-

SUPPLEMENTARY FILE 3: DEMOGRAPHIC DATA OF PARTICIPANTS**Table 2.** Demographic description of focus group participants

Focus group	Participants (n=29)	Sex	Age	Illness	No. of chronic medicines	Education	Nationality
1	1	Male	75	COPD	5-9	Low	Dutch
	2	Female	77	DM	5-9	Middle	Dutch
	3	Female	60	CVR	0-4	Middle	Other
	4	Female	68	DM	0-4	High	Dutch
2	1	Female	80	DM	5-9	Low	Dutch
	2	Female	54	COPD	5-9	Low	Dutch
	3	Female	65	DM	5-9	Low	Dutch
	4	Female	84	Unknown	5-9	Middle	Dutch
	5	Male	70	DM	0-4	Middle	Dutch
	6	Male	76	DM & CVR	5-9	High	Dutch
	7	Male	69	COPD	0-4	High	Dutch
	8	Male	71	DM	5-9	High	Dutch
3	1	Female	72	CVR	5-9	Low	Other
	2	Male	79	CVR	0-4	High	Dutch
	3	Male	71	CVR	5-9	Low	Dutch
	4	Female	66	COPD & CVR	>10	Middle	Dutch
	5	Male	72	CVR	5-9	Middle	Dutch
	6	Female	61	CVR	5-9	Low	Dutch
4	1	Male	62	DM	5-9	High	Dutch
	2	Female	64	DM & CVR	>10	Low	Dutch
	3	Male	65	DM	>10	Middle	Dutch
	4	Female	71	COPD	5-9	Middle	Dutch
	5	Female	79	CVR	0-4	Middle	Dutch
5	1	Female	72	Unknown	0-4	Low	Dutch
	2	Male	74	DM & CVR	5-9	Low	Dutch
	3	Female	81	Unknown	0-4	Low	Dutch
	4	Male	86	CVR	5-9	Low	Dutch
	5	Male	75	DM, CVR & COPD	5-9	High	Dutch
	6	Male	82	CVR	>10	Low	Dutch

* Some patients suffered from two illnesses, that is why the added number of patients on this category do not match the total participating patients.

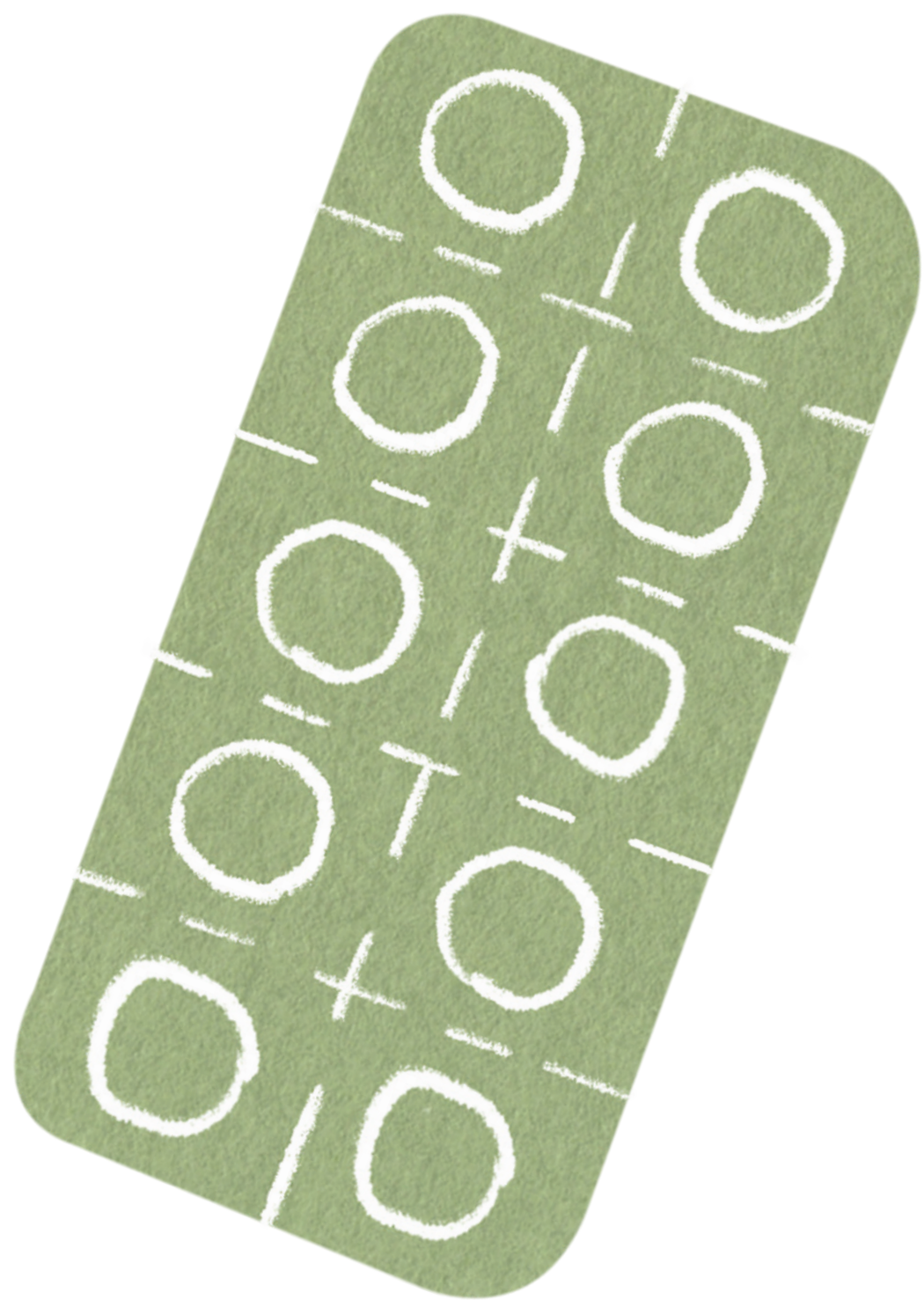


Chapter 4

Observation of pharmacists performing consultations

Authorship statement

I designed the study together with the research group. I performed the data management, performed the data analysis, wrote the first version of the manuscript and implemented the contribution of the co-authors and external reviewers until final publication. Throughout the process I asked for and implemented input and feedback from my supervisors in this study.



Chapter 4.1

Structure and content of the consultation by the pharmacist during a CombiConsultation

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ABSTRACT

Background

The CombiConsultation is a consultation with the community pharmacist (CP) for patients with diabetes, COPD and / or CVD, aligned with the consultation with the practice nurse or general practitioner. CPs were trained in patient-centred communication using the Calgary-Cambridge model to facilitate implementation of the CombiConsultation.

Objective:

The aim of this study is to investigate how CPs apply the learned Calgary-Cambridge based model in the CombiConsultation and to describe the content of these consultations between the CP and the patient.

Methods:

Consultations were videotaped and the structure was analysed using an observation guide, based on the Calgary-Cambridge model. How CPs applied the structure provided by this model was evaluated on a 4-point scale from 'not executed' (1) to 'fully executed' (4). The MEDICODE classification system was used to investigate the content of the consultations.

Results:

A total of 24 consultations were included in the analysis. In the majority of these consultations CPs scored sufficient on almost all items of the Calgary-Cambridge model. The CPs identified the patient's concerns or topics the patient wanted to discuss using appropriate initial questions and encouraged patients to elaborate on their problem(s).

CPs had more difficulties prioritizing problems and setting personal health-related goals. All four areas of MEDICODE (General information, Knowledge of the drug, Discussion of the prescribed medication and Effects of the drug) were addressed during the CombiConsultations. The most common topic was 'general information', followed by 'discussion of the prescribed medication'. During the consultation, most time was spent on medication-usage issues and achieving problem control through medication management.

Conclusion:

This study showed that, after limited training, CPs are generally able to apply the structure of the Calgary Cambridge model. However, they experience difficulties in goal setting and often revert to their familiar task of providing information about the medication in use.

INTRODUCTION

In recent decades, the role of community pharmacists (CPs) has undergone a significant transformation from primarily compounding and dispensing medicines to delivering pharmaceutical care [1, 2]. This entails taking the responsibility for the effectiveness and safety of pharmacotherapy by providing services such as disease and medication management [3], and adherence and life style counselling [4, 5].

This shift in focus requires reorientation regarding the required professional competencies [6]. While pharmacists have some experience in providing consultations (e.g. over-the-counter consultations or medication reviews) [7, 8], they are primarily trained in medication counselling in the context of the dispensing process. They are less prepared for patient-centred communication and shared decision making in the context of a professional consultation, such as physicians [9][10].

In several countries pharmacists are now undergoing training in patient-centred communication [11, 12]. In England, the NHS Community Pharmacist Consultation Service (CPCS) was launched to equip pharmacists with the skills required for patient-centred consultations, with focus on advice rather than the provision of an over-the-counter (OTC) product [12]. In the Netherlands, recently a consultation guideline, based on the Calgary-Cambridge model, was published by the Royal Dutch Pharmacist's Association (KNMP) [13]. This model provides a structure for the consultation process, from clarifying the patient's care demand, to formulating advice and recommendations [14].

The Calgary-Cambridge model was also used to train pharmacists who participated in a new pharmacy service, called CombiConsultation. This is a consultation with the community pharmacist (CP) for patients with diabetes, COPD and / or CVD, aligned with the consultation with the practice nurse or general practitioner [15]. This service has been developed to better integrate the pharmacist into the chronic disease management program [15]. In this consultation, CPs focus on setting personal goals for 1 or 2 health-related complaints related to the medication of a specific chronic condition (COPD, DM, CVD).

The aim of this study is to investigate how pharmacists apply the Calgary-Cambridge model in their CombiConsultations with the patient and to identify the content of these consultations.

METHODS

Study design

In this qualitative study we systematically analysed the structure and content of consultations by pharmacists within a prospective non-randomised study assessing the implementation of the 'CombiConsultation'.

Setting

The larger 'CombiConsultation' study was performed in 21 community pharmacies in the Netherlands. A total of 834 CombiConsultations were conducted. The median number of consultations per pharmacy was 29 (range 2-106) [16].

These CombiConsultations were performed by a CP aligned with the consultation with a practice nurse (PN) or general practitioner (GP) and consisted of three steps: 1. Medication check, 2. Implementation and 3. Follow-up. The CP focused on potential health-related complaints related to the patient's chronic condition (in this study either Diabetes, (risk of) Cardiovascular disease (CVD) and/or Chronic Obstructive Pulmonary Disease (COPD)) and identified drug related problems (DRPs) [15]. Prior to the consultation, the patients completed a questionnaire to prepare for the consultation which focused on possible medication-related problems.

Training

As part of the participation all pharmacists received 3 half days of interactive training in patient-centred consultation in the first half year after the start of the CombiConsultation study. All pharmacists from the 24 involved pharmacies took together part in the initial half training day. During the second and third half training days, the participants were divided into two groups (approximately 10-12 pharmacists per training). They were introduced to the Calgary-Cambridge model [13, 17] and learned how to apply it, emphasizing the pursuit of the patient's individual goals. By participating in collaborative role-playing, a safe practice space was provided to simulate real life scenarios. Prior to the second and third training day, pharmacists were asked to make a video recording of a consultation with a patient. During the training, fragments selected by the pharmacist were viewed and evaluated with the participants. The training sessions took place in the first half year of the study and the recordings were made in this period.

Instruments

The Calgary-Cambridge model highlights the essential steps within the consultation and is linked to the Calgary-Cambridge Guide (CCG), which describes the necessary communication skills in more detail [12]. An observation guide, based on the CCG, was

used to analyse how CPs applied the structure. The research tool MEDICODE was used to investigate the content of the consultations.

Observation guide

Audio fragments were analysed and scored with an observation guide, based on the guide described by Greenhill et al. which specifically focuses on pharmacists [18]. The observation guide consists of 5 areas from the adapted Calgary Cambridge model: I. Initiating the session, II. Gathering Information III. Providing structure to the consultation, IV. Explanation, advice and decision and V. Closing the session. Each area is associated with specific skills that are elaborated upon in 40 items (table 2). To align with the investigators aim, VM and MH omitted items were not focused on the conversation's structure (like (nonverbal) communication skills, including the area 'building a relationship'). A third researcher with communication research experience, MV, resolved uncertainties through discussions. The research group approved the adjusted observation guide. Four items relevant for the structure of the CombiConsultation had been added to the guide by the researchers. These items are marked with an asterisk in table 2.

MEDICODE

The research tool MEDICODE was used for content analysis of the consultation with the pharmacist regarding medication [19] and has been successfully used for consultations by various healthcare providers, like physicians, nurses and pharmacy technicians [20, 21].

The MEDICODE is divided into 4 areas: 1. General information (focus on the patient's views and attitudes about the medication), 2. Knowledge of the drug (focus on the expected (side) effect of the medication), 3. Discussion of prescription (focus on the practical use of the prescribed drug), 4. Effects of the drug (focus on the experienced (adverse) effects of the medication). For this research, 'physician' has been replaced by 'pharmacist' and area 3 was adjusted to 'Discussion of the prescribed medication' considering that multiple medications are typically discussed during the CombiConsultation.

Data collection

All CPs who participated in the CombiConsultation study were requested to record five consultations with patients. Out of 21 participating pharmacies 16 CPs agreed to record consultations using an iPad, with each CP recording 1 to 9 consultations. Videos that did not contain a full consultation were excluded. To maintain consistency in the number of consultations per pharmacist, a maximum of two randomly selected consultations were included. Consultations were recorded between January 2017 and July 2019. The recordings were stored on a secured server, accessible only to the

principal investigators. Patients were not visible in the recordings. Pharmacists gave informed consent to use the video for research purposes. Patients were verbally asked for consent at the beginning of the recording.

Data analysis

Application of the observation guide

Items of the observation guide were first independently scored by 2 researchers (VM and IA) on a 4-point Likert scale: 1. Not executed, 2. Partly executed, 3. Largely executed and 4. Fully executed. Scores 1 and 2 were considered as insufficient and 3 and 4 as sufficient (Table 1). Differences and uncertainties were resolved by consensus through discussion with a third researcher (SvL).

Content analysis

NVivo qualitative data analysis software (version 12 pro, QSR International) was used for content analysis of the audio of the consultations. VM and IA linked the fragments of discussions on medication to the coding of MEDICODE (Table 3). During analysis, codes were added when they were relevant for the content of the CombiConsultation, but were missing in MEDICODE. These items are marked in Table 3. This table shows the frequency of discussions about the item across the total of 24 consultations. Also the duration of these items have been measured to ascertain the percentage of the consultation dedicated to a specific item. Since some fragments were related to two items, the duration of the items was divided by the total time of all items (and not by the total duration of the consultations). The codes 'medication named', 'class named' and 'medication (general) mentioned' were included in Table 3, but excluded from further analysis (percentage of MEDICODE topics and Top 10 of MEDICODE items). In contrast to the medical consultation, the conversation with the pharmacist takes a pharmaceutical perspective, leading to a continuous discussion of these items. Including these items in the analysis of the duration of these fragments may introduce bias as a result.

ETHICS AND CONFIDENTIALITY

This study was exempted from formal medical ethical approval by the Medical Ethical Committee of the University Medical Centre Utrecht (METC protocol number 17-873/C) and the research protocol was approved by the Institutional Review Board of UPPER, Division of Pharmacoepidemiology and Clinical Pharmacology, Utrecht University (UPF1706; January 2018). All participating CPs and patients gave informed consent. Videos were used for training purposes only and afterwards converted into audio fragments for further analysis. Audio fragments were coded and stored on a secure server.

RESULTS

Eight pharmacists had provided one consultation and eight pharmacists had provided at least two consultations (of which two per pharmacist were used for analysis), resulting in a total of 24 consultations that were scored using the observation guide based on CCG and the coding list of MEDICODE.

The work experience of the 16 CPs ranged from 2 to 23 years (mean 13 years) (table 1). The duration of the 24 consultations ranged from 6 minutes to 43 minutes (mean 20 minutes).

Table 1. Demographic data

Pharmacy	Pharmacist	Years of experience	Area of pharmacy	Clinical setting of CombiConsultation
1	A.1	7 years	Urban	Pharmacy and GP practice
2	B.1	21 years	Urban	GP Practice
3	C.1	8 years	Urban	Pharmacy and GP practice
4	D.1	23 years	Rural	Pharmacy
5	E.1	16 years	Urban	Pharmacy
	E.2	13 years		
6	F.1	21 years	Rural	GP Practice
7	G.1	14 years	Rural	GP Practice
8	H.1	4 years	Urban	GP practice
9	I.1	13 years	Urban	GP practice
10	J.1	5 years	Urban	GP practice
11	K.1	12 years	Urban	GP Practice
12	L.1	13 years	Urban	GP Practice
	L.2	4 years		
13	M.1	2 years	Urban	Pharmacy
	M.2	23 years		

Application of the Calgary-Cambridge model

On average, 73% of the items of the observation guide were scored as sufficiently executed by the pharmacists. The results showed that the CPs frequently used the skills from all areas of the guide (table 2).

Area1: Initiating the session

CPs generally initiated the consultation by identifying the patient's problems or concerns using appropriate opening questions in 22 out of 24 consultations. Asking patients to complete a questionnaire, which prompted patients to reflect on their questions and concerns before the consultation, facilitated this particular aspect.

CP M.2: 'You have completed a questionnaire. Do you have any other questions in advance? Or shall we look at this [the questionnaire] first?'

CPs also were able to encourage patients to tell the story of their problem(s) (23 out of 24 sufficient). However, the CPs encountered more difficulty with the item 'Negotiating the agenda taking both patient's and pharmacist's needs into account' (8 out of 24 sufficient).

CP A.1: 'You already indicated that you prefer as few [pills] as possible, but do you have any further questions?'

Area II. Gathering information

The CPs actively determined and appropriately explored the patient's ideas, concerns, expectations and effect in most consultations (respectively in 22, 23, 17 and 19 out of 24 sufficiently):

CP J.1: '...and that pain score of 2, as you indicate now, would that be acceptable to you?'

CP K.1: 'You just said, "they [the medicine] work well for me", what exactly do you mean by that?'

