



Contents lists available at ScienceDirect

Exploratory Research in Clinical and Social Pharmacy

journal homepage: www.elsevier.com/locate/rcsop

Health care professionals' perspectives on medication safety among older migrants with cognitive impairment exposed to polypharmacy – A qualitative explorative study

Camilla Lynnerup^{a,b,c,i,*}, Charlotte Rossing^d, Morten Sodemann^{a,b,i}, Jesper Ryg^{e,f}, Anton Pottegård^{g,h}, Dorthe Nielsen^{a,b,f,i}

^a Migrant Health Clinic - Research Unit for Infectious Diseases, Odense University Hospital, Odense C, Denmark

^b Centre for Global Health, University of Southern Denmark, Odense C, Denmark

^c OPEN, Odense Patient Data Explorative Network, Odense, Denmark

^d Pharmakon, Danish College of Pharmacy Practice, Copenhagen, Denmark

^e Department of Clinical Research, University of Southern Denmark, Odense C, Denmark

^f Department of Geriatric Medicine, Odense University Hospital, Odense C, Denmark

^g Hospital Pharmacy Funen, Odense University Hospital, Odense C, Denmark

^h Clinical Pharmacology, Pharmacy, and Environmental Medicine, Department of Public Health, University of Southern Denmark, Odense C, Denmark

ⁱ University of Southern Denmark, Odense C, Denmark

ARTICLE INFO

Keywords:

Medication safety
Cognitive impairment
Language barriers
Polypharmacy

ABSTRACT

Background: Older migrants with cognitive impairment exposed to polypharmacy constitute a vulnerable group of patients. To our knowledge, evidence on medication safety among this patient group with multiple risk factors is lacking. **Objectives:** To explore the perspectives of health care professionals on medication safety among older migrants with cognitive impairment taking five or more medications daily.

Methods: A total of 34 health care professionals (general practitioners and hospital-, community pharmacy-, and home care staff) participated in the study, comprising nine focus groups and one semi-structured interview, and shared their perspectives on medication safety among older migrants with cognitive impairment exposed to polypharmacy. The analysis was inspired by Revsbæk and Tanggaard's "Analyzing in the Present" and was followed by systematic text condensation. **Results:** Three main themes emerged: (i) the importance of relationships in medication safety, (ii) culture and finances as risk factors, and (iii) the health care system as a risk factor. Subthemes and codes were related within and across main themes and revealed a high level of complexity within the barriers to medication safety. Some of these barriers were closely related to characteristics of this specific patient group, while others were more general barriers that also affected other patient groups. Participants found that these more general problems were complicated further by language barriers and cognitive impairment when working with this patient group.

Conclusion: Health care professionals across various sectors and professions experienced several barriers that threatened medication safety among older migrants with cognitive impairment exposed to polypharmacy. Closer collaboration between health care professionals, patients, and relatives is required to improve medication safety.

1. Background

Older migrants with cognitive impairment are a particularly vulnerable group of patients for several reasons. Migrants of non-Western origin in Europe seem to have poorer health status compared with the host population because they are at higher risk of developing certain non-communicable diseases¹ and have a higher mortality rate due to infectious diseases.² Migrants are also at higher risk for cardiovascular diseases and multimorbidity in general than either the host population or the population

of their home country (Boateng^{3,4}). Multi-morbidity leads to increased use of medications and potential polypharmacy, which is on the rise among those aged 65 years and older in general in Europe and the US.⁵ Polypharmacy, commonly defined as the use of five or more medications daily,⁶ increases the risk of drug-related problems, especially among older patients and patients with cognitive impairment.⁷

Language barriers, cultural differences in beliefs about health, and lack of trust can act as barriers to health care for migrant patients in the general practitioner (GP) setting.^{8–10} In the hospital setting, language barriers also

* Corresponding author at: Migrant Health Clinic, Odense University Hospital, J.B. Winsløvs Vej 4, DK-5000 Odense C, Denmark.
E-mail address: Camilla.lynnerup@rsyd.dk (C. Lynnerup).

<http://dx.doi.org/10.1016/j.rcsop.2022.100128>

Received 16 September 2021; Received in revised form 22 February 2022; Accepted 14 March 2022

Available online xxxx

2667-2766/© 2022 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

act as a potential threat to medication safety and thus patient safety.¹¹ Migrants in Europe are reportedly less satisfied with the medical information provided by health care professionals (HCPs),¹² understand less of the information provided,¹² and have a significantly higher risk of unplanned re-admission and extended length of stay compared to the host population.¹³ A Danish study showed that older migrants are more frequently underdiagnosed for dementia compared with the general population¹⁴ and that the quality of diagnostic evaluations of dementia for older migrants in secondary care differs significantly from that of the general population.¹⁵

A wide range of HCPs play a potential vital role in ensuring medication safety in that they handle the medication and provide information to patients. Community pharmacy staff have reported to delivering poor quality in their encounters with migrant patients.¹⁶ Furthermore, migrants report less effective therapeutic relationships with their pharmacists, which leads to missed opportunities to improve their health outcomes.¹⁷ Home care nurses and assistants also play a vital role in the medication safety of older vulnerable patients as they often help patients administer and take medication at home.^{18,19}

The factors that potentially affect a patient's medication safety include polypharmacy,²⁰ cultural and language barriers,²¹ age-related changes in metabolism,²² and disease complexity and the associated medical treatments.²³ However, to our knowledge, evidence is lacking about medication safety in patient groups with multiple risk factors.

This study aimed to explore the perspectives of various HCPs (GPs; hospital doctors, nurses, and social workers; pharmacists and pharmacy technicians; and home care nurses and assistants) involved in the medication safety of older migrants with cognitive impairments exposed to polypharmacy in a Danish context. In this study, older migrants are defined as persons aged ≥ 65 years and raised in a country other than Denmark who are now living permanently in Denmark.

2. Methods

2.1. Theoretical framework

This study used focus groups and one semi-structured interview to obtain a rich understanding of the HCPs' perspectives of their experiences working with this patient group and their beliefs about how these patients handle their medication.²⁴ A hermeneutic phenomenological inductive approach was used to explore the phenomena associated with medication safety among the patient group as experienced and expressed by the HCPs.^{25,26} The pre-understanding of the researchers and the interpretations of the qualitative data collection were essential to analyzing and reporting the generated knowledge. Researcher characteristics and reflexivity are described according to COREQ in Appendix A.²⁷ The findings of this study were reported in accordance with the Standards for Reporting Qualitative research.²⁸

2.2. Setting

This study took place across different municipalities and regions of Denmark. Approximately 10% of the Danish population are migrants.²⁹ By law, all Danish residents are ensured free and equal access to public health care including GP, home care, pharmacy services, and hospitals. In this study, the Geriatric Department and Migrant Health Clinic represent the public hospital. The Migrant Health Clinic is a multi-disciplinary department comprising doctors, nurses, and social workers who handle the health, psychological, and socioeconomic problems of the patients. In this study, all health professionals are referred to as HCPs.

