Beneath the surface: discovering the unvoiced concerns of older adults with Type 2 diabetes mellitus

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Abstract

Emerging clinical guidelines recommend shared decision making to individualize drug regimens for older adults with Type 2 diabetes mellitus. While the current health education campaign for diabetes in the United States recommends physician-initiated medication-related discussions about adherence and side effects, little emphasis is placed on soliciting patient concerns. This study’s aim was to explore the concerns of older adults with diabetes about the complexity of their drug regimens and to determine whether they discussed medication-related concerns with their physician. Twenty-two patients with Type 2 diabetes age 65 years and older who used five or more medications were selected from an urban academic geriatric medicine practice in the United States. In-depth semi-structured interviews were conducted to uncover participants’ perceptions of multiple medication use and related discussions with providers. The predominant theme that emerged was the variability in medication-related topics that patients perceived they could discuss with their physician. While most participants described physician-initiated discussions about adherence and side effects, many did not bring up concerns about medication cost or their desire to reduce medication burden. In order to encourage greater patient involvement in medication decision making for diabetes treatment, educational messages promoting patient–physician dialogue need to take more account of patient concerns.

Introduction

A shift toward patient centeredness in chronic disease management has led to an increased focus on shared decision making between patients and physicians [1–3]. Improved patient–provider communication and shared decision may lead to greater patient satisfaction, adherence to treatment plans and improved health outcomes [4–10]. Public health education programs are focusing on patient–physician communication because medication-related decisions are some of the most common and important decisions for patients [11]. A growing number of campaigns are trying to promote patient–physician communication [12, 13]. Maximizing the effectiveness of such public health efforts depends on understanding patients’ medication concerns and the nature of patient–physician communication about medicines.

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Patient–physician communication in diabetes mellitus (DM) management is particularly important to individualize DM management for older adults. This is a recommendation of the American Geriatrics Society [14]. Eliciting preference for these patients is important because active pharmacologic treatment could cause more harm than benefit [14], affect quality of life by increasing medication burden [15] or requiring needle use for insulin [16] and impart significant economic burden [17]. Cost-related underuse contributes to poorer outcomes in patients with DM, and polypharmacy contributes to poor adherence [15, 18, 19]. Optimizing communication and understanding patient preference is central to achieving individualized therapy [20].

We know from previous research about patient–physician communication and decision making for medications that (i) patients do not reveal aspects of their medication behavior to their physician [21], (ii) there is considerable ambivalence about taking drugs [22], (iii) physicians mistakenly think they know patient preferences regarding prescribing [23], (iv) patients vary in their desire to participate in medication decision making [24] and (v) misunderstandings between patients and physicians are common and based on inaccurate assumptions by both parties [23]. Previous studies also show that patients with DM do not discuss cost with their physicians even if prohibitive medication expense leads to non-adherence [25]. Work specifically addressing communication and patient preference for DM treatment shows that desire for aggressiveness of treatment varies among older patients [26] and that physician communication plays an important role in enhancing DM self-management and outcomes [27, 28].

What is missing is the perspective of older persons with DM that specifically focuses on their views toward their medication regimens, the nature of their medication-related discussions with their physicians and ultimately how much patient preference is taken into account in prescribing. We build on previous investigations by conducting qualitative interviews with older patients with DM to characterize medication-related discussions with their prescribing physicians. The specific aims of this pilot study were to (i) describe whether patients discussed medication therapy with their physician, (ii) characterize the issues addressed in medication-related discussions, (iii) describe the patient perspective regarding complex medication regimens and (iv) identify topics that patients wished to discuss with their physicians that were not usually addressed. In this way, we sought to identify older patients’ unvoiced concerns regarding DM therapy involving complex medication regimens. Our goal is that this information can educate providers and patients about relevant but unrecognized concerns.

