



The Association Between Visual Impairment and Delirium: A Systematic Review and Meta-Analysis

Abdelrahman Abu Osba¹; Mostafa Bondok²; Asim Ibrahim³; Syed Ahmad¹; Abdullah Al-Ani²; Anuradha Mishra⁴; Etienne Benard-Seguin²

1: Faculty of Medicine, Dalhousie University, Halifax, Nova Scotia, Canada, 2: Section of Ophthalmology, Department of Surgery, University of Calgary, Calgary, AB, Canada, 3: Max Rady College of Medicine, University of Manitoba, Winnipeg, MB, Canada, 4: Department of Ophthalmology and Visual Sciences, Dalhousie University, Halifax, Nova Scotia, Canada

INTRODUCTION

Background: Delirium is a serious and common neuropsychiatric syndrome in hospitalized adults, associated with longer hospital stays, cognitive decline, morbidity, and mortality. Visual impairment may increase delirium risk by worsening sensory deprivation, disorientation, and environmental misinterpretation.

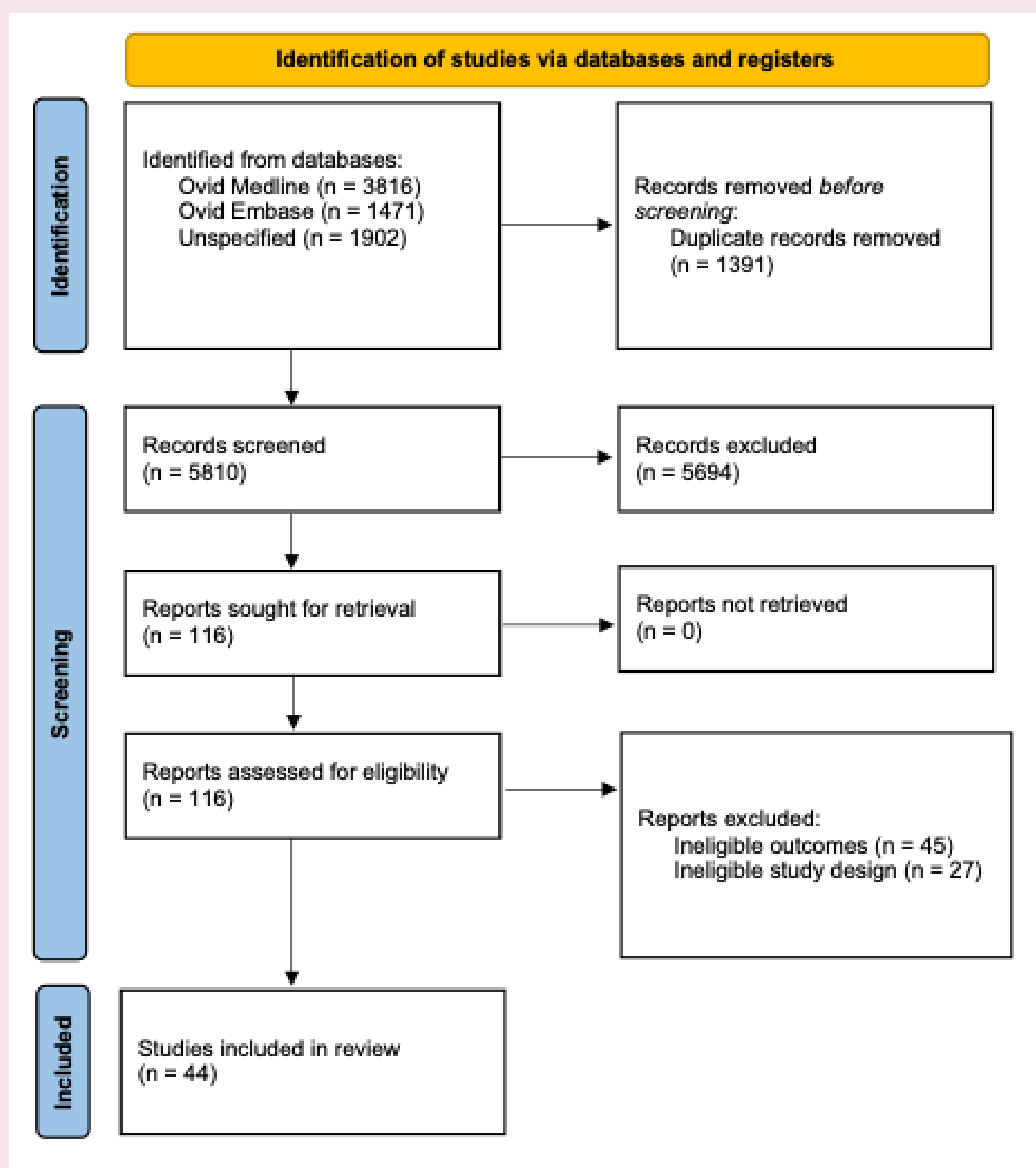
Aim: To systematically evaluate whether visual impairment is associated with increased odds of delirium across adult clinical settings.