Every Danish resident has a personal online medication list showing current and prior medical treatment in both the primary and secondary sectors. This list is called the Shared Medication Record and it is accessible to all groups of HCPs represented in this study via the patients' unique civil registration number (³⁰). Furthermore, all patients have a personal online prescription list. With few exceptions, prescriptions are electronic and remain active and available for patients to pick up at all Danish pharmacies

until they are either used up, cancelled by a doctor, or automatically voided after two years. Active prescriptions unrelated to a current medical treatment are referred to as "unattached prescriptions." These systems form the backbone of all medication prescriptions in Denmark and thus have a significant impact on medication safety.

2.3. Participants

Purposive sampling was used to recruit HCPs who were invited to participate based on their place of employment and the likelihood to their coming into contact with the patient group of interest. GPs, pharmacy staff, and home care staff organized by the municipality were invited to participate in the study if they were located in an area with a high prevalence of migrants (over 50% of the population). HCPs from the Geriatric Department and Migrant Health Clinic were invited to participate because these departments were the most likely ones to receive hospitalized older migrants. The focus groups were divided into general practitioners, community pharmacy staff, geriatricians and geriatrician trainees, nurses at the geriatric department, homecare staff, and Migrant Health Clinic staff. Structuring the focus groups according to profession created in depth knowledge on the different professional perspectives on and experiences with this patient group and medication safety. The structure of these focus groups also helped to reveal both the similarities and contrasts between the respective groups.

2.4. Data collection

An inductive approach was used to ensure that the researchers conducted the focus groups and interview with an open mind towards all of the input from the HCPs. This approach was necessary in order to describe a phenomenon that had not been addressed by any previous studies.³¹ The focus groups and interview were facilitated by author CL and carried out from April 2020 to October 2020. Due to the COVID-19 pandemic, the focus groups were primarily conducted using the video platform Microsoft Teams. The participants were encouraged to turn on their video cameras to ensure the best possible interpersonal connection with one another. However four participants had to participate with audio only due to technical issues. The focus groups were video and audio recorded. One focus group comprising geriatric nurses was carried out face-to-face and audio recorded. The focus group comprising geriatricians was mixed, with one geriatrician participating via video and two geriatricians physically attending. Due to logistical limitations, one participant (Geriatrician 3) was interviewed alone in a semi-structured interview using the same interview guide (Appendix B) as the one used in the focus groups. All participants granted permission to be recorded. No more interviews or focus groups were conducted when the majority of points made by the participants were repeated across focus groups or interviews.

2.5. Data analysis

The data analysis was inspired by Revsbæk and Tanggaard's "Analyzing the Present"³² combined with Malterud's Systematic Text Condensation.³³ First, CL listened to the recordings of the focus groups and the interview in order to create one mind map for each focus group. The mind map covered all aspects influencing medication safety for the patient group as expressed by the participants within that group. Second, CL and author DN discussed all the mind maps to identify similarities and differences and to find the preliminary main themes of the collected focus groups. All records were transcribed verbatim.³⁴ All meaning units of the transcriptions were then identified, coded, and gathered into subthemes and main themes, guided by the preliminary main themes from the mind maps. Meaning units are parts of the original data material, which can elucidate the study question. Finally, all authors contributed input to the final analysis and themes. The coding process is demonstrated in Appendix C, and an additional detailed analysis description is presented in Appendix A. NVivo 12 was used to facilitate the analysis.³⁵

2.6. Ethics

All participants provided written and informed consent to participate in the focus groups and interview. The study was approved by The Danish Data Protection Agency (journal no. 19/46044). The National Committee on Health Research Ethics waived registration (case no.20192000-149) due to the qualitative design and because the study did not involve participants undergoing any interventions.

3. Results

A total of 34 HCPs participated in nine focus groups and one semi-structured interview, representing a variety of positions and responsibilities for the patients' medication in both primary and secondary care settings. Table 1 displays the participants' characteristics.

Three preliminary themes emerged during the construction of mind maps. These preliminary themes guided the systematic text condensation and were adjusted after the condensation process. The final main themes were: (i) the importance of relationships in medication safety, (ii) culture and finances as risk factors, and (iii) the health care system as a risk factor. Some codes and subthemes interfered with each other as illustrated in Fig. 1 because this group of patients had several complex characteristics as expressed by a participating GP:

“The combination of polypharmacy, being a migrant, and being cognitively impaired - each of these categories poses a challenge in itself. When you mix them all together in a big mish mash, it becomes VERY challenging.”

(GP 3)

3.1. Main theme (i) – The importance of relationships in medication safety

The relationship between the patient and the HCP was expressed by all participants to be crucial to treatment and thus, medication safety. The subthemes emerging from this main theme were: (a) language is the key, (b) the use of relatives, and (c) relationships and trust.

Table 1

Participant characteristics.

	Median Age, years <i>median</i> (range)	Sex		Experience in healthcare, years <i>median</i> (range)	HCPs' self-reported experience with the patient group ^a		
		Women	Men		High	Medium	Low
Primary care							
General practitioners (n = 4) (Focus group 1)	44 (38–57)	2	2	14 (10–23)	2	2	0
Community pharmacy (n = 6) Pharmacists (n = 4) Pharmacy technicians (n = 2) (Focus group 2, 3)	38 (32–46)	3	3	12 (4–15)	6	0	0
Home care (n = 11) Nurses (n = 8) Health care assistant (n = 3) (Focus group 4, 5, 6)	39 (25–50)	11	0	13 (3–24)	6	5	0
Secondary care							
Geriatric department (n = 9) Geriatricians (n = 3) Geriatrician trainees (n = 1) (Focus group 7, interview 1) Nurses (n = 5) (Focus group 8)	45 (31–59)	6	3	18 (1–30)	0	0	9
Migrant Health Clinic (n = 4) Doctors (n = 1) Nurses (n = 2) Social workers (n = 1) (Focus group 9)	44 (33–60)	4	0	13 (8–35)	1	2	1

^a Many HCPs reported their experience in relation to their experience with the majority of patients in their everyday e.g. the HCPs at Geriatric department primarily treated older patients of Danish background, and the Migrant Health Clinic primarily treated younger migrant under the age of 65 years.

3.1.1. Language is the key

All groups of participating HCPs, except for the staff at the Migrant Health Clinic, highlighted language barriers as largest overall barrier to treating this group of patients as intended. The staff at the Migrant Health Clinic stated that although it was their standard procedure to work with professional interpreters they still perceived language barriers as a threat to patient medication safety in other parts of the health care system. Both diagnostic processes and medication information for this patient group were highlighted as being complicated, uncertain, and less in depth compared to that of patients without language barriers.

“You get much more in depth with patients when you can convey the information in a language both parties speak fluently. (...) When you do not have a language barrier, you conduct patient counselling on a completely different level. They [the patients] would get a lot more out of it [the counselling] if they understood.”

(Pharmacy technician 2)

Language barriers were described as the main reason that nurses and doctors at the geriatric department and pharmacy staff and homecare staff deviated from standard procedures. Moreover, these HCPs expressed that communication barriers made it challenging to provide individually tailored treatment. These language barriers resulted in the provision of a different and often lower level of examination, treatment, and information for this patient group, which affected both medication safety and the cooperation between the patients and HCPs.