### Methods

#### Study design

Two members of the research team (A.O.K. and Sangeeta Bhojwani) conducted audiotaped interviews following a semi-structured interview schema with semi-structured questions. Domains included (i) a self-assessment of comorbidities (‘Please describe your medical problems.’), (ii) communication with their physicians about medications (‘Do you speak with your physician about your medications? If so, what specifically do you talk about?’; ‘Is there anything else about your medications that you would like your physician to discuss during your visits?’) and (iii) medication use (‘How many pills do you take every day?’; ‘How do you feel about the number of pills you are taking?’; ‘Are there any medications that you would like your physician to discuss during your visits?’). Work specifically addressing communication and patient preference for DM treatment shows that desire for aggressiveness of treatment varies among older patients [26] and that physician communication plays an important role in enhancing DM self-management and outcomes [27, 28].

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in the past 4 weeks?), functional status and socio-
demographic characteristics.

Participants

Participants were drawn from a single outpatient
academic geriatric medicine practice and were eli-
gible if they were aged 65 years and older, diag-
nosed with Type 2 DM, had at least two visits with
their primary care provider in the previous year,
lived in the community and were not residents of
assisted living facilities and managed their own
medications. Inclusion criteria were verified by
medical record review and responsibility for medici-
nation management was confirmed by self-report.
Investigators chose to interview patients who made
their own medication decisions because of interest
in the point of view of the aging individual rather
than of proxy decision makers. Because the focus
of the investigation was on the patient’s burden of
multiple medication use, including the concern for
potential drug interactions and dosing complexities,
investigators included people whose record indi-
cated the simultaneous use of five or more medica-
tions [30] instead of using a criteria based on
excessive prescribing or cumulative medication
use within a given time period.

Recruitment

A total of 119 individuals with Type 2 DM were
identified. Investigators reviewed medical records
to identify patients who met eligibility criteria and
to identify those unable to participate because of
cognitive impairment, hearing impairment or other
language barriers. Cognitive impairment was de-
finite having a Mini-Mental Status Examination
score of 23 or less documented in the outpatient
medical record. A total of 59 individuals were iden-
tified as potentially eligible for this study and
investigators sent a list of these patients to practice
physicians to obtain permission to contact the pa-
tient. Investigators gained physician permission
to contact 50 eligible individuals. From the 50 eligi-
ble individuals, individuals were called with the
goal of attaining a purposive sample of respondents-
representing a mix of men and women, race and
household income that was representative of the
practice population. Our target enrollment was 20
participants for this pilot study because previous
studies have found thematic saturation with as few
as 12 interviews [31]. In the end, we enrolled 23
participants. Of the completed interviews, one inter-
view was lost because of faulty audio recording,
leaving 22 completed interviews for analysis.

Data collection

Digitally recorded interviews were conducted be-
tween June 2004 and September 2004. Except for
one conducted in the clinic at the request of the
participant, all interviews were conducted in the
patient’s home. A typical interview lasted ~30 min.

Coding and analysis of data

The recorded interviews were transcribed in full by
a professional transcription service and the accu-

racy was checked against the original digital record-
ings by a single member of the research team.
Investigators analyzed the transcripts in three stages
using thematic analysis. First, transcripts were
broadly coded separately by two of the investiga-
tors (J.T. and J.L.G.) based on the study aims.
In the second stage of analysis, the transcripts were
reread to explore recurrent emerging themes within
the broad categories of medication use and commu-
ication to develop fine coding themes. Using the
constant comparative method, transcripts were re-
read by the same two investigators to recode the
interviews based on these newly identified fine cod-
ing themes [32]. In this way, themes underwent con-
tinuous refinement throughout the analytic process.

In the final stage, coding of the transcripts was
compared for differences. When differences were
identified, the same two investigators met to review
the transcripts and reconcile differences in order to
validate the themes. The frequency of discrepancies
between reviewers was approximately <10%. An-
alysis of the transcripts was facilitated by the use of
the software package QSR N6 (QSR International,
Melbourne, Australia).