CPs tended to allow patients to broadly express themselves, but at times patients diverted from the topic causing a loss of focus of the consultation. CPs then faced difficulty in redirecting the conversation and retrieving relevant information for each problem. This resulted in lower scores for: 'Delay addressing multiple problems and return to them later', 'Establishes dates and sequence of events' and 'Periodically summarises to verify own understanding of what the patient has said' (respectively in 3, 12 and 10 out of 24 sufficiently). Some CPs were more skilled in this aspect:

Patient starts talking about brand changes and how frustrating that is.

CP D.1: 'I will keep that in mind, I promise you. Furthermore, you use a lot of medicines for (...), but you prefer to use fewer pills.'

These skills are also related to structuring the consultation and connect with the next area 'providing structure'.

Area III. Providing structure

Most consultations had a logical sequence, however, CPs had difficulty with summarising at the end of a specific topic to confirm understanding before moving on to the next section (8 out of 24 sufficient). An example where this was applied:

CP K.2: 'So if I understand correctly: you always take them in the evening and you sometimes forget those in the morning?'

Their lack of time management skills is apparent as they frequently got engaged in consultations that surpassed the recommended time limit of 15-20 minutes.

Area IV. explanation, advice and decision

The use of skills within the 'Explanation, advice and decision' section is vital to address the patients' concerns and questions. These skills were frequently used by the CPs. CPs experienced difficulties with making the information easier for the patient to remember and understand (Table 2, Skill IVB). Pharmacists had no difficulty with providing the correct amount and type of information. An example of giving information in manageable chunks and checking for understanding (23/24):

CP and patient discuss the reason for using a proton pump inhibitor:

CP G.1: 'This applies to every medicine: why use it if you don't have to? And if you need it to protect the stomach, do you really need this dosage or could it be less?'

P: 'You're right, maybe less would be fine.'

CP G.1: 'What if I discuss with the PN: Let's try if half of the dose is also ok. How would you feel about that?'

P: 'If only I could change it back if this goes wrong.'

CP G.1: 'Of course. You are now taking 40mg. We can try 20mg. Worst case scenario, it doesn't work and you can take two [tablets].'

P: 'That is fine by me.'

The timing of providing explanations and advice is crucial for enhancing patients' comprehension and retention of information. Almost all CPs delivered explanations at suitable moments during consultations (23/24). Within the skill IVB 'Aiding accurate recall and understanding', in only 9/24 of the consultations the information was sufficiently repeated and summarized and in 7/24 of the consultations CPs sufficiently

checked the patient's understanding of information given. Nevertheless, the results showed that CPs were able to develop a logical sequence for explanation (24/24):

CP J.2: 'Do you notice the effect [of the inhaler]?'

P: *'I have the impression that most of the medicine remains in the aerochamber'*

CP J.2: 'How do you use it?'

Patient shows

CP J.2 checks and explains:

- whether the patient has sufficient strength to inhale
- the number of repetitions of inhalation
- and that the aerochamber should not make any noise

The focus of the consultations was setting a personal goal together with the patient. It concerns a patient-important goal, related to his health or medication, for example reducing the number of drugs in use, reducing constipation or reducing muscle cramps. Therefore, pharmacists were trained in asking patients about health-related complaints. However, goal setting was rarely applied explicitly during the consultations ('Formulates a patient-specific health-related goal' (5/24)). Although, it corresponds to the frequently performed items 'Explores management options' (21/24), 'Negotiates a mutually acceptable plan' (resp. 23 and 21/24) and 'Determines whether the health related complaint could be medication-related and shares this with the patient' (22/24).

The Patient indicates that he often experiences muscle cramps, which is very annoying for him.

CP E.2: 'Shall I suggest that [switching the statin] to the doctor? To see if it has an effect on the muscle cramps? It would be desirable if you only suffer from this [muscle cramps] once a week. Would that be acceptable?'

P: *'Yes, that would be a lot less often.'*

CP E.2: 'We'll write that down as a goal and let's see if we can make it a lot more pleasant for you with a small adjustment to your medication.'

CPs were able to reach a shared understanding: taking into account the patient's perspective. They scored high on the item 'Elicits patient's beliefs, reactions and feelings regarding information given, terms used' (23/24):

CP M.2: 'You say reduce the number of drugs (...) we can stop the hydrochlorothiazide on a trial basis and evaluate the blood pressure (...) that would be one tablet less for you, how do you feel about that?'

Also, items regarding Skill IVD ‘shared decision making’ scored high. However, checking with the patient, especially whether the concerns have been addressed, only takes place in 14/24 of the consultations. The item ‘Shares own thinking as appropriate’ was scored sufficiently during all consultations:

The patient indicates that, according to the specialist, he may also stop taking the tablets for a while. However, he hasn’t tried that yet. The pharmacist shares his concerns about this:

CP G.1: *‘I’m just wondering if this is the right moment [to quit on a trial basis], because I hear you say you’re still experiencing quite a bit of discomfort.’*

V. Closing the session

The results showed that within the area ‘Closing the session’ a number of items scored noticeably lower: in only 2 out of 24 of the consultations the CPs scored sufficient on providing safety nets and explaining possible unexpected outcomes’ and in only half of the consultations CPs discussed the option of a follow-up. CPs did demonstrate that they reached agreement with the patient regarding follow-up steps for patient and pharmacist (22/24):

CP F.1: *‘You say: I am going to try that. What will you do extra to get those last kilos off?’*

P: *‘Walk more often’*

CP F.1: *‘So, more exercise’*

P: *‘Yes, more exercise’*

Table 2. Adapted Calgary-Cambridge observation guide

Area	Skill	Item	Number of consultations (n=24)			
			Insufficient		Sufficient	
			1. Not executed	2. Partly executed	3. Largely executed	4. Fully executed
I. Initiating the session	A. Identifying the reason(s) for the consultation	1. Identifies the patient's problems or the issues that the patient wishes to address with appropriate opening questions	0	2	6	16
		2. Confirms list and screens for further problems	2	5	6	11
		3. Negotiates agenda taking both patient's and pharmacist's needs into account.	6	10	6	2
		4. Encourages patient to tell the story of the problem(s) from when first started to the present in own words	0	1	2	21
II. Gathering Information	A. Exploration of patient's problems	5. Clarifies patient's statements that are unclear or need amplification	0	2	6	16
		6. Delay addressing multiple problems and return to them later.*	16	5	2	1
		7. Periodically summarises to verify own understanding of what the patient has said; invites patient to correct interpretation or provide further information.	9	5	6	4
		8. Establishes dates and sequence of events	3	9	5	7

Table 2. Continued

Area	Skill	Item	Number of consultations (n=24)			
			Insufficient		Sufficient	
			1. Not executed	2. Partly executed	3. Largely executed	4. Fully executed
B. Information and research, exploring complaints, daily activities and medication		9. Discuss whether the patient feels limited in daily activities due to medication or illness*	1	3	6	14
		10. Discuss medication: Ask about usage problems and time of administration	0	1	4	19
		C... Additional skills for understanding the patient's perspective				
III. Providing structure to the consultation	A. Making organisation overt	11. patient's ideas (i.e. beliefs re cause)	1	1	5	17
		12. patient's concerns (i.e. worries) regarding each problem	0	1	9	14
		13. patient's expectations (i.e., goals, what help the patient had expected for each problem)	2	5	6	11
		14. effects: how each problem affects the patient's life	0	5	7	12
		15. Summarises at the end of a specific line of inquiry to confirm understanding before moving on to the next section	11	5	4	4

Table 2. Continued

Area	Skill	Item	Number of consultations (n=24)			
			Insufficient		Sufficient	
			1. Not executed	2. Partly executed	3. Largely executed	4. Fully executed
	<u>B. Attending to flow</u>	16. Structures interview in logical sequence	0	2	9	13
		17. Attends to timing and keeping interview on task	1	5	5	13
IV. Explanation, advice and decision	<u>A. Providing the correct amount and type of information</u>	18. Determines whether the health related complaint could be medication-related and shares this with the patient *	0	2	5	17
		19. Formulates a patient-specific health-related goal (SMART) *	12	7	4	1
		20. Chunks and checks: gives information in manageable chunks, checks for understanding	0	1	6	17
		21. Assesses patient's starting point: asks for patient's prior knowledge early on when giving information, discovers extent of patient's wish for information	0	2	5	17
		22. Gives explanation at appropriate time	0	1	0	23
	<u>B. Aiding accurate recall and understanding</u> (Aims: to make information easier for the patient to remember and understand)	23. Organises explanation: develops a logical sequence	0	0	3	21

Table 2. Continued

Area	Skill	Item	Number of consultations (n=24)			
			Insufficient		Sufficient	
			1. Not executed	2. Partly executed	3. Largely executed	4. Fully executed
		24. Uses repetition and summarising to reinforce information	9	6	3	6
		25. Checks patient's understanding of information given (or plans made): e.g. by asking patient to restate in own words; clarifies as necessary	9	8	5	2
	<u>C. Achieving a shared understanding: incorporating the patient's perspective</u>	26. Relates explanations to patient's perspective: to previously elicited ideas, concerns and expectations	0	3	4	17
		27. Elicits patient's beliefs, reactions and feelings re information given, terms used	0	1	6	17
	<u>D. Planning: shared decision making</u>	28. Shares own thinking as appropriate: ideas, thought processes, dilemmas	0	0	5	19
		Involves patient:				
		29. offers suggestions and choices rather than directives	0	3	4	17
		30. Explores management options	1	2	6	15
		31. Ascertains level of involvement patient wishes in making the decision at hand	0	4	5	15

Table 2. Continued

Area	Skill	Item	Number of consultations (n=24)			
			Insufficient		Sufficient	
			1. Not executed	2. Partly executed	3. Largely executed	4. Fully executed
		Negotiates a mutually acceptable plan:				
		32. Signposts own position of equipoise or preference regarding available options	0	1	3	20
		33. determines patient's preferences	0	2	6	16
		Checks with patient:				
		34. if accepts plans	0	4	4	16
		35. if concerns have been addressed	3	7	7	7
V. Closing the session	A. Forward planning	36. Contracts with patient re next steps for patient and pharmacist	1	1	5	17
		37. Safety nets, explaining possible unexpected outcomes, what to do if plan is not working, when and how to seek help	18	4	1	1
	B. Ensuring appropriate point of closure	38. Summarises session briefly the health related problems, personal goals and clarifies plan of care	4	5	4	11
		39. Final check that patient agrees and is comfortable with plan and asks if any corrections, questions or other issues	3	1	3	17
		40. Discuss the options of a follow-up	11	1	1	11

* Added by the researchers

Content of the consultations

All four areas of MEDICODE (General information, Knowledge of the drug, Discussion of the prescribed medication and Effects of the drug) were addressed during 21 of the 24 CombiConsultations (Table 3). Area 2 was not discussed in 3 out of 24 consultations. Since conditions/complaints and lifestyle were frequently mentioned during the consultations, these topics were also coded to assess the percentage of the consultation dedicated to discussing them.

Figure 1 illustrates that most of the consultation time is dedicated to topics within area 1. 'General information' and 3. 'Discussion of the prescribed medication'. The latter also includes 'Medication-usage (issues)', on which most time was spent during all consultations combined (figure 2). Following closely is 'Control of problem' (feeling that the condition is under control with the medication / benefiting sufficiently from the medication) (figure 2). This aligns with the findings presented in table 3, indicating that these topics are addressed in nearly all consultations (respectively, 22 and 21 out of 24).

Within the total duration of the 24 consultations, medication-related items (MEDICODE) were discussed for 71% of the time, 23% concerned conditions and complaints and 6% concerned lifestyle.

Table 3. Number of consultations in which MEDICODE item occurs (n=24)

MEDICODE Item	Number of consultations
1. General information	
Medication named	22
*Medication (general) mentioned	21
Attitudes toward medication	16
Class named	16
Pharmacist asks patient's opinion of medication	14
Patient asks pharmacist questions about medication	14
Alternative medication brought up	10
Concerns regarding medication	8
Objections regarding medication	8
Strength of medication	6
*Self-care medication discussed	6
Doubt about effect of medication	1
2. Knowledge of the drug	
Possible adverse effects of medication	16
Action of the medication	10

Table 3. Continued

MEDICODE Item	Number of consultations
Expected effect on symptoms	9
Drug interactions	3
Value of the medication, studies/evidence	3
Contraindications of medication	2
Pharmacist asks about allergies/intolerance to medication	0
Timeframe for expected effect	0
3. Discussion of prescribed medication	
Medication-usage issues	22
Compliance problems	16
Adjustment of dosage	8
Solutions for compliance	5
Form of medication	5
Instructions for the medication (dosage)	4
*Delivery problems / brand change	4
Reasons for taking medication	4
Cost of medication	3
Pharmacist questions compliance with medication	2
Pharmacist recommends medication only if needed	2
Duration of treatment	2
Reasons against taking medication	2
Consequences of non-compliance	1
Pharmacist asks for patient's commitment	0
4. Effects of the drug	
Control of problem	21
Observed adverse effects	13
Observed effects on symptoms	4
Indication another consultation needed	1

* Added by the researchers during analysis

Structure and content of the consultation by the pharmacist during a CombiConsultation

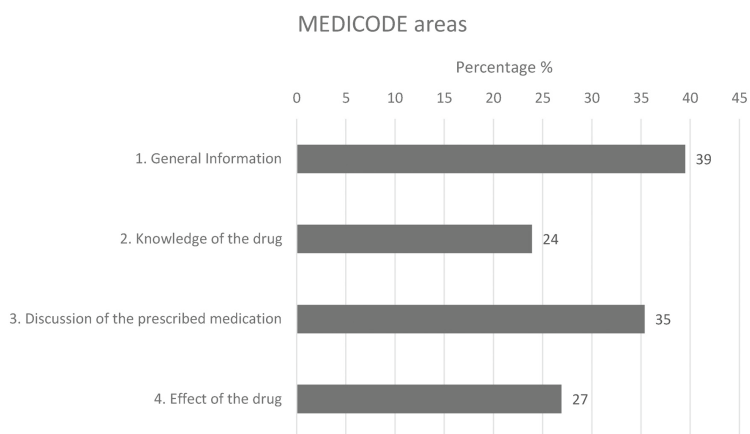


Figure 1. Average percentage of time spent on the particular MEDICODE area in 24 consultations

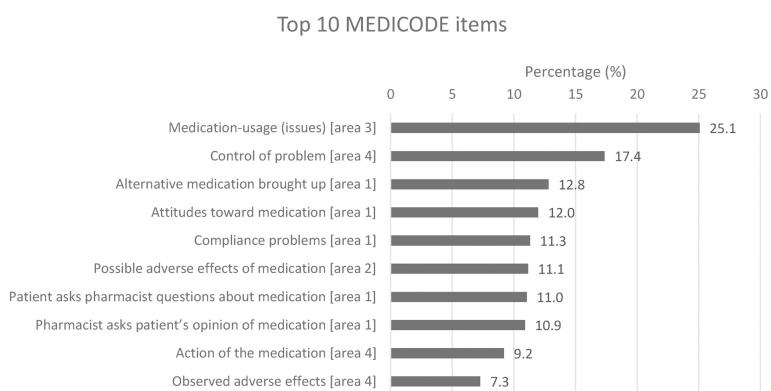


Figure 2. Percentage of time spent on the top 10 MEDICODE items compared to total time spent on MEDICODE items in 24 consultations

DISCUSSION

This study demonstrates that after training, CP's generally show adequate consultation skills. The majority of the consultations adequately covered most sections of the observation guide. Pharmacists were able to identify the patient's problems or issues, however, they often failed to explore this in more depth. Additionally, the consultation topics 'summarizing', 'checking patient understanding' 'goal setting' and 'providing safety nets' were often inadequately performed by the pharmacists. A substantial part (71%) of the consultation time was allocated specifically to addressing issues related to medication.

The study reveals a consistency between the results of the content analysis and the structure analysis: The trained model ensures that pharmacists inquire about the patient's complaints and understand their perspectives. This resulted in consultations that encompass not only medication but also patient's beliefs related to their condition/complaints. This emphasis is reflected in the content analysis, with approximately 23% of the time dedicated to conditions/complaints. Focus on the patient's perspective is also reflected in the content analysis on medication: both 'Attitude towards medication' and 'Pharmacist asks patient's opinion of medication' appeared in the top 10 of discussed topics of the MEDICODE. One of the key elements of patient-centred communication is 'eliciting and understanding patient perspectives', making patients become more actively engaged in their own healthcare [22]. However, although the concerns were often identified by the pharmacist, they were not consistently explored in greater detail. Pharmacists resorted to primarily discussing the used medication and providing information about it. These findings are in line with the results of the implementation study 'The CombiConsultation', which focussed on setting personal health-related goals. In only 40% of the consultations one or more goals were set.

In the current study, 'Medication-usage (issues)' has been observed in nearly all consultations and most time has been spent on this item. Also, discussions regarding "Compliance problems" were frequently observed. It is important to acknowledge that pharmacists possess extensive knowledge in these areas, and patients likely have expectations regarding their pharmacists' expertise in these matters. These results also align with the significant identification of DRPs in the intervention study (in 71% of the consultations, at least one DRP was found) [16].

There are still several areas that require attention and improvement. Related to 'gathering information' and 'providing structure': during CombiConsultations, patients often want to discuss multiple complaints/concern and CPs tend to address these instantly, without prioritizing first. This often leads to the consultation exceeding the

originally allocated time and causes pharmacists to deviate from the conversation's structure. In addition, they often do not summarize before moving to a new section. Improving these skills can also help to keep focus and to reinforce information (easier for the patient to remember and understand).

Other items that need attention were 'Checking if concerns have been addressed' and 'Discussing safety nets' (explaining possible unexpected outcomes, what to do if plan is not working, when and how to seek help). Despite the fact that it was not applicable in every consultation, like when the patient is referred to the PN/GP and there is no immediate intervention, it was frequently inappropriately omitted. For instance, when a pharmacist offers readily applicable advice, there is often a lack of discussion regarding what steps the patient should take if the advice does not yield satisfactory results.

