

BMJ Open Medication-related experiences of patients with polypharmacy: a systematic review of qualitative studies

Christian Ulrich Eriksen ¹, Stavros Kyriakidis,¹ Line Due Christensen,² Ramune Jacobsen,³ Jannie Laursen,⁴ Mikkel Bring Christensen,⁵ Anne Frølich^{6,7}

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MBC and AF contributed equally.

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For numbered affiliations see end of article.

Correspondence to
Christian Ulrich Eriksen;
cueriksen@gmail.com

ABSTRACT

Background We aimed to synthesise qualitative studies exploring medication-related experiences of polypharmacy among patients with multimorbidity.

Methods We systematically searched PubMed, Embase and Cumulative Index to Nursing and Allied Health Literature in February 2020 for primary, peer-reviewed qualitative studies about multimorbid patients' medication-related experiences with polypharmacy, defined as the use of four or more medications. Identified studies were appraised for methodological quality by applying the Critical Appraisal Skills Programme checklist for qualitative research, and data were extracted and synthesised by the meta-aggregation approach.

Results We included 13 qualitative studies, representing 499 patients with polypharmacy and a wide range of chronic conditions. Overall, most Critical Appraisal Skills Programme items were reported in the studies. We extracted 140 findings, synthesised these into 17 categories, and developed five interrelated syntheses: (1) patients with polypharmacy are a heterogeneous group in terms of needing and appraising medication information; (2) patients are aware of the importance of medication adherence, but it is difficult to achieve; (3) decision-making about medications is complex; (4) multiple relational factors affect communication between patients and physicians, and these factors can prevent patients from disclosing important information; and (5) polypharmacy affects patients' lives and self-perception, and challenges with polypharmacy are not limited to practical issues of medication-taking.

Discussion Polypharmacy poses many challenges to patients, which have a negative impact on quality of life and adherence. Thus, when dealing with polypharmacy patients, it is crucial that healthcare professionals actively solicit individual patients' perspectives on challenges related to polypharmacy. Based on the reported experiences, we recommend that healthcare professionals upscale communicative efforts and involve patients' social network on an individualised basis to facilitate shared decision-making and treatment adherence in multimorbid patients with polypharmacy.

INTRODUCTION

Patients with multimorbidity often have complex treatment regimens requiring them to take several medications concurrently,

Strengths and limitations of this study

- We employed a stringent process of selecting and appraising studies.
- The credibility of our results is enhanced by triangulation of findings from different studies.
- The transferability of our findings to all patients taking more than four medications is unknown.
- A single author completed data extraction, potentially limiting the confirmability of our study.

a phenomenon termed polypharmacy.¹ Although a wide range of definitions exist for polypharmacy, a common definition is simultaneous use of five or more medications.² Polypharmacy is often clinically appropriate and is thus not necessarily a sign of inappropriate care,³ but the use of multiple medications in the elderly is associated with increases in mortality, adverse drug events, falls, length of hospital stay, and readmission rates.² In addition, a high frequency of medication errors has been reported among primary care patients with polypharmacy,^{4,5} and discrepancies often exist between medication lists in the primary and secondary healthcare sectors.^{5–7} A 2018 systematic review found that 26 of 33 studies examining patient-related risk factors for medication errors reported positive associations between polypharmacy and medication errors.⁸

High rates of non-adherence have been identified among newly discharged patients with polypharmacy, and an increased number of medications prescribed in hospitals is associated with non-adherence.⁹ In general, medication-related burden and patient experiences of medications negatively affect patients' health and well-being, as well as their medication-related beliefs and behaviours.¹⁰ This can lead to non-adherence, poorer therapeutic outcomes, and patients independently altering their medications or continuing treatment, which negatively

affects their well-being.¹⁰ Multiple studies demonstrate that most patients are interested in having one or more medications deprescribed if possible.^{11–17}

Increasing numbers of people live with multimorbidity and require multiple medications, and an investigation of their experiences is essential to understand the phenomenon of polypharmacy. In addition, it is uncertain whether interventions to improve appropriate polypharmacy have clinically significant effects.¹⁸ Insight into medication-related experiences, defined as the sum of events involving drug therapy that a patient has in their lifetime,¹⁹ of multimorbid patients with polypharmacy can help identify opportunities to improve care, develop effective interventions and align research with what matters most to patients. The aim of this study was to explore medication-related experiences of polypharmacy among patients with multimorbidity through a systematic review of qualitative studies.

