Dementia and Geriatric Cognitive Disorders Extra

Research Article

Dement Geriatr Cogn Disord Extra 2025;15:119–131
DOI: 10.1159/000546708

Received: September 19, 2024
Accepted: May 22, 2025
Published online: June 30, 2025

Pharmaceutical Treatment of People with Dementia during the SARS-CoV-2 Pandemic in Germany: Polypharmacy, Anticholinergic Medication, and Antidementia Medication

Jennifer Scheel-Barteit[a] Caroline Floto[a] Henrike Höpfner[a] Thomas Kühlein[a] Ildikó Gágyor[b] Jochen Gensichen[c] Anita Hausen[d] Michael Hoelscher[e, f, g, h] Christian Janke[e] Armin Nassehi[i] Daniel Teupser[j] Tobias Dreischulte[c] Maria Sebastião[a] BaCoM Study Group

[a]Institute of General Practice, Friedrich-Alexander-Universität Erlangen-Nuremberg (FAU), University Hospital Erlangen, Erlangen, Germany; [b]Institute of General Practice, University Hospital of Julius-Maximilians-Universität Würzburg, Würzburg, Germany; [c]Institute of General Practice and Family Medicine, LMU University Hospital, LMU Munich, Munich, Germany; [d]Faculty of Health and Nursing, Katholische Stiftungshochschule München, University of Applied Sciences, Munich, Germany; [e]Institute of Infectious Diseases and Tropical Medicine, LMU University Hospital, LMU Munich, Munich, Germany; [f]Unit Global Health, Helmholtz Zentrum München, German Research Center for Environmental Health (HMGU), Neuherberg, Germany; [g]German Centre for Infection Research, Partner Site Munich, Munich, Germany; [h]Fraunhofer Institute for Translational Medicine and Pharmacology ITMP, Immunology, Infection and Pandemic Research, Munich, Germany; [i]Institute of Sociology, Ludwig-Maximilians-Universität, Munich, Germany; [j]Institute of Laboratory Medicine, LMU University Hospital, LMU Munich, Munich, Germany

Keywords
Dementia · Polypharmacy · Anticholinergic medication · Antidementia medication · SARS-CoV-2 pandemic

Abstract

Introduction: Dementia patients are at increased risk of polypharmacy and inappropriate medication, exacerbating cognitive decline. The SARS-CoV-2 pandemic constrained access to medical care and monitoring services for dementia patients, potentially worsening medication-related issues. We analyzed the medical treatment of dementia patients during the SARS-CoV-2 pandemic in Bavaria, particularly regarding polypharmacy, anticholinergic medication, and antidementia medication. ***Methods:*** The Bavarian Ambulatory COVID-19 Monitor (BaCoM) is a longitudinal registry study conducted in Bavaria, Germany. Participants in need of nursing care with baseline data during the SARS-CoV-2 pandemic were included in our detailed analysis (N = 345, dementia sample n = 96 with a dementia diagnosis and/or antidementia medication treatment). Descriptive statistics and group comparisons (dementia vs. non-dementia sample; within the dementia sample: participants with vs. without antidementia medication; participants with vs. without anticholinergic medication in both the non-

Tobias Dreischulte and Maria Sebastião share last authorship.

karger@karger.com
www.karger.com/dee

Correspondence to:
Jennifer Scheel-Barteit, jennifer.scheel-barteit@uk-erlangen.de

dementia sample and the dementia sample) are provided. ***Results:*** In the dementia sample, 91.7% of the patients received ≥4 medications (polypharmacy), 21.9% even ≥10 medications. Prescription of ≥1 anticholinergic medications was found in 65.6% and prescription of ≥1 antidementia medications in 31.2% of the dementia sample. Persons with versus without anticholinergic medication did not differ from each other in group comparisons. ***Conclusion:*** Despite known risks and adverse effects, polypharmacy as well as the use of anticholinergic and antidementia medication were common among individuals with dementia. Compared to pre-pandemic studies, levels of polypharmacy and anticholinergic medication but not of antidementia medication appeared slightly elevated in people with dementia. Because of the associated risks, polypharmacy and potentially inappropriate medication require regular review (and when possible reduction) in people with dementia. In crisis situations like a pandemic, an outreach approach might be necessary for this patient group.

Introduction

Dementia is a progressive disease [1, 2] and associated with a high burden of dependency and disability and reduced life time expectancy [3]. So far, the evidence suggests only very limited effectiveness of antidementia medication [4–10]. Furthermore, antidementia medication often have adverse side effects [4–7, 9–12] and drug-drug-interactions [11, 13–22]. Due to small effects and questionable clinical relevance, France stopped the state funding of certain antidementia medications in May 2018 [23, 24].

People with dementia are more often affected by polypharmacy and (potentially) inappropriate medication (e.g., anticholinergic substances) than people of the same age without dementia [25]. This might reflect pharmacological treatment of behavioral and psychological symptoms of dementia [25] and that people with dementia are often not able to play an active role in their medication regimen due to their dementia symptoms. Anticholinergic substances may add up to the anticholinergic burden, cause severe side effects (e.g., increased heart rate, dryness of mouth, urinary retention, decreased sweating, agitation, vision disturbances, dizziness, fatigue, memory deficits, confusion, disorientation, hallucinations, delirium) [26, 27], and may lead to a further decline in cognitive functioning or even be the reason for it [28, 29]. Hence, as they can aggravate dementia symptoms, the German Dementia Guideline recommends that anticholinergic medication should be avoided [29].