Even though pharmacists generally applied the taught Calgary-Cambridge model, additional training may be required to improve the skills mentioned in the observation guide (table 2), like summarizing, negotiating the agenda, goal setting and safety netting. Cleland et al. reported that pharmacists found training in consultation skills useful, especially new areas such as structuring the consultation and eliciting patients beliefs. However, pharmacists found it difficult to implement these skills in practice [23]. Hazen et al. developed a 14 months training program for the non-dispensing pharmacist, with a specific emphasis on training in conducting consultations, including applying communication skills and adding structure to the consultation. Pharmacists learned by reflecting on their experiences by evaluating at least 20 video-recorded patient consultations [24], indicating that acquiring these skills requires substantial dedication and effort. Despite the fact that the participating pharmacists in our study already have a lot of experience with conducting consultations, they can also derive benefits from additional training in this area [12]. The revised curriculum in pre-graduate pharmacy education in The Netherlands places a greater emphasis on consultation skills, potentially resulting in better-trained pharmacists among the new generation. Although pre-graduate education in consultation skills is valuable, post-graduate education is necessary to bridge the gap between theoretical knowledge and practical application (mainly intended for pharmacists who haven't graduated recently) and to address the complexities of patient diversity [12, 26].

The research tool MEDICODE was used for content analysis. MEDICODE is developed for analysis of discussions about medication during medical consultations, which often concerns a specific (newly prescribed) medicine. This differs from the content of the CombiConsultation, which focusses on complaints and concerns related to the medication that has been in use for some time (often polypharmacy). However, with some adjustments, MEDICODE was able to reflect the content of the consultation.

Given the design of the CombiConsultation and the related training for pharmacists, it was expected that a significant part of the consultation would involve 'complaints'. It is notable that 'Lifestyle' was regularly mentioned; a subject that is attracting increasing attention from pharmacists [27]. Van der Molen et al. report that pharmacist-led disease education (like awareness and risk prevention) may simultaneously emphasize the benefits of lifestyle interventions [28], which is also observed in the present study.

Strengths and limitations

A strength of this study is the high percentage of participating pharmacists, resulting in diversity of consultations. Another strength is the use of an existing and widely applied consultation model and coding instrument for analysis. This also confirmed a consistency between the outcomes derived from both methodologies. Some limitations of this study should be considered. First, the pharmacists mainly recorded the videos at the beginning of the study, when they were still inexperienced in performing CombiConsultations. On the other hand, it is likely that they still retained the information quite well so soon after training. Second, in order to include as many consultations as possible in the study, it was decided to include different numbers of consultations (one or two) per pharmacist. And third, the items on communication skills, like nonverbal communication, have been omitted from the observation guide, because we focused on the structure and content of the consultation. However, to improve performing consultations, all communication skills should be included. Therefore, further research could focus on all communication skills of the pharmacist, including non-verbal communication skills, as these are inextricably linked to conducting consultations [25]. For this purpose, it is preferable if the patient is also included in the videos.

CONCLUSION

This study showed that CPs are generally able to adhere to the taught Calgary-Cambridge model, although a number of items require attention. CPs discuss the patient's complaints and concerns, but often revert to their familiar task of providing information about the medication in use.

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Chapter 5

General Discussion



Authorship statement

I wrote the first draft of the text after a discussion with my supervisors on the subjects and arguments to be included. During the whole process I asked for and implemented input and feedback from my supervisors.

GENERAL DISCUSSION

Main findings of the CombiConsultation study

In this thesis, we evaluate the implementation of the new clinical pharmacy service 'The CombiConsultation' aimed to optimize pharmacotherapy in patients with a chronic condition. We give an introduction of the concept of the CombiConsultation and compared it to the Clinical Medication Review (CMR). The CMR is the most frequently used medication monitoring service. CMRs are most often conducted for older patients with polypharmacy which limits the access of younger patients with only 1 or 2 chronic conditions. The quality of collaboration between healthcare providers in the CMR varies and is strongly associated with the implementation rate of recommendations aimed at solving drug related problems (DRPs) [1].

In the Netherlands, practice nurses (PNs) are responsible for disease management for patients with Diabetes Mellitus (DM), chronic obstructive pulmonary disease (COPD), (risk of) cardiovascular diseases (CVD), as well as mental healthcare and care for the elderly. The primary healthcare system is generally adequately organized for addressing these chronic diseases, but comprehensive medication management is still a challenge. Although most healthcare providers consider diabetes care to be efficiently organized in multidisciplinary collaboration, some expressed the need for involvement of other professional groups, such as pharmacists [2].

To address these limitations, we proposed a new clinical pharmacy service. The CombiConsultation consists of a concise consultation (medication check) by the community pharmacist (CP) for patients with a specific chronic condition, such as DM, COPD and/or (risk of) CVD in collaboration with a PN or general practitioner (GP). It is ideally conducted in or nearby the general practice, with a specific focus on addressing 1 or 2 health-related problems and setting goals together with the patient. It is designed for patients above 18 years old who are taking at least one medicine (Chapter 2).

In this thesis we report the findings of the prospective intervention study 'The CombiConsultation for patients with diabetes, COPD and cardiovascular diseases', which demonstrate that the CombiConsultation contributes to safe and effective use of medication for patients with these conditions. In 71% of the patients, pharmacists identified one or more DRPs and successfully implemented 72% of the recommendations aimed at solving these DRPs. On average 1 DRP was identified during a CombiConsultation (15-20 minutes) [3-5]. At least one personal health-related goal was set together with the patient in almost half of the CombiConsultations, and more than half of these goals were (partially) attained (Chapter 2).

In Chapter 3 of this thesis we present the barriers and facilitators for successful implementation of the CombiConsultation by healthcare providers and the acceptability of the intervention for patients. Although the CombiConsultation is a promising intervention to improve safety and effectiveness of pharmacotherapy and a more clinical role of the pharmacist is supported by GPs, PNs, patients and pharmacists themselves, several prerequisites were defined. An existing collaboration with general practice, with a defined and accepted professional role of the pharmacist is essential for implementation. There was a high agreement in the perspectives of the healthcare providers about the other prerequisites for successful implementation of the CombiConsultation, such as training for pharmacists, reimbursement for consultations and good coordination between healthcare providers. Also, it is crucial to ensure that patients have a clear understanding of the precise role of the pharmacist, as well as their position in relation to the GP and PN.

Regarding communication skills, we show that, after limited training, CPs are generally able to adhere to the structure of the Calgary Cambridge communication model. Some skills, such as exploring the patient's problem in more depth can be further improved (Chapter 4).

In this chapter we will discuss the context, outcomes and consequences of our research. We will focus on the value of the CombiConsultations' characteristics and what this means for further implementation of this service. We will also put the CombiConsultation in a broader context, with an emphasis on interprofessional collaboration, clinical reasoning and the consultation skills of pharmacists.

The design of the CombiConsultation compared to the CMR

The CombiConsultation was designed with a number of characteristics that distinguish it from a CMR, like the focus on a single specific condition, the link to the consultation with the PN/GP, the focus on 1-2 health-related complaints, the relatively short duration of the consultation and the setting in the GP practice.

The consultation was purposely designed because it was expected to facilitate the effectiveness of this new pharmacy service and would ultimately increase the likelihood of implementation. However, this thesis also shows that the design of the CombiConsultation is not always feasible and some characteristics may not even be necessary. In this paragraph we will discuss the characteristics of the CombiConsultation with the insights we obtained from the research.

Target population

The CombiConsultation was designed for patients >18 years old, with a chronic disease and at least 1 type of medication. In our study the participating patients were on average 69.5 years old (SD 10.1). This is lower than the advised minimal age of patients (>75 years) according to the currently applicable standard CMR guideline in the Netherlands for patients that should primarily obtain a CMR [8]. The number of chronic medicines in use for participants of the CombiConsultation was on average 5.9 (SD 3.1) (Chapter 2). This is also lower than the recommendations of the CMR guideline to include primarily patients with ≥ 10 chronic medicines or established frailty [8]. The average of 5.9 medications is still relatively high but this is inherent to chronic diseases, which often require polypharmacy. Due to guideline directed treatment many patients with diabetes or cardiovascular risk management will be on a combination of antidiabetics, antihypertensives, antithrombotic and lipid lowering drugs. Maybe healthcare providers were also more likely to invite patients for a CombiConsultation when they were taking multiple medications to increase the chance of finding DRPs. However, the data also showed that in 61% of the patients with one or two chronic medications, DRPs were still identified (chapter 2). This indicates that a CombiConsultation can also be useful for patients with a limited number of chronic medications in use. Therefore, we think these patients should not be excluded. The CombiConsultation can also be used as a triage instrument to identify patients for whom a CMR may be needed, for example when multiple problems are identified that need to be addressed.

Although the CombiConsultation has been developed for patients with DM, COPD and (risk of) CVD, the concept can also be applied in other chronic diseases. In addition to being used in primary care, it can also be used in specialised outpatient care or secondary care. For example, a CombiConsultation could be helpful for chronic diseases that are primarily managed in secondary care, such as rheumatoid arthritis or Parkinson's disease. For these patient groups, interventions comparable to the CombiConsultation are already being performed in the Netherlands and may lead to better adherence and multidisciplinary cooperation [9].

Focus on health-related complaints

Focussing on personal health-related complaints followed by setting treatment goals in order to effectively address the patient's needs has been previously implemented in CMR [5,8]. It has been shown that specific attention to patients' individual health goals along with follow-up and monitoring of the suggested interventions leads to a higher implementation rate, improved quality of life and reduced the number of health-related complaints [10]. During the CombiConsultation, the pharmacist preferably focused on 1-2 health-related complaints of the patient in relation to their chronic disease (Chapter 2). Not all medicines needed to be discussed. This differs from a CMR, where normally

all medicines in use are discussed. However, despite the training in consultation skills, pharmacists often found it difficult to explore the identified problems or issues in more depth (Chapter 4). It is evident from the video recordings that some pharmacists are more focused on the medication (they elaborated especially on ‘technical’ aspects, such as correct intake and adherence), while others are more patient-centred, focusing on identifying health-related complaints and link goals to these. Moving towards more patient reported outcome measures (PROMs) has the advantage that it provides a more direct assessment of the impact on the patient’s well-being and that it encourages healthcare providers to prioritize what really matters to patients. Moreover, patient-centred care recognizes the patient’s experiences and promotes the involvement of the patients in their own care [11]. Therefore, we aimed to include PROMs during the CombiConsultation study by measuring goal attainment. Concurrently, intermediate and process outcome measures such as DRPs were used in order to compare the study results with existing literature in this area that often uses these outcome measures (Chapter 2).

In our qualitative work patients frequently indicated that they did not want to limit the CombiConsultation to discussing (problems related to) medication for one specific condition, but actually felt the need to be able to express concerns about any medication or conditions when relevant (Chapter 3). Patients expect that they can ask all medication-related questions to the pharmacist. If it is desirable to focus on a specific condition (and related medication), due to its connection with the consultation with the PN, this must be sufficiently explained to patients in advance.

Duration of the CombiConsultation

The CombiConsultation is, compared to a CMR, a less time consuming consultation. This enables pharmacists to provide consultations to a greater number of patients. The overall efficiency of the CombiConsultation compared to a CMR in identifying DRPs is only marginally lower: on average 3-4 DRPs are identified with a CMR (30-50 minutes) [3-5], compared to 1 with a CombiConsultation (15-20 minutes) (Chapter 2). This can be explained by the focus on only 1 or 2 complaints with a CombiConsultation. Although not all DRPs may be identified, it benefits from emphasizing what matters most to the patient.

Seventy-two percent of the recommendations to improve DRPs were implemented, which is on the higher end of implementation rates reported in literature with regard to CMR [1] (Chapter 2). This implies that a relatively short consultation can be at least as effective as longer consultation. Therefore, these short consultations certainly are interesting for clinical practice. If necessary, a CMR can still be scheduled when more issues arise during the CombiConsultation.

Setting

In the design of the CombiConsultation, the consultation by the pharmacist was preferably conducted in the general practice. Interprofessional collaboration is more effective when conducted in close proximity. This makes it easier to have face-to-face contact, will increase mutual trust in each other's expertise and acceptance of each other's roles. This will facilitate the integration of the pharmacist in the primary healthcare team and therefore also the swift implementation of recommendations, ultimately leading to better patient outcomes [12]. As observed in the interviews, collaboration in proximity among healthcare providers (like access to a consultation room in the general practice), has been shown to enhance mutual trust. However, mainly due to lack of physical space, the consultation with the pharmacist was not consistently conducted in the GP practice. CombiConsultations from the pharmacy proved also to be acceptable for both healthcare providers and patients (Chapter 3).

There were, however, also drawbacks of not being able to work in the GP practice. Pharmacists working from the pharmacy occasionally lacked access to medical data (Chapter 3). Pharmacists can make better decisions when they have access to medical information from the GP upon which they can base their decisions [13]. Therefore, access to medical data, including notes on diagnosis and laboratory results, is crucial for pharmacists to provide adequate care. As with any transfer of data between one healthcare provider to another, explicit permission must be requested according to the (Dutch) law. There is discussion as to whether a referral to the pharmacist also assumes that the patient implicitly consents to the exchange of data that is necessary for this referral [14].

Pharmacists who performed the consultations in the GP practice all had access to the GP information system (with explicit permission of the patient). This access facilitates communication with other healthcare providers, and the planning of consultations (through access to each other's appointment ledger). Online access to medical data from the pharmacy can be arranged, albeit slightly more challenging [15]. Further research can be conducted on how the setting influences the identification of DRPs and implementation of recommendations. These results are not reflected in the data of this study, since not all pharmacists were consistently conducting consultations from one setting.

Consecutive consultations

In the design of the CombiConsultation, the consultation with the pharmacist was supposed to be quickly followed by the consultation with the PN/GP to allow immediate implementation of the pharmacist's recommendations. In addition, this one-stop-shop principle could also be more convenient for the patient and lead to more continuity

of care [16]. However, this proved difficult to implement in practice and was therefore not been applied in every setting.

Despite the benefits of this design, both healthcare providers and patients seemed to attach little importance on consecutive consultations. The healthcare providers' objections were mainly focused on the planning of the consultations. Consecutive planning frequently met practical challenges. Due to different working hours, part-time work, inadequate staffing and lack of sufficient consultation rooms, consultations were not consistently scheduled consecutively (Chapter 3). This resulted in longer intervals between consultations with the CP and PN/GP. Patients did not have major objections to the time gap between the consultations, possibly due to the proximity of their pharmacy and GP practice in their neighbourhood which made it relatively easy to make two visits. Moreover, most participating patients were already retired and had little issues with making visits on different occasions (Chapter 3).

In the initial concept, the consultation with the pharmacist was scheduled first, allowing the PN/GP to immediately implement the recommendations in the following consultation. In daily clinical practice it turned out difficult to adhere to this order. Consultations were planned in both directions (first CP – than PN/GP and conversely) (Chapter 2). It seemed not that important in which order consultations were planned. Both alternatives have pros and cons. A consultation with the PN/GP could for example also raise questions for a later consultation with the pharmacist. Moreover, this order provides the pharmacist access to the most recent blood pressure values, as measured by the PN, and the patients are already informed about their most recent laboratory values (Chapter 3).

In conclusion it is preferable that the consultations occur within a limited period of time, however, consecutive consultations do not seem to be an absolute requirement. The preferred order depends mainly on the setting and the responsibilities of the PN and pharmacist.

Conclusion: should the design of the CombiConsultation be adapted?

The CombiConsultation can help addressing the specific needs of the individual patient with a chronic condition and enables reaching a large group of patients.

If the planning of consecutive consultations is feasible, for example because an assistant can fulfil this role, this is certainly valuable. However, if the burden on staff is excessive or planning too complex, it can also be planned with a time gap between the consultations. Linking the consultations (with or without this time gap) is valuable. The healthcare providers become more acquainted with each other and can complement

each other. To improve interprofessional collaboration, working in close proximity to each other and access to medical data is highly recommended.

Since DM, COPD and/or (risk of) CVD are among the most prevalent chronic conditions, for which existing disease management programs were in place, the CombiConsultation was linked to these conditions. However, focus on other chronic conditions is also possible. An efficient approach might involve the patient visiting the PN/GP for the check-up, and the PN/GP determining whether a referral to the pharmacist would be beneficial. This keeps the number of patients manageable. Thereafter, the pharmacist can arrange a second consultation (or CMR) if complaints/medication concerning another condition need to be discussed. The focus on health complaints, whether or not related to the chronic condition, is essential to meet the patient's wishes and thus maintain the patient's involvement in his treatment.

The CombiConsultation study has provided valuable insights in the feasibility and conditions for implementation of an additional clinical pharmacy service including a pharmacist consultation. With some adaptations, the CombiConsultation can be applied in clinical practice when it fits local situations. However, before large-scale implementation, its effects, pros and cons should be weighed against other developed concepts including pharmacist's consultations.

The CombiConsultation versus other pharmacotherapeutic services

The literature reported different models for involving the pharmacist in the care for chronic diseases.

A similar model to the CombiConsultation is the 'covisit': In this model, a pharmacist transitions one day a week from a conventional role to becoming an engaged team member in a primary care office at a health centre and patients are scheduled for both the pharmacist and the doctor on the same day [17]. Patients were selected for a covisit based on one or more of the selection criteria: 1) age (65 years of age or older) and due to an annual wellness visit; 2) complexity of care (uncontrolled chronic disease state); 3) number of medicine (>15 medications); or 4) use of high-risk medications. These visits consisted of education, goal setting, relationship building, and provider-approved medication adjustments while considering the patient's beliefs and values. The covisit model showed positive changes in clinical markers, like HbA1C and blood pressure [18]. The covisit model significantly increased accessibility, thus leading to an increased number of patients using this clinical pharmacy service compared to a referrals-based model (in which patients are referred by the doctor and must schedule an appointment with the pharmacist themselves). This does not seem to fully correspond to the results of the CombiConsultation study, where subsequent planning was actually a barrier.

Due to the structured approach (referral by the primary care team, planning by a medical assistant and help from a nurse), the covisit may have been easier to implement compared to the CombiConsultation.

