DOI: 10.1111/jgs.17054

CLINICAL INVESTIGATION

Journal of the American Geriatrics Society

Attitudes towards deprescribing: The perspectives of geriatric patients and nursing home residents

Carina Lundby MScPharm, PhD[1,2,3,4,5] | **Peter Glans MScPharm**[1] | **Trine Simonsen Pharmaconomist**[1] | **Jens Søndergaard MD, PhD**[4,5] | **Jesper Ryg MD, PhD**[5,6,7] | **Henrik Hein Lauridsen DC, MSc, PhD**[8] | **Anton Pottegård MScPharm, PhD**[1,3,5]

[1]Hospital Pharmacy Funen, Odense University Hospital, Odense C, Denmark

[2]OPEN, Open Patient data Explorative Network, Odense University Hospital, Odense C, Denmark

[3]Clinical Pharmacology, Pharmacy and Environmental Medicine, Department of Public Health, University of Southern Denmark, Odense C, Denmark

[4]Research Unit of General Practice, Department of Public Health, University of Southern Denmark, Odense C, Denmark

[5]ODIN, Odense Deprescribing INitiative, Odense University Hospital and University of Southern Denmark, Odense C, Denmark

[6]Department of Geriatric Medicine, Odense University Hospital, Odense C, Denmark

[7]Geriatric Research Unit, Department of Clinical Research, University of Southern Denmark, Odense C, Denmark

[8]Research Unit of Clinical Biomechanics, Department of Sports Science and Clinical Biomechanics, University of Southern Denmark, Odense M, Denmark

Correspondence
Carina Lundby, MScPharm, PhD, Hospital Pharmacy Funen, Odense University Hospital, Solfaldsvej 38, Entrance 208, DK-5000 Odense C, Denmark.

Funding information
Velux Fonden, Grant/Award Number: 00018248

Abstract

Background/Objectives: Successful deprescribing requires insight into patients' thoughts about deprescribing. We described attitudes towards deprescribing in a large sample of geriatric patients and nursing home residents.

Design: Interview-based questionnaire study.

Setting: Denmark.

Participants: Geriatric inpatients ($n = 44$), geriatric outpatients ($n = 94$), and nursing home residents ($n = 162$) with an Orientation-Memory-Concentration score of ≥8.

Measurements: Participants completed the validated Danish version of the revised Patients' Attitudes Towards Deprescribing (rPATD) questionnaire by interview. Attitudes were reported descriptively, and rPATD factor scores were compared between participant groups and across participant characteristics.

Results: Participants had a median age of 82 years (interquartile range [IQR] 76–89) and used a median of 8 medications (IQR 5–10). Thirty-three percent of participants would like to try stopping one of their medications on their own, while 87% were willing to stop one on their physician's advice. Geriatric inpatients reported slightly greater perceived burden of taking medication compared to geriatric outpatients and nursing home residents (median "burden" score 50 vs 42, $p = 0.11$), while geriatric outpatients reported slightly more involvement in their medication use compared to nursing home residents (median "involvement" score 80 vs 75, $p < 0.05$) and geriatric inpatients (median "involvement" score 80 vs 70, $p < 0.01$). An increasing number of medications was associated with an increased "burden" score ($p_{trend} = 0.001$): Those using 1–4 medications daily had a median score of 25 (IQR 17–33) compared to 58 (IQR 42–75) among those using ≥10 medications daily. Similarly, an increasing number of medications was associated with a higher "concerns about stopping" score ($p_{trend} = 0.001$) and a lower "appropriateness" score ($p_{trend} < 0.001$), respectively.

Conclusion: Geriatric patients and nursing home residents are generally open towards deprescribing, particularly if proposed by their physician. Some differences exist between populations and across individual patient characteristics. Clinicians should increase awareness of deprescribing as a possibility in these populations and tailor their deprescribing approach to the individual patient.

KEYWORDS

deprescribing, attitudes, geriatric patients, nursing home residents

INTRODUCTION

Use of medication with questionable benefit is common in older people with frailty and/or limited life expectancy[1-3] and is associated with a number of harms, including adverse drug reactions, hospitalization, and mortality.[4] Deprescribing is increasingly recognized as a solution to such medication use and should therefore be systematically considered.[5] Successful deprescribing requires exploring patients' feelings about taking medication, discussing goals and treatment preferences, and addressing questions and concerns.[6] One way to explore patients' feelings about medication use is by use of the revised Patients' Attitudes Towards Deprescribing (rPATD) questionnaire,[7] which has been widely used to explore attitudes across patient populations.[8-11] However, while the majority of previous studies concern older people in general, only few studies assess the attitudes of older people with frailty and/or limited life expectancy[12] for whom deprescribing is particularly relevant. By use of the validated Danish version of the rPATD questionnaire,[13] we therefore aimed to explore geriatric patients' and nursing home residents' attitudes towards deprescribing.

Key Points

- Geriatric patients and nursing home residents are generally open towards deprescribing, particularly on their physician's advice.
- Some differences in attitudes exist between geriatric patients and nursing home residents as well as across patient characteristics.
- Clinicians should tailor their deprescribing approach to the individual patient.

Why Does this Paper Matter?

This study presents geriatric patients' and nursing home residents' attitudes towards deprescribing. Differences in attitudes between populations and across patient characteristics underscore the need for clinicians to address each patient individually and tailor their deprescribing approach.