As access to medical care and support services was hampered during the SARS-CoV-2 pandemic [30–32], review/monitoring of medication and deprescribing was probably reduced. Therefore, the problems of polypharmacy and (potentially) inappropriate medication could possibly have worsened during this time. This was particularly problematic as people with dementia had more dementia symptoms (both faster cognitive decline and more behavioral and psychological symptoms of dementia) due to social isolation and therefore an even higher need for (non-pharmacological) interventions [31, 33–38].

Inappropriate medication use in people with dementia is an understudied subject in general [39], and little work has been done to characterize medication use in people with dementia during the SARS-CoV-2 pandemic. The Bavarian Ambulatory COVID-19 Monitor (BaCoM) was initiated to investigate the impact of the SARS-CoV-2 pandemic on people with nursing care needs, including people with dementia. This paper aims to analyze medication use in people with dementia and in comparison with people without dementia exploratively with a particular focus on polypharmacy, the use of anticholinergic medication, and the use of antidementia medication.

Methods

Design, Data Collection, and Sample

Design

BaCoM (German Clinical Trials Register DRKS, ID: DRKS00026039) is a longitudinal multicenter open registry study of four Bavarian universities (Ludwig-Maximilians-Universität München [LMU], Munich; Katholische Stiftungshochschule München/University of Applied Sciences Munich, Munich; Friedrich-Alexander-Universität Erlangen-Nuremberg [FAU], Erlangen; Julius-Maximilians-Universität Würzburg, Würzburg), carried out in the state of Bavaria, Germany. For details of the study design, see the study protocol [40]. For the present analyses, baseline data were analyzed in a cross-sectional design.

Data Collection

Baseline data (self-report questionnaires, medication plans, patient files) were collected for 978 participants during and after the SARS-CoV-2 pandemic (03/

2021–08/2023) by trained staff members of the respective study sites (Munich, Erlangen, Würzburg) from participants, caregivers, nursing home staff, and general practitioners via personal visit or telephone contact (participants' choice).

Sample

The sample of the BaCoM study comprises three groups: study group (frail people and/or people in need of nursing care with a positive SARS-CoV-2 PCR test), control group 1 (frail people and/or people in need of nursing care with a negative SARS-CoV-2 PCR test), and control group 2 (people with a positive SARS-CoV-2 PCR test, who are not in need of nursing care). SARS-CoV-2 infection had to be confirmed with a positive SARS-CoV-2 test from March 2020 or later.

General inclusion criteria comprised (1) signed informed consent from the participant or a legal guardian, (2) age ≥18 years, (3) sufficient proficiency of the German language or possibility of a translator, (4) current residence in Bavaria. For detailed general inclusion and exclusion criteria of BaCoM, see the study protocol [40].

For the present analyses, only participants with need of nursing care (combined sample of study group and control group 1) and baseline-data collection during the SARS-CoV-2 pandemic (03/2021–05/05/2023) were included. Participants with missing diagnosis data or medication data were excluded. Participants with a dementia diagnosis and/or antidementia medication treatment at baseline were considered as the dementia sample, participants without both as the non-dementia sample. For details, see Figure 1.

Instruments and Definitions

Sociodemographic Data and Nursing Care Data

Data on age, sex, education, income, care level, and institutionalization (nursing home yes/no) were collected via questionnaires.

Diagnoses

All diagnoses-related variables were extracted from the patient files and/or self-report questionnaires.

- Dementia diagnosis: the dementia diagnosis comprised the ICD-10 codes F00.-, F01.-, F02.-, and F03 and unspecific dementia information in the self-report questionnaire (no ICD-10 code classification possible, e.g., just "progredient dementia"). In addition to the dementia type, a dichotomous score was created to categorize people accordingly (dementia yes/no).
- Diagnosed SARS-CoV-2 infection: the SARS-CoV-2 diagnosis was used as a dichotomous score.
- Multimorbidity: multimorbidity was defined as ≥2 chronic diseases [41, 42].

Medication

All medication variables were extracted from the medication plans and/or self-report questionnaires. The following variables were calculated:

- Total number of medication (regular and regular medication plus on-demand/rescue medication);
- polypharmacy: according to the WHO criterion, polypharmacy was defined as receiving ≥4 regular medication [43];
- anticholinergic medication: the anticholinergic burden score for German prescribers [44] is the German update of the Anticholinergic Cognitive Burden (ACB) scale [45], a list to measure anticholinergic burden in patients. Anticholinergic medication is rated as having mild (score of 1), moderate (score of 2), or severe (score of 3) anticholinergic effects. A total ACB sum score of ≥3 is considered to be clinically relevant [45]. In addition to the total number of anticholinergic medication, the ACB score was calculated and dichotomous scores were created to categorize people (drugs with ACB yes/no; total ACB score of ≥3 yes/no);
- antidementia medication: medication with the ATC codes N06D* is defined as antidementia medication. In addition to the total number of antidementia medication, a dichotomous score of antidementia medication and the type of antidementia medication were used.

