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Medication management in patients with diabetes

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General discussion

Chapter 07

Follow-up case

In the introduction we have met Mary and the medication management problems she had to deal with. Because she could not control her diabetes with oral glucose lowering medication and lifestyle adaptations alone, insulin treatment was suggested. However, Mary had some second thoughts about insulin therapy and she discussed her medication management problems with her community pharmacist.

Mary's general practitioner (GP) agreed with the schedule and dose change of the metformin. Organizing and managing her oral medications has become much easier with the multidose drug dispensing system and she set an alarm on her mobile phone to remind herself to take the medication. The dispensing bags made it easier to take her medication to work during her evening- and night shifts. Mary also started to attend the monthly meetings of the new diabetes support program. Her husband accompanies her, and she has already received a lot of information about diabetes, its therapy and useful tips for daily practice. The most important thing she has learned is to take one step at the time to stay in control of her treatment.

Mary's case is a good example of collaboration in medication management in practice. Though, the results of this thesis show that there is room for improvement in different elements of medication management in the primary care setting. In this general discussion we will reflect on how medication management can be improved in relation to the findings of this thesis.

Main findings

This thesis describes medication management in patients with diabetes and the role of the community pharmacist in this. We gained insight into different aspects of medication management, including describing the population with diabetes at risk for possible medication management problems, exploring the type of problems experienced by patients, the role of the pharmacist in supporting patients' self-management and to describe the communication between pharmacists and patients during a clinical medication review (CMR) interview.

In **Chapter 2** we described the population of patients with diabetes and their level of control based on data available through general practices, including 37,371 patients. Over a two-year period, 54% of patients had controlled diabetes, 13% had uncontrolled diabetes and 33% had mixed controlled diabetes. Especially younger age and the use of multiple oral blood glucose lowering drugs were associated with uncontrolled and mixed controlled diabetes. Within a multinomial logistic regression analysis, 14% of the differences between groups was explained indicating that other factors also influence diabetes control. **Chapter 3** describes the added value of pharmacists in improving self-management skills in patients with diabetes. With a

systematic review and meta-analysis 24 studies have been analysed showing that pharmacist-led interventions overall improve HbA1c levels with 0.71% [-0.91, -0.51]. Interventions were heterogeneous in components implemented, including education on diabetes complications, medication and lifestyle and teaching of self-management skills. To explore medication related problems patients with diabetes experience, in **Chapter 4** we have conducted a qualitative semi-structured interview study based on the theoretical framework of the Cycle of Complexity model. [1] Problems experienced by patients were often related to stress – due to private circumstances or work – and concerns about using medication in general. Patients sought support from both relatives and healthcare providers. Though, to share problems with healthcare providers and to ask for support, a trusted relationship between the two was essential. This was also acknowledged by the healthcare providers. Healthcare providers experienced difficulties in identifying medication related problems in patients with diabetes. Pharmacists in particular had a rather passive role in identifying problems and relied on patients coming forward to share their problems. However, once problems were known to pharmacists or other healthcare providers, they were able to offer appropriate support to patients. The findings of **Chapter 4** led to further investigation of the communication between pharmacists and patients in identifying problems. An important role of pharmacists is to conduct CMRs in order to optimize medication therapy by evaluating the appropriateness of patients' medication therapy and assessing patients' experiences with it.[2,3] In **Chapter 5** we described what kind of problems patients with diabetes addressed during the patient interview of a CMR. In total we observed 68 video-taped patient interviews, in which 1,299 problems were addressed. The problems were categorized into five themes; physical complaints, medication, psychosocial complaints, experiences with healthcare and lifestyle. These results showed that patients discussed much more with their pharmacist than just medication related problems. The responses of pharmacists to the presented problems were mainly non-explicitly referring to the patients' problems and provided the patients space for further disclosure of their problems. Pharmacists' responses were mainly comparable throughout the different themes, although it seemed that pharmacists were more likely to give information and advice as a response to medication related problems compared to other kind of problems. To further explore the communication between pharmacists and patients we have looked into the presentation of negative emotions by patients and the responses of pharmacists to this. In **Chapter 6** we have analysed 132 patient interviews of 49 pharmacists. In total, we identified 2,538 negative emotions mainly expressed as cues (95%) – a verbal or non-verbal hint suggesting an underlying unpleasant emotion that needs clarification from the healthcare provider.[4] Patients often expressed cues as verbal hints to hidden concerns or the cues were related to cognitive or physical causes. The majority of pharmacists' responses were non-explicitly referring to patients' negative emotions (78%) and were providing space for further disclosure (76%). A minority of pharmacists' responses reduced space for patients, either explicitly (6%) or non-explicitly (18%). Pharmacists' non-explicit responses could hinder them to fully capture patients' problems.