“We have a conversation to align expectation [between the patient and home care staff] before starting [home care]. (...) This is often not done [when we cannot talk with each other].”

(Home care nurse 8)

Home care nurses reported not needing an interpreter in order to dispense medication, but mentioned that the patient could have medication-related concerns or questions for the HCPs that they did not ask because of language barriers. Hospital and home care nurses also mentioned that language barriers might have caused missed opportunities to improve

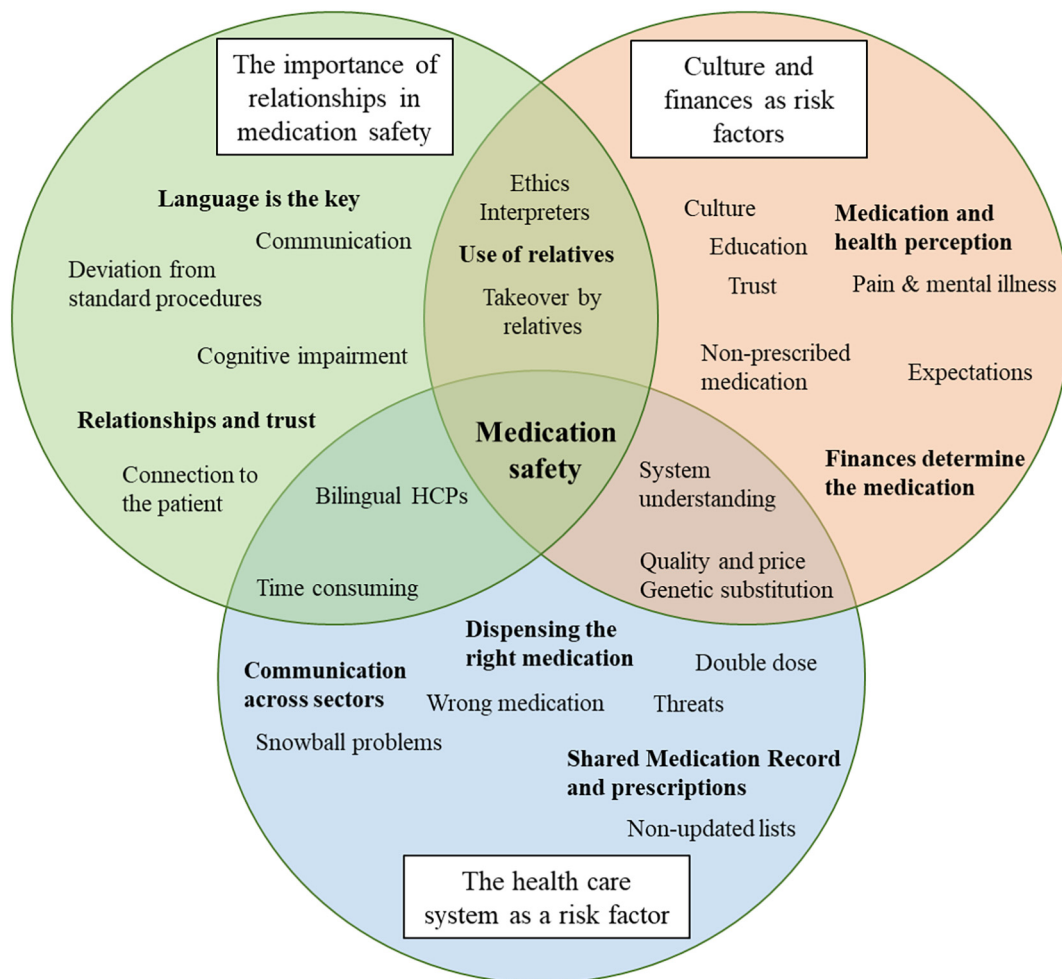


Fig. 1. Findings illustrating interactions between main themes, subthemes, and codes.

health or prevent medication for this patient group. The pharmacy staff expressed that language barriers also led to missed opportunities to inform patients about their medication at the pharmacy counter.

3.1.2. Use of relatives

All participating HCPs had experienced relatives being used as interpreters to overcome language barriers. However, the HCPs agreed that this often led to ethical and legal considerations about whether and how much responsibility could be imposed on relatives.

“We must obtain patient to talk to the relatives about their [the patient’s] medication. Do we really have that? Because if the person do not speak Danish, how do we get that consent? This is the first ethical challenge. (...) If we are unsure whether they [the relatives] understand what we are saying, we put them [relatives] in a bad position if they misinterpret something. Is this a responsibility that we can actually pass on to the relatives?”

(Home care nurse 2)

Staff at the Migrant Health Clinic reported using professional interpreters as much as possible to avoid having to use relatives to interpret. On the other hand, all participating groups of HCPs described relatives as essential when working with patients with cognitive impairment, regardless of their ethnicity. Pharmacy staff expressed that relatives remembered which medications to pick up. Doctors and nurses reported the need for relatives when investigating cognitive impairment, and home care staff often

relied on relatives to pick up medication at the pharmacy and to handle other practical tasks.

“It’s important, especially regarding cognitively impaired persons [to involve the relatives], as there might be some information that they [patients] cannot remember, which can be important to get from relatives.”

(Doctor, Migrant Health Clinic)

3.1.3. Relationships and trust

Geriatric staff and home care staff expressed that language barriers distanced them from the patient. They described the difficulties they experienced connecting with patients when having to communicate through an interpreter. They also found that relatives sometimes talked on behalf of the patient rather than interpreting for them. Home care staff found this distance to be a barrier to building a good relationship with the patient, which was considered essential to home care quality.

“Sometimes we experience that the relatives take responsibility for the patient and are a kind of spokesperson [for the patient], and it is like everything goes through them and you actually move away from the [patient], who is perhaps the most important.”

(Home care nurse 8)

Some geriatricians suggested using bilingual colleagues or other HCPs to interpret for them in order to provide both linguistic and cross-cultural translation. They believed that a bilingual colleague, more than a professional interpreter or relative could bring them closer to the patient.

“It would be perfect if we had an interpreter who was also a health professional and who came from the same culture as them because then we could get even closer [to the patient].”

(Geriatrician 1)

Bilingual colleagues were considered to be an advantage by both the HCPs with no or limited experience working with bilingual colleagues and those with several bilingual colleagues. Five out of six pharmacy staff reported using their own bilingual skills or bilingual colleagues on daily basis and perceived it to be a great resource when counselling older migrants with language barriers. Pharmacies that had staff with multiple language skills were perceived as being better able to help more patients than those whose staff knew few or no other languages besides Danish and English.

“We have a number of employees with other ethnic backgrounds or who speak many different languages, and we really benefit from this in our daily work when we counsel people with language barriers. (...) We can certainly help many more customers compared to a pharmacy that do not have as many languages to choose from [as we do].”