Interventions in which pharmacists collaborate with the primary care team have shown considerable positive effects on several chronic diseases, including hypertension, dyslipidaemia and diabetes management [19]. In addition to the covisit model (which aligns most closely with the design of the CombiConsultation), there are also other models in which the pharmacist collaborates with the GP team to improve care for patients with a chronic condition [2, 18, 20-22], for example integrated disease management interventions for patients with COPD [20]. A systematic review of Milosavljevic et al. showed that interventions that involved community pharmacists working from their community pharmacy setting can contribute to improved adherence and improved disease management, like better blood pressure control, cholesterol management, COPD and asthma control. Interventions in which pharmacists operate in a clinical setting in collaboration with other healthcare providers show similar improvements in patients' medication-related health outcomes including a reduction in hospitalizations [23]. In a clinical setting, pharmacists can provide a range of clinical services that can improve patient outcomes and quality use of medications for patients with complex and chronic diseases [12, 24-26]. These different models have interprofessional collaboration in common, albeit in some settings more extensive than in other settings. Research into this collaboration showed that pharmacists significantly contribute to interprofessional care teams in assuring the accuracy of the drug therapy, resulting in improved patient outcomes, decreased hospital stays and healthcare expenditures [7, 27]. The results of the CombiConsultation confirm that collaboration among the healthcare providers is crucial for implementation of this service.

The methodology of the CombiConsultation study

Reflecting on the conducted study, several strengths and limitations come to light. First, the study was designed as an uncontrolled real world prospective intervention study. Due to the complex intervention, it was desirable to investigate the implementation in the different settings. It needs to be addressed that the study was designed without a control group. A randomized clinical trial, however, does not seem necessary and preferable here either. To date, many studies have been conducted demonstrating the added value of interventions by clinical pharmacists, so it seems not necessary to formally prove this again. It seems more important to investigate how this role can be normalized most efficiently and effectively. A design in which different settings with different approaches of consultations by the pharmacist in collaboration with other health professionals are compared, enhanced with qualitative research, seems therefore more appropriate.

The number of CombiConsultations performed (834) and the number of participating centres (21) in both urban and rural area was high, resulting in a diverse group of participating patients and settings which makes the results reliable. It is a strength that the consultations were patient-oriented, by focusing on personal health-related goals, in addition to the more obvious intermediate and process outcome such as DRPs. Also, in addition to the quantitative research, we have conducted various qualitative studies: the perspectives of healthcare providers concerning barriers and facilitators for implementation of the CombiConsultation, the acceptability of the intervention by patients, and the consultation skills of the pharmacist concerning the structure and content of the conversation.

Regarding the qualitative analyses with healthcare providers, we limited ourselves to the participants in the study, mainly forerunners in the field of patient care. It would have been desirable to survey a large group of non-participating pharmacists to identify additional barriers beyond the ones currently found. However, since experience with the intervention is crucial for evaluation, we had to limit ourselves to the perspectives of the healthcare providers participating in the study.

Application of the CombiConsultation in practice

This study demonstrated that the CombiConsultation can be used by pharmacists as a compact health service contributing to safe and effective use of medication for patients with DM, COPD and/or (at risk of) CVD. Nevertheless, the results show that achieving optimal implementation necessitates fulfilment of several conditions:

Organization

To implement the CombiConsultation efficiently, the planning of the consultations must be optimally organised. Therefore, appointing a person responsible for the planning is crucial. This could, for example, be assigned to an assistant of either the physician or the pharmacist. It is important that the pharmacist is fully available for consultations and cannot be distracted by other tasks (like medication surveillance, logistics and management). Also, clarity regarding the specific times for conducting consultations is essential (for example a specified day each week). Preferably a workplace must be arranged in the proximity of the GP practice and agreements must be made about access to medical data, taking privacy into account.

Training

The pharmacist is trained as a medication expert and plays a pivotal role in healthcare by ensuring the safe and effective use of medications. During the CombiConsultation study, the participating pharmacists were trained to focus on the patients' health-related complaints and to set personal goals together with the patient. However, the

results show that this did not occur in all consultations. Pharmacists were either unable to set personal health-related goals together with the patient or patients actually did not have any complaints. In addition, GPs were of the opinion that the consultation- and clinical-reasoning skills of pharmacists can be improved. To enable pharmacists to fulfil their care-providing role to the fullest extent and involving them more actively in the pharmacotherapeutic treatment of the patient, the development of these skills is key. Research regarding clinical and community pharmacists' roles shows there is a recognized requirement for enhanced patient communication skills that will enable pharmacists to actively engage patients in decision-making [28]. Additional training is therefore recommended.

Reimbursement

The CombiConsultation study also showed that insufficient reimbursement is a barrier for further implementation. If pharmacists could receive appropriate compensation for their consultations, they are more willing to expand this service. It is important to make agreements with the health insurer. This will be discussed further below.

Collaboration

This study into the CombiConsultation revealed that a good existing collaboration with the GP is a prerequisite for implementation and that subsequently implementation of the CombiConsultation further enhances collaboration (Chapter 3). Effective collaboration is attained through a well-defined delegation of roles and responsibilities and mutual trust [29]. When pharmacists structurally want to implement patient consultations for specific groups of patients, it is crucial to align this with the GP. GPs often have difficulty delegating tasks to other healthcare providers, like the pharmacist [30]. Therefore, it is desirable to discuss mutual expectations and make agreements about the role and responsibilities of the pharmacist, as well as the setting in which the pharmacist conducts the consultations (Chapter 3).

Patient selection

In this thesis the focus was on the CombiConsultation that took place in a specific group of patients with three common chronic conditions. These were selected due to their need for specialized care in primary healthcare and the presence of an existing disease management program. They are often accompanied by the use of medication, so linking the check-up to the consultation with the pharmacist can contribute to improving medication management for these patients. But CombiConsultations could also take place for other conditions or in other settings, especially for patients who are on chronic pharmacotherapy for these conditions. Consultations can also take place in response to patient questions or events such as a hospital admission or discharge or the start of a new medicine. Therefore we will discuss more generic aspects of pharmacists' consultations.

Sustainability and Future Directions: The future of clinical consultations by the pharmacist

The care-providing role of the pharmacist

In recent years, there has been a transformation in the role of community pharmacists, shifting from their traditional tasks focused on dispensing medications and product-oriented services to a patient-centred care providing role. Although the community pharmacist may be more involved in the patient's care, consulting with patients is not their core business [31]. What role can (or should) pharmacists assume in this domain? And how does this align with the role of the physician?

Challenges such as medication shortages, recalls, reimbursement issues, and understaffing frequently hinder pharmacists from dedicating structured time to other aspects [32]. This was also apparent during the implementation of the CombiConsultation. However, to structurally implement and normalize the provision of consultations it is crucial to allocate dedicated time for the pharmacist. Presently, pharmacists remain heavily engaged in their crucial responsibility of ensuring the availability of medicines [33]. One of the responsibilities of a pharmacist is to ensure that this is guided on the right path and that the patient is properly informed [34]. It is desirable to provide this guidance from the pharmacy, where patients can easily walk in and often know the pharmacy staff. While it may not be advisable to entirely disconnect the roles of care and distribution, it is worth exploring methods to alleviate pharmacists from logistical processes, at least periodically.

Untangling care from the 'web of logistics'

Streamlining logistical tasks, such as alleviating administrative burdens and addressing medication shortages, is essential, as these are time consuming and distract pharmacists from individual patient care. Regional collaboration may be the key to make logistics more efficient without losing feeling with the products. An example of this is the regional Dutch 'Hub and spoke' model, where the delivery of medicines to surrounding pharmacies (spokes) is organized from one central point (hub) [35]. Pharmacists who adopt this approach are able to create opportunities for further investment in the provision of pharmaceutical care such as conducting patient consultations from the GP practice for part of their time. Concurrently, it remains possible for the patient to visit a pharmacy nearby and to receive the desired guidance in using their medication, because technicians also have more time to deliver pharmaceutical care in this model. Also, it remains important that the distribution of medicines is not completely disconnected from patient care as short communication lines with other healthcare providers (e.g. around care transitions, drug changes, acute situations) is required. Moreover, it is crucial for pharmacists (and technicians) to be able to connect physically to a product to offer effective guidance and advice.

The pharmacist should leverage this very accessibility of the pharmacy to demonstrate his visibility. To empower the pharmacist to conduct consultations will also require reallocation of tasks within the pharmacy. For example, less qualified pharmacy employees could take over logistic tasks from the pharmacy technician enabling pharmacy technicians to take over tasks of the pharmacist. In addition, a critical look could be taken at tasks that could be executed by another professional (such as financial affairs). And finally 'de-implementation' should be considered of tasks that consume significant time while resulting in relatively minor outcomes, like the final check of (no complex) prescriptions [31]. Consequently, pharmacists can devote themselves to more complex pharmaceutical care. It should be noted that currently there is a shortage of employees who can take over these tasks [36], which limits the options for outsourcing and further emphasizes the importance of de-implementation and streamlining logistics processes in the pharmacy. Firstly, this requires a cultural change among pharmacists themselves, as not everyone may be willing or courageous enough to let go traditional tasks. Second, this requires willingness of other parties, because some time-consuming tasks of pharmacists are imposed by other parties such as insurers and the health care inspectorate.

Consultations on demand

Currently, a considerable number of community pharmacists conduct CMRs and, often as part of a specific project or research, other clinical pharmacy services, like consultations regarding pharmacogenetics or deprescribing. However, the organization of care differs significantly from that of other healthcare providers. Patients are often invited to these services by the pharmacist, whereas patients generally make appointments with other healthcare providers on their own initiative. Although the initiative for addressing the more 'invisible' risks will mainly remain with the pharmacist, it would be preferable if patients who chronically use medication would realise the importance of regular consultations with the pharmacist. Therefore it is key that patients know with which questions they can contact the pharmacist. Patients have some awareness of the pharmacist's role, yet there are opportunities to better educate the public on the knowledge, skills and unique professional abilities of pharmacists to encourage greater acceptance of expanded pharmacist services [37].

Ideally, the patient will receive care at a multidisciplinary health centre, where the patient will be referred to the appropriate healthcare provider through triage by the GP's assistant [38]. Also, patients can be referred by other healthcare providers, like the GP or PN. Considering other healthcare providers, consultations are primarily dictated by patient demand. To encourage pharmacists, they can start on a small scale by being available for consultations at pre-announced times. The pharmacy technician could assess whether a consultation with the pharmacist is necessary. By informing other primary care providers that they can refer patients to the pharmacist, patients

become familiar with these consultations. The patient can also be informed through various channels at local, regional and national level. The professional organization for pharmacists and health insurers can collectively communicate to patients the valuable services that pharmacists can provide. Currently, some patients may also be discouraged by the cost of a consultation with the pharmacists (because of deductible health insurance). This will be discussed further below.

Evolving Roles and Responsibilities

Professional respect and understanding of each other other's role in providing patient care is essential [39, 40]. This collaboration can be a significant factor influencing the role that community pharmacists can assume in patient care. Although pharmacists have been regarded as experts in medication and highly focused on safety and accuracy, the CombiConsultation study shows there are some doubts about the pharmacists' consultation and clinical reasoning. Therefore, more attention is needed for these skills in both academic and post-academic education [41, 42].

The pursuit of increased collaboration between pharmacists and general practitioners in the management of patients with chronic diseases will generate a new dynamic. This interprofessional collaboration generally evolves over time [12, 43]. For patients with chronic diseases such as hypertension and diabetes, pharmacists can serve as valuable members of multidisciplinary healthcare teams, offering their expertise to other healthcare providers or through direct consultations with patients to enhance pharmacotherapy. However, their specific roles and responsibilities can vary significantly from one primary care setting to another [7, 44]. When pharmacists become more involved in the care of patients with chronic diseases, it is preferable to perform this task with maximum efficiency. Therefore, assigning certain responsibilities to the pharmacist, such as adjusting prescriptions and requesting laboratory values, can be helpful. Currently, pharmacists in the Netherlands have no prescribing authority. To streamline healthcare delivery effectively, it appears crucial to re-evaluate this arrangement. In practical terms, pharmacists frequently modify prescriptions, seeking subsequent approval from the prescriber. Proper organization is essential in ensuring that pharmacists, as prescribers [45], operate within their designated scope of expertise and maintain close collaboration with the prescribing healthcare providers. International experiences have shown that prescribing by pharmacists within a collaborative primary care model is both feasible and effective [46, 47].

Strategies for maintaining and improving consultations by pharmacists

Engaging Stakeholders: A Collaborative Approach

In order to arrive at the above vision of enhancing the care providing role of pharmacists and expanding their consultation services, engagement of all relevant stakeholders, including healthcare providers, policymakers, patients and health insurance companies

is key [48-50]. By involving these stakeholders in the decision-making process, we can ensure that the transformation is rooted in a thorough understanding of the distinct needs of primary care [51].

The literature shows that stakeholders' perceptions can differ between countries, which may be reflected in government policies. In some countries, like Canada, Slovenia and the UK, the care-providing role of the pharmacist is mainly imposed by the government [52-54]. Due to a lack of general practitioners, pharmacists have stepped forward to fill this gap. However, these pharmacists are often involved in more protocolized care. In the Netherlands, nurse specialists and physician assistants in particular have assumed this responsibility and often have prescribing authority within their competency. Hence, it is crucial to elucidate with the diverse stakeholders the optimal way to leverage the pharmacotherapeutic expertise of the pharmacist.

Various Dutch reports showed consensus about the desirability of consultations by pharmacists [55, 56]. However, the views on the necessary follow-up are not specific yet. There is no clarity in definitions, content, target groups, division of tasks between healthcare providers and methods of accountability. This hinders further implementation and the creation of structural financing. In order to arrive at a shared vision about the implementation of consultations by the pharmacist, insight in existing consultations and their added value is needed.

The significance of Reimbursement

Pharmacists commonly generate their revenue through a 'fee-for-service' model, where they receive reimbursement for each prescription dispensed and the provision of pharmaceutical care services. Most pharmacy revenues (99%) are related to the supply of medicine and maximal 1% of the revenue of an average Dutch pharmacy comes from performing pharmaceutical care services [57]. Currently, consultations offered by pharmacists may be reimbursed when this service is described by the Dutch Healthcare Authority (NZa). These services include, among others, a CMR, patient instruction on drug-related devices such as inhalers and pharmaceutical guidance during hospital admission/discharge. However, the amount of the reimbursement for these consultations is not fixed and is part of the negotiation between the healthcare provider and health insurer.

Reimbursement for clinical pharmacy services is currently often not sufficient (whether or not through agreements on higher prescription fee's) and both the conditions and fee may differ per insurer. And finally contracts about reimbursement may change every year. This makes it unattractive for pharmacists to invest in clinical pharmacy services, especially in times where work pressure on their logistic tasks is demanding. There are various options to reimburse the pharmacist properly for the care-providing role:

- Population-based financing: This funding model aligns with a strategy of conducting more community-oriented work, involving a consistent core of diverse general healthcare providers who are linked to a community of residents [59].
- A patient subscription rate: With this model, chronic and care-intensive patients would register with a home pharmacy, with a registration fee to cover clinical pharmacy services for these patients. This stimulates the necessary patient-oriented, tailor-made care, as well as cooperation in the local care network [57].
- Consultation-based financing: With this model, pharmacists would be remunerated for the consultations they conduct. The extent of the reimbursement could be dependent on the duration of the consultation.

The population-based financing, may be the best option from a public health perspective. Healthcare providers are encouraged to collaboratively deliver patient care. Hence, the reimbursement for this care is sourced from a primary care general budget. Pharmacists involved in patient care can help prevent hospital admissions, resulting in significant cost savings [61]. These savings should become available for this general budget. This concerns a cross-sectoral approach, which can facilitate improved management of care that goes beyond boundaries and divisions, prioritizing the needs of individual patients and clients. This is essential for organizing healthcare both now and in the future.

Given the complexity of population-based financing, a patient subscription rate, supplemented with a consultation rate for (longer) consultations may be the most feasible type of funding.

With a patient subscription rate all residents of the Netherlands (or at least chronic and care-intensive patients) would register with one home pharmacy. The home pharmacy will receive a registration fee (outside the deductible) to cover pharmaceutical patient care for registered patients. By applying this to patients with a chronic condition has minimal budgetary consequences for the government and health insurers as this patient group usually exceeds the deductible [57].

By also focusing on consultation-based financing, pharmacists will be even more encouraged to further strengthen their care efforts for patients. Currently, in guidelines and reimbursement agreements, a wide variety of consultation types is described, varying in different aspects, such as goal, target group, and complexity [8, 60]. In order to achieve appropriate reimbursement, it is desirable to follow a more generic approach. As in general practice, reimbursement could be linked to the duration allocated for a consultation. The division into the duration of the consultation: short, medium and

long (Figure 1), could be provided with a rough classification of types of consultations, such as a consultation at the counter for a first delivery of a medicine, a consultation about medication for a specific disease and a CMR. However, even within these types of consultations the duration can vary, often depending on the number of medicine in use and the patient's demand for care (part of the triage).

When compensation would be allocated for conducting consultations, these healthcare costs should not be subtracted from the patient's deductible health insurance as this could be a reason for patients to consult their GP instead of the pharmacist about a medication-related issue.

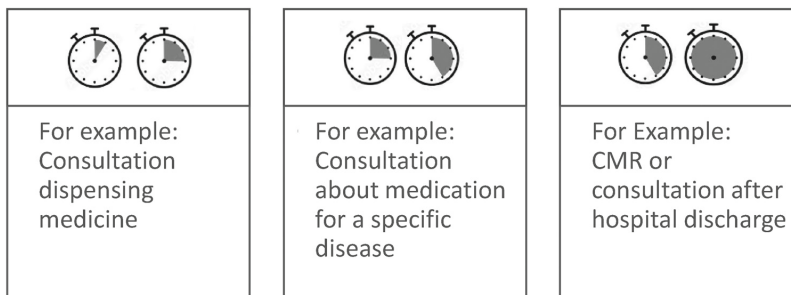


Figure 1. Classification of consultations based on duration

Advancing Excellence: Pharmacist's Additional Training

As pharmacists take on a more clinical role in the care of patients, the process of clinical decision-making, including clinical reasoning and clinical judgement, becomes an increasingly vital core aspect of their responsibilities [62]. Pharmacists have emphasized the importance of possessing these skills and underscored the significance of education in acquiring these capabilities [42]. Pharmacists' skills in clinical decision making and in conducting effective consultations, including communication skills and structuring, still need further improvement. The revised curriculum in pre-graduate pharmacy education in The Netherlands responded to this demand by putting a stronger focus on consultation skills and clinical decision making, and has already resulted in better-trained pharmacists among the new generation. In addition the post-graduate training for the specialisation in community pharmacy has also placed more emphasis on these skills. However, continuous post-graduate education remains necessary to bridge the gap between theoretical knowledge and practical application, especially for the pharmacists who graduated a long time ago. The Royal Dutch Pharmacists Association recently published the consultation guideline, mainly aimed at consultations within community pharmacy [60]. However, practical implementation proves difficult without repeated practice [63]. Training courses are currently being offered for the practical implementation of this

guideline in Dutch community- and outpatient pharmacies and focus on consultation skills, including communication skills and structuring the consultation.