Statistical Analysis

Descriptive data are provided for all variables (mean, standard deviation, and range for normally distributed variables; median and interquartile range for not normally distributed variables; frequencies for ordinal and dichotomous variables). Due to not normally distributed data and/or small sample sizes, Mann-Whitney U tests were computed for group comparisons ([1] dementia vs. non-dementia sample; [2] antidementia vs. no antidementia medication; [3] anticholinergic vs. no anticholinergic medication). For categorical variables, χ^2 tests were used to compare the groups, and in case of expected cell frequencies being below 5, Fisher-Freemann-Halton exact tests were interpreted. Since we deemed regular medication as a more reliable variable than rescue/on-demand medication, only regular medication was used for group comparisons. Statistical analyses were computed with the statistical analysis program SPSS 28. Findings were considered statistically significant at $p < 0.05$. Bonferroni-Holm correction was applied for multiple testing.

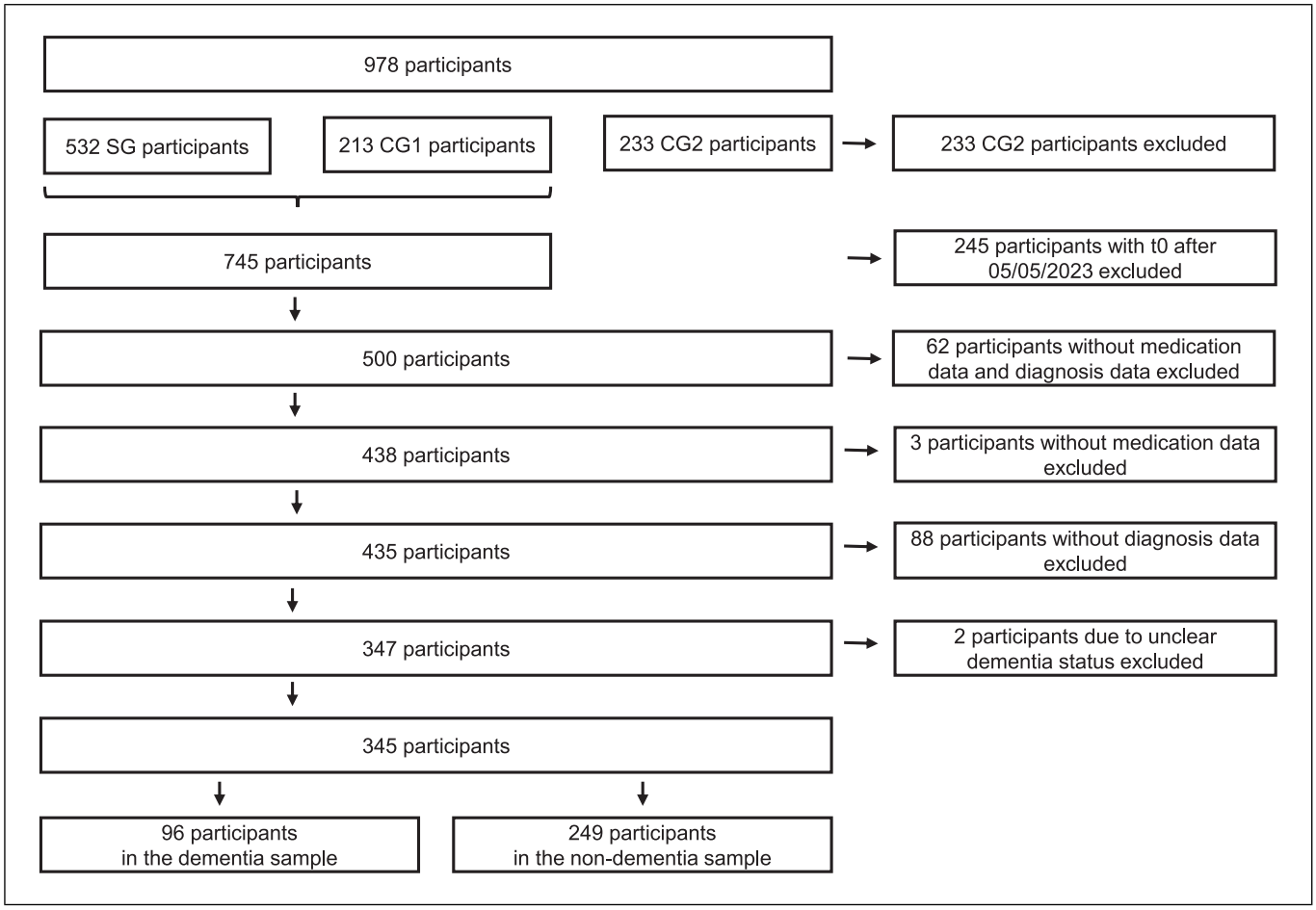

Fig. 1. Sample flowchart. SG, study group, frail people and/or people in need of nursing care with a positive SARS-CoV-2 PCR test; CG1, control group 1, frail people and/or people in need of nursing care with a negative SARS-CoV-2 PCR test; CG2, control group 2, people with a positive SARS-CoV-2 PCR test, who are not in need of nursing care; dementia sub-sample: participants with a dementia diagnosis and/or antidementia medication; non-dementia sub-sample: participants without dementia diagnosis and without antidementia medication.