Clinical relevance: Unlike many delirium risk factors, visual impairment may be partially addressable through low-cost inpatient strategies such as access to glasses, lighting optimization, large-print materials, and adapted re-orientation approaches.

METHODS

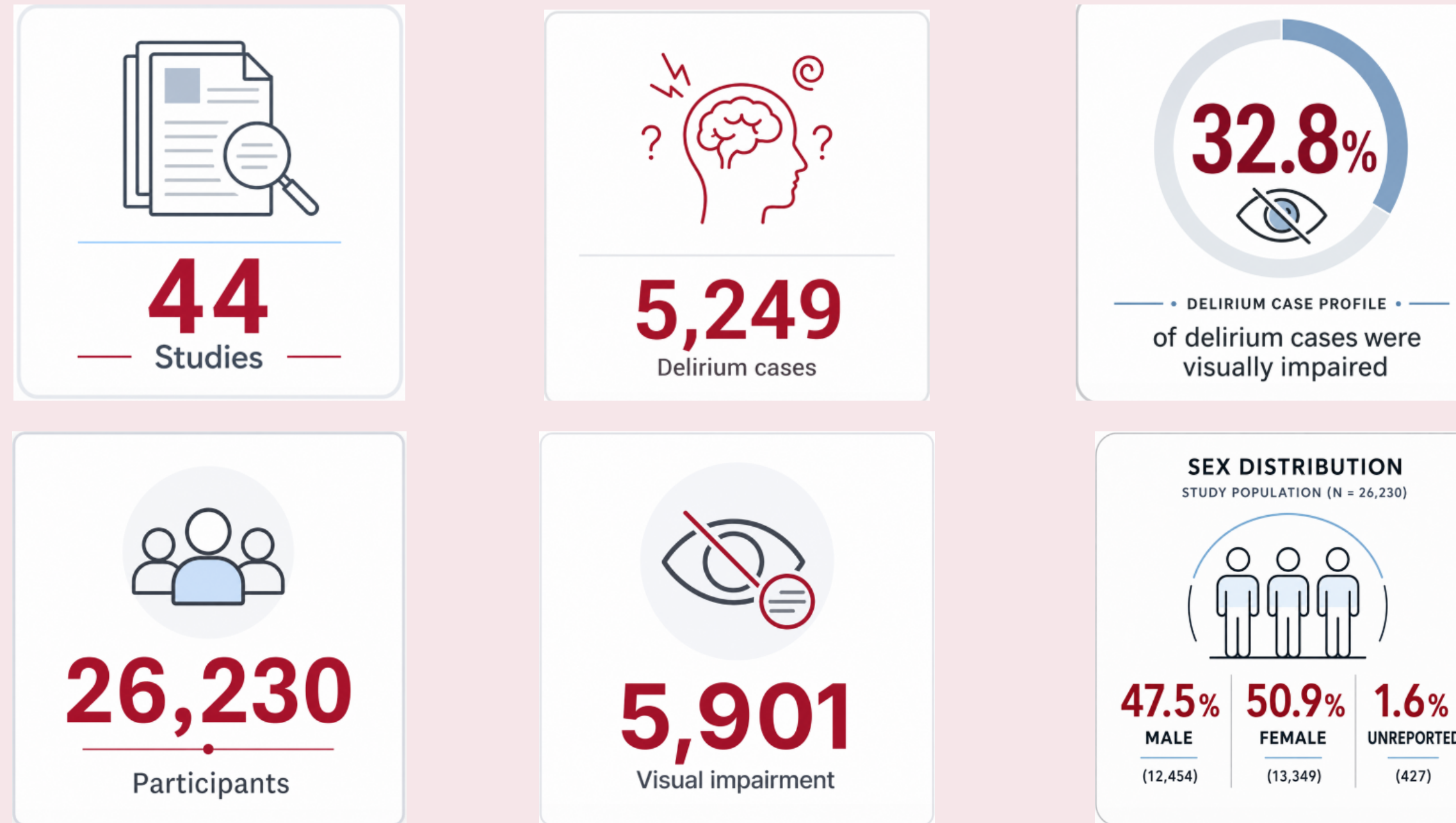
This systematic review and meta-analysis was conducted according to PRISMA 2020 guidelines and registered on PROSPERO. MEDLINE, Embase, and CENTRAL were searched from inception to September 2025 for adult studies reporting both visual impairment and delirium.