METHODS

Setting and participants

Nursing home residents were recruited from 27 long-term nursing homes in nine municipalities in the Region of Southern Denmark from November 2018 to March 2019. Geriatric in- and outpatients were recruited from the ward or outpatient clinic of the Geriatric Department at Odense University Hospital during October–November 2019. Potential participants from the nursing homes and geriatric ward were initially identified by nursing staff after which eligibility was assessed by one author (C. L., P. G., T. S.). No such initial selection was performed for the geriatric outpatients. Participants were eligible for study participation if they spoke and understood Danish, and had an Orientation-Memory-Concentration (OMC) score[14] of ≥8.

Questionnaires

The rPATD questionnaire consists of four 5-item factors exploring patients' level of involvement in medication use, perceived burden of taking medication, belief in appropriateness of using medication, and concerns about stopping medication. It further includes two global questions exploring patients' satisfaction with medication and willingness to stop a medication if proposed by a physician. The questionnaire uses a 5-point Likert response scale (1–5 points) and is reported as a total score for each of the four factors (score range: 1–5). Higher total scores indicate more involvement, greater perceived burden,

greater belief in appropriateness, and more concerns about stopping.[7]

The Danish version of the rPATD questionnaire has been validated in a cohort of nursing home residents and resulted in a model with a 4-factor structure similar to the original rPATD questionnaire.[7,13] However, to adjust the questionnaire to the Danish nursing home population and health care system, items 9 and 10 ("inconvenience of taking medication" and "medication expenses") were omitted.[13] In this study, responses for these items are only considered in supplementary analyses. Further, the Danish version was deemed suitable for use in the broader geriatric population since both populations are characterized by older people with frailty.[15,16]

Two additional previously validated instruments were used in the data collection: the Abbreviated Wake Forest Trust in Physician (Trust in Physician) Scale and the Beliefs about Medicines Questionnaire (BMQ) Specific-Concern Scale.[17,18] Both scales use a 5-point Likert response scale (1–5 points) and are reported as one total score (possible score range: 5–25). Higher scores indicate more physician trust[17] and more concerns about prescribed medication.[18]

Data collection

The data collection has previously been described in detail.[13] In brief, one author (C. L., P. G., T.S.) went through all questions with the participants. Response options were presented on a paper in a large font. If participants did not provide an answer after having a question read three times, it was registered as missing. C. L. and T. S. recruited nursing home residents, while P. G. recruited all geriatric patients. Data was stored using REDCap.[19]

Statistics

Validation of the Danish version of the rPATD questionnaire was based on a sample size of 162 nursing home residents (required to complete the exploratory factor analysis),[13] which was also considered sufficient for clinical interpretation. A similar sample size of geriatric patients was thus deemed feasible and sufficient for the aim of this study.

Participant characteristics and rPATD responses were reported using descriptive statistics. Individuals with two or more missing items within the same rPATD factor did not receive a total score. The same applied to the calculation of Trust in Physician and BMQ Specific-Concern scores. Scores were converted to a 0–100 scale using proportional recalculation.[20] rPATD factor scores were compared between participant groups (geriatric inpatients, geriatric outpatients, and nursing home residents) and across selected predefined participant characteristics (sex, age, OMC score, number of regular medications, Trust in Physician score, and BMQ Specific-Concerns score) using quantile regression for the median. A value of $p < 0.05$ was considered significant.

Ethics

The study was registered in the Region of Southern Denmark's repository (approvals 18/46232 and 19/35570). The Regional Committees on Health Research Ethics waived registration (case numbers 20182000-129 and 20192000-129). Inclusion of participants was based on informed and written consent.

RESULTS

Participants

A total of 358 individuals were screened for eligibility of which 32 were found ineligible due to cognitive impairment, 21 refused to provide written consent, and five were excluded for other reasons. Thus, 300 participants were included in the study, including 44 geriatric inpatients, 94 geriatric outpatients, and 162 nursing home residents.

Participants had a median age of 82 years (interquartile range [IQR] 76–89) and 66% were women (Table 1). Geriatric outpatients were slightly younger than geriatric inpatients and nursing home residents (median age 80 vs 83 and 84 years) and showed less cognitive impairment (median OMC score 26 vs 23 and 18). Participants used a median number of 8 regular medications (IQR 5–10), most commonly paracetamol (81%), laxatives (40%), platelet inhibitors (40%), and proton pump inhibitors (40%) (Table 2 and Tables S1–S3).

Attitudes towards deprescribing

Overall, 84% of the participants had a good understanding of their medications and 71% liked being involved in decision-making about their medications (Table 3). Although 51% believed they took a large number of medications, 64% considered their medications necessary and 84% were satisfied with their current medications. Nonetheless, 33% would like to try stopping one of their medications on their own, while 87% would be willing to stop