Results

Sample

A total of $N = 345$ BaCoM participants were included in the present analyses, of which 27.8% ($n = 96$) had a dementia diagnosis and/or antidementia medication treatment (dementia sample). For details, see Table 1. For sociodemographic and nursing care data in the dementia sample and the non-dementia sample, see Table 2.

Diagnoses

In the dementia sample, 99.0% ($n = 95$) of the patients fulfilled the multimorbidity definition of ≥2 chronic diseases and 76.0% ($n = 73$) had a SARS-CoV-2 infection, which was comparable to the non-dementia sample (98.8% [$n = 246$] and 73.5% [$n = 183$], respectively, for details, see Table 2). In the dementia sample, 90.6% ($n = 87$) were diagnosed with dementia and 9.4% ($n = 9$) were not (but received antidementia medication, see Table 1). For information on the dementia type, see Table 3.

Medication

Polypharmacy

In the dementia sample, 100.0% (96 of $n = 96$) received ≥1 medication, 91.7% (88 of $n = 96$) ≥4, 83.3% (80 of $n = 96$) ≥5, and 21.9% (21 of $n = 96$) ≥10 medication. In the non-dementia sample, 99.2% (247 of $n = 249$) received ≥1 medication, 90.4% ($n = 225$) received ≥4 medication, 85.5% (213 of $n = 249$) ≥5, and 31.3% (78 of $n = 249$) ≥10 medication.

Table 1. Included participants (N = 345)

	Antidementia medication, %	No antidementia medication, %	∑ (%)
Dementia diagnosis	n = 21 (6.1)	n = 66 (19.1)	n = 87 (25.2)
No dementia diagnosis	n = 9 (2.6)	n = 249 (72.2)	n = 258 (74.8)
∑	n = 30 (8.7)	n = 315 (91.3)	n = 345 (100)

Table 2. Group comparisons regarding sociodemographic data, care data, diagnoses, and medications (dementia sample, n = 96; non-dementia sample, n = 249; N = 345)

Data	Dependent variables	n dementia sample, n non-dementia sample	Variable values	Dementia sample	Non-dementia sample	Group difference
				median (IQR)/ percentage (n)	median (IQR)/ percentage (n)	
Sociodemographic data	Age	96, 249	Years	84.0 (79.0–88.0)	82.0 (74.5–88.0)	p = 0.193[c]
	Sex	96, 249	Female Male	72.9 (70) 27.1 (26)	70.7 (176) 29.3 (73)	p = 0.693[d]
	Education	83, 246	No school-leaving qualification 8–9 years of school education 10 years of school education 12–13 years of school education	1.2 (1) 67.5 (56) 20.5 (17) 10.8 (9)	3.7 (9) 61.4 (151) 23.6 (58) 11.4 (28)	p = 0.693[e]
	Income	38, 121	EUR	1,100.0 (775.0–1,600.0)	1,200.0 (863.0–2,000.0)	p = 0.143[c]
Care data	Care degree	88, 230	No care degree Care degree 1 Care degree 2 Care degree 3 Care degree 4 Care degree 5	2.3 (2) 2.3 (2) 25.0 (22) 35.2 (31) 23.9 (21) 11.4 (10)	17.0 (39) 7.4 (17) 29.6 (68) 33.9 (78) 10.4 (24) 1.7 (4)	**p < 0.001**[a,e]
	Institutionalization (= living in a nursing home)	94, 238	Yes	74.5 (70)	62.2 (148)	**p = 0.040**[b,d]
Diagnoses	Multimorbidity (≥2 diseases)	96, 249	Yes	99.0 (95)	98.8 (246)	p = 1.000[e]
	SARS-CoV-2 infection	96, 249	Yes	76.0 (73)	73.5 (183)	p = 0.682[d]

Table 2 (continued)

Data	Dependent variables	*n* dementia sample, *n* non-dementia sample	Variable values	Dementia sample	Non-dementia sample	Group difference
				median (IQR)/ percentage (*n*)	median (IQR)/ percentage (*n*)	
Medication	Number of regular co-medications besides antidementia medication	96, 249	–	7.0 (5.0–9.0)	8.0 (6.0–10.0)	***p* = 0.005**[b,c]
	Number of regular plus on-demand/rescue co-medication besides antidementia medication	96, 249	–	8.0 (6.3–10.0)	9.0 (6.5–12.0)	***p* = 0.036**[b,c]
	Regular anticholinergic medication dichotomous	96, 249	Yes	65.6 (63)	63.1 (157)	$p = 0.709$[d]
	Number of regular anticholinergic medication	96, 249	–	1.0 (0.0–1.0)	1.0 (0.0–2.0)	$p = 0.736$[c]
	Number of regular plus on-demand/rescue anticholinergic medication	96, 249	–	1.0 (1.0–2.0)	1.0 (0.0–2.0)	$p = 0.935$[c]
	ACB score of regular anticholinergic medication	96, 249	–	1.0 (0.0–2.0)	1.0 (0.0–2.0)	$p = 0.828$[c]
	ACB score ≥3 of regular anticholinergic medication (clinically relevant)	96, 249	Yes	13.5 (13)	17.7 (44)	$p = 0.420$[d]

IQR, interquartile range. [a]Holding Bonferroni-Holm correction. [b]Not holding Bonferroni-Holm correction. [c]Mann-Whitney U test. [d]Chi^2 test. [e]Fisher-Freemann-Halton exact test.