Eligible studies included observational or interventional designs with more than five participants. Extracted data included study characteristics, participant demographics, clinical setting, visual impairment definitions, delirium assessment methods, and effect estimates. Random-effects meta-analyses were performed to pool odds ratios, while risk of bias and certainty of evidence were assessed using JBI tools and GRADE, respectively.



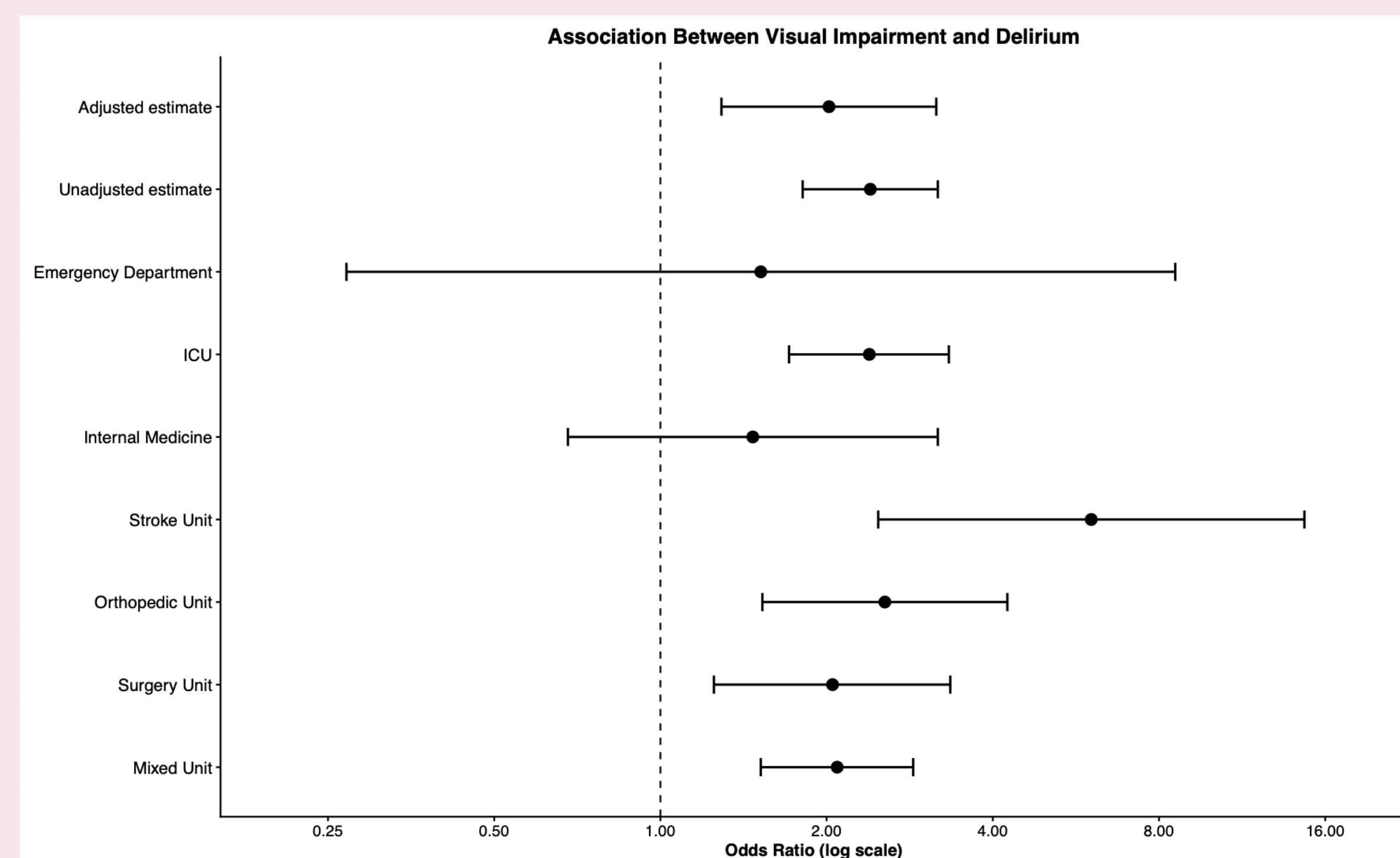
RESULTS

A total of 44 studies involving 26,230 participants were included; 47.5% were male, 50.9% were female, and the mean age across studies reporting age was 71.9 years. Overall, 5,249 participants were diagnosed with delirium, and 5,901 participants had visual impairment.



Meta-Analysis

Visual impairment was associated with increased odds of delirium across the overall analysis and most clinical settings. In the primary meta-analysis, visual impairment was associated with 2.40 times higher odds of delirium (OR 2.40), and this association remained significant when restricted to multivariable-adjusted estimates (OR 2.02). By clinical setting, the strongest association was observed in stroke unit populations (OR 6.03), followed by orthopedic units (OR 2.55), intensive care units (OR 2.39), mixed-setting studies (OR 2.09), and surgical units (OR 2.05). Associations were weaker and not statistically significant in emergency department (OR 1.52) and internal medicine settings (OR 1.47).