How can pharmacists improve medication management?

The results of this thesis have shown that many different factors should be taken into consideration when evaluating medication management in patients. **Chapters 2, 4 and 5** highlighted the importance of patient characteristics and their role in medication management. **Chapters 3, 4 and 6** indicated pharmacists' contributions to medication management and their role in the disclosure of medication related problems and the subsequent offer of support. Also, throughout this thesis the collaboration and communication between pharmacists and patients has been acknowledged as an important factor for successful medication management. Collaboration is important for identifying medication related problems, placing medication related problems into the perspective of patient's daily life and to frame the context for providing medication management support.

A considerable proportion of patients with diabetes do not meet HbA1c target values. Part of this problem is due to the complex treatment of diabetes leading to medication management problems.

These problems can occur in any step of the process of medication use, from prescription to the actual use by the patient. Many different healthcare providers are involved in this process, though eventually it is the patient who has to decide how to use their medication. Community pharmacists are the medication experts in primary care and have envisioned themselves to invest in the treatment relationship with patients to get insight into patients' needs. Pharmacists are in a position to combine knowledge about medications and the human body with observed patient behaviour with regards to health and medication use.[5] This gives community pharmacists the opportunity to offer pharmacist-led medication management interventions to improve medication management in patients with diabetes.

Based on the findings of this thesis, several elements are important to consider when further developing the role of the pharmacist. In this discussion we will address the following elements:

1. Selection of patient population: this is important for targeting an intervention as previous studies have shown it is not effective to offer an intervention to all patients with diabetes in general.[6–9]
2. Patients' role in medication management: this should be taken into consideration during the whole process of medication use as patients' capacities and skills are influencing their ability of self-management.[10–14] In addition, exploring patients experiences is important for identifying medication management problems.

3. Pharmacists' role in medication management: this should be further developed as pharmacists will increasingly become the health care professionals to deliver medication management interventions. In this regard, especially their communication skills deserve attention.[15]
4. Collaboration in primary care: this is necessary because patients never just deal with one healthcare provider and the combined efforts of healthcare providers are beneficiary for patient outcomes.[16]

Selection of patient population

Chapter 2 identified patients with diabetes at risk for uncontrolled diabetes based on HbA1c with the use of data available through the general practice. Our results did not provide specific parameters from the GPs' electronic health records which could be used to identify patients at risk for uncontrolled diabetes, indicating other factors play a role in diabetes control.

A combination of different data sources is necessary to identify patients at risk of uncontrolled diabetes as many factors can influence diabetes control.[17] The pharmacy holds a rich source of patient data, including dispensing data and personal patient notes made by the pharmacy staff. Pharmacy dispensing data is automatically recorded in the pharmacy and can be used to estimate patients' medication adherence.[18] Adherence has been described as an important factor for lowering HbA1c levels in patients with diabetes.[19,20] This relationship between adherence and lowering HbA1c levels is important for reaching HbA1c target values. Most pharmacy information systems give an automated pop-up if a patient comes in too early or too late to refill a prescription, making this an easy entrance to bring up adherence during a patient encounter. During patient encounters, pharmacists are also able to collect personal patient information by exploring patients' experiences with their medications. This personal data can be noted in the pharmacy patient record. The pharmacist can use this information to identify medication management problems and offer appropriate support. However, during patient encounters there is still much room for improvement in information gathering as pharmacy staff mainly provide information to patients and hardly encourage them to ask questions.[21–23]

Another source of information is patient-reported data. This can give insight in psychosocial factors influencing diabetes control, including diabetes knowledge, self-efficacy and patient empowerment level.[24] This information can be obtained during patient encounters in face-to-face conversations between patients and pharmacist, eHealth applications or with the help of questionnaires.[25,26] Information obtained through eHealth applications and questionnaires can be used as entrance for a conversation with patients about medication management or in combination with clinical data and pharmacy data to identify patient populations at risk of uncontrolled diabetes.