TABLE 1 Participant characteristics, overall and specified by subpopulation

Characteristic	Study population ($n = 300$)	Geriatric inpatients ($n = 44$)	Geriatric outpatients ($n = 94$)	Nursing home residents ($n = 162$)
Female	198 (66%)	28 (64%)	62 (66%)	108 (67%)
Age, median (IQR)	82 (76–89)	83 (78–88)	80 (75–85)	84 (75–91)
OMC score[a]				
Median (IQR)	22 (16–26)	23 (18–26)	26 (20–28)	18 (14–24)
8–17	90 (30%)	8 (18%)	12 (13%)	70 (43%)
18–24	107 (36%)	18 (41%)	30 (32%)	59 (36%)
25–28	103 (34%)	18 (41%)	52 (55%)	33 (20%)
Number of regular medications[b]				
Median (IQR)	8 (5–10)	9 (5–10)	6 (4–9)	8 (6–10)
1–4	61 (20%)	8 (18%)	25 (27%)	28 (17%)
5–9	151 (50%)	18 (41%)	53 (56%)	80 (49%)
≥10	87 (29%)	17 (39%)	16 (17%)	54 (33%)
Number of as-needed medications, median (IQR)	2 (1–3)	2 (1–2)	1 (0–2)	2 (1–3)
Number of vitamins, median (IQR)	1 (0–2)	1 (0–1)	1 (0–1)	1 (1–2)
Trust in Physician score,[c] median (IQR)	80 (70–90)	80 (75–90)	80 (70–95)	77 (70–90)
BMQ Specific-Concerns score,[c] median (IQR)	35 (25–50)	30 (25–55)	35 (25–55)	35 (25–50)

Abbreviations: BMQ, Beliefs about Medicines Questionnaire; IQR, interquartile range; OMC, Orientation-Memory-Concentration.
[a]OMC scores: 8–17: Moderate cognitive impairment; 18–24: Slight cognitive impairment; 25–28: Normal or minimal cognitive impairment.[14]
[b]The number of patients does not sum up to 300, as one of the geriatric inpatients only take medication on as-needed basis.
[c]Possible score range: 0–100. Higher scores indicate more physician trust[17] and more concerns about prescribed medication.[18]

one of their regular medications if their physician said it was possible.

Attitudes were generally similar between the individual participant groups, although considerable differences were seen for two items ("knowledge about current medications" and "feeling being given up on by physician"; Tables S4–S6).

Overall factor scores

The "appropriateness" and "concerns about stopping" scores were almost identical between the three participant groups (median 65 and 35–40, respectively) (Table 4). The "burden" score, however, was slightly higher for the geriatric inpatients compared to the geriatric outpatients and nursing home residents (median 50 vs 42, $p = 0.11$), indicating a greater perceived burden of taking medication among the geriatric inpatients. Further, the "involvement" score was higher for the geriatric outpatients compared to the nursing home residents (median 80 vs 75, $p < 0.05$) and geriatric inpatients (median 80 vs 70, $p < 0.01$), indicating more involvement in medication use among the geriatric outpatients.

Overall, the entire score range was generally used for each rPATD factor (Figure 1). The differences observed for the "burden" and "involvement" scores between the participants groups were also reflected in the score distributions for the three individual participant groups (Figures S1–S3).

Factor scores across participant characteristics

No pronounced differences in rPATD factor scores were found across sex and age groups, although the "burden" score was slightly higher for men compared to women (median 50 vs 42, $p = 0.05$) and for participants aged <80 years compared to those aged ≥80 years (median 50 vs 40, $p = 0.05$) (Table 4). A decreasing OMC score was associated with an increasing "appropriateness" score (median 60 vs 65 vs 70, $p_{trend} < 0.05$). Further, an increasing number of regular medications was associated

TABLE 2 The 20 most commonly used drug classes, including regular and as-needed medications, among geriatric inpatients, geriatric outpatients, and nursing home residents ($n = 300$)

Number	ATC code	Drug class	Proportion
1	N02BE	Paracetamol	81% ($n = 242$)
2	A06AD	Laxatives	40% ($n = 121$)
3	B01AC	Platelet inhibitors	40% ($n = 120$)
4	A02BC	Proton pump inhibitors	40% ($n = 120$)
5	C03CA	Loop diuretics	38% ($n = 114$)
6	C10AA	Statins	37% ($n = 112$)
7	A12BA	Potassium supplements	32% ($n = 97$)
8	C08CA	Calcium-channel blockers	25% ($n = 75$)
9	N06AX	Other antidepressants	24% ($n = 71$)
10	C07AB	Beta blocking agents, selective	22% ($n = 65$)
11	C09AA	ACE inhibitors	20% ($n = 61$)
12	N06AB	Selective serotonin reuptake inhibitors	19% ($n = 58$)
13	R03AC	Selective beta-2-adrenoreceptor agonists, inhaled	18% ($n = 55$)
14	M05BA	Bisphosphonates	18% ($n = 53$)
15	B01AF	Direct oral anticoagulants	17% ($n = 52$)
16	N03AX	Other antiepileptics	17% ($n = 50$)
17	N02AA	Opioids	16% ($n = 48$)
18	C09CA	Angiotensin II antagonists	14% ($n = 42$)
19	S01XA	Other ophthalmologicals	13% ($n = 39$)
20	N02AX	Other opioids	12% ($n = 37$)

with an increasing "burden" score ($p_{trend} < 0.001$): Those using 1–4 medications had a median "burden" score of 25 (IQR 17–33), while the median score of those using ≥10 medications was 58 (IQR 42–75). Likewise, the "concerns about stopping" score increased with an increasing number of regular medications ($p_{trend} < 0.001$), from a median of 30 (IQR 20–45) for those using 1–4 medications to a median of 45 (IQR 35–60) for those using ≥10 medications. Conversely, the "appropriateness" score decreased with an increasing number of regular medications ($p_{trend} < 0.001$), from a median of 75 (IQR 65–75) for those using 1–4 medications to a median of 60 (IQR 40–75) for those using ≥10 medications. Finally, lower physician trust was associated with a higher "concerns about stopping" score (median 45 vs 35, $p < 0.01$), while more concerns about prescribed medication was associated with a higher "burden" score (median 50 vs 25, $p < 0.001$) and a higher "concerns about stopping" score (median 45 vs 35, $p < 0.001$), respectively. Finally, less concerns about prescribed medication was associated with a higher "appropriateness" score (median 75 vs 57, $p < 0.001$).