Anticholinergic Medication

In the dementia sample, 65.6% ($n = 63$) of the patients received ≥1 regular anticholinergic medication. The mean number of anticholinergic medication as well as the mean ACB score and the proportion of participants with an ACB score ≥3 for both subgroups are shown in Table 2 and Figure 2.

In the dementia sample, 93 regular anticholinergic substances were counted; the most frequent anticholinergic substances (>5%) were metoprolol, citalopram, risperidone, metformin, mirtazapine, and quetiapine. For details, see Table 4 and Figure 3.

Antidementia Medication

In the dementia sample, 68.8% ($n = 66$) of the patients received no antidementia medication, 28.1% ($n = 27$) received one antidementia medication, and 3.1% ($n = 3$) received two antidementia medications. The different types of antidementia medication are shown in Table 5. In the dementia sample, about two-thirds of both participants with and without antidementia medication received regular anticholinergic medication (63.3% [$n = 21$ of 30] and 63.6% [$n = 42$ of 66], respectively). This was also the case for the whole sample (63.3% [$n = 21$ of 30] and 63.2% [$n = 199$ of 315]).

*Group Comparison of the Dementia Sample (*n = *96) and Non-Dementia Sample (*n = *249)*

People with dementia diagnosis and/or antidementia medication had a higher care degree ($p < 0.001$), lived more often in a nursing home ($p = 0.040$), had a lower number of regular co-medications besides antidementia medication ($p = 0.005$), and a lower number of regular plus on-demand/rescue co-medications besides antidementia medication ($p = 0.036$). After Bonferroni-Holm correction, only the difference regarding care degree remained significant. For details, see Table 2.

Table 3. Diagnoses-related data (N = 87)

Dependent variables (n)	Percentages (n)
Alzheimer's dementia (ICD-10 codes F00.-)	14.9 (13)
Vascular dementia (ICD-10 codes F01.-)	12.6 (11)
Dementia in other diseases classified elsewhere (ICD-10 codes F02.-)	4.6 (4)
Unspecified dementia (ICD-10 code F03)	42.5 (37)
Unspecific dementia information (no ICD-10 code classification possible)	25.3 (22)

*Group Comparison of Antidementia Medication Treatment (Yes/No) in the Dementia Sample (*n = *96)*

People with antidementia medication had higher education levels (p = 0.016). After Bonferroni-Holm correction, this difference did not remain significant. For details, see online supplementary Table A (for all online suppl. material, see https://doi.org/10.1159/000546708).

Group Comparison of Regular Anticholinergic Medication (Yes/No)

In the non-dementia sample (N = 249), people with regular anticholinergic medication (n = 157) had a significantly higher care degree (p = 0.021) compared to people without regular anticholinergic medication (n = 92). After Bonferroni-Holm correction, this difference did not remain significant. For details, see online supplementary Table B.

In the dementia sample (n = 96), there were no significant differences between people with and without anticholinergic medication. For details, see online supplementary Table C.

Discussion

Main Results

Our results provide insights into the nursing care situation of people with dementia and/or nursing care needs in Bavaria during the SARS-CoV-2 pandemic regarding their medical treatment. In the dementia sample, 91.7% of the participants were affected by polypharmacy (≥4 medication), 65.6% received ≥1 regular anticholinergic medication (comparable to the whole sample), and 31.2% received ≥1 antidementia medication. Persons with versus without anticholinergic medication did not differ from each other in group comparisons.

Comparison to the Literature

We found a higher proportion of polypharmacy within the dementia sample when compared to prepandemic data (polypharmacy criterion in those studies ≥5 medication): Anderson et al. [46] reported a polypharmacy rate of 75.2% within a sample of people with dementia (general population, data collection period: 2010–2019), Scheel et al. [47] an even lower rate of 60.3% within a sample of people with cognitive impairment and dementia (day-care centers, data collection period: 2015–2017), whereas we found 83.3%.

Dementia has a strong impact on the risk-benefit profile of medication as dementia reduces life expectancy and functional status of patients [46, 48]. Growdon and Smith [48] demanded the development of guidelines for reducing or deprescribing preventive medication for common comorbidities, especially under the perspective of remaining life expectancy.