METHODS

We conducted a preplanned structured search of qualitative studies exploring medication-related experiences among multimorbid patients with polypharmacy. Although many studies defined polypharmacy as five or more medications, some defined it as four or more medications.² To reflect varying definitions and capture all relevant studies, we used the latter definition. A systematic review of qualitative studies is ideal for our purpose because it provides an overview and reinterpretation of existing evidence from qualitative research.²⁰

Search strategy

We identified search terms relevant to the three major concepts of our study aim: patient experiences, polypharmacy and qualitative research. Synonyms and search terms were identified by reviewing the protocol for a previous review of qualitative studies on medication-related burden (not focused on patients with polypharmacy),¹⁰ as well as other qualitative review protocols. We also conducted a simple search in the PubMed database to identify relevant terms and medical subject headings. We applied the search strategy to PubMed, Embase and Cumulative Index to Nursing and Allied Health Literature (CINAHL) in February 2020 (online supplementary table 1). Searching PubMed and CINAHL in combination is recommended for identifying qualitative studies.²¹ We modified the search strategy to specific database requirements, tailoring the use of indexing terms or symbols for wildcards. Search filters were not applied. We also screened the reference lists of included studies and relevant systematic reviews for additional studies. Finally, we removed duplicate references.

To be eligible for inclusion, studies had to (1) be peer-reviewed research concerning medication-related experiences; (2) include patients with multimorbidity and polypharmacy aged 18 years or older taking four or more medications; (3) use a qualitative methodology; (4) be

reported in English (or Danish, Swedish or Norwegian for practical reasons); and (5) be published from 1988 onwards to ensure contemporary data. We excluded intervention studies. We first screened titles and abstracts and included studies related to both polypharmacy and multimorbidity. However, during subsequent full-text screening, we excluded studies that did not specifically address polypharmacy or studies focusing on patients with a single disease (n=9) or patients in palliative care (n=1) as they are unlikely to reflect the experiences in relation to multimorbidity and polypharmacy in the broader population. Two authors independently carried out both rounds of screening and resolved any disagreements by consensus.

For articles that did not clarify whether patients took four or more medications, we contacted the corresponding author; one study was excluded after we received no reply. We used Covidence systematic review software (Melbourne, Australia). The Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow diagram was used for reporting the study selection process.²²

Assessment of methodological quality

We assessed the methodological quality of the included studies with the Critical Appraisal Skills Programme (CASP) qualitative checklist, designed to help researchers make sense of qualitative research in a systematic way.²³ The 10-item checklist considers the validity of the results, the findings and their value in local settings.²³ Two authors applied the checklist to included studies and resolved disagreements by consensus. No studies were excluded based on methodological quality.

Data extraction

We extracted data from each included study on authors, year, title, aim, study design, context, participants and analytical approach. Each finding, defined as the authors' interpretation of their results,²⁴ was identified and coded by a single author and entered into a spreadsheet (Microsoft Excel, Redmond, Washington, USA) for all studies. If studies included other views than those of polypharmacy patients, only the data relating to patients' views were included in the synthesis. Using the terminology employed in the Joanna Briggs Institute Reviewer's Manual, each finding was assigned a level of credibility based on illustrations in the form of supporting quotations or field observations.²⁴ Possible credibility levels were unequivocal (the illustration supported the finding beyond a reasonable doubt), credible (some association was present between the illustration and the finding, but it did not clearly support it, meaning that the finding was open to challenge) and unsupported (no illustration was presented). The credibility levels were assigned by CUE.

Data synthesis

We used meta-aggregation to synthesise the data.²⁴ In this process, findings as expressed by researchers are

summarised to produce generalisations that provide a basis for identifying recommendations for action.²⁵ All findings are linked to a specific category and then to a specific synthesis, providing transparency in reporting. The endpoint of meta-aggregation is the formation of concrete recommendations for practice and research, increasing the practical utility of the synthesis. Specifically, the process of meta-aggregation includes three steps: (1) extracting all findings from the included articles, (2) developing categories of similar findings and (3) developing synthesised findings from at least two categories.²⁵ Two authors, CUE and JTL, collaboratively derived categories and syntheses by inductively grouping similar findings and subsequently identifying conceptual categories. All syntheses, as well as the recommendations for practice and research that were subsequently developed, were discussed with all authors.

We report the data synthesis using the ENTREQ (Enhancing Transparency in Reporting the Synthesis of Qualitative Research) statement,²⁶ an example of meta-aggregation,²⁵ and the Joanna Briggs Institute Reviewer's Manual.²⁷

Patient and public involvement

Neither patients nor the public were involved in the research process.