When including items 9 and 10 (corresponding to the original rPATD questionnaire),[7] we observed similar trends in factor scores and score distribution for the "burden" factor, although scores generally showed minor increases (Table S7 and Figure S4).

DISCUSSION

In a large sample of geriatric inpatients, geriatric outpatients, and nursing home residents, we found that most patients would be willing to stop one of their regular medications on their physician's advice; however, only one third reported an intrinsic desire to do so.

Strengths and limitations

The principal strength of this study is the inclusion of three older populations, allowing us to explore differences in attitudes towards deprescribing across different patient populations. The main limitation is related to the participant recruitment. Based on a subjective consideration of general health and cognitive function, geriatric inpatients and nursing home residents were initially identified by nursing staff as willing and seemingly able to participate in the study, after which participants were screened for study eligibility using the OMC test.[14] Consequently, the OMC scores are

TABLE 3 Attitudes of geriatric inpatients, geriatric outpatients, and nursing home residents ($n = 300$) towards deprescribing[a]

Item number and question	Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Missing
1. Overall, I am satisfied with my current medicines[b]	31% ($n = 93$)	53% ($n = 159$)	8% ($n = 25$)	5% ($n = 16$)	1% ($n = 3$)	1% ($n = 4$)
2. I like to be involved in making decisions about my medicines with my doctors	28% ($n = 84$)	43% ($n = 129$)	12% ($n = 36$)	11% ($n = 34$)	3% ($n = 8$)	3% ($n = 9$)
3. I have a good understanding of the reasons I was prescribed each of my medicines	24% ($n = 73$)	56% ($n = 169$)	7% ($n = 22$)	8% ($n = 24$)	2% ($n = 6$)	2% ($n = 6$)
4. I like to know as much as possible about my medicines	35% ($n = 104$)	46% ($n = 137$)	8% ($n = 25$)	8% ($n = 25$)	2% ($n = 5$)	1% ($n = 4$)
5. I always ask my doctor, at the pharmacy or the nursing staff if there is something I do not understand about my medicines	27% ($n = 82$)	48% ($n = 144$)	9% ($n = 26$)	12% ($n = 35$)	3% ($n = 8$)	2% ($n = 5$)
6. I know exactly what medicines I am currently taking, and/or I keep an up to date list of my medicines	26% ($n = 79$)	36% ($n = 109$)	9% ($n = 27$)	19% ($n = 58$)	6% ($n = 19$)	3% ($n = 8$)
7. If my doctor said it was possible I would be willing to stop one or more of my regular medicines[b]	39% ($n = 118$)	48% ($n = 144$)	3% ($n = 10$)	6% ($n = 19$)	2% ($n = 5$)	1% ($n = 4$)
8. I feel that I am taking a large number of medicines	21% ($n = 62$)	34% ($n = 102$)	6% ($n = 19$)	30% ($n = 90$)	8% ($n = 23$)	1% ($n = 4$)
11. Sometimes I think I take too many medicines	9% ($n = 28$)	22% ($n = 67$)	10% ($n = 30$)	44% ($n = 131$)	11% ($n = 33$)	4% ($n = 11$)
12. I feel that my medicines are a burden to me	5% ($n = 16$)	10% ($n = 31$)	7% ($n = 20$)	56% ($n = 168$)	20% ($n = 60$)	2% ($n = 5$)
13. I would like to try stopping one of my medicines to see how I feel without it	8% ($n = 24$)	25% ($n = 74$)	10% ($n = 31$)	40% ($n = 120$)	14% ($n = 43$)	3% ($n = 8$)
14. I would like my doctor to reduce the dose of one or more of my medicines	9% ($n = 28$)	24% ($n = 71$)	13% ($n = 38$)	37% ($n = 112$)	13% ($n = 39$)	4% ($n = 12$)
15. I feel that I may be taking one or more medicines that I no longer need	7% ($n = 20$)	11% ($n = 34$)	14% ($n = 41$)	46% ($n = 137$)	18% ($n = 53$)	5% ($n = 15$)
16. I believe one or more of my medicines may be currently giving me side effects	8% ($n = 24$)	14% ($n = 42$)	9% ($n = 26$)	51% ($n = 153$)	15% ($n = 46$)	3% ($n = 9$)
17. I think one or more of my medicines may not be working	3% ($n = 10$)	10% ($n = 29$)	20% ($n = 59$)	51% ($n = 154$)	12% ($n = 35$)	4% ($n = 13$)
18. I have had a bad experience when *stopping* a medicine before	11% ($n = 32$)	11% ($n = 34$)	2% ($n = 5$)	52% ($n = 156$)	22% ($n = 65$)	3% ($n = 8$)
19. I would be reluctant to stop a medicine that I had been taking for a long time	16% ($n = 49$)	25% ($n = 74$)	11% ($n = 34$)	34% ($n = 102$)	9% ($n = 28$)	4% ($n = 13$)
20. If one of my medicines was stopped I would be worried about missing out on future benefits	18% ($n = 54$)	37% ($n = 110$)	11% ($n = 34$)	25% ($n = 74$)	5% ($n = 15$)	4% ($n = 13$)

TABLE 3 (Continued)

