

Patterns of inappropriate polypharmacy among older inpatients with dementia when treated under different clinical specialties: A multi-centre cohort study



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Introduction

Hospital admissions caused by adverse drug events are three times higher in people living with dementia than those without dementia¹. Little research focusses on patterns of inappropriate polypharmacy in older patients with dementia during transitions of care. This study investigated polypharmacy, high-risk medications, high-risk patients, and transitions of care – all key elements addressed by the third WHO Global Patient Safety Challenge: Medication Without Harm.

Objectives

1) To report the prevalence of inappropriate polypharmacy among older inpatients with dementia when treated under different clinical specialties; and 2) Determine whether any changes in inappropriate polypharmacy occurred from admission to discharge among each of the different clinical specialties treating older inpatients with dementia.

Methods

A retrospective cohort study was conducted for inpatients with dementia, aged ≥ 75 years and admitted consecutively to six hospitals in Sydney from 1st July 2016 to 31st May 2017 under the following clinical specialties: Aged Care, Rehabilitation, General Medicine, Medical Subspecialties, Surgery (excluding Orthopaedics), and Orthopaedics. Dementia was defined as a documented diagnosis within the electronic medical record (eMR). Inappropriate polypharmacy was defined in two ways: 1) Exposure to polypharmacy (≥ 5 regular prescription medications); and 2) The use of ≥ 1 inappropriate medication (using the 2015 updated Beers criteria)².

Results

- The cohort consisted of 1013 patients. Sociodemographic and clinical characteristics are reported in **Table 1**.
- On admission, 74% of patients were exposed to polypharmacy, and 48% were prescribed ≥ 1 inappropriate medication (**Figure 1**). The prevalence of polypharmacy ranged from 65% (Orthopaedics) to 77% (Rehabilitation), while the prevalence of ≥ 1 inappropriate medication ranged from 42% (Aged Care) to 58% (Orthopaedics).
- Statistically significant changes from admission to discharge are also shown in **Figure 1**. With regards to polypharmacy, statistically significant differences occurred for the total cohort ($p < 0.001$), along with Aged Care ($p = 0.042$), Medical Subspecialties ($p = 0.002$), Surgery ($p = 0.035$), and Orthopaedics ($p < 0.001$). There was no statistically significant change in the prevalence of ≥ 1 inappropriate medication for the total cohort ($p = 0.653$), and only Aged Care showed a statistically significant decrease in prevalence ($p = 0.050$).
- The most common classes of inappropriate medications on admission are displayed in **Figure 2**. Anti-psychotics were the most common class used in Aged Care, General Medicine, Medical Subspecialties and Orthopaedics; whereas anti-depressants (includes highly anti-cholinergic/sedating agents or those used in history of falls) were the most common class used in Rehabilitation and Surgery.

Table 1 Sociodemographic and clinical characteristics (n = 1013)

Patient Characteristics	Category	Total Cohort
Age in years, median (IQR)		86 (82-90)
Sex, % (n)	Female	55 (561)
Dementia subtype, % (n)	Alzheimer's disease	25 (253)
	Vascular dementia	10 (96)
	Mixed dementia/Parkinson's dementia/Other	12 (117)
	Dementia, unspecified	54 (547)
Country of birth, % (n)	Australia	47 (477)
Living status prior to admission, % (n)	Home	49 (498)
	RACF	46 (462)
	Assisted Living	4 (39)
	Other	1 (14)
Clinical specialty, % (n)	Aged Care	38 (384)
	Rehabilitation	3 (35)
	General Medicine	10 (98)
	Medical Subspecialties	19 (197)
	Surgery	13 (136)
	Orthopaedics	16 (163)
Number of regular medications on admission, % (n)	0	3 (28)
	1-4	23 (236)
	5-9	51 (521)
	≥ 10	23 (228)
Number of inappropriate medications on admission, % (n)	0	52 (530)
	1-2	41 (417)
	≥ 3	7 (66)
CCI, median (IQR)		4 (2)

CCI = Charlson Comorbidity Index; IQR = Interquartile Range; RACF = Residential Aged Care Facility

Figure 1 Prevalence of polypharmacy and ≥ 1 inappropriate medication on admission and discharge for the total cohort and across the different clinical specialties (n = 1013)