Participants provided written informed consent
to participate in this University of Pennsylvania
Institutional Review Board-approved protocol.
Results

Characteristics of respondents

Among the 22 patients interviewed, 17 were women and the average age was 75. Seventeen respondents were black, three were white and three were Asian, American Indian or other race. The majority (>75%) had insurance to cover the cost of their medications. Less than one-quarter (23%) had some high school education or less. Based on individual’s zip codes and the median household income by zip code census data [33], the average median household income was $29 234 (range $15 888–63 750). Seven used five prescribed medications a day, 11 used six to 10 medications a day and four used >10 medications a day. The majority reported no impairments in their ability to perform either basic or instrumental activities of daily living (Table I). The respondents were cared for by eight physicians in the practice and each physician had from one to five patients participating in this pilot study. The demographics of the practice population from which the study sample was drawn are as follows: average age 79; female 72%; African American 54%, white 34%, other race 10%, Asian/Pacific Islander 0.6% and American Indian/Alaskan native 0.1%. Our study population overrepresented African Americans, was somewhat younger in age, but representative in terms of gender.

Do patients discuss medication therapy with their physician?

The majority (95%) reported they spoke with their physicians about their medications. Only one respondent voiced the belief that their physician did not have time to discuss medication issues with them:

I don’t talk to my doctor about my medications because half of the time these doctors today do not have time to sit and talk with you. Not just my doctor, any of them do not have the time. I think they are limited to a certain time as to how long they are supposed to talk to a patient and visit a patient. And if they go over their time it’s like a crime, so I really do not have the time to talk to him about it.

Issues addressed in medication-related discussions with physicians

All other respondents said they did speak with their physicians regarding their medications and offered
a variety of topics about which they spoke (Table II). Many of these topics addressed patient concerns and were patient initiated. Themes included side effects, indications for use, medication effectiveness, cost, could new medications could help, importance of medications to patients, polypharmacy and desire to cut down and potential interactions.

**Patient concerns**

*Side effects*

Five respondents said their discussions centered on the medication side effects. This was the theme offered by three of the five respondents who used 10 or more prescription medications. This was also much more common among respondents who had some college education (six out of 11). Interviews showed that some discussions were physician initiated and some were patient initiated:

… every time I go … he asks me how I’m doing and what reactions, if any, am I getting from them.

You know, I ask ‘Does it affect my liver, you know, and stuff …’

**Table II. Medication-related topics discussed between patients and physicians**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Number</th>
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<tbody>
<tr>
<td>Adherence</td>
<td>8</td>
</tr>
<tr>
<td>Side effects</td>
<td>5</td>
</tr>
<tr>
<td>Refills</td>
<td>3</td>
</tr>
<tr>
<td>Indications</td>
<td>2</td>
</tr>
<tr>
<td>Medication reconciliation</td>
<td>2</td>
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<tr>
<td>Medication effectiveness</td>
<td>2</td>
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<tr>
<td>Correct medication use</td>
<td>1</td>
</tr>
<tr>
<td>Cost</td>
<td>1</td>
</tr>
<tr>
<td>Could new medications could help me?</td>
<td>1</td>
</tr>
<tr>
<td>Importance of medications to patient</td>
<td>1</td>
</tr>
<tr>
<td>Monitoring and laboratory testing</td>
<td>1</td>
</tr>
<tr>
<td>Polypharmacy and cutting down</td>
<td>1</td>
</tr>
<tr>
<td>Potential interactions</td>
<td>1</td>
</tr>
<tr>
<td>Prescribing</td>
<td>1</td>
</tr>
</tbody>
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**Indications for use**

Two respondents had discussed medication indications with their physician:

Well, he did at one time tell me what [the medications are for], but I … forgot now.

**Medication effectiveness**

Two respondents said that their discussions centered around whether their medications were working for them:

I took my medication to the neurologist and told him about the [medication name] which wasn’t helping. And I wanted to know … what was I doing wrong?

