

Anticholinergic Burden in Care Homes: The Impact of Pharmacist Intervention

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Background

Anticholinergic burden is the cumulative effect of receiving multiple medicines with potential anticholinergic effect. Numerous studies have now shown links between an older person's anticholinergic burden and negative health outcomes such as increased falls risk, poorer cognitive function, functional decline, institutionalization and all-cause mortality.^{1, 2, 3, 4, 5}



Objectives

- To examine the prevalence of anticholinergic burden in selected care homes within the Northern Health and Social Care Trust.
- To consider possible predictors of anticholinergic burden in care homes.
- To examine the impact of pharmacists' medication reviews on anticholinergic burden in care homes.

Methods

Four care homes, previously recruited to the Northern Health and Social Care Trust Nursing Home Outreach Project service development programme, were selected at random. All residents (≥65years) from the four selected care homes who had received a medication review by a pharmacist as part of the service development programme were included in the study. Retrospective analysis of pharmacists' medication review records for all included residents (n=245) was carried out. The Anticholinergic Cognitive Burden (ACB) scale⁶ was used to calculate ACB score at baseline, after pharmacists' recommendations and after uptake of pharmacists' recommendations by the general practitioner (GP). Table 1 shows common examples of drugs appearing on the ACB scale and their scores.

Table 1: Common Examples of Drugs that Appear on the ACB Scale and their scores

Examples of Drugs carrying ACB score of 1	Examples of Drugs carrying ACB score of 2	Examples of Drugs carrying ACB score of 3
Codeine	Carbamazepine	Quetiapine
Diazepam	Amantadine	Amitriptyline
Furosemide	Oxcarbazepine	Chlorphenamine
Digoxin		Fesoterodine
Cetirizine		Oxybutynin
Ranitidine		Paroxetine
Risperidone		Solifenacin

Results

Table 2 shows the baseline characteristics of the study sample.

Table 2: Baseline Characteristics of the Study Sample

Characteristic	Value
Mean Age (years)	85.6
% of residents in a nursing unit of a care home	56
% of residents in a residential unit of a care home	11
% of residents in a dementia unit of a care home	33
Mean number of drugs with anticholinergic effect per resident	1.7
Mean ACB score per resident	2.3

This study found that 80% of residents were prescribed at least one medication with anticholinergic effect while 26% of residents were prescribed more than two. Age may have had an independent association with anticholinergic burden as the mean number of drugs with anticholinergic effect and the mean ACB score decreased with age. Of the recommendations made by pharmacists, 87% were implemented by the resident's GP. Ultimately, 86 residents had less drugs with anticholinergic effect prescribed after pharmacists' interventions, 0 residents had more drugs with anticholinergic effect prescribed after pharmacists' interventions and 159 residents remained unchanged. Figure 1 shows the impact of pharmacists' interventions on number of drugs with anticholinergic effect prescribed.