Item number and question	Strongly agree	Agree	Unsure	Disagree	Strongly disagree	Missing
21. I get stressed whenever changes are made to my medicines	6% ($n = 19$)	12% ($n = 36$)	9% ($n = 26$)	49% ($n = 146$)	20% ($n = 59$)	5% ($n = 14$)
22. If my doctor recommended stopping a medicine I would feel that he/she was giving up on me	5% ($n = 16$)	7% ($n = 22$)	8% ($n = 23$)	49% ($n = 146$)	27% ($n = 80$)	4% ($n = 13$)

[a]Item wording from the English version of the revised Patients' Attitudes Towards Deprescribing (rPATD) questionnaire is used in this table.[7] One exception concerns item 5 for which pronounced changes were made during the validation of the Danish version (replacement of "my pharmacist" and "other health care professional" with "at the pharmacy" and "the nursing staff," respectively).[13]
[b]Global question, that is, the item is not included in any of the four factors.

TABLE 4 Revised Patients' Attitudes Towards Deprescribing (rPATD) factor scores[a] for participants and across participant characteristics

	Involvement, median (IQR)	Burden, median (IQR)	Appropriateness, median (IQR)	Concerns about stopping, median (IQR)
Study population ($n = 300$)	75 (60–83)	42 (25–58)	65 (50–75)	40 (25–55)
Geriatric inpatients ($n = 44$)	70 (60–80)	50 (25–58)	65 (52–75)	40 (25–55)
Geriatric outpatients ($n = 94$)	80 (70–85)	42 (25–58)	65 (50–75)	35 (25–50)
Nursing home residents ($n = 162$)	75 (60–80)	42 (25–67)	65 (50–75)	40 (30–55)
Sex				
Female	75 (65–85)	42 (25–58)	65 (50–75)	40 (30–55)
Male	70 (55–80)	50 (25–67)	60 (45–75)	35 (25–50)
Age				
<80 years	75 (65–85)	50 (25–67)	65 (40–75)	40 (30–55)
≥80 years	75 (60–80)	40 (25–58)	65 (50–75)	40 (25–50)
OMC score[b]				
8–17	70 (60–80)	42 (25–58)	70 (55–75)	40 (30–50)
18–24	75 (60–85)	42 (25–58)	65 (50–75)	40 (30–55)
25–28	75 (70–85)	42 (25–67)	60 (45–75)	40 (25–55)
Number of regular medications				
1–4	75 (65–85)	25 (17–33)	75 (65–75)	30 (20–45)
5–9	75 (65–80)	42 (25–58)	65 (45–75)	40 (25–50)
≥10	75 (60–85)	58 (42–75)	60 (40–75)	45 (35–60)
Trust in physician score[c]				
<80	70 (56–80)	42 (25–58)	60 (45–75)	45 (30–55)
≥80	75 (65–85)	42 (25–58)	65 (50–75)	35 (25–50)
BMQ Specific-Concerns score[c]				
<35	75 (65–85)	25 (25–42)	75 (60–75)	35 (25–50)
≥35	75 (60–80)	50 (33–67)	57 (40–70)	45 (30–55)

Abbreviations: BMQ, Beliefs about Medicines Questionnaire; IQR, interquartile range; OMC, Orientation-Memory-Concentration.
[a]Possible score range: 0–100. Higher scores indicate more involvement, greater perceived burden, greater belief in appropriateness, and more concerns about stopping.[7]
[b]OMC scores: 8–17: Moderate cognitive impairment; 18–24: Slight cognitive impairment; 25–28: Normal or minimal cognitive impairment.[14]
[c]Possible score range: 0–100. Higher scores indicate more physician trust[17] and more concerns about prescribed medication.[18]