**Cost**

Only one respondent spontaneously offered that they spoke with their physicians about medication cost in open-ended questioning:

We have serious financial difficulty getting them. The money, everything is bad for the money … for the money that the pills costs; that’s the problem … I talked to my doctor that my medicine costs too much.

We also found other patient concerns addressed in medication-related discussions with physicians.

**New medication**

Is there any new medicine came in that would help me more than what I’m taking?

**Polypharmacy**

There’s so many of them; when can we start cutting them down?

**Potential interactions**

Is this going to be compatible with everything else I’m taking?
Physician concerns

However, many discussions centered on physician concerns, such as adherence, medication refills, medication reconciliation, correct use, monitoring and testing and prescribing.

Adherence

Eight respondents indicated that their discussions focused on adherence:

Yes, every third month when I see him, he reviews my medications with me, and says ‘Sure you’re taking them?’ I say, ‘Sure, I’m taking them.’

Yet, another respondent had this to say about his non-adherence:

So I see this doctor like every six weeks, Dr. (name) and he’s very nice to talk to. But the only thing I don’t do is take the medication he prescribes for me and I’m being very honest with you. If I can see where it’s doing me some good then I will take it.

Medication refills

Three respondents indicated that the focus of their discussions were refills. For some patients, this was the entire content of their medication-related discussion:

The only thing he says is that I am doing good. I never said nothing to him about it … he checks it and if its need to be refilled he just makes me a prescription.

I take ‘em there and let him see ‘em. If I need ‘em, he writes out a prescription for me.

Medication reconciliation

Two respondents mentioned that the focus of their discussion was clarifying which medications the person was taking and not taking:

… she asks me if I am still on the same medicine. She’ll read it off to me again and she seems satisfied, you know, that I’m still on it.

We also found the following topics in discussions with the respondents.

Monitoring

Well, you know, that they draw blood, so I talk about my cholesterol, I talk about my kidneys cause most people who have sugar, it does something to you kidneys, you know.

Prescribing

… the doctor said don’t take that anymore, so I stop.

Patient perspective regarding complex medication regimens

To understand whether patients discussed the complexity of their medication regimens with their physicians, we asked patients to describe their attitudes and feelings toward the number of medications they were prescribed and whether they discussed this with their physician. We found that respondents offered a spectrum of negative to positive attitudes toward their medication regimens.

Complex medication regimens are a ‘necessary evil’

Nine respondents wished they did not have to take their medications and thought it was a necessary evil; they wished they could stop, but did not do so because they believed that the medications were necessary and important to their health. The daily task of pill taking presented a burden to these individuals:

They’re a hassle taking all those pills, you know, but I think it’s what you call a ‘necessary evil’.

I’m not in favor of taking medicine, period. But, you know, if this is what works, it works.

However, even those who expressed a burden and dislike of the number of pills they took also expressed an acceptance that they were important.
A theme emerged of patients trusted that each pill had a specific purpose:

Interviewer: ‘Okay, … you said you hate the number of pills you take. Did you tell your doctor that?’ Respondent: ‘But I have to have them, so why. Like he always says, well you know the medicine that you have we gave them to you on account of what your ailments are.’

**Patients desire to cut down**

Only one respondent spontaneously offered that they spoke about the number of pills they took and specifically about reducing the number of pills with their physician:

There’s so many of them; when can we start cutting them down?

When interviewers asked specifically about whether respondents discussed the number of medications they used with their physician, seven said that they had spoken with their provider about this and two had shared their concern that their medication burden was too much. In one example, a patient was given the goal of weight loss as a mechanism to reduce the number of pills she was taking:

Well, just like—I know I have to take it. What do I talk about? He tells me it’s … my weight and if I could get my weight down, I wouldn’t have to take all this medicine.

Others had their medication burden acknowledged by their physician. For one person, the number of medications was an important factor in prescribing:

He said I’m taking quite a few. And he wasn’t going to give me anymore because I was taking quite a few.