The clinicians' decision process regarding deprescribing should be guided by the appraisal of risk versus benefit of the medication, challenges in the administration and/or monitoring of the medication, and barriers to drug adherence [49]. Anticholinergic medication could be one of the first medication groups to be considered for discontinuation, where alternatives with less anticholinergic effects could be sought [26–29]. In the present sample, the anticholinergic substances metoprolol (β-blocker), citalopram and mirtazapine (antidepressants), risperidone and quetiapine (antipsychotics), and metformin (antidiabetic) were particularly frequent. Discontinuation should be considered in particular when patients have diagnoses with a reduced life expectancy (e.g., dementia [8]), comorbidities especially sensitive to anticholinergic effects (e.g., dementia [9]), polypharmacy, and high anticholinergic burden. Discontinuation should be discussed with the patient with regard to quality of life and to other medications and comorbidities. Medications like

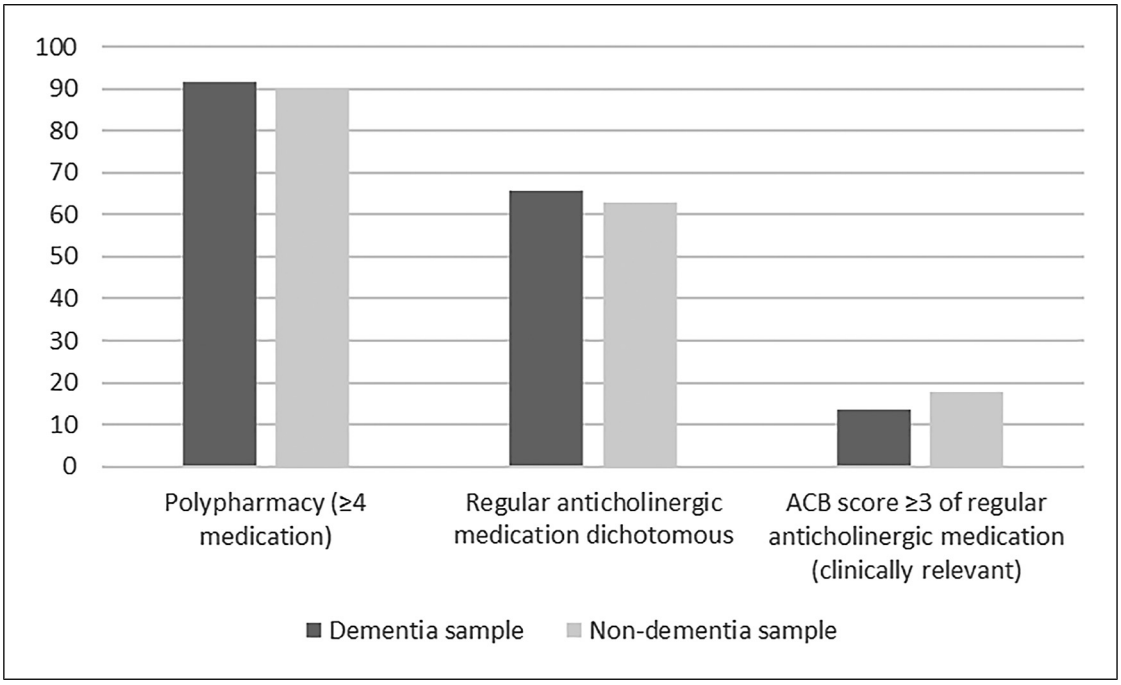

Fig. 2. Percentages of polypharmacy and anticholinergic medication.

Table 4. ATC code groups of anticholinergic medication and most frequent anticholinergic substances

	Percentages (*n*)	
	dementia sample (*n* = 96)	non-dementia sample (*n* = 249)
ATC code group		
A – alimentary tract and metabolism	11.8 (11)	13.6 (36)
C – cardiovascular system	23.7 (22)	23.4 (62)
D – dermatologicals	–	0.4 (1)
G – genitourinary system und sex hormones	–	4.2 (11)
L – antineoplastic and immunomodulating agents	–	0.8 (2)
M – musculoskeletal system	1.1 (1)	4.9 (13)
N – nervous system	62.3 (58)	48.3 (128)
R – respiratory system	1.1 (1)	4.2 (11)
S – sensory organs	–	0.4 (1)
Most frequent anticholinergic substances (>5%)		
Metoprolol (C07AB02, ACB rating of 1)	18.3 (17)	15.8 (42)
Citalopram (N06AB04, ACB rating of 1)	11.8 (11)	–
Risperidone (N05AX08, ACB rating of 1)	10.8 (10)	–
Metformin (A10BA02, ACB rating of 1)	9.7 (9)	11.7 (31)
Mirtazapine (N06AX11, ACB rating of 1)	9.7 (9)	9.1 (24)
Quetiapine (N05AH04, ACB rating of 2)	7.5 (7)	–

antidepressants might be discontinued as their use is in many cases generally debatable due to side effects and no clinically meaningful benefit [50, 51]. Furthermore, citalopram and mirtazapine are associated with a faster cognitive decline in people with dementia [52]. Non-pharmacological approaches should be the first-line treatment [53]. This also applies to antipsychotics, which are often administered to manage behavioral and