RESULTS

Study inclusion

The search strategy yielded 1676 citations (figure 1); 1305 remained after we removed duplicates and applied publication data and language restrictions. After screening titles and abstracts, we included 69 studies, of which 10 met the eligibility criteria after full-text screening. The

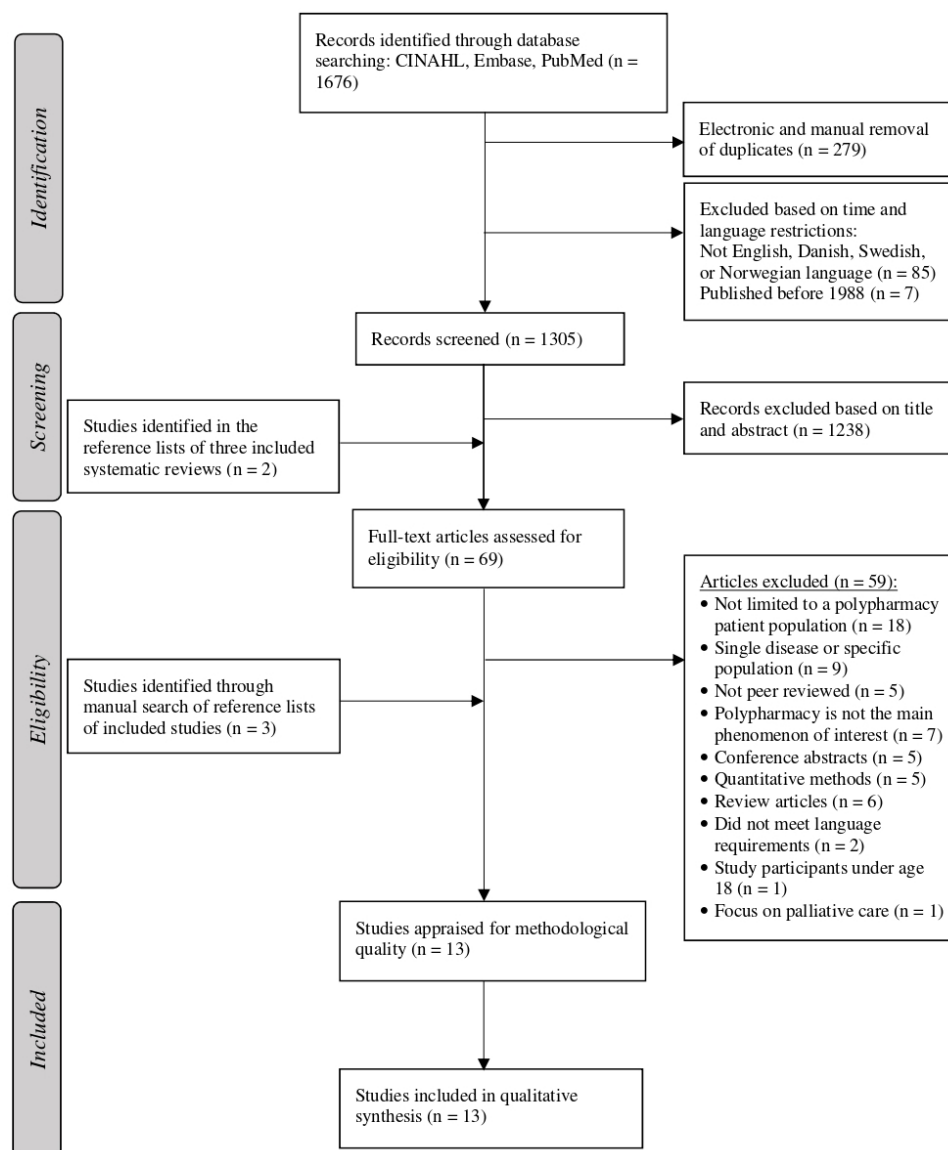


Figure 1 PRISMA flow diagram providing an overview of the selection process. CINAHL, Cumulative Index to Nursing and Allied Health Literature; PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

primary reasons for exclusion during full-text screening were study populations that were not limited to patients with polypharmacy (n=18) and focus on a population with a specific disease (n=9) or palliative care patients (n=1). We identified three additional studies from reference lists, thus assessing a total of 13 studies for methodological quality and including them in the synthesis.^{28–40} All studies were reported in the English language. See online supplementary table 2 for a list of studies excluded during full-text screening.

Study characteristics

Eleven studies used semistructured individual and/or focus group interviews, and two studies applied an unstructured approach to conducting individual interviews. Patients were recruited from primary care and community settings. A total of 499 patients taking four or more medications for varying chronic conditions were included, the majority of whom were over the age of 65 years and residing in communities. Five studies took place in the USA, three in the UK, three in Sweden, and one each in Australia and Germany (table 1).

Methodological quality

All 13 studies reported at least 8 of the 10 CASP checklist items. No studies met the criteria of adequately considering the relationship between researchers and participants, and only two studies^{31 36} failed to report the information required by all remaining CASP items (table 2).

Synthesis

We extracted 140 findings from the 13 studies, grouping them into 17 categories describing a wide variety of patient experiences of polypharmacy (online supplementary tables 3–7). We subsequently summarised the 17 categories into five interrelated syntheses describing central aspects of medication-related experiences of patients with polypharmacy (figure 2). For additional data supporting the syntheses, see online supplementary table 8.