For pharmacists who supervise patients with pharmacotherapy, regardless of their setting, these skills are indispensable. The more pharmacists perform clinical tasks, the greater the significance of these skills. Previously a 14 month training program for non-dispensing pharmacist was developed , including workplace based learning and additional training in consultation skills [64]. This suggests that acquiring these skills requires substantial dedication and effort. Due to the revised curriculum in both pre- and postgraduate pharmacy education in the Netherlands, a shorter additional training period may now be feasible and ultimately this training should be fully incorporated in regular pre- and postgraduate training. However, the further development of these skills should not be taken lightly and also needs to be supported with life-long learning.

CONCLUSION AND RECOMMENDATIONS

The research into the CombiConsultation has shown that this compact consultation, aimed interprofessional collaboration, contributes to safe and effective use of medication. In addition, pharmacists are able to further develop their consultation skills in order to use their specialist knowledge of medication to improve the pharmacotherapy of patients with a (chronic) condition and to solve health-related complaints. However, this study also provided insight into the barriers of healthcare providers and patients concerning the implementation and acceptance of this new clinical pharmacy service. Therefore, we perceive the CombiConsultation not as a single option, but as one among several options in a range that can be selected based on the circumstances within a particular setting. We recommend implementation of pharmacists' consultations which match three main characteristics of the CombiConsultation. First, pharmacists could offer short consultations, whether or not for a specific patient group, in addition to the CMR. Thus, they can attend to a greater number of patients. Second, pharmacists should work in close proximity to other healthcare providers in primary care. Therefore, pharmacists may consider carrying out consultations in the GP practice for part of their time, which will facilitate the integration of the pharmacist in the primary healthcare team. Third, pharmacists should focus on the patients' personal health-related goals. This will encourage them to prioritize what really matters to patients, resulting in increased involvement of patients into their own treatment.

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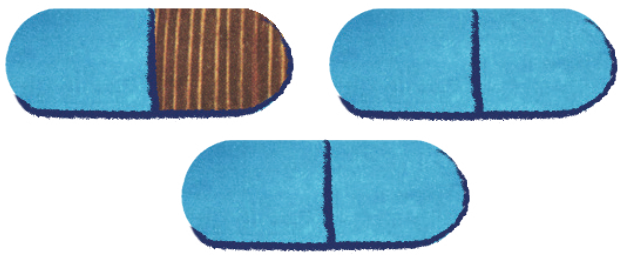
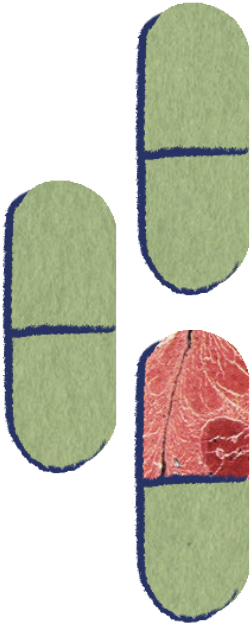
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Appendices

Summary
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Summary

SUMMARY

The aging of the global population contributes to a substantial increase in the worldwide prevalence of chronic diseases, leading to an increased demand of care. The provision of care of most chronic conditions has shifted from secondary to primary care, mostly for cost effectiveness reasons. However, these conditions often require prolonged medical attention and specialized care. In the Netherlands, healthcare for patients with Diabetes Mellitus (DM), chronic obstructive pulmonary disease (COPD) and (at risk of) cardiovascular disease (CVD) is usually provided by practice nurses (PN) in a general practice setting. These chronic conditions are usually associated with polypharmacy, defined as patients using multiple medications chronically (usually five or more). While these medications may be necessary to control various health issues, polypharmacy can also pose risks. This has led to the development of new models for primary care for patients with chronic conditions, which share an integrated, patient-centred and pro-active approach. In the Netherlands, community pharmacists (CPs) are actively involved in patient care and they are experienced in performing clinical medication reviews (CMRs) together with General Practitioners (GPs). The selection criteria for a CMR are ≥ 75 years old and ≥ 10 medicines in use (and/or frailty)). Next to this primary target group, patients can be invited for a CMR at the perception of the GP and/or pharmacist. However, this results in the exclusion of a considerable group of patients who also require care. Therefore, there is a pressing need for a new, less intensive, healthcare service that can address the needs of patients not eligible for a CMR. A new pharmacotherapeutic intervention is the CombiConsultation. This is a clinical pharmacy service for patients with a chronic condition (DM, COPD and/or (at risk of) CVD) and is conducted by the CP in collaboration with the practice nurse (PN) and/or GP, preferentially from the general practice.

A CombiConsultation as a less intensive type of medication review allows for the possibility to consult more patients. The general objective of this thesis is to evaluate the implementation of the CombiConsultation both from a quantitative and qualitative perspective, to assess what the CombiConsultation yields and which patients can benefit most.

In **Chapter 2.1** we introduce the concept 'CombiConsultation' and compare it's characteristics to those of a CMR. The CombiConsultation consists of 3 steps. Step 1) Medication Check: The patient receives a medication consultation of 15–20 minutes with the pharmacist shortly before a consultation with the PN/GP concerning their chronic condition. The pharmacist focuses on 1 or 2 personal health-related complaints and sets one or more goal(s) with the patient; Step 2) Implementation: after the consultation, the pharmacist discusses the goals set and identified drug related

problems (DRPs) with the GP/PN. During the periodical check-up with the PN/GP, the plan is discussed with the patient, and actions are implemented; Step 3) Follow-up: the pharmacist or GP/PN has a follow-up consultation with the patient to evaluate the implemented actions.

The differences with a CMR concern the target group, aim, duration and setting. Selection criteria for a CombiConsultations are: suffering from DM, COPD and/or (at risk of) CVD, at least 18 years old and at least one medicine in use. During the consultation, the pharmacist focusses on 1-2 personal health related complaints instead of the complete medical- and drug history. The consultation takes about half as long as a CMR and is preferably performed in the GP practice.

In **Chapter 2.2** we report the findings of the prospective intervention study 'The CombiConsultation for patients with diabetes, COPD and cardiovascular diseases'. We evaluate the interventions and personal health related goals. Twenty-one pharmacies with associated general practices participated in the study. A total of 834 patients received a CombiConsultation. Four hundred twenty-five personal health-related goals were set by the patients and pharmacists and more than half of these goals was (partially) attained. Also, a total of 939 DRPs were identified by pharmacists (median: 1 per patient, range: 0–6) and in 71% of the consultations, at least one DRP was found. The pharmacists made 935 recommendations and the implementation rate of recommendations emerging from the CombiConsultation was high (72%). DRPs were found more often in patients with a higher number of drugs used for chronic conditions. Other characteristics (age, gender, multidose drug dispensing system and disease) were not significantly associated with the identification of a DRP.

This study demonstrated that the CombiConsultation can be used by pharmacists as a compact health service contributing to safe and effective use of medication for patients with DM, COPD and/or (at risk of) CVD, also in patients under 65 or with less than 5 medications in use. With a relatively small time investment, pharmacists identified DRPs in a large proportion of patients and successfully implemented a high number of recommendations.

In **Chapter 3** we present three studies on the perspective of healthcare providers and patients regarding the CombiConsultation.

Chapter 3.1 shows the results of a qualitative interview study with 5 GPs, 10 pharmacists and 5 PNs who participated in the CombiConsultation study. The aim of this study was to identify the barriers and facilitators that determine the behavioural changes by these healthcare providers required for the implementation of the CombiConsultation. Their views regarding the implementation of this clinical pharmacy service were explored using the 14 domains of the Theoretical Domains Framework (TDF), which are linked to the Capability-Opportunity-Motivation-Behaviour-model. Twelve barriers and 23 facilitators were found within 13 TDF domains with high agreement between the healthcare

providers. Important facilitators for implementation were the pharmacists' expertise in pharmacotherapy (capability), access to medical data and physical proximity between professional practices (opportunity) and an improved contact between the pharmacist and the GP/PN (motivation). Barriers were pharmacists' insufficient consultation- and clinical-reasoning skills (capability), insufficient staff (opportunity) and reimbursement, and lack of coordination among all involved healthcare providers (motivation). To implement the CombiConsultation, establishing a pre-existing collaborative practice with a well-defined and accepted professional role for pharmacists showed to be crucial. Providing training for pharmacists in consultation- and clinical reasoning skills can yield benefits, as can addressing logistical aspects and reimbursement for consultations. In **Chapter 3.2** we took a closer look at the factors that influence implementation of the CombiConsultation by means of a survey. The topics derived from the interview study (Chapter 3.1) were used to construct a questionnaire to assess the relevance and generalisability of the identified topics among all CPs who had performed CombiConsultations.

The questionnaire, based on a 5-point Likert scale, consisted of 19 statements and was completed by 23 of the 27 pharmacists. Most participants agreed on the high relevance of good collaboration with the GP/PN, access to medical data and the impact of performing a consult on job satisfaction. They attached less importance to finding drug-related problems, access to a consultation room in general practice and consultations being consecutive. According to this study, widespread implementation will have to focus on interprofessional collaboration, access to medical data and training in consultation skills.

In **Chapter 3.3** we demonstrate the results of the focus group study, which shows the patient's perspective. We performed five focus groups with respectively 4, 8, 6, 5 and 6 participants who had experienced a CombiConsultation. During the focus group we aimed at investigating the acceptability of the CombiConsultation by patients.

The topic guide was focussed on acceptability of the intervention and was based on the results of a Patient-Reported Experience Measure (5-minute survey) which patients completed directly after the CombiConsultation. The Theoretical Framework of Acceptability (TFA) was used to assess the acceptability of the CombiConsultation. Participants were generally satisfied with the CombiConsultation. They valued the opportunity to consult the pharmacist and were pleased with the advice they received. The location and timing of the consultations are not of utmost importance as long as healthcare providers effectively communicate. Regarding the focus of the consultation, participants expressed a desire to discuss all the medication they take. Although they experienced the pharmacist as readily approachable and acknowledged their expertise concerning medications, they may not necessarily perceive them as deeply engaged in the comprehensive treatment plan or decision-making process. It is crucial to ensure that patients have a clear understanding of the precise role of the pharmacist, as well as

their position in relation to the GP and PN. By closely aligning with the individual needs of each patient, pharmacists can enhance the acceptability of the CombiConsultation and make a meaningful contribution to the broader healthcare team.

In **Chapter 4** we discuss the consultation skills of the pharmacists by video recordings. The aim of this study was to investigate how CPs apply the learned Calgary-Cambridge model in the CombiConsultation and to describe the content of these consultations between the CP and the patient.

As part of the participation in the CombiConsultation intervention study all pharmacists received 3 half days of interactive training in patient-centred consultation.

Consultations were videotaped and the structure was analysed using an observation guide, based on the Calgary-Cambridge model. How CPs applied the structure provided by this model was evaluated on a 4-point scale from 'not executed' to 'fully executed'. The MEDICODE classification system was used to investigate the content of the consultations. A total of 24 consultations were included in the analysis. In the majority of these consultations CPs scored sufficient on almost all items of the Calgary-Cambridge model. The CPs identified the patient's concerns or topics the patient wanted to discuss using appropriate initial questions and encouraged patients to elaborate on their problem(s). CPs had more difficulties prioritizing problems and setting personal health-related goals.

All four areas of MEDICODE (General information, Knowledge of the drug, Discussion of the prescribed medication and Effects of the drug) were addressed during the CombiConsultations. The most common topic was 'general information', followed by 'discussion of the prescribed medication'. In almost all consultations, attention was paid on medication-usage issues and achieving problem control through medication management.

This study showed that, after limited training, CPs are generally able to apply the structure of the Calgary Cambridge model. However, they experience difficulties in goal setting and often revert to their familiar task of providing information about the medication in use.

Finally in **Chapter 5**, the findings of these studies are placed into a broader perspective by discussing 1) The design of the CombiConsultation and requirements for implementation in practice; and 2) The future directions and strategies for maintaining and improving consultations by pharmacists.

1. The design of the CombiConsultation and requirements for implementation in practice

The CombiConsultation can help addressing the specific needs of the individual patient with a chronic condition and enables reaching a large group of patients. If the planning of consecutive consultations is feasible, this service is certainly valuable. However, if the burden on staff is excessive or planning too complex, it can also be planned with a time gap between the consultations. Linking the consultations (with or without this time gap) is valuable. The healthcare providers become more acquainted with each other and can complement each other. To improve interprofessional collaboration, which enhances patient care, working in close proximity to each other and access to medical data is recommended.

Since DM, COPD and/or (at risk of) CVD are among the most prevalent chronic conditions, for which existing disease management programs were in place, the CombiConsultation was linked to these conditions. However, focus on other chronic conditions is also possible.

The focus on health complaints, whether or not related to the chronic condition, is essential to meet the patient's wishes and thus maintain the patient's involvement in his treatment.

The CombiConsultation study has provided valuable insights in the feasibility and conditions for implementation of an additional clinical pharmacy service. With some adaptations, the CombiConsultation can be applied in clinical practice when it fits local situations. In order to achieve optimal implementation it is necessary to fulfil several conditions in the field of: 1) Organization, like planning of the consultations; 2) Training of the pharmacist in consultation and clinical reasoning skills; 3) Reimbursement of the consultations; 4) Collaboration between the CP and GP/PN and 5) Patient selection, like a specific (chronic) condition.

The CombiConsultation is not a single option of a targeted medication consultation. Therefore, the consultation by the pharmacist will be placed in a broader perspective below.

2. The future directions and strategies for maintaining and improving consultations by pharmacists.

Nowadays, the CP is more involved in the patient's care, however, consulting with patients is not their core business. To structurally implement the provision of consultations it is crucial to allocate dedicated time for the pharmacist. Although it may not be advisable to entirely disconnect the roles of care and distribution, it is worth exploring methods to alleviate pharmacists from logistical processes, at least periodically.

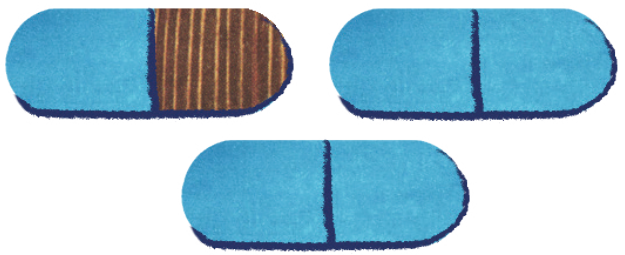
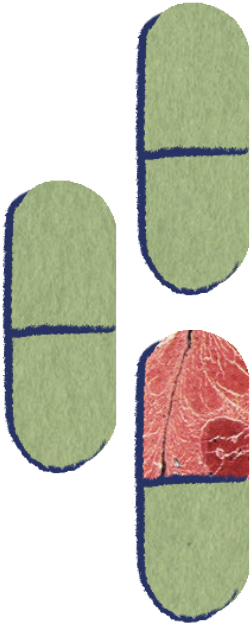
To empower the pharmacist to conduct consultations will require reallocation of tasks within the pharmacy. Also, it is important that patients become familiar with consultation by the pharmacist. Ideally, the patient will receive care at a multidisciplinary health centre, where the patient will be referred to the appropriate healthcare provider through triage. The pursuit of increased collaboration between pharmacists and GPs in the management of patients with chronic diseases will generate a new dynamic. This interprofessional collaboration generally evolves over time.

A shared vision is important to strengthen the care-providing role of pharmacists and to expand consultation by pharmacists. All relevant stakeholders, including healthcare providers, policy makers, patients and health insurers, will have to be involved. In addition, it would be desirable if pharmacists were properly reimbursed for the care they provide. There are various options to compensate the pharmacist for the care-providing role: Population-based financing, a patient subscription rate or consultation-based financing.

Given the complexity of population-based financing, a patient subscription rate, supplemented with a consultation rate may be the most feasible type of funding. With a patient subscription rate all residents of the Netherlands (or at least chronic and care-intensive patients) would register with one home pharmacy. By also focusing on consultation-based financing, pharmacists will be even more encouraged to further strengthen their care efforts for patients. Reimbursement could be linked to the duration allocated for a consultation.

Finally, pharmacists' skills in clinical decision making, including clinical reasoning and clinical judgement and conducting effective consultations, including communication skills and structuring, still need further improvement. For pharmacists who supervise patients with pharmacotherapy, regardless of their setting, these skills are indispensable.

In conclusion, this study has shown that the CombiConsultation aimed at a specific condition contributes to safe and effective use of medication. We perceive the CombiConsultation not as a single option, but as one among several options in a range that can be selected based on the circumstances within a particular setting. Interprofessional collaboration with other healthcare providers, preferably in close proximity to each other, is essential for the success of these consultations. Implementing shorter pharmacist consultations focusing on one or two of the patient's personal health-related goals rather than a comprehensive medication review, will aid in addressing more patients with drug related problems.