However, two individuals indicated that they would not seriously object to their physician if prescribed a new medication:

… I probably say ‘oh another pill’ but I mean I don’t say I’m not going to take this you know. If they want me to take it, I will.

… I just say, well when she says I have to take medication, I hit the ceiling, you know … but she discussed with me what each is for … and I said another pill?

**Other issues**

Finer exploration of the responses of individuals with negative attitudes toward their medication regimens revealed several distinct questions that patients voiced but often did not consider discussing with their physician: (i) why can’t I have a combination pill? \((n = 2)\), (ii) why do I take multiple pills for the same reason \((n = 1)\), (iii) why do I take pills if my lab tests are good? \((n = 1)\).

**Why can’t I have a combination pill?**

Some individuals asked why they could not have a combination pill that addressed all their medical problems:

Is there a combination of something you can take in one pill? Has that been invented yet?

I think [the number of pills] is ridiculous. I would like one big pill included for everything.

**Why multiple pills for the same reason?**

Another expressed a lack of understanding about why they needed to take more than one medication for the same indication:

I have three different blood pressure medicines …. I want to get off of the [medication name]. I don’t really think three blood pressure medicines is necessary. Two is enough; that’s the way I look at it. If I take two different kinds each day, [medication name] and the [medication name], that should get the blood pressure under control.
Why continue medications if my lab tests are good?

Another respondent was unclear about why they needed to continue taking a lipid-lowering medication after being told that their tests results were fine:

… [the number of pills is] quite a bit. As a matter of fact, I was on [medication name] for a while but I just felt it was just too much … my nurse practitioner told me that my numbers were good. I went back to the heart doctor and I gave him the message and he said ‘Well I’m going to put you on [medication name] anyhow.’ And I was thinking if I’m doing pretty good … then why am I taking extra medicine? Because I just don’t want to be …

Questioning the polypharmacy paradigm

Finally, two individuals questioned the entire premise of needing to take multiple, chronic medications, but did not discuss this with their physician. Each explained how previous generations did well without such interventions:

But I say if I eat right I shouldn’t need all this medicine. I know our parents years ago, grandparents, they didn’t have all this medicine. They just ate a lot of vegetables and stayed healthy, didn’t have to go to the doctors the way we do.

… I just don’t think older people need to take so many medicines. Two generations ago, nobody cared about what we did but these people lived for years … I don’t think they took a whole lot of medicines and they seem to have survived better than we are …

‘The number doesn’t matter’

In contrast to the negative attitudes offered by some, seven respondents acknowledged the importance of medications but provided neither particularly positive nor negative feelings toward their medication regimen complexity and indicated that their medication burden did not bother them. They felt no need to discuss medication burden with their physician. These individuals indicated that taking multiple medications daily posed no particular burden to their lives and seemed to indicate that adherence was not a particularly difficult issue:

I think they all serve a different purpose so the number doesn’t matter. If I have a condition and I need this pill and this pill …, then I have to take them. I don’t feel as though I’m taking them for nothing, just to be taking them.

‘Lucky to have them’

The remainder of the respondents (n = 6) indicated a gratefulness that the medications were available to take care of their problems. These respondents felt that the number they were taking was fine:

I feel lucky to have them to keep me going.

Medication-related issues patients wish to discuss with their physicians that are not usually addressed

In response to direct questions about whether there were issues they wanted to address with their physicians that they did not currently discuss, only three respondents indicated they had further questions. One respondent wished to discuss the importance and indication for each medication, one wanted to discuss what they read about aspirin in relation to their diabetes and renal disease and one respondent wished to discuss whether there were combination pills to reduce the number of pills they took.

All the other respondents expressed no desire to discuss any other issues with their physician. Most were satisfied with their physician and the quality of their communication with them. However, one individual said that they did not want to discuss medications with their physician because they would never question their prescribing physician:

Well I don’t, you know, I never question my doctor. If I go to him, okay, when I go to him
and then he checks me out, he says like everything, he said you’re doing fine, I never question him … I never come to conclude that I should question him about my medication … because he is my doctor.