Synthesis 1: patients with polypharmacy are a heterogeneous group in terms of needing and appraising medication information

Even though it is generally difficult for patients with polypharmacy to understand information about harms and benefits of medications, patients with polypharmacy are a heterogeneous group in terms of needing and appraising information and respond differently to the same information. These differing needs for and ways of responding to information are illustrated by Krska and colleagues³¹:

More than half the participants felt they needed information to allay their concerns, beyond that provided directly by health professionals, which they obtained by various means, including books, patient information leaflets (PILs) and the internet. Conversely, four participants either did not want to know about their

medicines or would never seek further information. One was uncertain about the usefulness of PILs and three considered that information caused or worsened rather than allayed concerns, meaning further reassurance and clarification from a health professional was needed.

Synthesis 2: patients are aware of the importance of medication adherence, but it is difficult to achieve

Patients are aware of the importance of adherence and of developing routines for taking medications. However, doing so requires substantial effort due to practical issues, regimen changes, and skipping, altering or forgetting doses, which may occur when patients assign different priorities to medications. Health professionals and patients' social networks can facilitate medication adherence. Some of the challenges to maintaining medication routines are illustrated by Krska and colleagues³¹:

Although all participants had developed routines for using medicines, which had become automatic or 'second nature' – 'you think nothing of it' – interviews revealed the extent of the physical and organisational effort required by some patients in using medicines. ... The impact of changes in daily routine sometimes resulted in medicines not being used.

Synthesis 3: decision-making about medications is complex

Generally, patients want to take fewer medications. A multitude of factors affect patients' decision-making about medications, but physical function and the preference for a stable regimen are central. The desire for a stable regimen can even impact patients' willingness to discuss deprescribing. The following quotation from a participant in the study by Linsky and colleagues³² illustrates the importance to patients of a stable regimen:

Oh, let's give it a time frame and find out how it goes. I'm not going to quit it completely because I already seen where my blood pressure was up there and sometimes I felt weird because I didn't even know what it was, and it was the high blood pressure. But if they are going to do something like that, well, if you want to do it on a trial basis and monitor me, fine, but right now it's got everything working fine. I'm not going to fool with something that's working good.

Synthesis 4: multiple relational factors affect communication between patients and physicians, and these factors can prevent patients from disclosing important information

Multiple factors in relationships between patients and healthcare professionals, such as unequal power relations, trust or lack thereof, problems in interacting with providers or in receiving care, and conflicting advice, affect communication and increase the risk that patients will not disclose important information about their

Table 1 Study characteristics

Author (year), country	Title	Aim	Study design	Context	Participants	Analytical approach
Elliot <i>et al</i> ²⁸ (2007), USA	Strategies for coping in a complex world: adherence behavior among older adults with chronic illness.	Explore how older adults with multiple illnesses make choices about medications.	Semistructured individual interviews.	Harvard Pilgrim Health Care, a New England health maintenance organisation based in Eastern Massachusetts.	20 community-dwelling seniors with health insurance, aged 67–90 years, 4–12 medications and 3–9 comorbidities.	Constant comparison method.
Fried <i>et al</i> ²⁹ (2008), USA	Views of older persons with multiple morbidities on competing outcomes and clinical decision-making.	Examine the ways in which older persons with multiple conditions think about potentially competing outcomes to gain insight into how processes to elicit values regarding these outcomes can be grounded in the patient's perspective.	Semistructured focus groups.	Senior centres, physicians' practices and a congregate housing site.	66 participants aged 65 years and older, 5 or more medications, and a median of 5 chronic conditions.	Constant comparison method.
Holmqvist <i>et al</i> ³⁰ (2019), Sweden	Older persons' experiences regarding evaluation of their medication treatment—an interview study in Sweden.	Explore and describe older persons' experiences of evaluation of their medication treatment.	Semistructured interviews.	Primary care centres in southern Sweden.	20 community-dwelling older persons (age 75–91 years) with a mean of 7.3 diagnoses and treated with medication(s) on a regular basis.	Content analysis.
Kraska <i>et al</i> ³¹ (2013), UK	Issues potentially affecting quality of life arising from long-term medicines use: a qualitative study.	Determine the issues which patients taking long-term medications consider affect their day-to-day lives, including quality of life.	Semistructured individual interviews.	General medical practices in North West England.	21 community-dwelling participants and 4–17 medications (average of 7.8).	Thematic analysis.
Linsky <i>et al</i> ³² (2015), USA	Patient perceptions of proactive medication discontinuation.	Identify patient perspectives on intentional medication discontinuation to optimise medication use.	Semistructured individual interviews and focus groups.	Two US Veterans Affairs medical centres.	27 participants with a mean age of 66 years, 5 or more medications, and visited primary care at least twice in the previous 2 years.	Modified grounded theory and method.
Moen <i>et al</i> ³³ (2009), Sweden	I don't know how many of these [medicines] are necessary... -a focus group study among elderly users of multiple medicines.	Conduct an exploratory study describing multiple medication use from the elderly patient's perspective.	Semistructured focus groups.	Two largest senior citizens' associations in Sweden.	59 participants aged 65 years or older, and 5 or more medications.	The framework method.