(Pharmacy technician 2)

Most focus groups highlighted trust as an essential aspect of the relationship between HCPs and patients. Geriatricians and HCPs from the Migrant Health Clinic indicated that a patient's faith in both treatment and medication depended on their background and that patients tended to prefer and have higher trust in medication from their home country. This was deemed as an understandable human reaction rather than a cultural matter.

“Sometimes it could also be about trust if the medication is from your home country. Well, if we were hospitalized in the Middle East, we would also rather have our own doctors. (...) You have faith in the place you come from (...), and now you come to a new country and their medication does not work as well. I believe that says a lot.”

(Doctor, Migrant Health Clinic)

A patient's trust in the HCPs and the health care system was considered by some home care nurses, pharmacy staff, and geriatric nurses to be complicated due to language barriers, which consequently limited opportunities to explain complex matters in different ways to patients who were confused or did not understand things the first time they were explained. A bilingual pharmacist expressed how a shared mother tongue highly increased patients' trust in him as a pharmacist.

“If we speak the [patient's] language, then we do the counselling in our own language, where it becomes MUCH easier for them to believe in us because we can use the right words and explain ourselves in a completely different way.”

(Pharmacist 1)

3.2. Main theme (ii) – Culture and finances as risk factors

All groups of HCPs expressed that the minority background of this patient group affected medication safety in various ways. The subthemes emerging from this main theme were: (a) medication and health perception and (b) finances determine the medication.

3.2.1. Medication and health perception

Across all focus groups, the HCPs found that some older migrant patients with cognitive impairment had views on medication and illness that differed from those of similar ethnic Danish patients. These differences were perceived to be linked to cultural variances. Moreover, most pharmacy staff and geriatricians believed that educational level affected the way patients understood health information, and they expressed that patients with lower level of education were difficult to handle, particularly

when providing information about medication and diseases. One pharmacist explained how some older migrants in his family used the term “soft medication” to refer to Danish medication, which they believed to be ineffective. The pharmacist believed that this perspective stemmed from a lack of education. Other pharmacy staff with minority backgrounds agreed that this term was used among some older migrants.

“He thought that the pharmacy had given him soft painkillers. “Soft“ means ineffective. (...) Well, the man grew up near a village and was never educated (...). Those with higher education just have a different approach and listen to you more.”

(Pharmacist 3)

None of the participating HCPs experienced general resistance to taking medication among the patient group or their relatives. Conversely, several doctors and nurses working in the secondary sector experienced that this patient group primarily expected medication to fix their problems. The HCPs also found this patient group to be less open-minded about physical training and diet change, which was perceived as a problem, especially when treating patients suffering from diabetes or falls.

“You expect [as a patient] to get some medication, but if the doctor starts talking about what to eat and that you should exercise and such things - no, that's not what the doctor is supposed to do.”

(Geriatrician 1)

The hospital HCPs reported that this group of patients often addressed mental disorder such as PTSD and dementia as physical issues. Both nurses and doctors had treated patients who expressed grief or mental trauma as physical pain. One geriatrician emphasized the importance of being aware of this phenomenon to avoid misinterpreting mental pain as physical pain, which could lead to the prescribing of painkillers.

“They can visit for a dementia investigation, which is not the issue at all. We can keep telling [the patients]: ‘You have a lot of past experiences that are affecting you’ (...) That can lead to symptoms like pain, and therefore they ask for painkillers because it hurts, but that pain should not be treated with painkillers.” (Geriatrician 3)

GPs, home care staff, Migrant Health Clinic staff expressed that this group of patients might take other medications that had not been prescribed by Danish doctors, which could make it challenging to maintain an overview of their full medical treatment and to ensure medication safety. During the interview, one geriatrician trainee reflected on the importance of being aware of the potential use of non-prescribed medication because unknown medication use could lead to both abstinences and drug-drug interactions during hospitalization.

“It is interesting whether it [asking specifically about non-prescribed medication] should be part of our standard procedure when admitting [patients in to the hospital]. I actually did not know that it [use of other medications] was an issue.”

(Geriatrician trainee)

HCPs at the geriatric department and in home care discussed that their department or workplace had no structured way to address or discuss the use of non-prescribed medication with patients. Home care nurses and hospital doctors reflected on the importance of asking patients specifically about non-prescribed medication to get to know about it. They also agreed that no patients had tried to hide their use of non-prescribed medication.

“It's not a secret. They want to be counseled. I have frequently experienced that they take many other medications than what we know about. But if you do not inquire into it, then you will not discover it either.”

(Home care nurse 8)

The pharmacy staff expressed the difficulty of explaining generic substitution to the patients, due to not only language barriers but also a lack of

trust in the authority of pharmacy staff. All participating pharmacy staff agreed that this patient group associated inexpensive medication with low quality which could result in unnecessarily high medication expenses for patients.

“They do not believe that the cheapest medication is as good as the expensive medication. They only believe that the one the doctor wrote on the prescription is the best. ... And that's because they do not trust us or the system overall.”

(Pharmacist 4)

3.2.2. Finances determine the medication

HCPs in the primary sector and at the Migrant Health Clinic all agreed that finances served as a barrier for this group of patients when it came to purchasing and taking their medication. In contrast, HCPs at the geriatric department did not mention the financial aspect of medication safety and purchase.

“Those who are very limited financially - we often experience that they choose not to buy their medication, simply because they think it is too expensive.”

(Pharmacist 4)

GPs discussed having to prioritize when prescribing medication because they knew the patient could not afford all the medications they needed. Thus, when treating patients under financial pressure, the GPs prescribed only the most important medications even though the patients may have needed additional treatment.

“You have to be hardcore in your prioritization of what diseases you think are the most important. If the patient can afford three pills a day, then you have to choose which three pills you think would be of most benefit, knowing that had it been a Danish patient from a family with a good income, you would have prescribed seven [pills].”

(GP 3)

3.3. Main theme (iii) – The health care system as a risk factor

The participating HCPs identified several problems with medication handling due to errors in the Shared Medication Record and electronic prescriptions. These problems were described to be issues for many patient groups, regardless of cognitive status or ethnicity. However, these problems were often complicated further by cognitive impairment and language barriers, which also limited the HCPs in their opportunities of actions to overcome the problems. Three subthemes emerged from this main theme: (a) Shared Medication Record and prescriptions, (b) dispensing the right medication, and (c) communication across sectors.

3.3.1. Shared Medication Record and prescriptions

All participating HCPs agreed that an up-to-date Shared Medication Record was essential to ensuring that the right medication went to the right patient at the right time. However, both home care and pharmacy staff referred to non-updated Shared Medication Records as a common problem.

“Especially when they start taking medication [administered by home care staff], they can have a Shared Medication Record that has not been updated at all. Then we have to go back and forth, about what they are taking, what they recognize, and then there is medication that they have never taken at all despite it having been prescribed for 12 years.”

(Home care nurse 2)

Some geriatricians reported that when they experienced language barriers, they tended to rely on the Shared Medication Record rather than of making a medicine anamnesis with the patient. During the interview, one geriatrician trainee reflected on the potential danger of patients getting

the wrong medication during hospitalization due to the non-updated Shared Medication Records.