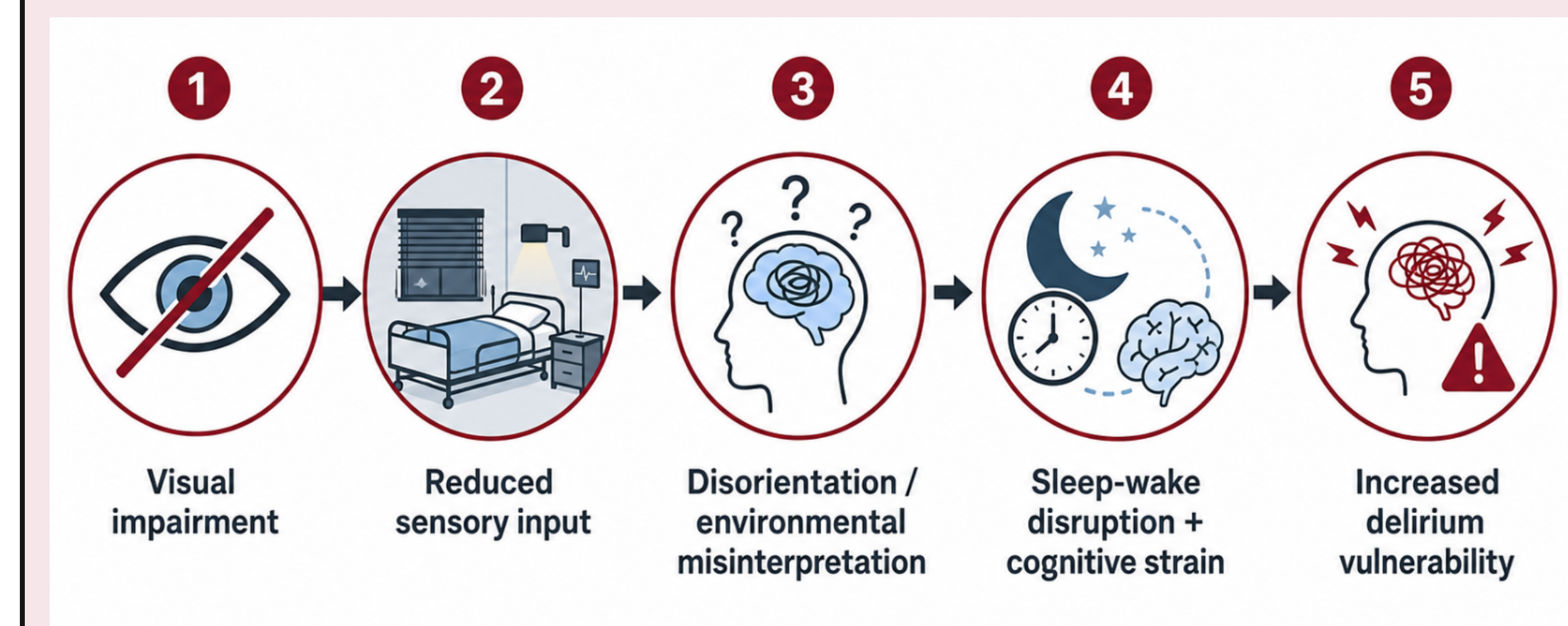


DISCUSSION

Mechanism: Visual impairment may contribute to delirium vulnerability through sensory deprivation and reduced environmental orientation. In hospitalized adults, poor visual input can make it harder to interpret surroundings, recognize staff, read clocks or signage, use call bells, and participate in re-orientation strategies. This may increase disorientation, perceptual misinterpretation, sleep-wake disruption, and cognitive strain, all of which are clinically relevant contributors to delirium.

Recognition: Visual impairment remains under-recognized in acute care despite being clinically addressable. Many included studies did not use standardized visual impairment definitions, and routine inpatient care may not consistently document patients' baseline vision, access to glasses, or need for visual accommodations. This limits certainty about the precise effect size but also highlights an important gap in delirium prevention research.

Prevention: These findings support incorporating vision-focused strategies into multicomponent delirium prevention. Simple interventions such as ensuring glasses are available, improving lighting, using large-print materials, reducing visual clutter, and adapting re-orientation for visually impaired patients may help address a potentially modifiable vulnerability.



CONCLUSIONS

Main conclusion: Visual impairment was consistently associated with increased odds of delirium across adult clinical settings, including overall and adjusted analyses.

Clinical implication: Routine recognition of visual impairment may help clinicians adapt delirium prevention strategies, including orientation, communication, lighting, and access to corrective lenses.

Future direction: Future studies should standardize visual impairment definitions and evaluate whether vision-specific delirium prevention strategies reduce delirium incidence or severity.

Low-cost strategies: Glasses nearby | Bright lighting | Large-print materials | Adapted re-orientation