Continued

Table 1 Continued

Author (year), country	Title	Aim	Study design	Context	Participants	Analytical approach
Noël <i>et al</i> ³⁴ (2005), USA	Collaborative care needs and preferences of primary care patients with multimorbidity.	Explore the collaborative care needs and preferences in primary care patients with multiple chronic illnesses.	Semistructured focus groups.	Eight geographically dispersed primary care Veterans Health Administration clinics.	60 participants, ranging in age from their 30s to their 80s, 8–27 medications, and 2 or more chronic illnesses.	Content analysis.
Patton <i>et al</i> ³⁵ (2018), UK	Improving adherence to multiple medications in older people in primary care: selecting intervention components to address patient-reported barriers and facilitators.	(1) Identify determinants (barriers, facilitators) of adherence to multiple medications from older people's perspectives; (2) identify key domains to target for behaviour change; and (3) map key domains to behaviour change techniques that could be delivered in an intervention by community pharmacists.	Semistructured focus groups.	General practices from across the five Health and Social Care Trusts in Northern Ireland.	50 community-dwelling participants aged 65 years and older, and 4 or more medications.	The framework method and content analysis.
Schöpf <i>et al</i> ³⁶ (2018), Germany	Elderly patients' and GPs' perspectives of patient-GP communication concerning polypharmacy: a qualitative interview study.	Explore elderly patients' and general practitioners' perceptions of communication about polypharmacy, medication safety and approaches for empowerment.	Semistructured individual interviews.	Primary healthcare centre.	6 participants aged 65 years and older, and 5 or more medications.	The framework method.
Summer Meranius and Engstrom ³⁷ (2015), Sweden	Experience of self-management of medications among older people with multimorbidity.	Explore the experience of self-managing medications among older people with multimorbidity.	Unstructured face-to-face interviews.	Either primary care settings or nursing homes in a municipality.	28 participants aged ≥ 75 years with ≥ 2 medical diagnoses and living at home or in special accommodation.	Lifeworld-based phenomenological method.
Tudball <i>et al</i> ³⁸ (2015), Australia	Challenges to consumers travelling with multiple medicines.	Examine how consumers residing in Australia experience and manage their multiple medications while travelling.	Semistructured individual interviews.	General practitioner surgeries and community pharmacies; consumer organisations; and various communication channels.	35 community-dwelling participants, most aged over 50 years and taking 5–25 medications.	Constant comparison method.

Continued

Table 1 Continued

Author (year), country	Title	Aim	Study design	Context	Participants	Analytical approach
Vandermause <i>et al</i> ²⁹ (2016), USA	Preserving self: medication-taking practices and preferences of older adults with multiple chronic medical conditions.	Examine the experiences of older adults with multiple chronic medical conditions when a new medication was added to their existing multiple medication regimen.	Hermeneutic unstructured individual interviews and self-assessment diaries.	Recruited by clinic healthcare professionals on receipt of a prescription for a new medication.	15 community-dwelling participants aged 60 years and older, 5 or more medications plus a new prescription, and 3 chronic medical diagnoses.	Hermeneutic analysis, content analysis and parallaxic praxis.
Williams <i>et al</i> ⁴⁰ (2005), UK	Patient perspectives on multiple medications versus combined pills: a qualitative study.	To explore attitudes and practices to medication regimens among patients already in receipt of multiple medications, and to assess whether a combined tablet would be perceived as advantageous.	Semistructured focus groups.	Urban and rural general practices in Tayside, Scotland and in the South East of England.	92 participants aged 40 years and older, receiving antihypertensive and cholesterol-lowering medications, and from 6 to more than 20 medications.	The framework method.

GP, general practitioner.

medication regimens. Continuity of care is important. Making changes to regimens without consulting prescribers beforehand is expressed in the following interpretation by Elliot and colleagues²⁸ :

Experimenting with regimens ranged from stopping a medicine altogether; taking regular breaks; discontinuing medicines to check if they are working, or to determine the cause of side effects, trying individual medicines in a complex new regimen; and reducing doses. One patient reported stopping taking their antihypertensives to increase symptoms before a consultation. Prescribers were often not consulted before interviewees changed regimens.