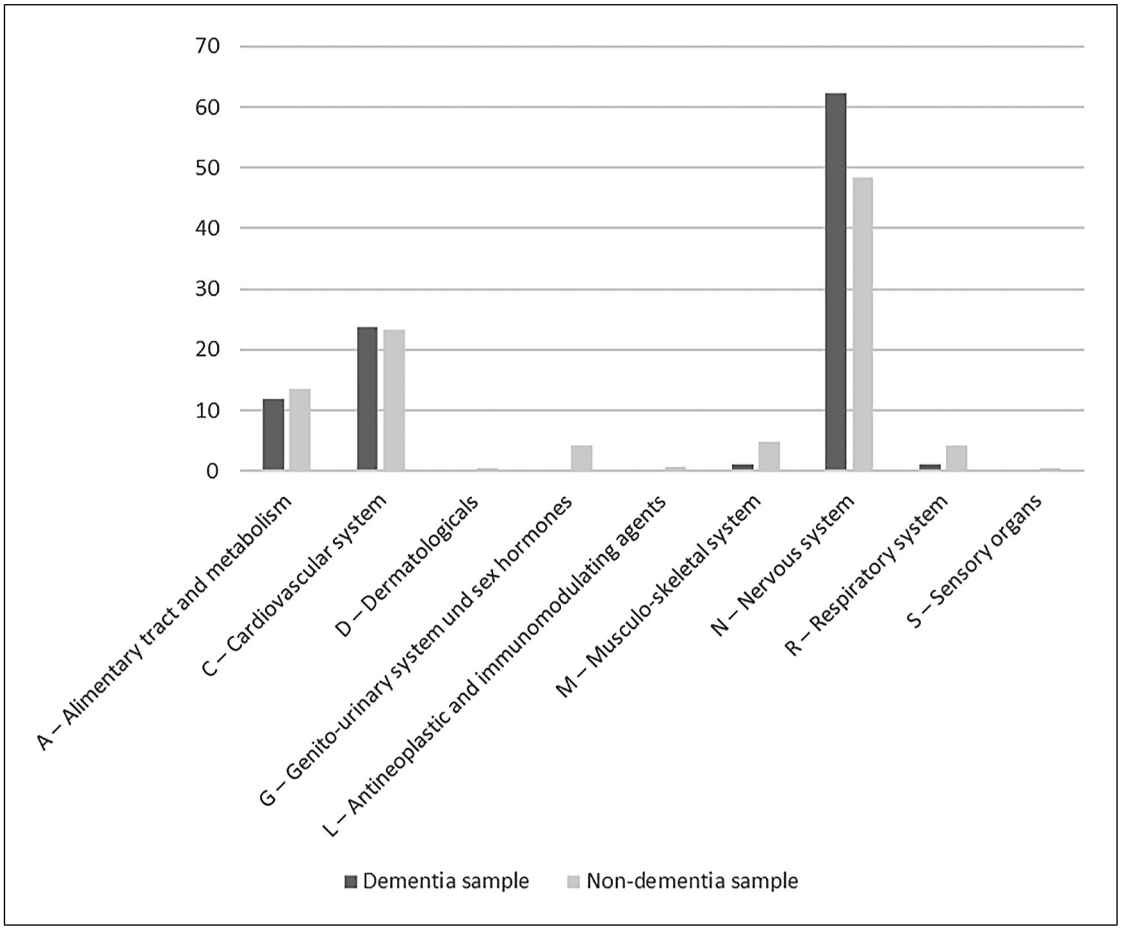

Fig. 3. Percentages of ATC code groups of anticholinergic medication.

Table 5. Types of antidementia medication (n = 30)

Type of medication	Percentages (n)
Donepezil	26.7 (8)
Rivastigmine	16.7 (5)
Ginkgo biloba	20.0 (6)
Memantine	26.7 (8)
Combination of donepezil and memantine	10.0 (3)

psychological symptoms of dementia [53]. For detailed control of side effects of antidepressants and antipsychotics, tools like the Psymatik Treatment Optimizer [54] might be applied.

The proportion of 65.6% of the people with dementia who received ≥1 regular anticholinergic medication in the present study was found to be somewhat higher than previously reported by pre-pandemic studies: for example, Ivchenko et al. [55] reported 47.54% (ambulant patients of urological practices, Germany, data collection period: 2014–2015, N = 986), Pfistermeister et al. [56] 46.3% (hospitalized geriatric patients, Germany, data collection period: 2013–2015, N = 89,579), and Scheel et al. [47] 43.6% (people with cognitive impairment and dementia in day-care centers, Germany, data collection period: 2014–2015, N = 433). Yet the percentage of people with a clinically relevant ACB score of ≥3 is comparable (16.2% [47] vs. 13.5% in the present study).

Furthermore, 31.2% of the present sample received ≥1 antidementia medication. This is comparable to pre-pandemic data (30.9% in people with cognitive impairment and dementia in day care) [47] and peri-pandemic data (31.3% in community-dwelling people with dementia, recruited 2021–2022) [57]. As the prescription of antidementia medication is mainly conducted by a physician (only Ginkgo biloba is available as

over-the-counter medication in Germany), antidementia medication should only be started after deprescribing (or at least critical review) of anticholinergic medications. This should theoretically result in a lower number of anticholinergic medications in patients with antidementia medication. However, in the present study no difference regarding anticholinergic medication could be found between participants with and without antidementia medication – in both groups, about two-thirds received regular anticholinergic medication. This means simultaneous use of antidementia medication and anticholinergic medication was not noticed by physicians or did not lead to any consequence. During the SARS-CoV-2 pandemic, medication monitoring of people with dementia was possibly even more limited than before as the access to medical care and support services was impeded [30–32]. This could have led to further deterioration in the medical care of people with dementia. Patients in general and people with cognitive impairment due to their condition in particular are relying on medical advice regarding their medication. Especially in vulnerable and nonindependent individuals, an outreach approach might be necessary.

