Influence of the 2016 smarter medicine campaign on sedative prescriptions in older adults in Swiss university hospitals: a LUCID NDS study

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Background

Smarter Medicine published its first list of recommendations for medical inpatients in 2016. It classified the prescription of benzodiazepines (BZD) and other sedatives in adults aged ≥65 years as "low-value care" (LVC) due to its association with various complications, such as prolonged hospital stays and falls. This study aimed to determine whether the publication was followed by a reduction in BZD and other sedative prescriptions in older adults in Swiss university hospitals.

Methods

Observational, multicentric, before-and-after study using data from the LUCID NDS on general internal medicine (GIM) hospitalisations. The study included consenting adult patients aged ≥65 years who were hospitalised for at least 24 hours in Lausanne, Geneva, Bern, and Zurich university hospitals between 01.01.2014 and 05.02.2024. Basel was excluded due to insufficient data before 2018. The publication period, from 01.05.2016 to 30.11.2016, separated the before- and after-publication periods. Additionally, the three COVID-19 waves were excluded. The presence of at least one prescription of BZD or other sedatives, such as Z-drugs and barbiturates, during a hospital stay in patients without alcohol dependence, epilepsy, or psychiatric comorbidities (identified using ICD-10 codes) was classified as LVC. We assessed the proportion of such LVC before and after the publication.

Results

Among 58,554 total stays, 17.5% (N=10,275) occurred before 01.05.2016. Patient characteristics are shown in the **Table**. Overall, inappropriate BZD or other sedative prescriptions occurred in 20.5% (N=12,021) of stays. Among BZD, lorazepam was the most frequently prescribed, accounting for 35.1% of LVC prescriptions, while Z-drugs comprised 27.1%. The proportion of LVC decreased from 30.4% before publication to 18.4% after publication across participating hospitals (**Figure**).

Conclusion

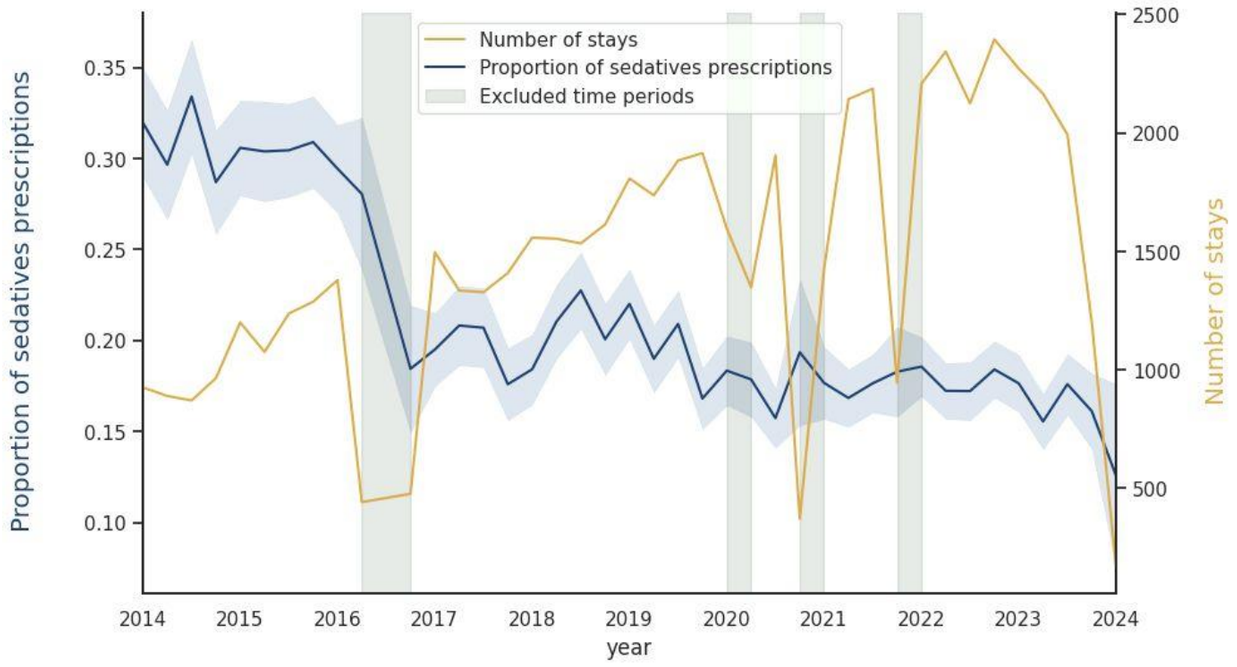
Over the last decade, BZD or other sedatives were prescribed in approximately one in five hospital stays for adults aged ≥65 years. We observed a 12% decrease in these LVC prescriptions in Swiss university hospitals following the publication of the smarter medicine recommendation in 2016. Efforts must continue to strengthen this positive trend.