Samenvatting

SAMENVATTING

Door de groei en vergrijzing van de wereldbevolking zal het aantal mensen met een chronische aandoening de komende jaren sterk toenemen. Dit leidt tot een grotere zorgvraag. Vooral vanwege kosteneffectiviteit is de zorg voor de meeste chronische aandoeningen verschoven van de tweede naar de eerste lijn. In Nederland worden de periodieke controles voor patiënten met Diabetes Mellitus (DM), chronisch obstructieve longziekte (COPD) en (risico op) hart- en vaatziekten (HVZ) doorgaans uitgevoerd door praktijkverpleegkundigen (PVK) in de huisartsenpraktijk. Bij deze chronische aandoeningen is meestal sprake van polyfarmacie, gedefinieerd als het chronisch gebruik van vijf of meer medicijnen. Hoewel deze medicijnen nodig kunnen zijn om verschillende gezondheidsproblemen onder controle te houden, kan polyfarmacie ook risico's met zich meebrengen. Binnen de eerstelijnszorg heeft dit geleid tot de ontwikkeling van nieuwe modellen voor patiënten met een chronische aandoening. Hierbij ligt de focus op een geïntegreerde, patiëntgerichte en proactieve aanpak. In Nederland zijn openbaar apothekers actief betrokken bij de patiëntenzorg en hebben zij ervaring met het uitvoeren van medicatiebeoordelingen (MBO) samen met huisartsen. De selectiecriteria voor een MBO zijn ≥ 75 jaar oud en ≥ 10 geneesmiddelen in gebruik (en/of kwetsbaarheid)). Naast deze primaire doelgroep kunnen patiënten ook worden uitgenodigd voor een MBO als de huisarts en/of apotheker dat noodzakelijk acht. Het leidt echter tot exclusie van een aanzienlijk deel van de patiëntenpopulatie. Daarom is er een dringende behoefte aan een nieuwe, minder intensieve interventie waarbij de apotheker tegemoet kan komen aan de behoeften van patiënten die niet in aanmerking komen voor een MBO. Een nieuwe farmacotherapeutische interventie is het CombiConsult. Dit is een gecombineerd consult voor patiënten met een chronische aandoening (DM, COPD en/of (risico op) HVZ) en wordt uitgevoerd door de openbare apotheker in samenwerking met de PVK en/of huisarts, bij voorkeur vanuit de huisartsenpraktijk.

Een CombiConsult biedt de mogelijkheid voor de apotheker om meer patiënten een consult aan te bieden. Onderzocht moet worden wat het CombiConsult oplevert en welke patiënten het meeste baat kunnen hebben bij een dergelijk consult. De algemene doelstelling van dit proefschrift is om zowel kwantitatief als kwalitatief de implementatie van het CombiConsult te evalueren.

In **Hoofdstuk 2.1** introduceren we het nieuwe concept 'CombiConsult' en vergelijken we de kenmerken van dit consult met die van een MBO. Het CombiConsult bestaat uit 3 stappen. Stap 1) Medicatiecheck: De patiënt krijgt een medicatieconsult met de apotheker, gericht op zijn chronische aandoening. Dit consult duurt 15-20 minuten en sluit aan op het consult met de PVK/huisarts. De apotheker richt zich op 1 of 2 gezondheidsgerelateerde klachten en stelt samen met de patiënt een of meerdere

doelen op; Stap 2) Implementatie: na het consult bespreekt de apotheker de opgestelde doelen en gevonden farmacotherapeutische problemen (FTP's) met de PVK/huisarts. Tijdens de periodieke controle bij de PVK/huisarts wordt het behandelplan met de patiënt besproken en worden eventuele acties uitgevoerd, zoals een aanpassing in de medicatie; Stap 3) Opvolging: de apotheker of PVK/huisarts heeft een follow-up met de patiënt om de ondernomen acties te evalueren.

De verschillen met een MBO betreffen de doelgroep, het doel, de duur en de setting. Selectiecriteria voor een CombiConsult zijn: de patiënt heeft DM, COPD en/of (risico op) HVZ; is minimaal 18 jaar oud en heeft minimaal één medicijn in gebruik.

Tijdens het consult concentreert de apotheker zich op 1-2 gezondheidsgerelateerde klachten in plaats van op de volledige medicijnlijst. Het consult duurt ongeveer de helft van de tijd van een MBO en wordt bij voorkeur in de huisartsenpraktijk uitgevoerd.

In **Hoofdstuk 2.2** rapporteren we de bevindingen van het prospectieve interventieonderzoek 'Het CombiConsult voor patiënten met diabetes, COPD en hart- en vaatziekten'. We evalueren de interventies en persoonlijke gezondheidsgerelateerde doelen. Aan het onderzoek namen 21 apotheken met bijbehorende huisartsenpraktijken deel. In totaal kregen 834 patiënten een CombiConsult. Er werden 425 persoonlijke gezondheidsgerelateerde doelen gesteld door de patiënten en apothekers en ruim de helft van deze doelen werd (gedeeltelijk) behaald. Ook werden in totaal 939 FTP's geïdentificeerd door apothekers (mediaan: 1 per patiënt, range: 0-6) en in 71% van de consulten werd ten minste één FTP gevonden. De apothekers deden 935 aanbevelingen en de implementatiegraad van de aanbevelingen was hoog (72%). FTP's werden vaker aangetroffen bij patiënten met meerdere geneesmiddelen die voor chronische aandoeningen werden gebruikt. Andere kenmerken (leeftijd, geslacht, gebruik van een medicatierol en chronische aandoening) waren niet significant geassocieerd met de aanwezigheid van een FTP.

Uit dit onderzoek is gebleken dat het CombiConsult door apothekers ingezet kan worden als compacte interventie die bijdraagt aan veilig en effectief medicatiegebruik bij patiënten met DM, COPD en/of (risico op) HVZ, ook bij patiënten jonger dan 65 jaar of met minder dan 5 geneesmiddelen in gebruik. Met een relatief kleine tijdsinvestering hebben apothekers bij een groot deel van de patiënten FTP's geïdentificeerd en met succes een groot aantal aanbevelingen geïmplementeerd.

In **Hoofdstuk 3** laten we de resultaten zien van drie onderzoeken naar het perspectief van zorgverleners en patiënten op het CombiConsult.

Hoofdstuk 3.1 betreft een kwalitatief interviewonderzoek met 5 huisartsen, 10 apothekers en 5 PVK die deelnamen aan het onderzoek naar het CombiConsult. Het doel van dit onderzoek was om de bevorderende en belemmerende factoren in kaart te brengen die bepalend zijn voor de gedragsveranderingen bij deze zorgverleners die nodig zijn voor de implementatie van het CombiConsult. Hun opvattingen over de implementatie van het CombiConsult werden onderzocht met behulp van de 14 domeinen

van het Theoretical Domains Framework (TDF), die gekoppeld zijn aan het Capability-Opportunity-Motivation-Behaviour-model. Binnen deze TDF-domeinen werden 12 barrières en 23 facilitators gevonden, met daarbij een hoge mate van overeenstemming tussen de zorgaanbieders. Belangrijke facilitators voor de implementatie waren de expertise van apothekers op het gebied van farmacotherapie (Capability), toegang tot medische gegevens en fysieke nabijheid tussen professionals (Opportunity) en een verbeterd contact tussen apotheker en huisarts/PVK (Motivation). Barrières waren o.a. de onvoldoende klinisch redeneervaardigheden van apothekers (Capability), onvoldoende personeel (Opportunity) en vergoeding, en bemoeilijkte coördinatie wanneer een extra zorgverlener (apotheker) betrokken wordt (Motivation). Om het CombiConsult te implementeren is een goede bestaande samenwerking met een goed gedefinieerde en geaccepteerde professionele rol voor apothekers cruciaal. Het bieden van training aan apothekers in consult- en klinische redeneervaardigheden kan voordelen opleveren, evenals het aanpakken van logistieke aspecten en de vergoeding van consulten.

In **Hoofdstuk 3.2** gaan we door middel van een enquête dieper in op de factoren die van invloed zijn op de uitvoering van het CombiConsult. De onderwerpen uit het interviewonderzoek (hoofdstuk 3.1) zijn gebruikt om een vragenlijst op te stellen. De vragenlijst werd voorgelegd aan alle apothekers die hadden deelgenomen aan de CombiConsult-interventiestudie en hadden als doel om de relevantie en generaliseerbaarheid van de onderwerpen te beoordelen. De vragenlijst bestond uit 19 stellingen en werd door 23 van de 27 apothekers ingevuld. De meeste deelnemers waren het eens over het belang van een goede samenwerking met de huisarts/PN en de toegang tot medische gegevens. Tevens vonden zij het uitvoeren van consulten belangrijk voor de werktevredenheid. Zij hechtten minder belang aan het opsporen van medicatie gerelateerde problemen, toegang tot een spreekkamer in de huisartsenpraktijk en het direct op elkaar aansluiten van de consulten. Uit deze studie blijkt dat grootschalige implementatie gericht zou moeten zijn op interprofessionele samenwerking, toegang tot medische gegevens en training in consultvaardigheden.

In **Hoofdstuk 3.3** laten we de resultaten zien van het focusgroeponderzoek, waarin het perspectief van de patiënt is kaart is gebracht. We voerden vijf focusgroepen uit met respectievelijk 4, 8, 6, 5 en 6 deelnemers die een CombiConsult hadden meegemaakt. Tijdens de focusgroep hebben we ons gericht op de ervaringen en percepties van patiënten over het CombiConsult. De gespreksonderwerpen hebben we o.a. gebaseerd op de uitkomsten van een korte vragenlijst die patiënten na het CombiConsult hadden uitgevoerd. Voor de analyse hebben we gebruik gemaakt van het Theoretisch Raamwerk van Acceptatie (TFA). Deelnemers waren over het algemeen tevreden over het CombiConsult. Ze waardeerden de mogelijkheid om de apotheker te raadplegen en waren blij met het advies dat ze kregen. De locatie en timing van de consulten zijn niet van het grootste belang, zolang zorgverleners maar effectief communiceren. Wat betreft de focus van het consult, gaven de deelnemers aan dat

ze de mogelijkheid willen hebben om al hun medicijnen te bespreken. Hoewel zij de apotheker gemakkelijk benaderbaar vonden en hun expertise op het gebied van medicatie erkennen, ervaren zij hen niet noodzakelijkerwijs als diep betrokken bij het integrale behandelplan of besluitvormingsproces. Het is van cruciaal belang om ervoor te zorgen dat patiënten inzicht hebben in de rol van de apotheker, evenals hun positie in relatie tot de huisarts en de PVK. Door nauw af te stemmen op de individuele behoeften van elke patiënt kunnen apothekers de acceptatie van het CombiConsult vergroten en een betekenisvolle bijdrage leveren aan het bredere zorgteam.

In **Hoofdstuk 4** bespreken we de consultvaardigheden van de apothekers aan de hand van video-opnamen. Het doel van dit onderzoek is om te vast te stellen hoe apothekers het geleerde Calgary-Cambridge model toepassen in het CombiConsult en om de inhoud van dit consult tussen de apotheker en de patiënt te beschrijven.

Alle deelnemende apothekers kregen tijdens het CombiConsult onderzoek 3 dagdelen training in patiëntgericht consultvoering. De consulten werden op video opgenomen en de structuur werd geanalyseerd met behulp van een observatiegids, gebaseerd op het Calgary-Cambridge-model. Aan de hand van een vierpuntsschaal ('niet uitgevoerd' tot 'volledig uitgevoerd') werd geëvalueerd hoe de apothekers de structuur van het model volgden. Om de inhoud van de consulten te onderzoeken is gebruik gemaakt van het classificatiesysteem MEDICODE.

In totaal zijn er 24 consulten geanalyseerd. In het merendeel van deze consulten scoorden apothekers voldoende op vrijwel alle items van het Calgary-Cambridge-model. De apothekers identificeerden de zorgen van de patiënt of de onderwerpen die de patiënt wilde bespreken met behulp van passende vragen en moedigden patiënten aan om over hun zorgen of problemen te vertellen. Apothekers hadden meer moeite met het prioriteren van problemen en het stellen van persoonlijke gezondheidsgerelateerde doelen.

Tijdens het CombiConsult kwamen alle vier de onderdelen van MEDICODE ('algemene informatie', 'kennis van het medicijn', 'bespreking van de voorgeschreven medicijnen' en 'effecten van het medicijn') aan bod. Het meest voorkomende onderwerp was 'algemene informatie', gevolgd door 'bespreking van de voorgeschreven medicijnen'. In bijna alle consulten werd aandacht besteed aan (problemen met) gebruik van medicatie en het effect van de medicatie op de aandoening of de klacht van de patiënt.

Uit dit onderzoek bleek dat apothekers, na een beperkte training, over het algemeen in staat zijn de structuur van het Calgary Cambridge-model toe te passen. Ze ervaren echter problemen bij het stellen van doelen en vallen vaak terug op hun vertrouwde taak: het verstrekken van informatie over de gebruikte medicatie.

Ten slotte worden in **Hoofdstuk 5** de bevindingen van dit onderzoek in een breder perspectief geplaatst en wordt dieper ingegaan op 1) Het ontwerp van het CombiConsult

en aanbevelingen voor implementatie in de praktijk; en 2) De toekomstige richtingen en strategieën voor het in stand houden en verbeteren van consulten door apothekers.

1. Het ontwerp van het CombiConsult en aanbevelingen voor implementatie in de praktijk

Met het CombiConsult kan tegemoet worden gekomen aan de specifieke behoeften van de individuele patiënt met een chronische aandoening. Als het haalbaar is om het consult bij de apotheker aan te laten sluiten op het consult bij de PVK, is deze service zeker waardevol. Echter, wanneer de druk op het personeel te groot is of de planning te complex, kan het consult bij de apotheker en het consult bij de huisarts/PVK ook los van elkaar worden gepland. Het koppelen van de consulten (al dan niet aansluitend) is waardevol. De zorgverleners leren elkaar beter kennen en kunnen elkaar aanvullen. Om de interprofessionele samenwerking te verbeteren, wat de patiëntenzorg ten goede komt, wordt het aanbevolen om dezelfde werkplek te hebben en als apotheker toegang te krijgen tot relevante medische gegevens.

Het CombiConsult is gekoppeld aan DM, COPD en/of (het risico op) HVZ, aangezien deze tot de meest voorkomende chronische aandoeningen behoren en hiervoor ketenzorgprogramma's bestaan (wat de koppeling met de controle bij de PVK mogelijk maakt). Focus op andere chronische aandoeningen is echter ook mogelijk.

De aandacht voor gezondheidsgerelateerde klachten van de patiënt is van belang om de zorgvraag te achterhalen en de patiënt zoveel mogelijk bij zijn behandeling te betrekken. Deze studie heeft waardevolle inzichten opgeleverd in de haalbaarheid en voorwaarden voor de implementatie van het CombiConsult en laat zien dat, wanneer het past bij de lokale situatie, met enkele aanpassingen in de klinische praktijk kan worden toegepast. Het is hierbij van belang dat aan een aantal voorwaarden wordt voldaan op het gebied van: 1) Organisatie, zoals de planning van het overleg; 2) Training van de apotheker in consult- en klinische redeneervaardigheden; 3) Vergoeding van de consulten; 4) Samenwerking tussen apotheker en huisarts/PVK en 5) Selectie van patiënten, bijvoorbeeld voor een specifieke aandoening.

Het CombiConsult is een vorm van een gericht medicatieconsult door de apotheker, maar is niet de enige optie. Hieronder bespreken we het consult door de apotheker in een bredere context.

2. De toekomstige richtingen en strategieën voor het behouden en verbeteren van consulten door apothekers.

Tegenwoordig is de openbare apotheker meer betrokken bij de zorg voor de patiënt, maar het voeren van consulten (los van het leveren van medicatie) is niet hun kerntaak. Om consultvoering structureel in te bedden in de praktijk is het van cruciaal belang dat er tijd voor wordt vrijgemaakt. Hoewel het misschien niet raadzaam is om zorg en distributie volledig los te koppelen, is het de moeite waard om methoden te

onderzoeken hoe apothekers, in ieder geval periodiek, ontlast kunnen worden van logistieke processen.

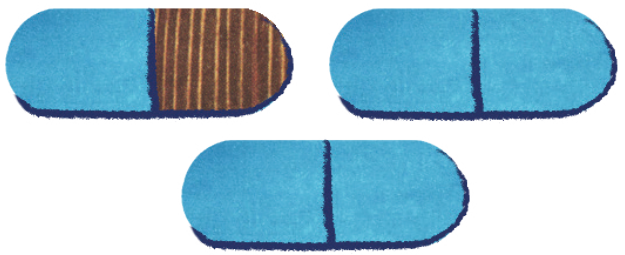
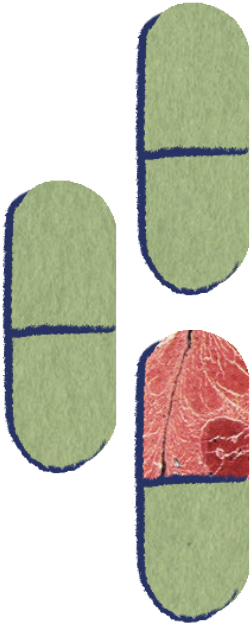
Om de apotheker in staat te stellen consulten te voeren, zal een herverdeling van taken binnen de apotheek nodig zijn. Daarnaast is het belangrijk dat patiënten vertrouwd raken met consulten door de apotheker. Idealiter krijgt de patiënt zorg in een multidisciplinair gezondheidscentrum, waar de patiënt via triage wordt doorverwezen naar de juiste zorgverlener. Het streven naar meer samenwerking tussen apothekers en huisartsen bij de behandeling van patiënten met chronische ziekten zal een nieuwe dynamiek genereren. Deze interprofessionele samenwerking evolueert over het algemeen in de loop van de tijd.

Om de zorgverlenende rol van apothekers te versterken en consultvoering door apothekers uit te breiden, is een gedeelde visie hierover van belang. Alle relevante stakeholders, waaronder zorgverleners, beleidsmakers, patiënten en zorgverzekeraars, zullen hierbij betrokken moeten worden. Daarnaast zou het wenselijk zijn als apothekers een passende vergoeding krijgen voor de zorg die zij leveren. Er zijn verschillende mogelijkheden om de apotheker te compenseren voor de zorgverlenende rol: populatiebekostiging, patiëntgebonden bekostiging of financiering per consult.

Gezien de complexiteit van populatiebekostiging, is een patiëntgebonden bekostiging, aangevuld met een financiering voor consulten, een meer haalbare financieringsvorm. Bij een patiëntgebonden bekostiging zouden alle inwoners van Nederland (of in ieder geval patiënten met een chronische aandoening en zorg intensieve patiënten) zich bij één huisapotheek inschrijven. Door daarnaast ook in te zetten op financiering op basis van consulten, worden apothekers nog meer aangemoedigd om hun zorginspanningen voor patiënten verder te versterken. De vergoeding kan worden gekoppeld aan de duur van een consult.