Particularly in patients with dementia (and therefore reduced life expectancy), any medication should be strictly oriented toward the patient's benefit and quality of life (= core outcome in long-term nursing care [58]), monitored carefully, and potentially discontinued [59]. However, several Cochrane reviews show no significant positive effect of antidementia medication on quality of life [4, 5, 7, 8], or quality of life was not even an outcome [6, 9]. As there is good evidence for the limited effectiveness of antidementia medication [4–10], their adverse side effects [4–7, 9–12], and their drug-drug-interactions [11, 13–22], various recommendations to review and deprescribe antidementia medication are available [49, 60–62]. In addition (or as an alternative) to medical treatment of dementia, non-pharmacological treatment should be considered [10, 29, 53], e.g., different forms of the MAKS therapy (MAKS = "motorisch"/motor stimulation, "alltagspraktisch"/activities of daily living, "kognitiv"/cognitive stimulation, and "sozial"/social stimulation) [63–65].

Strengths and Limitations

In our study, we provide a detailed description of polypharmacy and both anticholinergic and antidementia medication treatment in a sample of people with dementia during the SARS-CoV-2 pandemic and combine these data with sociodemographic data, nursing care data, and measures of dementia. This helps to identify problems from a holistic perspective and is the basis for improving the situation. However, our study has some limitations. First, the sample sizes were small and differed substantially regarding size (n = 96 versus n = 249); this might lead to type I and type II errors and over-/under-interpretations. Second, the data were partly assessed via self-report (patients and/or caregivers) and data from attending physicians and nursing homes were sometimes incomplete. Medication and diagnoses data were sometimes difficult to categorize. Third, the status of diagnoses and medication before the SARS-CoV-2 pandemic was not available.

Conclusion

Although risks and adverse effects are known, polypharmacy, anticholinergic medication use, and treatment with antidementia medication are frequent in people with dementia. In the present study, we found slightly elevated levels of polypharmacy and anticholinergic medication but not of antidementia medication compared to pre-pandemic studies in people with dementia.

Polypharmacy, anticholinergic medication, and antidementia medication should be regularly reviewed in people with dementia and reduced if possible. Especially in a crisis situation like a pandemic, an outreach approach regarding medication monitoring and review might be necessary for people with dementia.

Acknowledgments

We would like to thank all participants of the BaCoM study, especially the people in need of nursing care and health care workers who agreed to share their personal experiences during the ongoing SARS-CoV-2 pandemic with us. These very personal insights might help to develop and improve long-term care. We also would like to thank the BaCoM study group. Members of the BaCoM study group: Principal Investigator and Co-Principal Investigators: Jochen Gensichen* (PI), Tobias Dreischulte*, Ildikó Gágyor*, Anita Hausen, Michael Hoelscher, Christian Janke, Thomas Kühlein*, Armin Nassehi, Daniel Teupser. Research staff: Daniel Arend, Felix Bader, Christine Eidenschink, Dorothea Fichtl, Caroline Floto, Dagmar Hindenburg, Peter Kurotschka, Daniela Lindemann, Karoline Lukaschek, Katharina Mayr, Irina Michel, Marietta Rottenkolber, Linda Sanftenberg, Jennifer Scheel-Barteit, Rita Schwaiger, Maria Sebastia, and Susanne Winter. Doctoral students: Heidi Hentschel, Christina Huber, Julian Mayrhuber, Mara Pettke, Sophia Straub, and Alexander Theiss (*study coordination in the recruitment centers).

Statement of Ethics

This study was reviewed and approved by the Ethics Committee of the Ludwig-Maximilians-Universität München (LMU), Germany, Approval No. 20–860. All participating study sites (Ethical Committees at the Medical Faculties of the University of Würzburg and the Friedrich-Alexander-University of Erlangen-Nuremberg) approved the BaCoM study procedures. Before the commencement, written informed consent was obtained from the participants. If the person in need of nursing care or support was not capable of giving consent himself or herself (e.g., due to dementia), consent was given by the legal guardian. The conduct of the present study is in accordance with relevant guidelines, regulations, and with the ethical principles of the Declaration of Helsinki.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Funding Sources

This publication is part of the study "BaCoM, a multicenter open registry study," and was funded by the Bavarian State Ministry of Health, Care and Prevention (Grant No.: G45a-G8300-2021/257-2). Explanation of the roles of the funder in the study design, execution and analysis, and manuscript conception, planning, writing, and decision to publish: the Bavarian State Ministry of Health, Care and Prevention had no role in any of the above.

Author Contributions

Thomas Kühlein, Ildikó Gágyor, Jochen Gensichen, Anita Hausen, Michael Hoelscher, Christian Janke, Armin Nassehi, Daniel Teupser, and Tobias Dreischulte substantially contributed to the conception and the design of the BaCoM study. Jennifer Scheel-Barteit, Caroline Floto, Henrike Höpfner, and Maria Sebastião substantially contributed to analysis and interpretation of the data for the work. Jennifer Scheel-Barteit drafted the manuscript. All authors reviewed the manuscript critically for important intellectual content, approved the final version of the manuscript to be published, and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Data Availability Statement

The data that support the findings of this study are not publicly available due to data protection reasons but are available from the corresponding author (J.S.-B.) upon reasonable request.

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