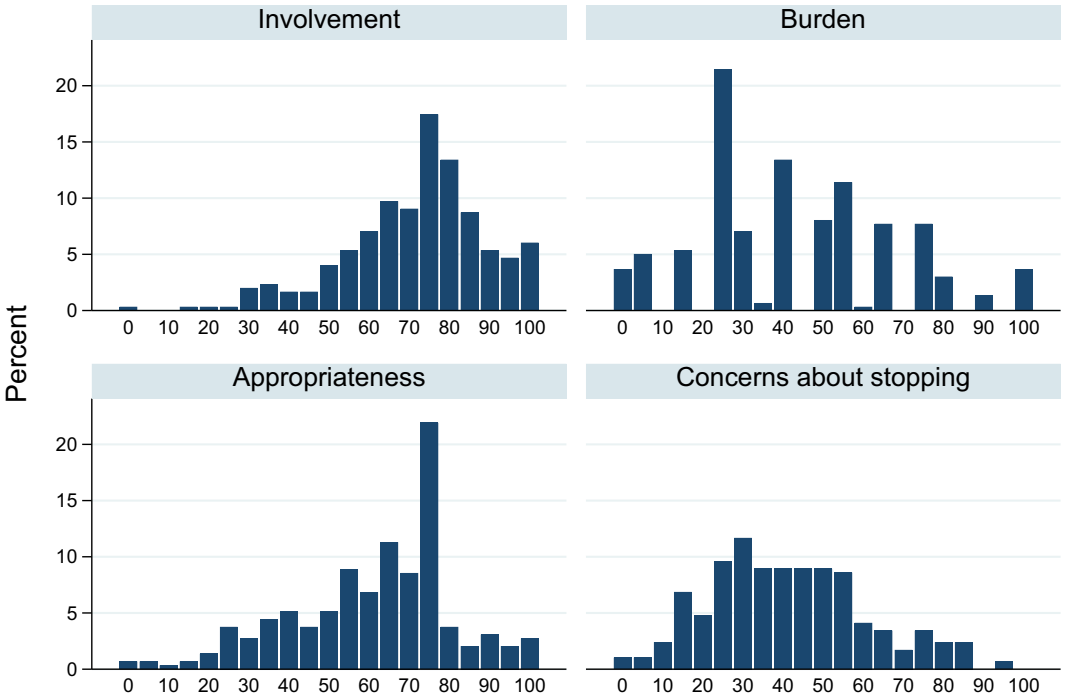

FIGURE 1 Revised Patients' Attitudes Towards Deprescribing (rPATD) factor score distributions for geriatric inpatients, geriatric outpatients, and nursing home residents ($n = 300$). Higher scores indicate more involvement, greater perceived burden, greater belief in appropriateness, and more concerns about stopping.[7] See main text for more detail about score interpretation

higher than normally seen in these populations[15,16] which might limit generalizability of results to all Danish geriatric inpatients and nursing home residents. However, that 9% ($n = 32$) were still excluded due to cognitive impairment during the eligibility screening indicates that the nursing staff have not been too selective in the initial screening. Further, as we only observed a minor effect of OMC scores (ranging from 8 to 28) on the "appropriateness" factor, this suggests that cognitive function may only to a limited extent affect attitudes towards deprescribing. Generalizability may also be influenced by recruitment of participants restricted to the Region of Southern Denmark and by the single center inclusion of geriatric patients. Finally, there is a risk that some nursing home residents may have been referred or admitted to the geriatric department following study inclusion and consequently offered study participation twice. However, as only 6% ($n = 8$) of the geriatric patients resided in nursing homes (data not shown), we believe the risk of double inclusion is negligible.

Comparison with existing literature

Our finding that most participants (89%) would be willing to stop one of their regular medications on their physician's advice is in accordance with previous literature.[8-12,21-23] Interestingly, only one third reported an intrinsic desire to try stopping one of their medications. This is consistent with a recent study reporting that 41% of residents in aged care facilities would like to reduce their number of medications, while this number was almost twice as high if suggested by their physician.[12] Recently, two qualitative studies found that a large proportion of nursing home residents were unaware of the possibility of taking less medication.[24,25] This may in part explain the lower intrinsic desire to stop a medication observed in this population. However, as lower intrinsic desire has also been reported in other populations of older people,[8,9,11,21] it may also be explained by the high physician trust among many older people, resulting in not questioning their physician's medical decisions.[24-27] Regardless, this highlights the importance of clinicians making older people aware of the possibility of deprescribing.

Across the three participant groups, the majority was satisfied with their current medications; however, participants also expressed great interest in deprescribing. Such conflicting attitudes have been extensively reported in the qualitative literature, where older people would like to reduce their number of medications but at the same time feel obliged to take them.[24,25,28-30]

The "concerns about stopping" score increased with an increasing number of medications, indicating that those taking more mediations also have more concerns about stopping them. A recent study found that older

adults were less likely to be willing to have a medication deprescribed if they had concerns about stopping their medications,[9] suggesting that it may be more challenging to facilitate deprescribing among patients that could possibly benefit most from it, i.e., those with polypharmacy.

Implications for clinical practice and research

Our results imply that attitudes towards deprescribing vary across populations of geriatric patients and nursing home residents, stressing the importance of addressing each patient individually and tailoring the deprescribing approach to the individual patient. Based on the limited knowledge of deprescribing as a possibility in these populations,[24,25] clinicians should remember to continuously make patients aware of this.

In conclusion, our study demonstrates that geriatric inpatients, geriatric outpatients, and nursing home residents are open towards deprescribing, particularly if proposed by the physician. Despite many similarities in attitudes between the populations, differences also exist, while attitudes are also affected by individual patient characteristics.

ACKNOWLEDGMENTS

First and foremost, the authors thank all geriatric patients and nursing home residents for participation in the study. The authors further thank the Geriatric Department (Odense University Hospital) and all nursing homes for help with recruitment of participants. Finally, the authors thank all municipalities for establishing the contact with the nursing homes.

FINANCIAL DISCLOSURE

This study was funded by VELUX FONDEN (grant no. 00018248).

CONFLICT OF INTEREST

The authors have no conflicts of interest.

AUTHOR CONTRIBUTIONS

All authors contributed significantly to the publication. Carina Lundby contributed to study concept and design, and acquisition, analysis, and interpretation of data; drafted and revised the manuscript; and approved the final version for publication. Peter Glans contributed to acquisition and interpretation of data; revised the manuscript critically; and approved the final version for publication. Trine Simonsen contributed to acquisition and interpretation of data; revised the manuscript critically; and approved the final version for publication. Jens Søndergaard contributed to study concept and design, and interpretation of data; revised the manuscript critically; and approved the final version for publication. Jesper Ryg contributed to study concept and design, and interpretation of data; revised the manuscript critically; and approved the final version for publication. Henrik Hein Lauridsen contributed to study concept and design, and interpretation of data; revised the manuscript critically; and approved the final version for publication. Anton Pottegård contributed to study concept and design, and analysis and interpretation of data; revised the manuscript critically; and approved the final version for publication.

SPONSOR'S ROLE

The study was funded by VELUX FONDEN (grant no. 00018248). The funding body had no role in study concept and design; acquisition, analysis, and interpretation of data; preparation of the manuscript; or decision to submit the manuscript for publication.