“You hear stories about people who get hospitalized, and they have been prescribed five blood pressure medications from their GP [according to the Shared Medication Record], and then they have not been properly asked [about the medications], and then they get all of the medications and they suddenly get extremely sick.”

(Geriatrician trainee)

3.3.2. Dispensing the right medication

All pharmacy staff expressed “unattached prescriptions” as a common problem when doctors changed or stopped the medical treatment without cancelling the related prescription. The pharmacy staff wished that prescriptions not attached to an active ongoing treatment were automatically deleted to avoid the risk of dispensing the wrong medication.

“The problem is that even if they [the doctors] discontinue Amlodipine in the Shared Medication Record, the associated prescription is not cancelled. Then there is still a prescription for Amlodipine. It would be nice if that [prescription] just disappeared automatically.”

(Pharmacist 4)

When the doctors changed medical treatment without cancelling the related former prescription, the pharmacy staff became uncertain about which medication to give the patient. The pharmacy staff discussed several cases where this potential could occur or actually had resulted in the wrong medication being dispensed to the patient. This put the patient at risk of getting a double dose or the wrong medication as well as wasting money on the wrong medication.

“We very often experience that the transition from one GLP-1-receptor agonist to another is difficult because the old prescription has not been cancelled when the new ones arrive. Therefore, they buy the wrong medication. It's a big problem.”

(Pharmacist 2)

All participants agreed that the responsibility for keeping these lists up to date lies with the doctor in charge of the treatment related to the medication. However, this could lead to overlaps in cases where patients were treated by both their GP and doctors in the hospital. Pharmacy staff described experiences with patients wherein two prescribing doctors initiated the same treatment without coordinating, resulting in the patient being prescribed double medication for the same disease.

“I had a patient last week who was given two different strengths of the same medication, and one [prescription] had actually been discontinued [in the Shared Medication Record], but he was taking both. The hospital doctor had written one prescription, and the GP wrote the other. (...) Both prescriptions were still active and both [prescriptions] had been redeemed. One of each.”

(Pharmacy technician 1)

All participating pharmacy staff agreed that they had to spend time figuring out what medication to hand out to the patient, and that this extra work could have been spared had the prescription list always been up to date. The pharmacy staff took extra time to ensure proper patient safety even though they expressed that it was not their responsibility to correct the prescription list. When the patient or relatives were uncertain of exactly which medication to pick up, or when the communication was hindered due to language barriers, dispensing the right medication became even more complicated.

“Sometimes you can spend half an hour looking up something in old prescriptions. I did that the other day, specifically because of language barriers and non-comprehension. The customer had no idea what kind of medication she should take, and then I looked at the Shared Medication Record and several

of the things that the customer came and asked for were discontinued, and then I simply had to spend time deleting prescriptions even though it is the doctor's job to do – simply to eliminate the risk of the customer coming next time and asking again for the medication that had been discontinued.”

(Pharmacist 4)

3.3.3. Communication across sectors

Just as the pharmacy staff discussed how issues that were not their responsibility became problems to be solved at the pharmacy, the home care staff also experienced that they could end up with the responsibility of making a medication anamnesis at the patients' homes even though it should have been done by the prescribing doctor. The home care staff claimed to experience the same limitations as the GP due to language barriers and found it even more challenging to make a medication anamnesis than it had been for the GP, and thus the problem escalated as it was passed on.

“They [doctors] maybe looked into the medication, but they have not asked the patient whether they actually take it [medication]”

(Home care nurse 3)

“Then it often goes: ‘Will you ask the patient [whether they take the medication] while you are already in their home?’ when you also have other tasks. But just as the doctor cannot ask [because of language barriers], we cannot just ask either... It needs to be done thoroughly by the doctor from the beginning.”

(Home care nurse 2)

The phenomenon of the problem escalating as it was passed on to the next HCP to meet the patient was expressed in several ways by both home care and pharmacy staff.

“We often end up in situations where I think to myself: ‘It is strange that nobody else [other HCPs] has taken responsibility for this problem.’ That nobody else could see that here is a challenge.”

(Home care nurse 1)

Pushing the problem forward to the next HCP instead of taking care of the problem often increased the size of the problem as well as the complexity in solving it, similar to a snowball effect. Several home care nurses agreed that the dispensing and handling of medication in the patient's home would be much easier if they knew that the patient had been well informed about the medication by the prescribing doctor before starting new medication.

“If you had the feeling, ‘Okay, the GP has taken care of this medication before we [in home care] start administering it. We would know that the individual agrees on what they should take because the GP has explained it, either with a relative or an interpreter.’ Then it would also be a different experience to come into the home and dispense [the medication].”

(Home care nurse 2)

All participants found the transfer of patients between sectors to cause complications in the patients' medication because it involved multiple changes. This was highlighted as a problem for all polypharmacy patients, regardless of their ethnicity or cognitive status.

Some GPs and staff at the Migrant Health Clinic perceived the collaboration with the municipality, which grants and coordinates the home care staff, as a barrier to the patient medication safety due to the complicated nature of the cooperation. The complicated cooperation between sectors was considered to result in delayed or a complete lack of help to the patient in terms of medication handling or purchase.

“... Then [you have to] get in touch with their social worker, but that is a jungle too... so. That is often the point where I throw in the towel. And then I simply have to say (pushing hands away), ‘Now, I cannot help them any further.’”

(GP 2)

4. Discussion and implications

This in-depth focus group study found several risk factors and mechanisms affecting the medication safety among older migrants with cognitive impairment and polypharmacy from the point of view of HCPs. Some factors and mechanisms affected only one or a few professional groups of the participating HCPs, but most of the barriers were more general and spanned across professions and sectors. The analysis revealed a high level of complexity within these factors and mechanisms because several of them were interrelated and interfered both within and across the three main themes.

For those participants who did not work consistently with professional interpreters, the language barrier became a barrier to providing adequate medication information, establishing a good relationship with the patient, and thereby delivering the proper treatment and care that are vital to medication safety. Some participants in this study reported deviating from standard procedures when challenged by communication barriers. Other studies have similarly reported that language barriers can lead to HCPs omitting to double check that the right medication goes to the right patient.¹¹ Language barriers have been reported to reduce the degree of medication information offered at the pharmacy,¹⁶ and in one study Swiss pharmacies perceived migrants to have increased risk for adverse drug events primarily due to communication barriers.²¹ In addition, a study across 16 European countries found language barriers or communication barriers to be the most frequently reported problem area for HCPs treating migrants.³⁶ A Danish study found that tailored pharmacy services that include interpretation for migrants improved self-reported medication adherence.³⁷ However, our current study revealed that sufficient treatment of patients with cognitive impairments requires the involvement of relatives to support the patient and HCPs, regardless of language or ethnicity.