Patient's role in medication management

Patients' diabetes outcome is positively related to the level of self-management.[27] The results of **Chapter 4 and 5** have shown that medication management and problems related to this cannot be seen separately from patients' overall healthcare nor from patients' daily activities. Patients only see the pharmacist – and other healthcare providers – a couple of times a year, in the mean time they have to manage their disease on their own. This highlights the importance of organizing care around patients' needs. As previously discussed, the Cycle of Complexity Model reflects factors influencing patients' ability for medication management.[1] For developing a long-term medication management plan, patients' 'Workload' and 'Capacity & Resilience' are important factors to take into consideration. Patients' 'Workload' can be translated into the number of activities a patient is engaged in on a daily basis – either healthcare related or non-healthcare related – and therefore influences the amount of time patients can invest in medication management. 'Capacity & Resilience' on the other hand includes health literacy, self-efficacy and social support from relatives and affects patients' independence in healthcare.

In practice, 'Workload' and 'Capacity & Resilience' can be translated into two elements in a medication management intervention. To lower patients' 'Workload', support is required in time management and planning skills to manage their day-to-day and long-term medication regimen. To increase patients' 'Capacity & Resilience', support is required to increase diabetes and medication knowledge and assistance for improving social support.[14,28–31] Equipping patients with communication skills is necessary to assist them in asking questions during encounters with healthcare providers (face-to-face as well as on-line) to disclose problems. This can be improved by using a patient-empowerment strategy.[32] The level of patient empowerment is influenced by responsibilities and opportunities on a patient level, healthcare provider level and healthcare system level and comprises of both patients' capacities and patients' behaviours. Patients' capacities – including communication skills – can be trained and influence patients' behaviours in healthcare. Patients' behaviour includes participating in shared-decision making, self-management and actively participating in information seeking and support groups.[32] The interventions targeting patient-empowerment are often long-term. Short term interventions for engaging patients in communication with their healthcare provider include hands-on tools as instruction cards to inform patients about the goals of a specific encounter.[33]

It is a shared responsibility of patients and pharmacists to address 'Workload' and 'Capacity & Resilience' when discussing medication management. Also, these elements can be used to identify patients' priorities in medication management in relation to other activities.

Pharmacist's role in medication management

Chapter 3 has shown the added value of pharmacist-led self-management interventions to improve diabetes outcomes in patients. These are promising results, although **Chapter 4, 5 and**

6 have described areas in pharmacists' care that can be improved, including communication skills and discussing problems indirectly related to medication management. Over the years communication education has received increased attention during several stages of pharmacists' career, starting at the pharmacy degree program and continuing into post-graduate courses and seminars.[34]

One of the recent developments in Dutch practice is the guideline 'consultation for pharmacy practice'. [35] This guideline emphasizes two main aims. Firstly, how to implement consultation in pharmacy practice. Secondly, the guideline provides guidance on how to conduct consultations in pharmacy practice with a focus on the structure of the consultation, shared-decision making and building a relationship with the patient. However, this guideline lacks information on improving actual communication skills required for obtaining patient information, engaging patients in a consultation and building a long-term relationship with patients and should therefore be the focus of future communication training for pharmacists. Providing pharmacists with patient-centred communication skills will enable them to better explore patients' medication related problems.[36] Investing in a long-term, trusted and sustainable relationship with patients is not only beneficial for adequate consultation, but can also contribute to get engaged in patients' life and increase pharmacists' ability to put medication related problems into a broader perspective. This could help pharmacists to tailor support to patients' needs, resulting in better patient outcomes.[37,38]

A high-quality pharmacist-patient relationship may also be helpful in discussing patients' problems indirectly related to medication. Pharmacists' knowledge on these problems is key for acting appropriately even though their added value for lifestyle interventions and chronic disease management have already been acknowledged.[39,40] These interventions mainly focused on equipping patients with general practical advice, whereas sustainable interventions require a person-centred and goal-based approach.[41] This highlights once more the importance of pharmacists informing themselves about patients' lives to be able to tailor interventions to patients' needs and circumstances in the future.

Collaboration in primary care

Dutch diabetes care guidelines in primary care already emphasize the importance of collaboration between different healthcare providers.[42,43] In the guideline for conducting CMRs for vulnerable polypharmacy patients, the shared responsibility of both GPs and community pharmacists is described.[44] The GP and pharmacist combine information about possible pharmacotherapy related problems to invite patients for a CMR. The results in **Chapter 4** confirm that collaborations between healthcare providers are not always obvious, both from a patient and healthcare provider perspective. Improving the collaboration between healthcare providers in primary care is beneficial for improving health outcomes in patients with diabetes.[45] Key components

of multidisciplinary collaboration are adequate coordination of care, clear communication of responsibilities towards patients and colleagues and sufficient sharing of information.[46] By assigning a case manager within the multidisciplinary care team, the coordination of care and communication towards the patient can be improved. This case manager can be responsible for a specific patient case or the care for a group of patients.[46] Sharing information between healthcare providers can be challenging due to privacy legislation and shared electronic patient records are therefore still promises for the future.[47] However, sharing of medication information has been improved over the past years in the Netherlands with the help of LSP (Landelijk Schakelpunt/ electronic communication system for sharing patients' medical information) and guidelines for sharing medication information.[48,49] Both initiatives aim to avoid medication related problems and increase patient safety by providing accurate medication information to healthcare providers. Improving the quality of multidisciplinary care teams will contribute to timely identification of medication related problems in patients and the offer appropriate support.