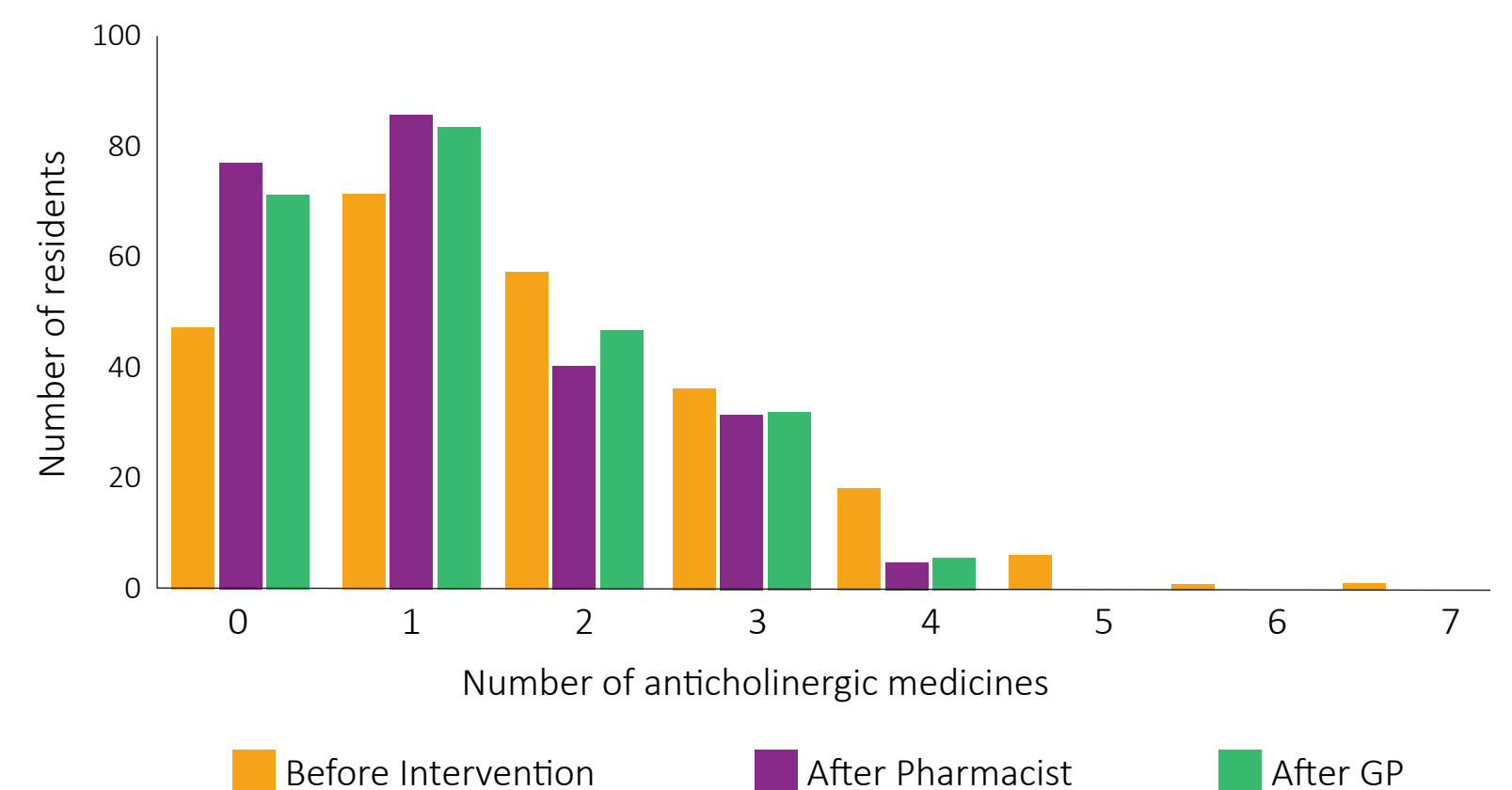


Figure 1: Impact of Pharmacists' Interventions on Number of Drugs with Anticholinergic Effect Prescribed

In the same way, 86 residents had a lower ACB score after pharmacists' interventions, 0 residents had a greater ACB score after pharmacists' intervention and 159 residents remained unchanged. Figure 2 shows the impact of pharmacists' interventions on ACB score.