ORCID

Carina Lundby https://orcid.org/0000-0002-2121-6252
Jens Søndergaard https://orcid.org/0000-0002-1629-1864
Jesper Ryg https://orcid.org/0000-0002-8641-3062
Henrik Hein Lauridsen https://orcid.org/0000-0001-5198-5215
Anton Pottegård https://orcid.org/0000-0001-9314-5679

TWITTER

Carina Lundby @CarinaLundby
Trine Simonsen @SimTrine
Jens Søndergaard @JensSndergaard1
Jesper Ryg @JesperRyg
Anton Pottegård @Pottegard

REFERENCES

1. Lundby C, Jensen J, Larsen SP, Hoffmann H, Pottegård A, Reilev M. Use of medication among nursing home residents: a Danish drug utilisation study. *Age Ageing*. 2020;49(5):814-820. https://doi.org/10.1093/ageing/afaa029.
2. Poudel A, Yates P, Rowett D, Nissen LM. Use of preventive medication in patients with limited life expectancy: a systematic review. *J Pain Symptom Manage*. 2017;53(6):1097-1110.e1. https://doi.org/10.1016/j.jpainsymman.2016.12.350.
3. Morin L, Laroche M-L, Texier G, Johnell K. Prevalence of potentially inappropriate medication use in older adults living in nursing homes: a systematic review. *J Am Med Dir Assoc*. 2016;17(9):862.e1-862.e9. https://doi.org/10.1016/j.jamda.2016.06.011.
4. Maher RL, Hanlon J, Hajjar ER. Clinical consequences of polypharmacy in elderly. *Expert Opin Drug Saf*. 2014;13(1):57-65. https://doi.org/10.1517/14740338.2013.827660.
5. Scott IA, Hilmer SN, Reeve E, et al. Reducing inappropriate polypharmacy: the process of deprescribing. *JAMA Intern*

Med. 2015;175(5):827-834. https://doi.org/10.1001/jamainternmed.2015.0324.
6. Jansen J, Naganathan V, Carter SM, et al. Too much medicine in older people? Deprescribing through shared decision making. *BMJ*. 2016;i2893:353. https://doi.org/10.1136/bmj.i2893.
7. Reeve E, Low L-F, Shakib S, Hilmer SN. Development and validation of the revised Patients' attitudes towards deprescribing (rPATD) questionnaire: versions for older adults and caregivers. *Drugs Aging*. 2016;33(12):913-928. https://doi.org/10.1007/s40266-016-0410-1.
8. Tegegn HG, Tefera YG, Erku DA, et al. Older patients' perception of deprescribing in resource-limited settings: a cross-sectional study in an Ethiopia university hospital. *BMJ Open*. 2018;8(4):e020590. https://doi.org/10.1136/bmjopen-2017-020590.
9. Reeve E, Low L-F, Hilmer SN. Attitudes of older adults and caregivers in Australia toward deprescribing. *J Am Geriatr Soc*. 2019;67(6):1204-1210. https://doi.org/10.1111/jgs.15804.
10. Reeve E, Wolff JL, Skehan M, Bayliss EA, Hilmer SN, Boyd CM. Assessment of attitudes toward deprescribing in older medicare beneficiaries in the United States. *JAMA Intern Med*. 2018;178(12):1673-1680. https://doi.org/10.1001/jamainternmed.2018.4720.
11. Kua C-H, Reeve E, Ratnasingam V, Mak VSL, Lee SWH. Patients' and caregivers' attitudes toward deprescribing in Singapore. *J Gerontol Ser A*. 2020;glaa018. https://doi.org/10.1093/gerona/glaa018.
12. Kalogianis MJ, Wimmer BC, Turner JP, et al. Are residents of aged care facilities willing to have their medications deprescribed? *Res Soc Adm Pharm*. 2016;12(5):784-788. https://doi.org/10.1016/j.sapharm.2015.12.004.
13. Lundby C, Simonsen T, Ryg J, Søndergaard J, Pottegård A, Lauridsen HH. Translation, cross-cultural adaptation, and validation of Danish version of the revised patients' attitudes towards deprescribing (rPATD) questionnaire: version for older people with limited life expectancy. *Res Soc Adm Pharm*. 2020:[Epub ahead of print]. https://doi.org/10.1016/j.sapharm.2020.11.001.
14. Katzman R, Brown T, Fuld P, Peck A, Schechter R, Schimmel H. Validation of a short orientation-memory-concentration test of cognitive impairment. *Am J Psychiatry*. 1983;140(6):734-739. https://doi.org/10.1176/ajp.140.6.734.
15. Ryg J, Engberg H, Mariadas P, et al. Barthel index at hospital admission is associated with mortality in geriatric patients: a Danish nationwide population-based cohort study. *Clin Epidemiol*. 2018;10:1789-1800. https://doi.org/10.2147/CLEP.S176035.
16. Reilev M, Lundby C, Jensen J, Larsen SP, Hoffmann H, Pottegård A. Morbidity and mortality among older people admitted to nursing home. *Age Ageing*. 2020;49(1):67-73. https://doi.org/10.1093/ageing/afz136.
17. Dugan E, Trachtenberg F, Hall MA. Development of abbreviated measures to assess patient trust in a physician, a health insurer, and the medical profession. *BMC Health Serv Res*. 2005;5:64. https://doi.org/10.1186/1472-6963-5-64.
18. Horne R, Weinman J, Hankins M. The beliefs about medicines questionnaire: the development and evaluation of a new method for assessing the cognitive representation of medication. *Psychol Health*. 1999;14(1):1-24. https://doi.org/10.1080/08870449908407311.
19. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009;42(2):377-381. https://doi.org/10.1016/j.jbi.2008.08.010.
20. Kent P, Lauridsen HH. Managing missing scores on the Roland Morris disability questionnaire. *Spine*. 2011;36(22):1878-1884. https://doi.org/10.1097/BRS.0b013e3181ffe53f.
21. Scott S, Clark A, Farrow C, et al. Attitudinal predictors of older peoples' and caregivers' desire to deprescribe in hospital. *BMC Geriatr*. 2019;19(1):108. https://doi.org/10.1186/s12877-019-1127-x.
22. Reeve E, Wiese MD, Hendrix I, Roberts MS, Shakib S. People's attitudes, beliefs, and experiences regarding Polypharmacy and willingness to deprescribe. *J Am Geriatr Soc*. 2013;61(9):1508-1514. https://doi.org/10.1111/jgs.12418.
23. Ng WL, Tan MZW, Koh EYL, Tan NC. Deprescribing: what are the views and factors influencing this concept among patients with chronic diseases in a developed Asian community? *Proc Singap Healthc*. 2017;26(3):172-179. https://doi.org/10.1177/2010105817699633.
24. Graabaek T, Lundby C, Ryg J, Søndergaard J, Pottegård A, Nielsen DS. "I simply don't know, because I don't know which drugs I get": perspectives on deprescribing among older adults with limited life expectancy and their relatives. *Basic Clin Pharmacol Toxicol*. 2020:128(1):115-27. https://doi.org/10.1111/bcpt.13476.
25. Thompson W, Jacobsen IT, Jarbøl DE, Haastrup P, Nielsen JB, Lundby C. Nursing home Residents' thoughts on discussing deprescribing of preventive medications. *Drugs Aging*. 2020;37(3):187-192. https://doi.org/10.1007/s40266-020-00746-1.
26. Burghle A, Lundby C, Ryg J, et al. Attitudes towards deprescribing among older adults with limited life expectancy and their relatives: a systematic review. *Drugs Aging*. 2020;37(7):503-520. https://doi.org/10.1007/s40266-020-00774-x.
27. Linsky A, Simon SR, Bokhour B. Patient perceptions of proactive medication discontinuation. *Patient Educ Couns*. 2015;98(2):220-225. https://doi.org/10.1016/j.pec.2014.11.010.
28. Moen J, Bohm A, Tillenius T, Antonov K, Nilsson JLG, Ring L. "I don't know how many of these [medicines] are necessary." - a focus group study among elderly users of multiple medicines. *Patient Educ Couns*. 2009;74(2):135-141. https://doi.org/10.1016/j.pec.2008.08.019.
29. Bagge M, Tordoff J, Norris P, Heydon S. Older people's attitudes towards their regular medicines. *J Prim Health Care*. 2013;5(3):234-242.
30. Goyal P, Requijo T, Siceloff B, et al. Patient-reported barriers and facilitators to deprescribing cardiovascular medications. *Drugs Aging*. 2020;37(2):125-135. https://doi.org/10.1007/s40266-019-00729-x.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

