

# THE PREVALENCE AND IMPACT OF MEDICATION-RELATED HARM IN PEOPLE LIVING WITH DEMENTIA – A SYSTEMATIC REVIEW



QUEEN'S  
UNIVERSITY  
BELFAST

Fiona Carabine, Carmel M. Hughes, Heather E. Barry  
Primary Care Research Group, School of Pharmacy, Queen's University Belfast

## INTRODUCTION

People living with dementia (PLWD) take five more medications on average than those without dementia [1]. This can increase their risk of experiencing medication-related harm, a broad term, which can be defined as any negative outcome, harm or injury caused by taking a medication [2]. This can include medication errors, adverse drug events (ADEs), adverse drug reactions (ADRs), potentially inappropriate prescribing and drug interactions. There is an urgent need to explore medication-related harm in PLWD, to identify the scale of this issue.

## AIM AND OBJECTIVES

This review aimed to identify studies that examined the prevalence of medication-related harm in PLWD and to assess its impact by evaluating a range of outcomes.

The objectives were to:

- Identify studies that reported the prevalence of medication-related harm in PLWD;
- Identify the prevalence of medication-related harm in PLWD; and
- Evaluate a range of outcomes to assess the impact of medication-related harm on PLWD.

## METHODS

The protocol for this systematic review was registered with PROSPERO (CRD42023413953).

A total of twelve electronic databases, including one trial registry and two grey literature databases, were systematically searched for articles published in English from the date of inception to April 2023. A search strategy was developed in conjunction with a subject librarian, using terms such as "prevalence", "medication related harm" and "dementia".

Inclusion criteria were as follows:

- Any study design that reported on the prevalence and/or outcomes of medication-related harm
- Participants with dementia of any type or severity
- Participants living in any setting.

Data were extracted from the included studies using a standardised form, and quality assessment of included studies was conducted using the Risk Of Bias In Non-randomised Studies of Exposures (ROBINS-E) tool for non-randomised studies, and the Cochrane Collaboration's Risk of Bias 2 (ROB 2) tool for randomised controlled trials (RCTs). A meta-analysis was conducted on a subset of the included papers to determine combined hazard ratios (HRs) and 95% confidence intervals (CIs).

## RESULTS

A total of 5,951 articles were retrieved from searches, and after duplicates were removed, 4,945 records underwent title and abstract screening. The full texts of 418 articles were assessed for eligibility, and 97 studies were included in the review. The majority of included studies were observational in nature (n=93), with a small number of RCTs (n=4). All four of the RCTs and 62.3% (n=58) of the observational studies were judged to be at a low risk of bias. For papers judged to be at a higher risk of bias, this was largely due to a lack of control for confounding factors and bias due to missing data.

ADEs/ADRs were the most commonly studied medication-related harm event in 79 papers, with a reported prevalence ranging from 2.5 to 93.0% of study participants.

Adverse health outcomes (AHOs), including falls, hospitalisations and mortality, were the most frequently reported medication-related harm outcome in 45 studies, with the majority of these (n=31) finding that the use of various medications increased the risk of participants experiencing an AHO.

Psychoactive medications (such as antipsychotics, antidepressants and benzodiazepines) were the most implicated class of medicines in the included papers (n=54 studies). The majority of these (n=37) reported a link between the use of these medications and various negative outcomes including AHOs.

A meta-analysis conducted on six studies showed that the use of antipsychotics was associated with a significantly increased mortality risk (n=25,715 participants; HR=1.42; 95% CI 1.10-1.84; p=0.008). Figure 1 shows the Forest plot for this analysis.