Table: Comparison of characteristics of patients within included stays.

	Overall (N = 58'554)	Pre-publication period (01/2014 – 04/2016) (N= 10'275)	Post-publication period (12/2016 – 02/2024) (N = 48'279)
Age at admission in years, median (IQR)	77.0 (11.0)	75.0 (10.0)	77.0 (11.0)
Female sex, n (%)	23'686 (40.7)	4'156 (41.1)	19'530 (40.6)
Length of stay in days, median (IQR)	5.9 (7.3)	6.6 (8.7)	5.8 (7.1)
Setting prior to admission, n (%)			
Long-term care facility	2'017 (3.5)	468 (4.6)	1'5
Hospital or rehabilitation	14'420 (24.7)	1'974 (19.4)	12'44
Home	38'761 (66.3)	7'461 (73.5)	31'30
Discharge destination, n (%)			
Long-term care facility	2'542 (4.4)	454 (4.5)	
Hospital or rehabilitation	20'218 (34.6)	3'015 (29.7)	
Home	33'026 (56.5)	6'442 (63.5)	
BMI, median (IQR)	25.2 (6.4)	25.7 (6.4)	
Comorbidities, n (%)*			
Ischemic cardiopathy[a]	18'272 (31.3)	1'476 (14.5)	
Heart failure[b]	13'513 (23.1)	1'211 (11.9)	
History of stroke or TIA[c]	5'112 (8.7)	617 (6.1)	
Chronic pulmonary disease[d]	7'087 (12.1)	590 (5.8)	
Liver disease[e]	2'340 (4.0)	192 (1.9)	
Diabetes[f]	13'119 (22.5)	1'096 (10.8)	
Chronic kidney disease[g]	15'985 (27.4)	1'243 (12.2)	
Cancer[h]	11'027 (18.9)	1'005 (9.9)	
Dementia[i]	2'741 (4.7)	162 (1.6)	
Polymedication (>=5)[†], n (%)	42'562 (72.8)	7'280 (71.7)	
Charlson Comorbidity Index[‡], mean (SD)	4.8 (2.2)	3.9 (1.7)	

Abbreviations: BMI: Body Mass Index, TIA: Transient Ischemic Attack.
*: All diagnoses coded during the same stay were considered.
a: includes any diagnoses under the ICD-10 codes I20-I25 (ischemic heart diseases).
b: includes any diagnoses under the ICD-10 codes I50 (heart failure) or I11.0 (hypertensive heart disease wi
heart failure).
c: Includes any diagnosis under the ICD-10 codes I60 (subarachnoid haemorrhage), I61 (intracerebral haem
(other nontraumatic intracranial haemorrhage), I63 (cerebral infarction), I64 (stroke, not specified as haem
infarction) or G45 (transient cerebral ischaemic attacks and related syndromes).
d: includes any diagnoses under the ICD-10 codes J40-J47 (chronic lower respiratory diseases).
e: includes any diagnoses under the ICD-10 codes K70-K77 (diseases of liver).
f: includes any diagnoses under the ICD-10 codes E10-E14 (diabetes mellitus).
g: includes any diagnoses under the ICD-10 codes N18 (chronic kidney disease).
h: includes any diagnoses under the ICD-10 codes C00-C97 (malignant neoplasms).
i: includes any diagnoses under the ICD-10 codes F00* (dementia in Alzheimer disease), F01 (dementia in other diseases classified elsewhere), F03 (unspecified dementia) or R54 (senility
†: as commonly defined in the literature. Considers the number of prescriptions on the last d
‡: as calculated with the formula available at https://www.mdcalc.com/calc/3917/charlson-c

Figure: Number of stays and proportion of inappropriate BZD or other sedatives prescriptions over time. Stays increased from 2016 due to the adoption of general consents in hospitals.



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