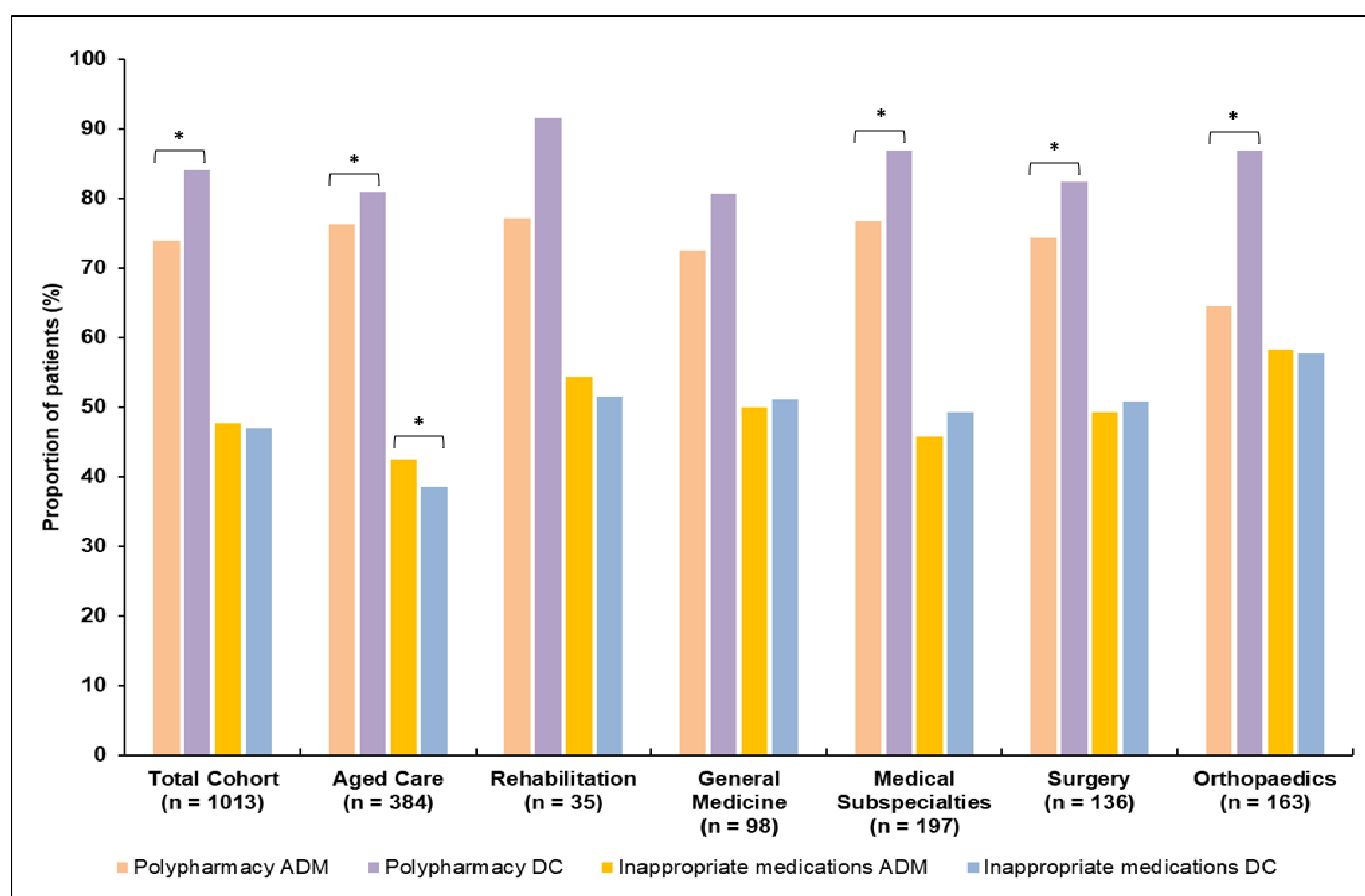


Figure 2 Most common classes of inappropriate medications for the total cohort on admission (n = 1013)



Conclusions & Future Directions

Inappropriate polypharmacy was highly prevalent across all specialties. The prevalence of polypharmacy increased during hospitalisation, with no significant changes in the use of inappropriate medications (except for Aged Care). Our findings provide valuable insights into patterns of inappropriate polypharmacy among older inpatients with dementia, which may assist in targeting future interventions during transitions of care.