Because medication cost is an important issue for many patients and cost can be a barrier to medication adherence, we specifically asked participants if they wanted to discuss medication cost with their physicians. When asked directly, five offered that they already had such conversations while the remainder said they did not. Two said that their physician already knew about the expense associated with their medication regimen:

Oh yes, yes. Yes he knows it’s expensive and I know it’s expensive.

Two felt that the discussion would not help. For example:

Well, she does [know], but she can’t help me!

Three believed that it was not the physician’s purview to discuss medication cost:

I don’t think I should go to him with that.

No doctors that I have spoken to seem to concern themselves about the cost of the medicine. … you know, I get the impression that that’s not their department.

Of the six men in the study, three offered this theme of skepticism or the attitude that cost should not be brought up with the physician. Six respondents did not have a need for discussion because they had generous insurance. The following was a common response:

No, because right now there is no cost. I don’t have to pay for any medicines. I just want to get better so I won’t have to take them, so he won’t have to prescribe so many.

Discussion

In this study, we spoke with elderly patients with Type 2 DM to enhance our understanding of patient–physician communication about prescription medications. Specifically, we gained insight into patient’s perceptions of the nature of medication-related discussions with physicians, patient attitudes toward their medication regimens and what they wished they could speak to their physician about. Perhaps more importantly, we also elicited patient concerns that they either did not consider discussing with their physicians or explicitly felt were not appropriate to discuss with their physicians.

Most patients indicated that they spoke with their physicians about their medications and were satisfied with their communication. In open-ended questioning, respondents revealed that the content of their discussions focused on a range of topics from adherence and refills to a desire to understand proper medication use and indication. Although our sample was small, there were clearly some topics that were discussed more frequently than others, such as adherence and side effects. It is possible that these frequently occurring topics were the most important to patients. However, it is also possible that respondents were just recounting what they actually discussed with their physician and not what they found most important.

We specifically asked patients if there were topics they wished to discuss with their physicians that were not otherwise addressed. The responses to this direct questioning revealed general satisfaction with their communication. Only three respondents could identify topics for further discussion. However, respondents also identified topics that they would not discuss with their physician, they felt either because it was not appropriate or because it seemed not to occurred to them. Few patients felt it was appropriate to discuss their concerns about medication cost or doubted that chronic medications were necessary at all. Participants also expressed confusion about some issues that they did not bring up with their providers, such as the need to continue
certain medications when their laboratory tests were ‘normal’ or the need to take several medications of the same type (e.g. multiple antihypertensives).

Other studies have also shown that patients will not discuss issues such as cost with their physicians even if prohibitive medication expense lead to non-adherence [25]. Piette et al. [25] showed that the reasons for not discussing issues with their physician included patient embarrassment, not thinking the topic was important enough, lack of trust and lack of time during the clinical encounter. The most common reason was that the issue was never raised by the clinician, but many also thought their physician could help them with medication cost [25]. This is consistent with the findings in our study. Unfortunately, medication cost is a significant issue for many adults with DM. In one study, 19% reported cutting back on medication use in the prior year due to cost, 11% reported cutting back on their diabetes medications and 7% reported cutting back on their diabetes medications at least once per month [18]. Even with increased medication expense coverage through Medicare Part D, many elders with Type 2 DM will continue to have significant out-of-pocket expenses under Part D [34]. Prescribers could take the initiative by asking patients if cost is an issue and offering cost-saving strategies for prescription medications if appropriate.

Miscommunication is a significant issue affecting the quality of patient-physician communication [23]. We found aspects of this in our study, for example, with participants expressing confusion about the need to continue their medications when they are told that their blood tests were normal. This suggests that physicians reporting of results may be misinterpreted and require clarification regarding the implication for their medication use. This is important because patient-physician misunderstandings have been shown to be associated with potential or actual adverse outcomes such as non-adherence to treatment [23].