This study also found that language concordance between patient and HCP could increase trust and improve collaboration. A qualitative study on the involvement of HCPs with ethnic minority backgrounds in consultation with migrant patients showed that use of bilingual HCPs has the potential to improve quality of health for migrant patients but also has downsides to take into consideration.³⁸ Another way to address cultural gaps between HCPs and patients is through education in cultural competences³⁹ and raising cultural awareness among HCPs.³⁶ This can enable HCPs to address and handle problems related to cultural differences⁴⁰ instead of pushing a problem forward to the next HCP who meets the patient, thus creating a snowball effect.

One of the key findings of this study was the phenomenon of snowball problems, which are defined as problems that are generated or not handled by the first HCP to face the problem and thereby grew larger or more complicated as was pushed forward to the next HCP. Snowball problems leave the patient in an unsustainable situation, which introduces a potential danger regarding medication safety. In this study, GPs were generally perceived to be responsible for the combined medical treatment which is in accordance with the results of other studies on HCPs treating older patients with polypharmacy.⁴¹ The consequences of snowball problems included increased time use for other HCPs trying to fix the root cause of the problem or derived problems, less effective problem solving and most importantly, potential risk to the medication safety of patients.

Non-updated Shared Medication Records was also identified by this study as an important risk factor in medication safety for all of the represented health care professions and across sectors. This was perceived to be a problem for many older patients with polypharmacy, no matter their ethnicity or cognitive status, which is also reported in other Danish studies.^{42,43} At the same time, the combination of non-updated Shared Medication Records with communication barriers related to cognitive impairment and language barriers limited the HCPs' options to overcome these problems. Furthermore, communication barriers reduced the HCPs' chances of detecting and stopping medication errors derived from non-updated systems or miscommunication between HCPs. Beside the risk of medication errors, the presence of non-updated Shared Medication Records

often resulted in extra workload and uncertainty among the participating HCPs.

All participating HCPs agreed that older migrant patients in general had views on medication and treatment that differed from Danish patients of similar age. Patients with minority backgrounds were described to be likely to expect health-related issues to be cured by medication. A Dutch study also found that non-Western migrants expect more prescriptions and examinations from GPs compared with the European populations in the Netherlands.⁴⁴ Eastern European migrants in UK have described GPs as reluctant to prescribe antibiotics and claim that they only prescribe paracetamol and rest.⁴⁵ This opinion is also described in our study, where HCPs perceived these patients to be less understanding of the 'wait-and-see' approach before prescribing medication. Moreover, in this study there was consensus across GPs and HCPs in the secondary sector that the perception of cognitive illness of this patient group differed from that of the clinicians, which has also been found among Indigenous communities.⁴⁶ Illness perception appears to be significantly associated with medication adherence among migrants,⁴⁷ and interventions to enhance medication adherence by modifying illness perceptions among migrants has been recommended.⁴⁷ Low health literacy⁴⁸ is associated with lower health status, decreased ability to understand and follow medical instructions,⁴⁹ and higher risk of forgetting to take prescribed medication.⁵⁰ Several HCPs across professions and sectors in this study believed that older migrants' level of education affected their ability and willingness to receive and follow advice of HCPs regarding medication. Education level has been associated with health literacy among both older Black Americans⁵¹ and older Chinese Americans.⁵² Furthermore, being from an ethnic minority group, not being able to work, having a lower household income, and having strong religious beliefs have all been associated with lower health literacy.^{51,53} Our study is in line with other studies^{46,50} that highlight the importance of working towards improved health literacy among older migrants with cognitive disorders by closing the gap between patients and HCPs regarding their respective perceptions of health and medication. A better understanding of treatment purpose and medication greatly increases adherence among older migrants.⁵⁴

Cultural differences also exist within native populations; however, the native population was not the target patient group of this study. Some migrants also master Danish and do not experience any language barriers, but the patient group of interest in this study was older migrants born and raised outside of Denmark with cognitive disorders, which meant that Danish was not their first language.

5. Strengths and limitations

The primary strength of this study is the in-depth knowledge obtained from the HCPs working in a wide range of settings within the health care system on issues threatening medication safety among older migrants with cognitive impairment taking five or more medications daily. Including the perspectives from five different HCP groups helped to clarify similar issues from multiple perspectives and revealed both similarities and differences within and across the groups. The diversity among the HCP groups and individuals also clarifies that the level of experience with the patient group determine what options the HCPs consider themselves to have and how aware they are of the risk factors for medication safety for this patient group.

During the process of collecting data, the researchers critically evaluated the knowledge obtained and found that some perspectives needed to be elaborated and uncovered in the groups of homecare staff, community pharmacists, and geriatricians. Therefore, more focus groups were conducted with these groups. No additional perspectives were revealed among participants after nine focus groups and one interview were conducted (Table 1), and the researchers found that sufficient data had been obtained to answer the research question. Thereby, the researchers assumed that data saturation was reached and conducted no more focus groups or interviews.⁵⁵

A limitation of this study is the sudden introduction of online focus groups in the early stage of data collection due to the COVID-19 pandemic.

The online format potentially affected the synergy among the participants, some of whom appeared to hold back to avoid interrupting each other. Mixing physically present and online participants in the same focus group seemed to create unequal interaction between them. If some participants held back due to the online setup, this could be a limitation to the study because interaction is essential in conducting focus groups.²⁴ On the other hand, holding online focus groups also allowed the inclusion of HCPs from different geographical areas in the same online focus group, which enabled these HCPs to reflect on differences between urban and rural areas.

The transferability of the study are limited due to the mechanisms and barriers to medication safety that are directly related to the structure of the Danish health care system, especially problems concerning the Shared Medication Record and electronic prescription lists. Furthermore, the online setup eliminated travel time and expenses, which could have contributed to a higher rate of participation in the focus groups.⁵⁶ Finally, this paper lacks insight into the perspectives of patients and their relatives about medication safety. Although this was outside the scope of the current paper, such insight is needed in order to investigate and fully understand the barriers to medication safety for this vulnerable group of patients.

6. Conclusion

This study found that HCPs involved in the medication of older migrants with cognitive impairment and polypharmacy experienced several barriers to medication safety in working with patients. The barriers were related to the relationship between patients and HCPs, the non-Danish background, and the health care system. These barriers interacted with each other and highlighted the complexity of securing medication safety for this vulnerable patient group. Most of the participating HCPs lacked effective work strategies to overcome these barriers and ensure medication safety for older migrants with cognitive disorders and polypharmacy. This study underline an increased need for all health care departments working with this vulnerable patient group to develop effective strategies to overcome these barriers and ensure medication safety for older migrants with cognitive disorders exposed to polypharmacy.

Funding

This work was supported by THE VELUX FOUNDATIONS; and Helsefonden [grant numbers 25834; 20-B-0315].

Declaration of Competing Interest

None.

Acknowledgements

The authors would like to thank all participants for their participation in this study. Furthermore, we would like to thank stakeholders at Høje Taastrup Municipality, Vejle Municipality, Kolding Municipality, Copenhagen Municipality, Fredericia Municipality, Hasle Pharmacy, Hundige Pharmacy, Taastrup Pharmacy, Albertslund Pharmacy, and København Hamlets Pharmacy.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.rcsop.2022.100128>.