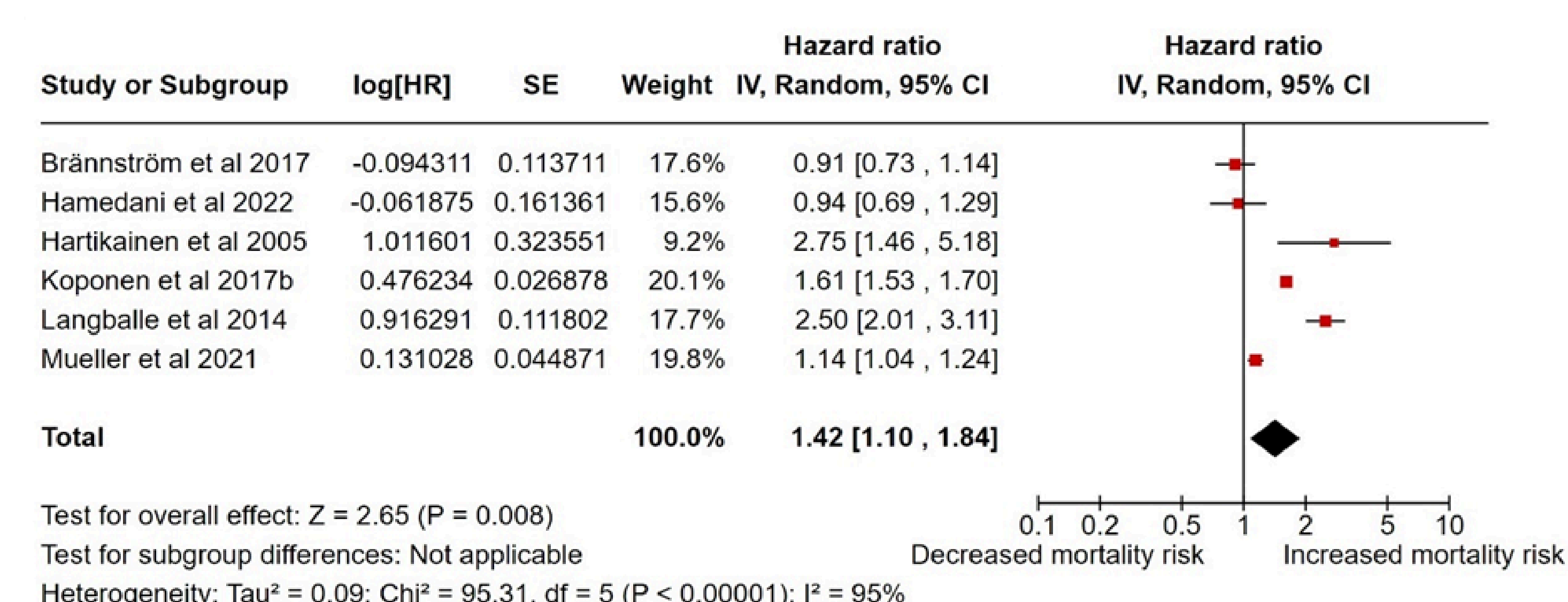
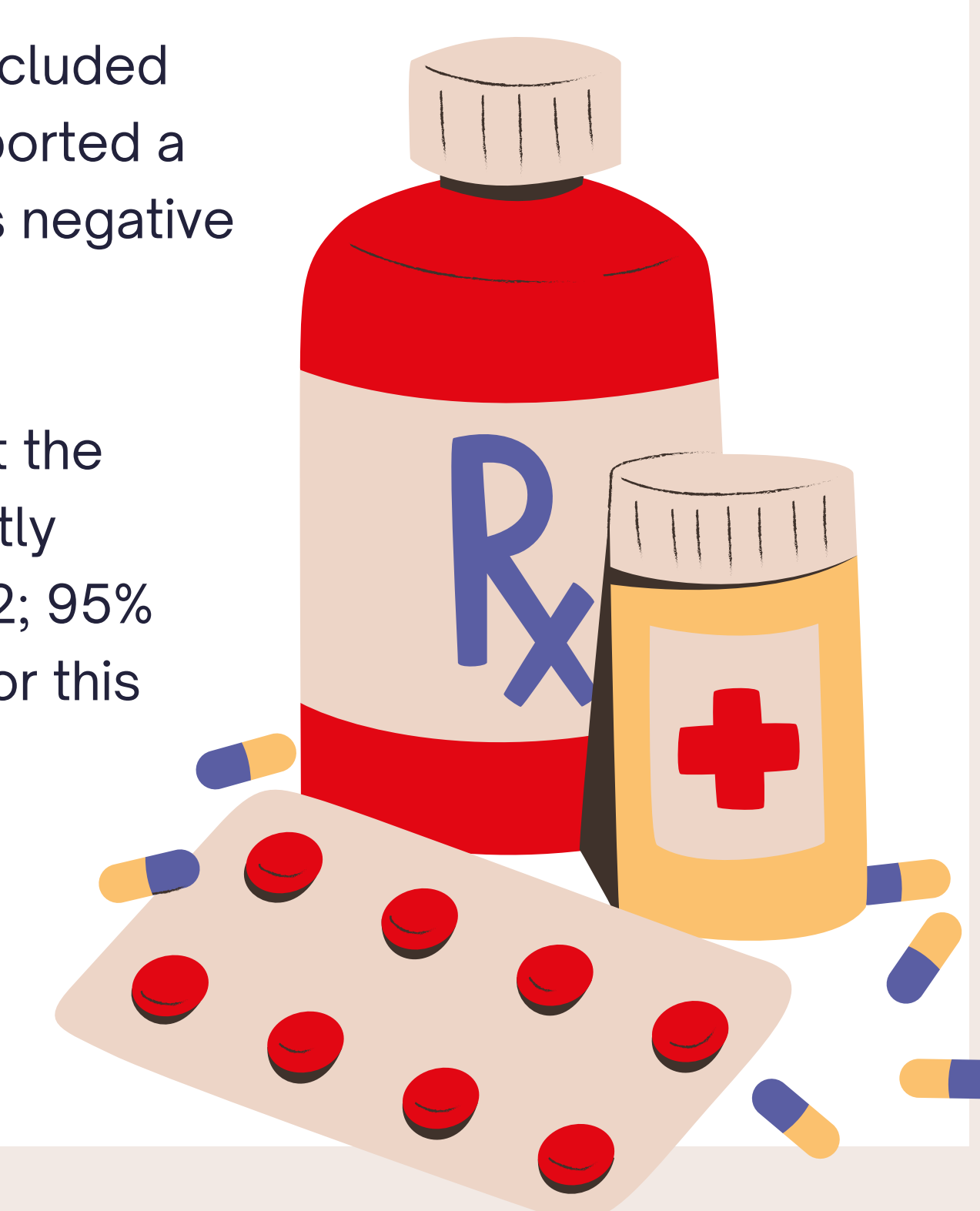


Figure 1 Forest plot showing the association between antipsychotic use and mortality risk.



## CONCLUSION

This systematic review is the first to report on the impact of medication-related harm among PLWD. The findings show that PLWD are widely impacted by medication-related harm issues. The meta-analysis provides evidence that the use of antipsychotic medication is associated with an increased mortality risk among PLWD. Further research is required to take action to minimise the effect of these issues on this vulnerable patient population.

## ACKNOWLEDGEMENTS

The research team would like to thank Angela Thompson at Queen's University Belfast Medical Library for her assistance in developing the search strategy.

## REFERENCES

1. Mueller, C. *et al.* (2018) Polypharmacy in people with dementia: Associations with adverse health outcomes. *Exp Gerontol*; 106: 240-245.
2. Falconer, N. *et al.* (2018) Defining and classifying terminology for medication harm: a call for consensus. *Eur J Clin Pharmacol*; 75(2): 137-145.