Ten slotte moeten de vaardigheden van apothekers op het gebied van klinische besluitvorming en het voeren van effectieve consulten, inclusief communicatieve vaardigheden en structurering, nog verder worden verbeterd.

Concluderend is uit het onderzoek naar het CombiConsult gebleken dat dit compacte consult gericht op een specifieke aandoening bijdraagt aan veilig en effectief medicijngebruik. Het CombiConsult kan passend worden gemaakt aan de lokale setting en populatie. Nauwe samenwerking met andere zorgverleners, bij voorkeur in elkaars nabijheid, is daarbij essentieel. In meer algemene zin is het wenselijk dat apothekers consulten aanbieden die korter zijn dan een medicatiebeoordeling, waarbij de focus ligt op een of twee persoonlijke behandeldoelen van de patiënt. Hierdoor kunnen meer patiënten gezien worden door de apotheker.



Woord van dank

*“Alone we can do so little;
together we can do so much.”*

Helen Keller



WOORD VAN DANK

Toen ik jong was droomde ik ervan om mijn eigen boek te schrijven. Ik had het verhaal al uitgedacht, maar verder dan een paar hoofdstukken ben ik nooit gekomen. Nu, jaren later, is mijn eerste boek een feit. De inhoud wezenlijk anders, maar dat maakt me zeker niet minder trots. Ik zal niet ontkennen dat ik vaak getwijfeld heb of ik dit wel echt zou kunnen. Niet voor niets heb ik de eerste 3 jaar niet durven uitspreken dat ik aan het promoveren was. Mijn promotie-overleggen plande ik in als 'Overleg CombiConsult' en het boek 'Promoveren, een wegwijzer voor de beginnend wetenschapper' las ik pas na mijn eerste publicatie. Ik heb nooit, zoals mijn oudste zoon Philip, van jongs af aan verkondigd dat ik wetenschapper wilde worden. Hij wil dat overigens combineren met een baan als bouwvakker, wat maar weer aangeeft dat hij dat praktische wellicht meer van mij heeft. Het was dus maar goed dat ik het onderzoek jarenlang kon combineren met mijn werk in de huisartsenpraktijk. De praktijkervaring die ik daar heb opgedaan heeft me enorm geholpen met de uitvoering van het onderzoek.

Wat dit promotietraject met vlagen nog wel het meest uitdagend maakte, was de combi met het jonge gezinsleven. De slapeloze nachten, het kolven, het nooit opgeruimde huis, de uitdagingen met opvoeden en was waar nooit een eind aan leek te komen; ik kwam vaak tot rust op werk. Maar ondanks dat was het altijd een feestje om naar huis te gaan en ook echt even los te komen van het onderzoek.

En toen kwam Corona... waardoor de scheiding tussen privé en werk volledig vervaagde. Mijn cursus epidemiologie volgde ik (online) met drie maal per dag een kind aan de borst en het indienen van een artikel kon feilloos worden gecombineerd met het verschonen van een luier. Ook onze overleggen gingen voortaan via Zoom of Teams. Wat toch zeker ook veel tijdsinstaat opleverde als je bedenkt dat voorheen altijd wel iemand de afstand Utrecht – Leiden moest afleggen. In het plannen van overleggen werd ik overigens niet per se beter en het was soms het hoogtepunt van de week als ik iedereen weer bij elkaar had gekregen.

Ik heb veel geluk gehad dat de periode van includeren van patiënten en het uitvoeren van focusgroepen en interviews net voor Coronatijd was afgerond, want dat zou een enorme impact op het onderzoek hebben gehad. De laatste periode heb ik vooral besteed aan het schrijven van dit proefschrift. Wie mij een beetje kent, zal begrijpen dat ik me soms wat beperkt voelde door de te volgen structuur en het maximaal aantal woorden. Ik heb begrepen dat daar voor het dankwoord geen eisen voor zijn...

Mijn grootste motivatie om te promoveren was om uitgedaagd te worden. Dat is zeker gelukt. Het heeft soms veel van me gevraagd, maar ik heb er altijd met plezier aan gewerkt. En ik ben me er zeer van bewust dat dit te danken is aan de geweldige mensen om mij heen.

Allereerst wil ik mijn promotieteam bedanken.

Marcel, toen jij mijn promotor werd, werkte je nog bij SIR. Je gaf al meteen aan dat regelmatige reminders zouden helpen om mijn stukken snel terug te krijgen en hiervoor had ik Martine (destijds midden in haar promotietraject) als grote voorbeeld. Laten we zeggen dat ik daarin mijn eigen weg heb gevonden ;)

Juist omdat we elkaar vaak zagen, was je in het begin van dichtbij betrokken bij het traject. Ik kon altijd bij je terecht met vragen en je hielp mee met de focusgroepen en conference calls.

Je hebt me geïnspireerd om met de trein naar een congres te gaan (Ljubljana) en nee, daar kom ik na Aberdeen niet van terug. In Ljubljana hebben we (Henk-Frans, jij en ik) hardgelopen door het park. En die tocht symboliseert hoe ik destijds mijn promotietraject beleefde: twee ervaren hardlopers met een voor mij net te hoog tempo. Op meerdere momenten heb ik gedacht 'ik kan ook stoppen', maar op wilskracht ben ik doorgegaan. En op een gegeven moment kom je dan over dat dode punt en kan je dus (6 jaar lang) blijven gaan. Marcel, je hebt me geholpen als ik het even niet meer wist, me in verwarring gebracht met last minute nieuwe ideeën (help, we hadden toch al een plan?) en uitgedaagd met kritische vragen. Maar wat ik ook zeker heb gewaardeerd, was je belangstelling naar het thuisfront. Tegen het einde was ik misschien niet altijd de makkelijkste, maar ja, de finish was in zicht. Ik ben blij dat ik het gehaald heb en ben je zeer dankbaar.

Niek, vanuit mijn werk in de praktijk ben ik gewend om me als enige apotheker tussen de huisartsen te begeven, maar in dit geval voegde jij je als enige huisarts bij vier apothekers. Welke uitdaging groter is, daar laat ik me niet over uit :) Wat ik wel kan zeggen is dat ik erg blij ben dat je mijn promotor wilde zijn. Je belichtte de ideeën en problemen vaak vanuit een ander perspectief en juist doordat je wat meer op de achtergrond aanwezig was hield je oog voor het grotere plaatje. Ik kon altijd bij je terecht met vragen of om even te sparren over een kwestie waar ik niet uit kwam. Maar naast je inhoudelijke bijdrage, heb ik vooral ook je positiviteit gewaardeerd. Als ik het even niet meer zag zitten of de online stemming was wat bedrukt, dan vond jij de woorden om mij weer te motiveren. Je liet me inzien wat wel goed ging of gaf net dat duwtje in de rug om een bepaalde analyse (opnieuw) uit te voeren. Ik ben je zeer dankbaar voor al je hulp en laten we ons, jij als arts en ik als apotheker, vooral in blijven zetten voor een goede samenwerking.

Mette, je was nog maar nauwelijks klaar met je eigen promotie of je werd al ingezet bij het CombiConsult. Jouw hulp kwam als geroepen bij het gebruiksklaar maken van het portfolio en dat was ook meteen mijn eerste ervaring met jouw prachtige hoge denkniveau. Natuurlijk maakte me dat soms wat onzeker, maar jij liet me inzien wat mijn eigen sterke kanten zijn. Als ik iets niet begreep nam je de tijd om het uit te leggen. Vooral SPSS, NVIVO en Access, programma's die jij volledig hebt uitgespeeld, hebben mij

soms slapeloze nachten bezorgd. En niet alleen omdat het ingewikkelde programma's zijn, maar de moeilijkheid zat 'm soms ook in het aanvragen van licenties (ojee, waar moet dat ook alweer?) en onverklaarbare systeem errors (help, er is een ramp gebeurd!). Mijn emoties heb ik hierbij meestal niet onder stoelen of banken gestoken, maar jij bleef te allen tijde de rust zelve. In een handomdraai toverde je een licentiecode, back-up van mijn gecrashte bestand of een planning (wat voor mij misschien nog wel het moeilijkste was van dit hele traject) tevoorschijn.

In het bovengenoemde boek over promoveren las ik de verschillende stereotypen van begeleiders. De lijst eindigde met 'De professional': *heeft altijd tijd voor je, leest stukken snel, voorziet ze van adequaat commentaar, motiveert je, en combineert de rollen van coach en beoordelaar op bewonderingswaardige wijze*. Zonder twijfel voldoe jij hieraan. Ik heb veel van je geleerd en daarnaast heb ik je leren kennen als een enorm creatief en betrokken persoon. Je lieve woorden toen ik je, toch iets gespannen vanwege alle deadlines, vertelde dat ik zwanger was van Jules, zal ik niet snel vergeten. En ook je gastvrijheid wanneer ik even niet de dag op zolder wilde doorbrengen en ik bij jou thuis met een kopje thee en mooi uitzicht mocht werken. Lieve Mette, je bent een prachtig persoon en ik ben je zeer dankbaar voor alles!

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Jouw motiverende woorden voor - en enthousiasme na een presentatie of workshop hebben me enorm geholpen met mijn zelfvertrouwen. Ik heb mooie herinneringen aan de congressen (waar ik tot jouw verbazing na afloop mijn posters in de prullenbak gooide en echt niet meer mee terug wilde nemen) en ben je nog altijd dankbaar dat je de reisleidingsrol op je nam voor de terugreis vanuit Ljubljana (aangezien we daar anders nog dagen hadden vastgezeten). Lieve Henk-Frans, je stond voor me klaar wanneer ik (vooral aan het einde) het even niet meer zag zitten en bent altijd in me blijven geloven. Dank voor alles!

Graag wil ik de leescommissie, Toine Egberts, Katja Taxis, Roger Damoiseaux, Astrid Janssens en Jacobijn Gussekloo bedanken voor het beoordelen en goedkeuren van mijn proefschrift. De datum was nog even spannend en de opluchting was dus groot toen 15 mei kon blijven staan. Dank voor het vrijmaken van jullie tijd! Tevens wil ik Roger bedanken voor de fijne gesprekken die we hebben gehad over de zorgverlenende rol van de apotheker.

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Graag wil ik alle apothekers, huisartsen en praktijkverpleegkundigen bedanken die aan dit onderzoek hebben meegewerkt. Ik vind het geweldig dat jullie samen ruim 800 patiënten hebben geïncludeerd. En naast de vele CombiConsulten die jullie hebben uitgevoerd, hebben jullie ook tijd gemaakt voor scholing, conference calls, interviews, vragenlijsten, registratie van onderzoeksgegevens en de vele vragen van mijn kant. Per telefoon, app, mail of Teams wist ik jullie altijd wel te bereiken voor nog snel even een vraag over een aangeleverd bestand, een bepaalde karakteristiek voor in een tabel of het extraheren van gegevens. Ik vind het heel fijn dat ik met jullie samen heb mogen werken en dat bij velen van jullie de onderlinge samenwerking nog sterker is geworden. In het bijzonder wil ik de bedenkers van het CombiConsult, de apothekers uit Alphen a/d Rijn van Samenwerkende apotheken Rijn en Gouwe bedanken. Toine Seesing, dank voor de hulp bij het opstarten van het project!

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Lieve Annemieke, je bent niet meer werkzaam bij SIR, maar jij was destijds degene die mij liet weten dat dit project ook een promotietraject zou worden. En de keus was aan mij; niet promoveren en op de achtergrond betrokken blijven, of zelf promoveren op dit onderwerp. Eigenlijk wist je het zo te brengen dat ik geen nee kon zeggen. Nu kan ik zeggen: Dank daarvoor! En natuurlijk ook voor je betrokkenheid en het creëren van een fantastisch team, want dat heeft me zeker geholpen.

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Lieve Bram, we go way back: middelbare school, Farmacie, SIR.. je kent me ondertussen als geen ander en dus klopte ik bij jou aan voor advies: ga ik dit traject aan of niet? Je was op dat moment in de laatste fase van jouw promotietraject en wellicht was het daarom een gevaarlijk moment om deze vraag te stellen. Het advies luidde dan ook dat ik er heel goed over na moest denken. Toen ik vervolgens twijfelde, vroeg je me of er ooit iets in het verleden niet gelukt was wat ik op voorhand wel lastig of spannend vond. Ik kon niks bedenken. En zo simpel was toen jouw antwoord: "Nou dan gaat dit ook wel lukken!" Bedankt voor je goede advies, want zie hier het resultaat. En natuurlijk bedankt voor je gezelligheid, je bent een topper!

Lieve Gert, Oh My God! Het is af: 112 pages, front and back! Ik kan natuurlijk zeggen dat ik beschik over unagi, maar jij kent mij goed genoeg om te weten dat ik die staat van bewustzijn nooit gehaald heb. Dat het dan toch gelukt is, daar wil ik ook zeker jou voor bedanken. Jij bent niet alleen mijn collega, maar ook mijn mental coach, wandelende agenda, persoonlijke chauffeur en redder in nood (altijd een krentenbol in de aanslag). Maar bovenal ben je mijn maatje! Toen SIR zich ook in Vleuten vestigde, werd jij mijn vaste kamergenoot. Ik heb je goede ideeën en kritische vragen zeer gewaardeerd (je komt niet zomaar aan de middle name 'Wonderboy'), maar bovenal heb ik enorm veel met je gelachen. Dat het ons samen is gelukt om met de trein in Aberdeen aan te komen, is een wonder. Dat het ons gelukt is om (nog net binnen een etmaal) thuis te komen én nog even Dundee en Carstairs aan te tikken (in niet bepaald een "Relaxi Taxi") kan ik nog steeds niet geloven. Wie weet komt het ooit nog tot 'The one with the pharmacists'. Al heb jij nu nog even andere prioriteiten! Maar ik weet zeker, jouw proefschrift wordt ongetwijfeld een succes! (You've) Got the key(s)!!

Lieve (voormalig) stagiaires Fleur, Abdel, Ilham, Ivona, Nilofar, Warsha, Sasja, Fatima. Wat een hoop werk hebben jullie verzet! Ik ben jullie zo enorm dankbaar voor jullie inzet en hulp.

Nilofar, jij was mijn eerste stagiair en hebt de startgesprekken met apothekers en huisartsen gevoerd. Zo dapper! Daarnaast maakte je de nieuwsbrief en een logo en zorgde je altijd voor een mooie vormgeving.

Ivona, wat een bewondering heb ik voor jou. Je kwam in 2015 vanuit Kroatië naar Nederland, ging hier opnieuw de master Farmacie volgen en kwam tijdens je keuzestage bij mij de interviews met huisartsen en praktijkverpleegkundigen uitwerken. Ik heb je nauwelijks op een spelfout kunnen betrappen, zo knap! En leuk om zo te merken wat een raar taaltje we soms hebben door jouw vraagtekens bij bepaalde spreekwoorden en gezegden.

Warsha, wij gingen samen aan de slag met de analyse van de interviews. De zoektocht naar een framework (en hoe dit te gebruiken) en het werken met NVIVO was voor ons beiden een grote zoektocht. Ik herinner me nog de enorme codeboom, uitgestald op de tafel in de koffiekamer. Wat een werk!

Ilham, jij hebt me geholpen met de analyse van de opgenomen consulten. Wat voor ons beiden nieuw en ingewikkeld was. En extra uitdagend: alles via Teams vanwege Corona. Fatima, je kwam me als werkstudent ondersteunen en dat was heel wenselijk! Je hebt me enorm veel werk uit handen genomen, van data verzamelen (als er tenminste gereden mocht worden met het OV (Coronatijd)) tot vragenlijsten invoeren.

Fleur, je kwam een half jaar onderzoekstage lopen en je was direct onderdeel van het team. Je weet van aanpakken, want in no time had je genoeg patiënten voor de focusgroepen. Ik heb enorm met je gelachen (er zijn quotes die ik nooit meer vergeet!) en de reisjes door het land naar de focusgroepbijeenkomsten werden een stuk gezelliger met jou (zingend) naast me. En dank voor je hulp bij het artikel over de focusgroepen!

Abdel, ook jij kwam een half jaar onderzoekstage lopen. En dat beviel heel goed! Dus kwam je weer terug, voor een keuzestage. En gelukkig daarna ook nog als werkstudent. Wat een hoop werk heb jij verzet! Waar ik zo enorm tegenop zag, het extraheren van de data bij apotheken en huisartsenpraktijken, deed jij met gemak en met veel plezier. Je verdiepte je eerder in Access dan ik en hielp me vervolgens dit programma te begrijpen. Zelfs een handleiding werd gemaakt. Je hebt me echt met zoveel geholpen (ik denk nog even terug aan die vrijdag waarop ik realiseerde dat mijn posters terug naar Duitsland waren gestuurd en jij een dag lang een luisterend oor was en met oplossingen kwam). Sasja, jij werd op het einde nog even ingevlogen voor een extra analyse van de consulten. Dat je op korte termijn en in razend tempo mij zo hebt kunnen helpen was zeer welkom!!

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Lieve (ex) assistenten van apotheek Vleuten en Stevenshof, ondanks dat ik geen minuut bij jullie in de apotheek heb gewerkt, voel ik me toch een beetje onderdeel van jullie teams. In het begin bij de Stevenshof, maar later ook in Vleuten heb ik vele koffie- en lunchpauzes mogen meemaken. Ik heb me enorm welkom gevoeld en jullie zijn vaak een luisterend oor geweest als ik weer eens een boekje open deed over de strubbelingen die ik had met mijn onderzoek. Stieneke en Liesbeth, leuk dat jullie altijd interesse zijn blijven tonen in mijn onderzoek! En Jacqueline, ik meen dit in alle ernst: er is nu ruimte om na te denken over cabaret ;)

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Lieve Loozen en Liek, jullie zijn altijd zo lief voor me! Ik kijk er altijd enorm naar uit om jullie weer te zien en te knuffelen! De mok met jullie foto heeft me er op moeilijke momenten zeker doorheen gesleept!

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via Brenda en je werd al snel mijn hardloop- en klimmaatje. Topsport zit er voor ons alle drie niet meer in, maar laten we ons gaan storten op het jeu de boules!