Synthesis 5: polypharmacy affects patients' lives and self-perception, and challenges with polypharmacy are not limited to practical issues

The burden of polypharmacy does not arise solely from logistical challenges of organising medications and routines. Polypharmacy affects the self-perception of patients, can be seen by patients as embarrassing, and causes adverse effects that can have grave implications for patients' lives and affect their attitudes towards medications. The effect of taking multiple medications on patients' self-perception is illustrated by Vandermause and colleagues³⁹ :

Participants did not want to fall into the category of 'taking multiple medicines.' Many rejected this descriptor, though they fit the criterion of taking five or more medicines. No matter what their medicines, they did not want to be seen as medication users. The desire to be viewed outside this designation was commonly strong. It was not uncommon to hear stories of confusion and dejection when participants described medicine side effects or compatibility problems, barriers to getting their prescriptions filled, and cost factors that were worrisome. All of these impediments affected their sense of who they were as persons. Their bodies were failing them, unless they could find a way to manage the problems they encountered.

Proposed implications

Based on the five syntheses, we proposed the following implications for practice:

- ▶ Healthcare professionals should actively solicit individual patients' perspectives on challenges related to polypharmacy (syntheses 1–5).
- ▶ Healthcare professionals should consider upscaling their communicative efforts to better inform and involve polypharmacy patients on their medications to an extent that reflects their needs (syntheses 1–5).
- ▶ Healthcare professionals should consider supporting patients with polypharmacy, preferably by involving patients' social network, by coordinating and ensuring continuity of care, as well as to facilitate dealing with

**Table 2** Results of the quality appraisal using the CASP checklist for qualitative studies

Item	Studies reporting the item, n (%)	References
Was there a clear statement of the aims of the research?	13 (100)	28–40
Is a qualitative methodology appropriate?	13 (100)	28–40
Was the research design appropriate to address the aims of the research?	10 (76.9)	28 29 31–35 38–40
Was the recruitment strategy appropriate to the aims of the research?	12 (92.3)	28–30 32–40
Were the data collected in a way that addressed the research issue?	12 (92.3)	28–35 37–40
Has the relationship between researcher and participants been adequately considered?	0 (0)	–
Have ethical issues been taken into consideration?	12 (92.3)	28–35 37–40
Was the data analysis sufficiently rigorous?	12 (92.3)	28–30 32–40
Is there a clear statement of findings?	13 (100)	28–40
How valuable is the research?	13 (100)	28–40

CASP, Critical Appraisal Skills Programme.

practical and psychological issues with taking many medications (syntheses 2, 4 and 5).

In addition, we propose the following recommendations for strengthening research in medication-related experiences of multimorbid patients with polypharmacy:

- ▶ Studies of the different medication information needs of patients with polypharmacy should be conducted (synthesis 1).
- ▶ Interventions promoting continuity of care should be evaluated qualitatively to assess patients' perspectives on polypharmacy (synthesis 4).

DISCUSSION

To the best of our knowledge, this is the first systematic review of qualitative studies to comprehensively compile medication-related experiences of multimorbid patients with polypharmacy. From the 13 included studies, we extracted a plethora of experiences of being a patient with polypharmacy and formed five interrelated syntheses related to the differing medication information needs, the difficulties of achieving adherence, the complexity of decision-making, the relationship between healthcare professionals and patients, and the impact on patients' self-perception. These formed the basis for several recommendations that can improve care for patients with polypharmacy, as well as guide future research in medication-related experiences of multimorbid patients with polypharmacy.

One important aspect of synthesis 2 is the potential facilitating role that patients' social network can play in medication adherence. This finding of social support being important to ensuring proper medication use is consistent with previous findings.¹⁰ Also, experiencing a lack of understanding from others about one's condition negatively affected patients' beliefs about medications.¹⁰ This calls for healthcare professionals to include patients' support networks in consultations or communicate with friends and relatives providing social support to ensure

they understand the necessity for treatment and consequences of non-adherence.

A finding central to our synthesis is the challenges that patients with polypharmacy experience in the relationship with healthcare professionals. These relationships are challenged by multiple factors, such as power imbalances, varying levels of trust, problems in interacting with providers or in receiving care, and conflicting advice. Schiøtz *et al*¹³ reported that patients with polypharmacy in a Danish context generally trusted healthcare professionals. In general, this finding was reflected in the included studies. However, blind trust may prevent patients from asking questions and disclosing important information relevant to their condition. Rather than focusing on establishing trust between patients and healthcare professionals as a means of improving adherence, it may be more important to address power imbalances and to increase continuity of care for patients, particularly relational continuity, defined as 'an ongoing therapeutic relationship between a patient and one or more providers'.⁴¹ Mohammed *et al*¹⁰ found a link between the lack of an established relationship with healthcare professionals and both inappropriate medication-related behaviour and a negative attitude towards treatment. A larger treatment burden and more complex regimen involving multiple healthcare professionals may increase the risk that patients have no established patient–healthcare professional relationship. In addition, Mohammed *et al*¹⁰ argue that healthcare professionals should direct their attention towards patients' lived experiences with medications; a focus on patients' medication-related needs can lead to improvements in medication therapy and health outcomes. Thus, healthcare professionals must focus on medication-related experiences of patients with polypharmacy to address experiences or attitudes that can affect medication adherence. In a qualitative study of barriers to providing medication reviews for multimorbid