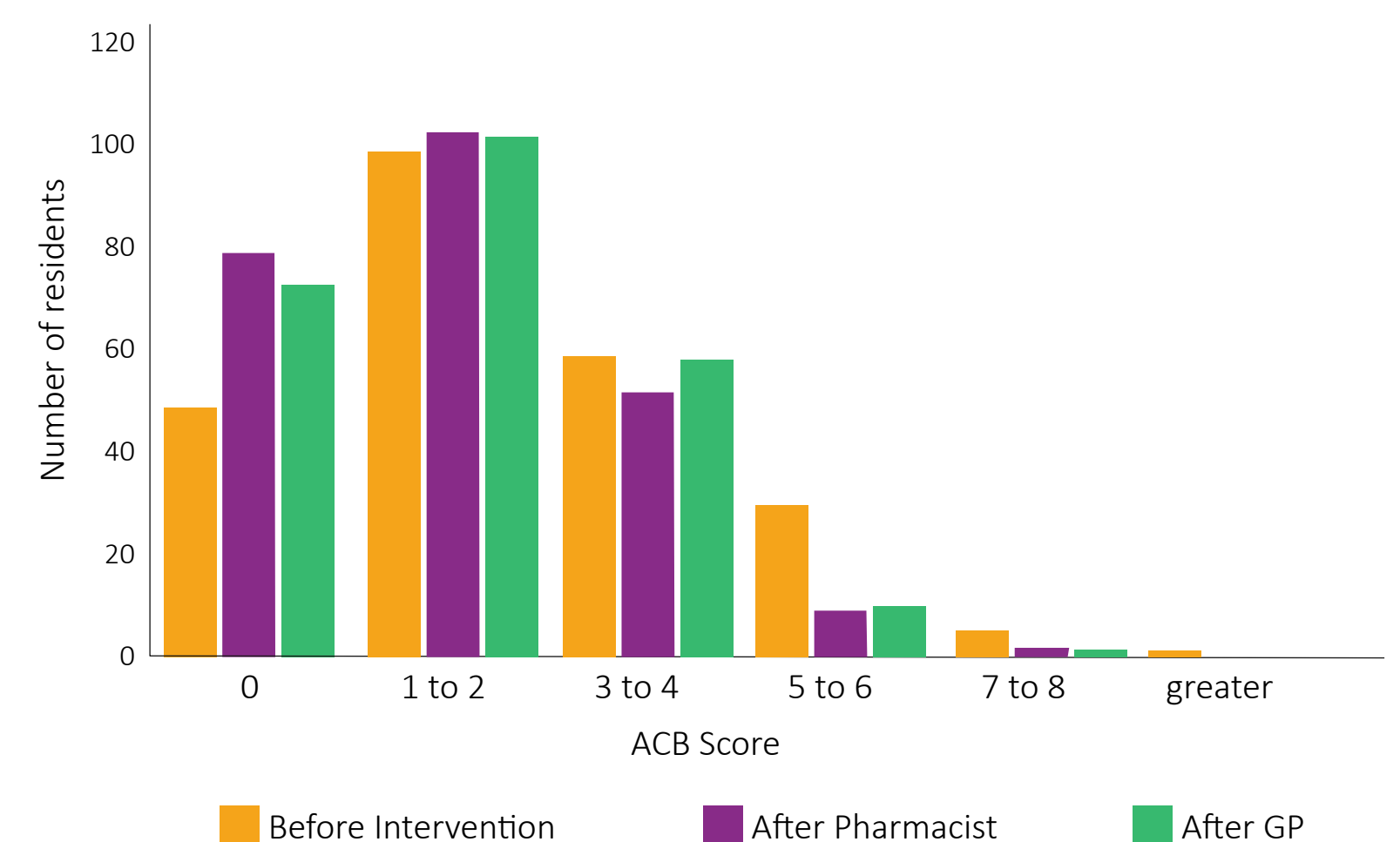


Figure 2: Impact of Pharmacist Intervention on ACB Score

A Wilcoxon signed-rank test determined that pharmacists' interventions elicited a statistically significant decrease in median number of anticholinergic drugs prescribed ($z=-8.505$, $p<.001$) and median ACB score ($z=-8.275$, $p<.001$).

Conclusion

Medication reviews carried out by clinical pharmacists working as part of the Northern Trust Nursing Home Outreach Project led to a reduction in the anticholinergic burden of care home residents.

References

- Aizenburg, D. Sigler, M. Weizman, A. Barak, Y. (2002) Anticholinergic burden and the risk of falls among elderly psychiatric inpatients: A four year case-control study. *International Psychogeriatrics Journal*. 14:307-10
- Bostock, CV. Soiza, RL. Mangoni, AA. (2013) Associations between different measures of anticholinergic drug exposure and Barthel Index in older hospitalised patients. *Therapeutic Advances in Drug Safety*. 4:235-45
- Kumpula, EK. Bell, JS. Soini, H. Piktala, KH. (2011) Anticholinergic drug use and mortality among residents of long term care facilities: a prospective cohort study. *Journal of Clinical Pharmacology*. 51:256-63
- Lowry, E. Woodman, RJ. Soiza, RL. Mangoni, AA. (2011) Clinical and demographic factors associated with antimuscarinic medication use in older hospitalized patients. *Hospital Practice*. 39:30-6
- Fox, C. Richardson, K. Maidment, I.D. Savva, G.M. Matthews, F.E. Smithard, D. Coulton, S. Katona, C. Boustani, M.A. Brayne, C. (2011) Anticholinergic medication use and cognitive impairment in the older population: The Medical Research Council Cognitive Function and Ageing Study. *Journal of the American Geriatrics Society*. 59:1477-83
- www.agingbraincare.org