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Lieve Piet en Dymphna,

Jullie leerden mij kennen als student op het hockeyveld, maar dat veranderde langzaam naar werkende moeder. Bij de aankondiging van mijn eerste zwangerschap lieten jullie weten graag op te willen passen. En dat hebben jullie geweten.. :) Ondertussen 3 kinderen verder, maar nog altijd paraat op de woensdag. Als ik thuis kom heeft Dymphna het huis aan kant en de was gedaan en Piet rijdt al 2 jaar lang kinderen naar zwembles en terug. Bij sommigen zal misschien nu een belletje gaan rinkelen: Piet.. is dat niet die man die samen met Chiel 2300km reed om jullie op te halen in Zuid-Frankrijk? Ja dat is 'm! Lieve Piet, je bent al vele malen onze reddende engel geweest. Ik ben je ook zeer dankbaar voor alle keren dat je aan het einde van mijn promotietraject extra wilde oppassen! Die tijd heb ik goed besteed. En Dymphna, bedankt voor alle goede zorgen!

Lieve papa en mama,

De keuze voor farmacie was niet vanzelfsprekend. Van jongs af aan werkte ik in de vakanties met veel plezier in de apotheek, maar apotheker wilde ik niet worden. Toen de studiekeuze gemaakt moest worden, wist vooral mama mij toch te overtuigen. Boven in het restaurant van de V&D vertelde je met veel passie over dit vak. En dat terwijl je de opleiding zelf niet gevolgd had. Later besepte ik dat het boek dat jij altijd meenam op vakantie, het farmacotherapeutisch kompas bleek te zijn.

Het werd dus toch farmacie. Al snel kwam ik erachter dat jij niet zomaar een apothekersassistent was. Als ik me ergens voorstelde volgde vaak "De dochter van Gudy?" Jouw enthousiasme voor het vak, je motivatie om nieuwe uitdagingen aan te gaan en je zorg voor de patiënt; je hebt het allemaal doorgegeven. Wat was ik blij toen ik aan het begin van mijn carrière jou kon bellen als ik weer eens niet zeker was van een voorschrift. Maar na een tijdje merkte ik dat de rollen langzaam begonnen om te draaien. Misschien dat toen die vervelende Alzheimer al in jouw leven was. De diagnose was een enorme klap en we hebben er samen om gehuild. Maar ik weet ook als geen ander hoe ik je weer kan laten stralen: een gesprek over de farmacie. Bij mij thuis vraag je altijd naar het laatste PW en geniet je van de voor jou soms nog bekende gezichten. Toen je me laatst vertelde dat jij ook aan het promoveren bent en nog heel veel werk te doen hebt, voelde ik me enorm gesteund. Lieve mam, je bent en blijft mijn grote voorbeeld en dit boekje is ook voor jou (hopelijk scheelt je dat wat werk) :)

Lieve papa, daar zaten we dan, bij de V&D... welke studie zou het worden? Je bent nog mee gaan kijken bij Nederlandse taal en cultuur, maar dat leek je toch niks voor mij. Het werd farmacie. Net als mama en Sabine de zorg in. Toch kan ik zeggen dat ik ook wat van jouw genen heb meegekregen: passie voor het onderwijs. Ik begon bij de co-assistenten, maar al snel volgden de HAO's, apothekers en apotheketeams. Van jouw skills als docent heb ik nog vaak gebruik gemaakt. Tekst die nog even nagekeken moest worden stuurde ik altijd jouw kant op, zo ook de maandelijkse columns. Binnen no time kreeg ik ze gecorrigeerd weer terug. De inhoud van dit boekje heb ik je bespaard, al krijg ik vast nog wel commentaar op wat tekstuele fouten in mijn dankwoord.

Ik ben jullie vooral heel dankbaar dat ik altijd mijn eigen keuzes heb mogen maken, dat jullie me in alles gesteund hebben en áltijd voor me klaarstaan. Een ziek kind of crèche die dicht is: jullie springen in de auto. De weg van Breda naar Utrecht en later De Meern kunnen jullie dromen. Zonder deze hulp had ik vast nog jaren langer over dit boekje gedaan.

En lieve pap, het moet nog even genoemd worden dat jij dit allemaal doet naast de zorg voor mama. Daar heb ik heel veel bewondering voor.

Lieve Sabine,

Je bent mijn lieve, knappe zus en mijn grote voorbeeld. Ik heb altijd een beetje tegen je op gekeken en vond dat ik alles moest kunnen wat jij ook kan. Ik weet ondertussen dat me dat toch niet gaat lukken (nee, geen publicatie in The Lancet), maar je motiveert me wel om me verder te ontwikkelen. Promoveren vond ik toch wel een dingetje, maar jij riep meteen enthousiast “Leuk! Moet je doen!” Van jou kreeg ik het boek ‘Promoveren, een wegwijzer voor de beginnende wetenschapper’, maar dat las ik dus pas toen ik al 3 jaar bezig was en eindelijk hardop durfde uit te spreken dat ik aan het promoveren was. Al toen we klein waren, maar nu nog steeds, sta je altijd klaar om me te helpen. Zowel privé (“Anders breng je de kinderen toch even naar mij”), als op werk. Je bent ondertussen ook bekend bij aardig wat huisarts collega’s. Een appje over een patiënt met hyponatriëmie of verminderde nierfunctie, je denkt altijd even mee.

Lieve Sabine, je bent een geweldige zus. En met de ziekte van mama nam je de rol van moeder ook een beetje op je. Ik ben enorm trots dat je mijn paranimf bent.

Lieve Philip, Lucie en Jules,

Het boek is af! Zo lang als jullie leven, ben ik hier al mee bezig (pfff dat is lang hè!). Maar wat was het fijn om na een dag schrijven weer thuis te komen en jullie om me heen te hebben. Werken op een vrije dag was daardoor absoluut niet mogelijk. En dat was maar goed ook!

Ik had jullie al verteld dat het geen voorleesboek zou gaan worden, maar dat ik het boek in een versje zou samenvatten. Jullie mochten verzinnen over wie het zou gaan. Lucie koos een eenhoorn, Philip en Jules een dino:

*Op een prachtig eiland in de oceaan
Zie je vanuit de verte twee dino’s staan
De een is paars, de ander groen
En ze hebben belangrijk werk te doen
Ze zorgen voor alle zieke dieren
Van giraffen met hoofdpijn, tot duizelige mieren
Maar voor pillen, hoestdrank of drop
Moeten de dieren naar een eiland verderop
Daar werkt een eenhoorn lange dagen
En kunnen de dieren terecht met vragen
Maar de boot gaat 1x in het uur
En dat is wel een beetje zuur
Ook willen de eenhoorn en dino’s elkaar veel vertellen
Maar dat kan alleen door even te bellen
Ze vinden dat dit beter kan*

*Dus bedenken ze een prachtig plan
Om elkaar wat vaker te kunnen zien
En met elkaar te praten bovendien
Vragen ze de grootste vis in leven
Om hun eiland een flinke zwieper te geven
En nu zie je op een prachtig eiland in de oceaan
Twee dino's en een eenhoorn staan*



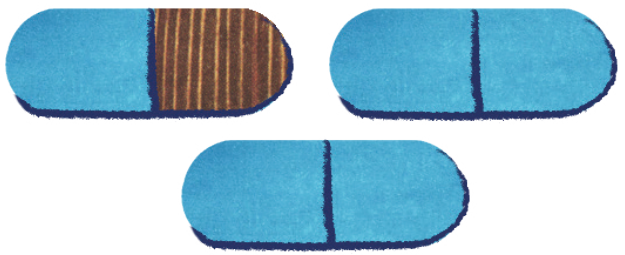
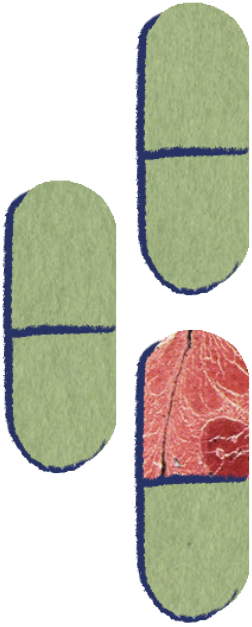
Lieverds, als jullie groot zijn, kunnen jullie dit boekje misschien nog eens bekijken. Ik heb hier namelijk met veel plezier (en natuurlijk ook wel eens frustratie ;)) aan gewerkt en ik hoop dat het jullie kan inspireren om later te doen wat je leuk vindt! Ik hou intens veel van jullie!

Lieve Rik,

Mijn laatste woorden van het dankwoord zijn voor jou. Zo'n zes jaar geleden liet ik je weten dat het onderzoek waar ik bij betrokken was, een promotieonderzoek zou worden. En mijn vraag of jij er achter zou staan als ik zou gaan promoveren. Philip was toen net 1 jaar en ik was zwanger van Lucie (niet bepaald de rustigste fase in ons leven). Zonder twijfel zei je ja. En toen kon ik niet meer terug...

In die zes jaar is er veel gebeurd. Lucie en Jules werden geboren, we maakten een pandemie mee en zelf maakte je een moeilijke tijd door. Maar ondanks dat sta je altijd voor me klaar. Je was aandachtig publiek als ik een presentatie wilde oefenen en een geduldige docent als ik weer eens hulp nodig had met Access of Excel. Je bent een geweldige kok die elke avond een heerlijke maaltijd voor ons bereidt. En je bent letterlijk en figuurlijk een warm persoon met wie ik alles kan delen (dat was de afgelopen 6 jaar nogal wat) en die elk jaar weer zorgt dat ik, als koukleum, de winter doorkom. Daarbij komt dat je een fantastische vader bent voor Philip, Lucie en Jules. Als ik weer eens 's avonds training moest geven of nog 'even' achter de laptop moest kruipen voor mijn onderzoek, zorgde jij voor onze kleine druktemakers. Het was niet altijd makkelijk en ik heb soms veel van je gevraagd, maar je hebt me nooit het gevoel gegeven dat ik daardoor iets moest laten. Ik kijk met veel plezier op deze periode terug. Maar als je me nu vraagt of ik blij ben dat het klaar is, zeg ik zonder twijfel ja :)

Ik denk niet dat we nu meteen kunnen spreken van een rustigere levensfase, al hou ik eerlijk gezegd wel van een beetje chaos. Maar bovenal hou ik van jou, met heel mijn hart!



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LIST OF CO-AUTHORS

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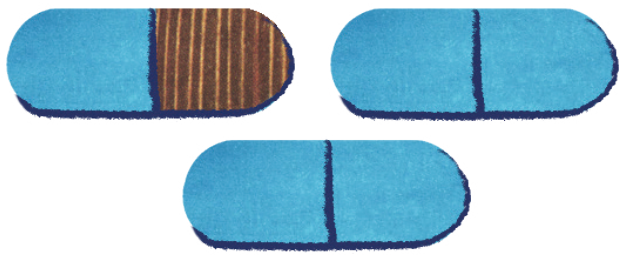
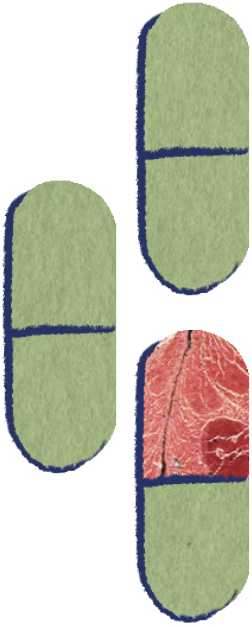
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List of publications

LIST OF PUBLICATIONS

International publications presented in this thesis

- Meijvis VAM, Heringa M, Kwint HF, de Wit NJ, Bouvy ML. The CombiConsultation: a new concept of sequential consultation with the pharmacist and practice nurse/ general practitioner for patients with a chronic condition. *Int J Clin Pharm*. 2022 Apr;44:580-584.
- Meijvis VAM, Heringa M, Kwint HF, de Wit NJ, Bouvy ML. The CombiConsultation for patients with diabetes, COPD and cardiovascular diseases: Evaluation of interventions and personal health-related goals. *Res Social Adm Pharm*. 2023 Jul;19:1054-1060.
- Meijvis VAM, Heringa M, Kwint HF, de Wit NJ, Bouvy ML. Barriers and facilitators for the implementation of the CombiConsultation by general practitioners, pharmacists and practice nurses: a qualitative interview study. *Int J Clin Pharm*. 2023 Aug;45:970-979.
- Meijvis VAM, Heringa M, Kwint HF, de Wit NJ, Bouvy ML. Factors influencing the implementation of the CombiConsultation in Dutch clinical practice: a survey study. Manuscript submitted for publication.

Other publications related to this thesis

- Seesing T, Meijvis VAM. Verlichting klachten na gesprek. *Pharm Weekbl*. 2018; 48, p. 18.
- Valentijn R, Meijvis VAM. Lactulose oorzaak diarree. *Pharm Weekbl*. 2019; 15, p. 16.
- Braspenincx BEC, Meijvis VAM. Maagpijn en obstipatie verdwijnen na stoppen tramadol. *Pharm Weekbl*. 2022; 24, p. 17-18.

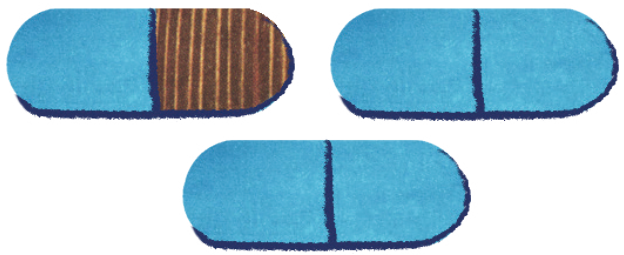
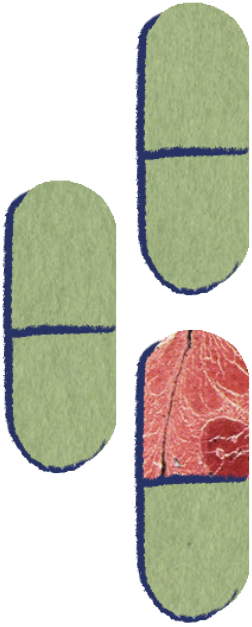
Presentations related to this thesis

- Het CombiConsult bij diabetes / CVRM / COPD - patiënten: evaluatie van interventies en persoonlijke behandeldoelen. Presented at Prisma symposium 2019, Amersfoort, The Netherlands
- Deprescribing en persoonlijke doelen bij medicatiebeoordeling. Presented at Workshop Alliantie Medicatieveiligheid 2019, The Hague, The Netherlands.
- The CombiConsultation for patients with diabetes, COPD and/or CVR. Presented at the 48th European Society of Clinical Pharmacy (ESCP) Symposium on Clinical Pharmacy 2019, Ljubljana, Slovenia.
- Patient perspectives on CombiConsultation with community pharmacists. Presented at the 48th European Society of Clinical Pharmacy (ESCP) Symposium on Clinical Pharmacy 2019, Ljubljana, Slovenia.

- Bevorderende en belemmerende factoren voor het implementeren van het CombiConsult: een kwalitatieve studie. Presented at Prisma symposium 2021, Amersfoort, The Netherlands.
- Het CombiConsult bij diabetes / CVRM / COPD - patiënten: evaluatie van interventies en persoonlijke behandeldoelen. Presented at Prisma symposium 2022, Amersfoort, The Netherlands.
- Het CombiConsult van huisarts, praktijkverpleegkundige en openbaar apothekers voor patiënten met diabetes, CVRM en COPD. Presented at the GGG Congres 2023, 's-Hertogenbosch, The Netherlands
- The CombiConsultation: Barriers and Facilitators for implementation. Presented at Prisma symposium 2023, Amersfoort, The Netherlands.

Poster presentations related to this thesis

- Patient perspectives on CombiConsultation with community pharmacists. Presented at the 48th European Society of Clinical Pharmacy (ESCP) Symposium on Clinical Pharmacy in Ljubljana, Slovenia.
- The CombiConsultation for patients with diabetes, COPD and/or CVRM. Presented at the 48th European Society of Clinical Pharmacy (ESCP) Symposium on Clinical Pharmacy in Ljubljana, Slovenia.
- Implementatie van het CombiConsult: perspectief van de (openbaar) apotheker. Presented at the KNMP congres 2021, The Netherlands.
- The CombiConsultation for patients with diabetes, COPD and/or CVRM. Presented at the 50th European Society of Clinical Pharmacy (ESCP) Symposium on Clinical Pharmacy 2022, Prague, Czech Republic.
- The consultation by the pharmacist: let's talk about goals. Presented at the 51th European Society of Clinical Pharmacy (ESCP) Symposium on Clinical Pharmacy 2023, Aberdeen, Scotland.



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ABOUT THE AUTHOR



Valérie Adriënne Marie Meijvis was born on December 18th 1985 in Breda, the Netherlands. From an early age, she had a summer job at Apotheek Hoge Vucht. After obtaining her VWO diploma at the Onze Lieve Vrouweyceum in Breda, she moved to Utrecht to study Pharmacy at the Utrecht University. Throughout her childhood, student years and early career, she dedicated her free time to playing field hockey.

After obtaining her Master of Science degree in Pharmacy (2011), she started working as a community pharmacist in Apotheek Van Maarseveen in Hilversum. Six months later she transferred to Mediq apotheek Ommoord to combine her work with the post-academic advanced community pharmacist education program, which she completed in 2014. In the same year, she started working as a non-dispensing pharmacist at Julius Gezondheidscentrum Parkwijk. She participated in a newly developed 15-month dual training program focused on primary care-based clinical pharmacy as part of the POINT study. After completing this training in 2015, she continued to work part-time at Julius Gezondheidscentra; five years at location Parkwijk and since 2020 at location Terwijde. At the same time in 2015, she started working at SIR Institute for Pharmacy Practice and Policy. With her particular interest in pharmacotherapy and her clinical experience, she provided guidance to pharmacists in a nationally certified training program for conducting medication reviews (Periodieke Individuele Analyse Farmacotherapie (PIAF)). Also, she has taught aspiring general practitioners about pharmacotherapy at location in Zeist and Rotterdam. In 2018 she started her PhD, which she combined with providing consultation training to community pharmacy teams.

Valérie lives in De Meern with Rik and their three children Philip (2016), Lucie (2018) and Jules (2020).