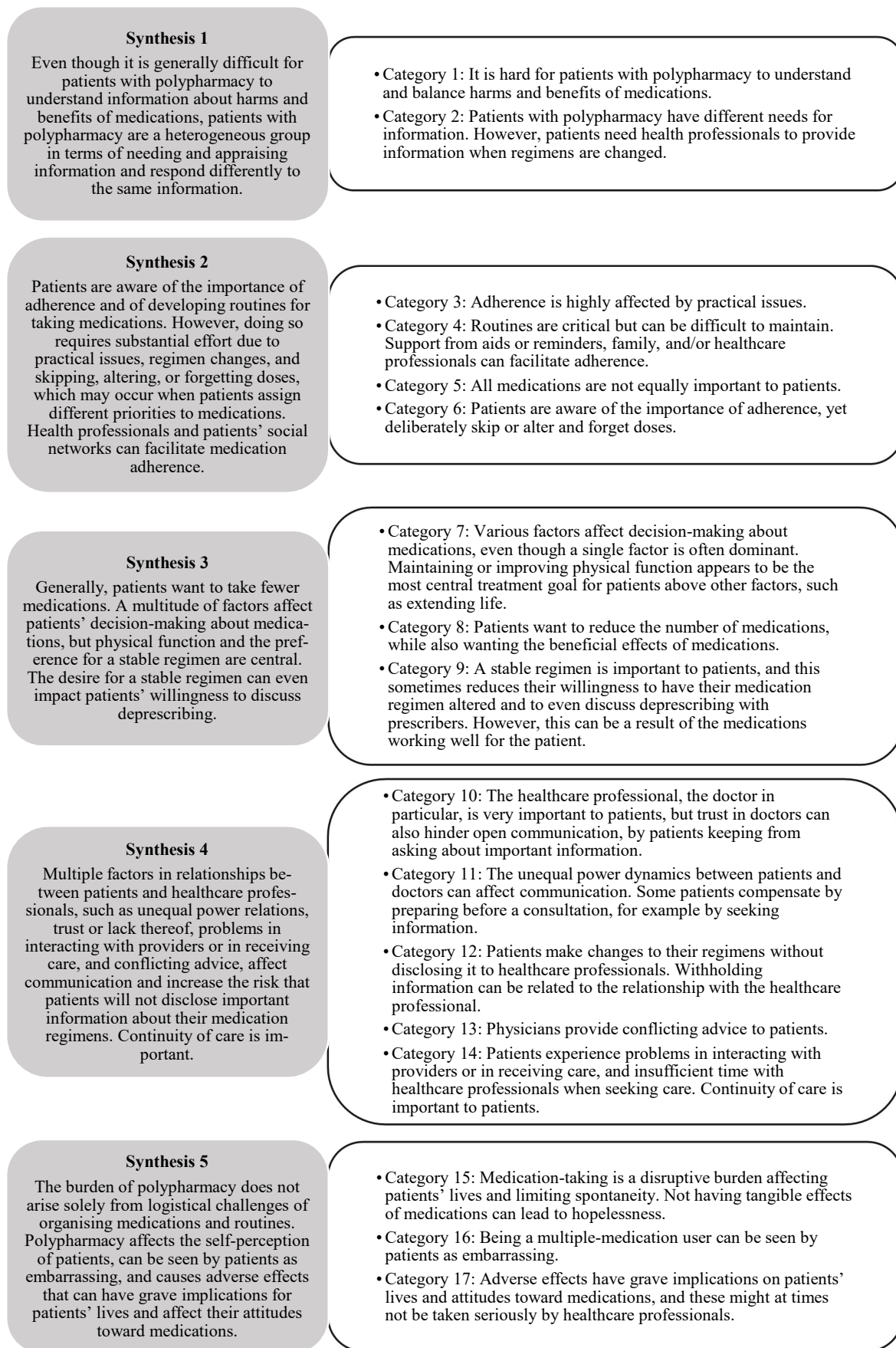


Figure 2 Syntheses. The figure provides an overview of the five syntheses, along with the categories from which they are formed.



patients with polypharmacy, general practitioners (GPs) expressed a clear need to improve information exchange between sectors by, for example, establishing a dialogue and collaboration between GPs and specialists.⁴² This pertains to the current study in that information exchange between sectors could improve the relationship between patients and healthcare professionals and, in particular, improve patients' general perceptions of the healthcare system as a unified entity in which information is consistent and shared across sectors.