Methodological considerations

The work in this thesis explored the role of the pharmacist in medication management in patients with diabetes. This theme has been approached from different perspectives to get a broad view of the current state of practice. The results of **Chapter 3 and 4** give a general impression of medication management in pharmacy practice and led to observing a more specific setting – CMR interviews – in **Chapter 5 and 6**. Due to choices made in types of observations in the different chapters, some methodological considerations can be made for future studies.

Throughout the different studies it was not possible to adequately observe and assess non-verbal communication of patients and healthcare providers. This was because there was no suitable tool available to assess non-verbal communication and because observations were not made for this purpose. Exploring non-verbal communication could help identify the quality of the patient-provider relationship as non-verbal communication has been described as positive by patients and increases their satisfaction of communication with healthcare providers.[50]

The studies in **Chapter 4, 5 and 6** have looked into the role of patients in sharing medication related problems. The focus in these studies was on what they shared and with whom. There was little attention for how they could be involved in sharing problems and finding solutions and support. More work is needed to assess the active patients' role in participating in medication management. This could be done according to the framework of person-centred participation, describing three phases of participation[51]:

1. Human connection: The healthcare provider should try to create an inviting atmosphere to make patients feel welcome and healthcare providers have an attitude of being approachable for questions. Establishing a meaningful, equal relationship with mutual respect is important.
2. Information processing: Patients' information seeking and healthcare providers' information providing should be balanced. Timing of providing information should be related to patients' disease state and the planning of treatment. Healthcare providers involve patients in an interactive dialogue to increase knowledge and understanding of their disease and its treatment.
3. Action: The actual action undertaken towards health problems. Creating confidence and acceptance of treatment responsibilities in patients. Including patients in shared decision-making and use of patients' goals to increase patients' perceived control over their healthcare.

As previously described in this discussion, collaboration between healthcare providers is essential for providing adequate medication management. However, in this thesis only **Chapter 4** looked into this collaboration. Although several guidelines in Dutch practice describe collaboration between healthcare providers, it would be more interesting to observe this collaboration in practice and to explore the effect of different collaboration structures on patient outcomes.

The chapters of this thesis mainly focused on patients with diabetes mellitus type 2 treated in primary care. Our findings, recommendations and suggestions are mainly applicable for this patient population. In **Chapters 4, 5 and 6** we knew the proportion of patients with diabetes mellitus type 2. In **Chapters 2 and 3**, as detailed in the methods sections of those chapters, it was not possible to differentiate between patients with diabetes of type 1 and 2. Most likely, we included a small proportion of patients with diabetes type 1. In general patients with diabetes mellitus type 1 are treated in secondary care due to the higher disease burden and complexity of the treatment.[52] Therefore, we believe that having included a small number of patients with diabetes type 1, does not change the overall findings. This emphasizes that future work should elucidate the role of the pharmacist for patients with diabetes type 1.[53] Also, future studies should collect more clinical parameters of patients to get more information on the diagnosis, insight into patients' disease burden and severity of the disease.

Conclusions

A considerable proportion of patients with diabetes are uncontrolled. Part of the reason patients are uncontrolled are medication management problems. Pharmacists are able to support patients in their medication management, improving both clinical- and patient reported outcomes. Though, the identification of medication related problems in patients with diabetes remains challenging for pharmacists. Patients indicate the need of a trusted relationship to be able to share medication related problems with their pharmacist. During CMRs, patients share

many problems indirectly related to medication management. Pharmacists need to anticipate that patients share all types of problems and should guide consultations without losing sight of what is important for patients.

A pharmacist-led intervention to improve medication management in patients should include the following elements;

- Selection tool to target patients at risk of medication management problems;
- Goal setting with patients;
- Offering support tailored to needs and goals of patients;
- Communication skills training for pharmacists addressing goal setting and tailored support.

The intervention should not be limited to a single incident but should focus on a long-term, sustainable treatment relationship between pharmacist and patient. Furthermore, the pharmacist-led intervention cannot be a stand-alone approach but will require collaboration with other primary care providers to optimize patient care.

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