References

1. Agyemang C, van den Born B-J. Non-communicable diseases in migrants: an expert review. *J Travel Med* 2019;26. <https://doi.org/10.1093/jtm/tay107>.

2. Ikram UZ, Mackenbach JP, Harding S, et al. All-cause and cause-specific mortality of different migrant populations in Europe. *Eur J Epidemiol* 2016;31:655–665. <https://doi.org/10.1007/s10654-015-0083-9>.
3. Daniel Boateng, Charles Agyemang, Erik Beune, et al. Migration and cardiovascular disease risk among Ghanaian populations in Europe. *Circulation* 2017;136:e04013. <https://doi.org/10.1161/CIRCOUTCOMES.117.004013>.
4. Mathur R, Hull SA, Badrick E, Robson J. Cardiovascular multimorbidity: the effect of ethnicity on prevalence and risk factor management. *Br J Gen Pract* 2011;61:e262–e270. <https://doi.org/10.3399/bjgp11X572454>.
5. Oktora MP, Denig P, Bos JHJ, Schuiling-Veninga CCM, Hak E. Trends in polypharmacy and dispensed drugs among adults in the Netherlands as compared to the United States. *PLoS One* 2019;14, e0214240. <https://doi.org/10.1371/journal.pone.0214240>.
6. Masnoon N, Shakib S, Kalisch-Ellett L, Caughey GE. What is polypharmacy? A systematic review of definitions. *BMC Geriatr* 2017;17:230. <https://doi.org/10.1186/s12877-017-0621-2>.
7. Abramsson L, Gustafsson M. Prevalence of drug-related problems using STOPP/START and medication reviews in elderly patients with dementia. *Res Soc Adm Pharm* 2020;16:308–314. <https://doi.org/10.1016/j.sapharm.2019.05.016>.
8. Guirgis M, Yan K, Bu YM, Zekry A. General practitioners' knowledge and management of viral hepatitis in the migrant population. *Intern Med J* 2012;42:497–504. <https://doi.org/10.1111/j.1445-5994.2011.02440.x>.
9. Teunissen E, Van Bavel E, Van Den Driessen Mareeuw F, et al. Mental health problems of undocumented migrants in the Netherlands: a qualitative exploration of recognition, recording, and treatment by general practitioners. *Scand J Prim Health Care* 2015;33:82–90. <https://doi.org/10.3109/02813432.2015.1041830>.
10. Tillmann J, Just J, Schnakenberg R, Weckbecker K, Weltermann B, Münster E. Challenges in diagnosing dementia in patients with a migrant background - a cross-sectional study among German general practitioners. *BMC Fam Pract* 2019;20:34. <https://doi.org/10.1186/s12875-019-0920-0>.
11. van Rosse F, de Bruijne M, Suurmond J, Essink-Bot M-L, Wagner C. Language barriers and patient safety risks in hospital care. A mixed methods study. *Int J Nurs Stud Lang Commun Issues Health Care* 2016;54:45–53. <https://doi.org/10.1016/j.ijnurstu.2015.03.012>.
12. Giese A, Uyar M, Uslucan HH, Becker S, Henning BF. How do hospitalised patients with Turkish migration background estimate their language skills and their comprehension of medical information - a prospective cross-sectional study and comparison to native patients in Germany to assess the language barrier and the need for translation. *BMC Health Serv Res* 2013;13:196. <https://doi.org/10.1186/1472-6963-13-196>.
13. de Bruijne MC, van Rosse F, Uiters E, et al. Ethnic variations in unplanned readmissions and excess length of hospital stay: a nationwide record-linked cohort study. *Eur J Pub Health* 2013;23:964–971. <https://doi.org/10.1093/eurpub/ckt005>.
14. Nielsen TR, Vogel A, Phung TKT, Gade A, Waldemar G. Over- and under-diagnosis of dementia in ethnic minorities: a nationwide register-based study. *Int J Geriatr Psychiatry* 2011;26:1128–1135. <https://doi.org/10.1002/gps.2650>.
15. Nielsen T, Rune, Andersen BB, Kastrup M, Phung TKT, Waldemar G. Quality of dementia diagnostic evaluation for ethnic minority patients: a nationwide study. *Dement Geriatr Cogn Disord* 2011;31:388–396. <https://doi.org/10.1159/000327362>.
16. Mygind A, Espersen S, Nørgaard LS, Traulsen JM. Encounters with immigrant customers: perspectives of Danish community pharmacy staff on challenges and solutions. *Int J Pharm Pract* 2013;21:139–150. <https://doi.org/10.1111/j.2042-7174.2012.00237.x>.
17. Alzubaidi H, Mc Namara K, Versace VL. Predictors of effective therapeutic relationships between pharmacists and patients with type 2 diabetes: comparison between Arabic-speaking and Caucasian English-speaking patients. *Res Soc Adm Pharm* 2018;14:1064–1071. <https://doi.org/10.1016/j.sapharm.2017.11.013>.
18. Lenander C, Bondesson Å, Viberg N, Beckman A, Midlöv P. Effects of medication reviews on use of potentially inappropriate medications in elderly patients: a cross-sectional study in Swedish primary care. *BMC Health Serv Res* 2018;18:1–9. <https://doi.org/10.1186/s12913-018-3425-y>.
19. Staats K, Tranvåg O, Grov EK. Home-care nurses' experience with medication kit in palliative care. *J Hosp Palliat Nurs* 2018;20:E1–E9. <https://doi.org/10.1097/NJH.0000000000000518>.
20. Kim J, Parish AL. Polypharmacy and medication management in older adults. *Nurs Clin North Am* 2017;52:457–468. <https://doi.org/10.1016/j.cnur.2017.04.007>.
21. Schwappach DLB, Meyer Massetti C, Gehring K. Communication barriers in counselling foreign-language patients in public pharmacies: threats to patient safety? *Int J Clin Pharm* 2012;34:765–772. <https://doi.org/10.1007/s11096-012-9674-7>.
22. Mangoni AA, Jackson SHD. Age-related changes in pharmacokinetics and pharmacodynamics: basic principles and practical applications. *Br J Clin Pharmacol* 2004;57:6–14. <https://doi.org/10.1046/j.1365-2125.2003.02007.x>.
23. Panagioti M, Stokes J, Esmail A, et al. Multimorbidity and patient safety incidents in primary care: a systematic review and meta-analysis. *PLoS One* 2015;10, e0135947. <https://doi.org/10.1371/journal.pone.0135947>.
24. Gill P, Stewart K, Treasure E, Chadwick B. Methods of data collection in qualitative research: interviews and focus groups. *Br Dent J* 2008;204:291–295. <https://doi.org/10.1038/bdj.2008.192>.
25. Kvale S, Brinkmann S. *InterViews: Learning the Craft of Qualitative Research Interviewing*. SAGE, 2009.
26. Lavery SM. Hermeneutic phenomenology and phenomenology: a comparison of historical and methodological considerations. *Int J Qual Methods* 2003;2:21–35. <https://doi.org/10.1177/160940690300200303>.
27. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int J Qual Health Care* 2007;19:349–357. <https://doi.org/10.1093/intqhc/mzm042>.