The finding from synthesis 5 of the impact of polypharmacy on self-perception expands on previous findings. In a synthesis of qualitative studies of medication-taking in general, certain medications, such as those for mental health conditions, were reported as being particularly stigmatised, likely due to the stigma attached to mental illness.⁴³ Our syntheses expand on this by suggesting that taking multiple medications, regardless of underlying conditions, can be perceived as embarrassing by patients. This feeling can affect how patients perceive and make decisions about taking medications and may affect adherence negatively. Therefore, we see a clear need to target the perception of medications among patients and their social network to increase the adherence and quality of life for patients with polypharmacy.

In assessing study strengths and limitations, four evaluation criteria for qualitative research are relevant: credibility, transferability, dependability and confirmability.⁴⁴ The credibility of our categories and syntheses is enhanced by our triangulation of findings from different studies and transparent report. However, the transferability of our findings to all patients taking more than four medications is unknown. We included 13 studies with participants who varied in terms of the number and types of their medications and diagnoses and the healthcare systems in which they received care, which may limit transferability to some degree. However, our use of four or more medications as the definition of polypharmacy arose from our aim to capture a broad range of patient experiences of polypharmacy; this definition was applied in 4 of the 13 included studies. We did not use the most common definition of polypharmacy,² but we believe our findings express common experiences of people with multimorbidity and polypharmacy. Our findings are dependable because we assessed the credibility of each finding from all papers; we are confident that our findings are supported by the original data. In addition, the transparency of our reporting (online supplemental file 1) allows the reader to assess how well our syntheses are supported by the findings. However, as is the case with all qualitative methods, the subjective nature of our analysis introduces a risk of bias. A factor potentially limiting the confirmability of our study is that the involved researchers influence the process of extracting and grouping data, and a single author completed data extraction. However, problems, doubts and unclear texts were discussed with the author group, and two authors collaborated in the data synthesis. Other factors mitigating bias include

transparency in reporting, triangulation and assessing our findings in light of what was previously known. Additional strengths are our stringent process of selecting and appraising studies with a preplanned and structured approach to searching and appraising literature, the use of two reviewers for the screening and quality appraisal, and the use of CASP checklist for assessing the methodological quality of included studies.

CONCLUSION

Polypharmacy has a range of consequences and poses many challenges to patients. We identified five syntheses emphasising themes of central importance for patients with multimorbidity and polypharmacy relating to medication information needs, adherence, decision-making, the relationship between healthcare professionals and patients, and patients' self-perception. These themes can affect adherence and quality of life, and it is therefore essential that healthcare professionals actively solicit individual patients' perspectives on challenges related to polypharmacy. Based on the reported experiences, we recommend that healthcare professionals upscale communicative efforts and involvement of patients' social network on an individualised basis to facilitate shared decision-making and treatment adherence in many patients with multimorbidity and polypharmacy.

Author affiliations

¹Center for Clinical Research and Prevention, Bispebjerg and Frederiksberg Hospital, Capital Region of Denmark, Frederiksberg, Denmark

²The Research Unit for General Practice, Aarhus, Denmark

³Research Group for Social and Clinical Pharmacy, Department of Pharmacy, University of Copenhagen, Faculty of Health and Medical Sciences, Copenhagen, Denmark

⁴Global Business Quality Management, Falck, Copenhagen, Denmark

⁵Department of Clinical Pharmacology, Bispebjerg and Frederiksberg Hospital, University of Copenhagen, Faculty of Health and Medical Sciences, Copenhagen, Denmark

⁶The Research Unit for General Practice, Department of Public Health, University of Copenhagen, Faculty of Health and Medical Sciences, Copenhagen, Denmark

⁷Innovation and Research Center for Multimorbidity and Chronic Conditions, Region Zealand, Slagelse, Denmark

Contributors CUE is the guarantor of the submitted work. CUE planned the searches in collaboration with RJ, JTL, MBC and AF; conducted the searches; carried out study selection in collaboration with SK; assessed the methodological quality in collaboration with LDC; extracted the findings; synthesised the findings in collaboration with JTL; and wrote the manuscript. CUE, RJ, JTL, MBC and AF devised the project and provided input for the synthesis of findings. All authors critically revised the manuscript. Data synthesis was conducted by CUE with expertise in literature review and JTL with extensive experience in qualitative research on patient and professional perspectives on use of medications.

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ORCID iD

Christian Ulrich Eriksen <http://orcid.org/0000-0002-7163-5703>

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