Medication knowledge is also a significant issue for many of our participants. Communication about side effects and medication indications were among the most common discussions reported in our study. This is consistent with other investigations that report that many older patients lack knowledge about the usefulness and side effects of their medications [35, 36]. In a study of 22 elderly heart failure patients, only half of patients could name their medications, dose or dosing schedule and many were found to be non-compliant [37]. Another study also reported large differences between levels of self-reported and correct knowledge about various issues regarding medication treatment [38]. This is only of greater concern for patients with complex medication regimens, since medication knowledge decreases with polypharmacy [39]. Our study’s findings underscore the need for physicians to deliver more effective verbal and written communication about prescribed medications.

Our findings expand previous studies addressing medication-related decision making. Such studies suggest that physicians and patients consider different factors when deciding to prescribe or take medications [21–23, 40, 41]. Other investigators have also found that patients were extremely passive in physician-patient exchanges regarding prescription medications, rarely offering their opinion or initiating discussing about treatment [11]. Moreover, physicians tend to overestimate the extent to which they elicit patients’ opinion about the prescribed medication and the extent to which they discuss medication risks. Most participants in our study were satisfied with the quality of the medication discussions they had with their physicians, and yet we identified unaddressed concerns. Collectively, our results suggest that physicians cannot solely depend on their perceptions of the quality of their medication-related discussions, because patients have concerns that they are reluctant to address.

Our findings should be interpreted in the light of several limitations. First, we sampled a relatively limited number of individuals from a single urban academic geriatric medicine practice, the majority of whom was African American. This sample may not be representative of the general population of elderly patients with DM. But, DM is a common problem for older adults and the prevalence is higher among some ethnic groups including African Americans [42]. Further, the number of patients enrolled was typical for this type of qualitative
investigation where recent literature suggests that typically no new themes or information are found in data from as few as 12 individuals [31]. However, the small sample size could introduce sampling bias and limits our ability to generalize our findings or make quantitative inferences. Although our sample included a range of medication burden, income and educational attainment, we acknowledge that the themes expressed in our study may simply reflect the views of predominantly older, African American, women. Second, we enrolled patients who used five or more medications and likely selected for a population with a positive attitudes toward medication use, thereby not examining patients more reluctant to take medications. Third, many of our participants had generous insurance coverage for medications, limiting the generalizability of our findings to individuals who have high prescription drug out-of-pocket expenses. Additional studies are needed to confirm whether these themes are salient to elders residing in different geographic regions, with less generous prescription drug insurance or of other ethnic groups. However, our findings still shed light on unspoken concerns of older patients that can be taken into consideration when prescribing medications for DM.

One strength of using qualitative research methods is the opportunity to give voice to patient views and unexpected themes [43]. The identification of the themes in our study lays the groundwork for larger, epidemiologic investigations. Future work should quantify the importance of the themes identified here to the more general population of older patients with complex medicine regimens. Nonetheless, our findings suggest that efforts to implement recommendations to individualize DM therapy among older adults based on expressed patient preferences [14, 20] can be improved by making physicians aware of medication-related concerns that are unspoken or potential areas of confusion. Ultimately, enhancing communication in DM treatment can improve self-management, adherence and health outcomes [2, 28].

Our study, taken together with previous research on diabetes and shared decision making among older patients, has the policy implication that a health education message that simply states ‘Take medicines exactly as prescribed’ is inadequate. What providers are concerned about and their understanding of medication-related issues may not address patient concerns. For example, the Center for Disease Control and Prevention’s National Diabetes Education Program handout ‘What To Discuss With People With Diabetes’ promotes regular medication reviews, individualized drug regimens and screening for interactions and side effects. These messages could be enhanced by including specific suggestions that make patients aware that it is okay to ask their physicians about reducing medication cost or pill burden. Further educational tools providing specific techniques to individualize drug regimens and engage interested patients in shared decision making could prepare prescribers to work more closely with their patients to achieve congruence of treatment goals.

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**Conflict of interest statement**

None declared.
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