28. Standards for reporting qualitative research: a synthesis of recommendations | The EQUATOR Network, n.d. [https://www.equator-network.org/reporting-guidelines/srq/](https://www.equator-network.org/reporting-guidelines/srq/>(accessed 11.5.19)) (accessed 11.5.19).
29. Statistics Denmark [Danmarks Statistik], n.d. Immigrants and Their Descendants [WWW Document] <https://www.dst.dk/en/Statistik/emner/borgere/befolkning/indvandrerer-efterkommere> (accessed 12.10.21).
30. Case - Danish Health Data Authority: The Shared Medication Record, n.d. <http://trifork.com/?portfolio=fmk> (accessed 6.28.21).
31. Elo S, Kyngäs H. The qualitative content analysis process. *J Adv Nurs* 2008;62:107–115. <https://doi.org/10.1111/j.1365-2648.2007.04569.x>.
32. Revsbæk L, Tanggaard L. Analyzing in the present. *Qual Inq* 2015;21:376–387. <https://doi.org/10.1177/1077800414562896>.
33. Malterud K. Systematic text condensation: a strategy for qualitative analysis. *Scand J Public Health* 2012;40:795–805. <https://doi.org/10.1177/1403494812465030>.
34. Holstein J, Gubrium J. *The Active Interview*. 2455 Teller Road, Thousand Oaks California 91320 United States of America: SAGE Publications, Inc. 1995. <https://doi.org/10.4135/9781412986120>.
35. Qualitative Data Analysis Software | NVivo [WWW Document], n.d. <https://www.qsrinternational.com/nvivo-qualitative-data-analysis-software/home> (accessed 4.1.20).
36. Priebe S, Sandhu S, Dias S, et al. Good practice in health care for migrants: views and experiences of care professionals in 16 European countries. *BMC Public Health* 2011;11:187. <https://doi.org/10.1186/1471-2458-11-187>.
37. Dam P, El-Souri M, Herborg H, et al. Safe and effective use of medicines for ethnic minorities - a pharmacist-delivered counseling program that improves adherence. *J Pharma Care Health Sys* 2015;02. <https://doi.org/10.4172/2376-0419.1000128>.
38. Mygind A, Nørgaard LS, Traulsen JM, El-Souri M, Kristiansen M. Drawing on healthcare professionals' ethnicity: lessons learned from a Danish community pharmacy intervention for ethnic minorities. *Scand J Public Health* 2017;45:238–243. <https://doi.org/10.1177/1403494816683454>.
39. Seeleman C, Suurmond J, Stronks K. Cultural competence: a conceptual framework for teaching and learning. *Med Educ* 2009;43:229–237. <https://doi.org/10.1111/j.1365-2923.2008.03269.x>.
40. Nielsen DS, Korsholm KM, Mottelson I, Sodemann M. Cultural competences gained through an education program as ethnic patient coordinator: a qualitative study. *J Transcult Nurs* 2019;30:394–402. <https://doi.org/10.1177/1043659618823923>.
41. Lundby C, Graabæk T, Ryg J, Søndergaard J, Pottegård A, Nielsen DS. "... above all, it's a matter of this person's quality of life": health care professionals' perspectives on deprescribing in older patients with limited life expectancy. *Gerontologist* 2019. <https://doi.org/10.1093/geront/gnz1216>.
42. Bülow C, Flagstad Bech C, Ullitz Faerch K, Trærup Andersen J, Byg Armandi H, Treldal C. Discrepancies between the medication list in electronic prescribing systems and patients' actual use of medicines. *Sr Care Pharm* 2019;34:317–324.
43. Bülow C, Nørgaard JDSV, Faerch KU, et al. Causes of discrepancies between medications listed in the national electronic prescribing system and patients' actual use of medications. *Basic Clin Pharmacol Toxicol* 2021. <https://doi.org/10.1111/bcpt.13626>.
44. Keizer E, Bakker P, Giesen P, et al. Migrants' motives and expectations for contacting out-of-hours primary care: a survey study. *BMC Fam Pract* 2017;18:92. <https://doi.org/10.1186/s12875-017-0664-7>.
45. Madden H, Harris J, Blickem C, Harrison R, Timpson H. "Always paracetamol, they give them paracetamol for everything": a qualitative study examining Eastern European migrants' experiences of the UK health service. *BMC Health Serv Res* 2017;17:604. <https://doi.org/10.1186/s12913-017-2526-3>.
46. Webkamigad S, Warry W, Blind M, Jacklin K. An approach to improve dementia health literacy in indigenous communities. *J Cross Cult Gerontol* 2020;35:69–83. <https://doi.org/10.1007/s10823-019-09388-2>.
47. Shahin W, Kennedy GA, Cockshaw W, Stupians I. The role of refugee and migrant migration status on medication adherence: mediation through illness perceptions. *PLoS One* 2020;15. <https://doi.org/10.1371/journal.pone.0227326>.
48. World Health Organization. *Health Promotion Glossary*. 1998:36.
49. Berkman ND, Sheridan SL, Donahue KE, Halpern DJ, Crotty K. Low health literacy and health outcomes: an updated systematic review. *Ann Intern Med* 2011;155:97–107. <https://doi.org/10.7326/0003-4819-155-2-201107190-00005>.
50. Mayo-Gamble TL, Mouton C. Examining the association between health literacy and medication adherence among older adults. *Health Commun* 2018;33:1124–1130. <https://doi.org/10.1080/10410236.2017.1331311>.
51. Davis SN, Wischhusen JW, Sutton SK, et al. Demographic and psychosocial factors associated with limited health literacy in a community-based sample of older Black Americans. *Patient Educ Couns* 2020;103:385–391. <https://doi.org/10.1016/j.pec.2019.08.026>.
52. Simon MA, Li Y, Dong X. Levels of health literacy in a community-dwelling population of Chinese older adults. *J Gerontol A Biol Sci Med Sci* 2014;69(suppl 2):S54–S60. <https://doi.org/10.1093/gerona/glu179>.
53. Christy SM, Gwede CK, Sutton SK, et al. Health literacy among medically underserved: the role of demographic factors, social influence, and religious beliefs. *J Health Commun* 2017;22:923–931. <https://doi.org/10.1080/10810730.2017.1377322>.
54. Bazargan M, Smith J, Yazdanshenas H, Movassaghi M, Martins D, Orum G. Non-adherence to medication regimens among older African-American adults. *BMC Geriatr* 2017;17:163. <https://doi.org/10.1186/s12877-017-0558-5>.
55. Saunders B, Sim J, Kingstone T, et al. Saturation in qualitative research: exploring its conceptualization and operationalization. *Qual Quant* 2018;52:1893–1907. <https://doi.org/10.1007/s11335-017-0574-8>.
56. Saarijärvi M, Bratt E-L. When face-to-face interviews are not possible: tips and tricks for video, telephone, online chat, and email interviews in qualitative research. *Eur J Cardiovasc Nurs* 2021;20:392–396. <https://doi.org/10.1093/eurjcn/zvab038>.