Table S1. The 20 most commonly used drug classes, including regular and as-needed medications, among geriatric inpatients ($n = 44$).

Table S2. The 20 most commonly used drug classes, including regular and as-needed medications, among geriatric outpatients ($n = 94$).

Table S3. The 20 most commonly used drug classes, including regular and as-needed medications, among nursing home residents ($n = 162$).

Table S4. Attitudes of geriatric inpatients ($n = 44$) towards deprescribing[a].

Table S5. Attitudes of geriatric outpatients ($n = 94$) towards deprescribing[a].

Table S6. Attitudes of nursing home residents ($n = 162$) towards deprescribing[a].

Table S7. Revised Patients' Attitudes Towards Deprescribing (rPATD) factor scores[a] for participants and across participant characteristics using the full Danish version of the rPATD questionnaire[b].

Figure S1. Revised Patients' Attitudes Towards Deprescribing (rPATD) factor score distributions for geriatric inpatients ($n = 44$). Higher scores indicate more involvement, greater perceived burden, greater belief in appropriateness, and more concerns about stopping.[7] See main text for more detail about score interpretation.

Figure S2. Revised Patients' Attitudes Towards Deprescribing (rPATD) factor score distributions for geriatric outpatients ($n = 94$). Higher scores indicate more involvement, greater perceived burden, greater belief in appropriateness, and more concerns about stopping.[7] See main text for more detail about score interpretation.

Figure S3. Revised Patients' Attitudes Towards Deprescribing (rPATD) factor score distributions for nursing home residents ($n = 162$). Higher scores indicate more involvement, greater perceived burden, greater belief in appropriateness, and more concerns about stopping.[7] See main text for more detail about score interpretation.

Figure S4. Revised Patients' Attitudes Towards Deprescribing (rPATD) factor score distributions for geriatric inpatients, geriatric outpatients, and nursing home residents ($n = 300$) using the full Danish version of the rPATD questionnaire.[a] Higher scores indicate more involvement, greater perceived burden, greater belief in appropriateness, and more concerns about stopping.[7] See main text for more detail about score interpretation.

How to cite this article: Lundby C, Glans P, Simonsen T, et al. Attitudes towards deprescribing: The perspectives of geriatric patients and nursing home residents. *J Am Geriatr Soc*. 2021;1–11. https://doi.org/10.1111/jgs.17054