

# SYSTEMATIC REVIEW: THE RELATIONSHIP BETWEEN HURRICANES AND EMERGENCY DEPARTMENT USE IN THE ELDERLY POPULATION



Public Health

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## BACKGROUND

Hurricanes are one of the most devastating and costly natural disasters to occur in coastal regions of the U.S.

Older adults have increased vulnerability to injuries during disasters because of their reduced physical flexibility, decreased sensory responsiveness, medical conditions, and socioeconomic challenges that may prevent preparedness capabilities during disasters

Emergency department use during a hurricane has the potential to strain resources if not adequately prepared

It is important to use data-driven evidence to guide the federal, state, and local governments on **disaster preparedness resources** to support the older population in the healthcare system

## STUDY OBJECTIVE

To investigate the relationship between hurricanes and emergency department utilization in the elderly population.

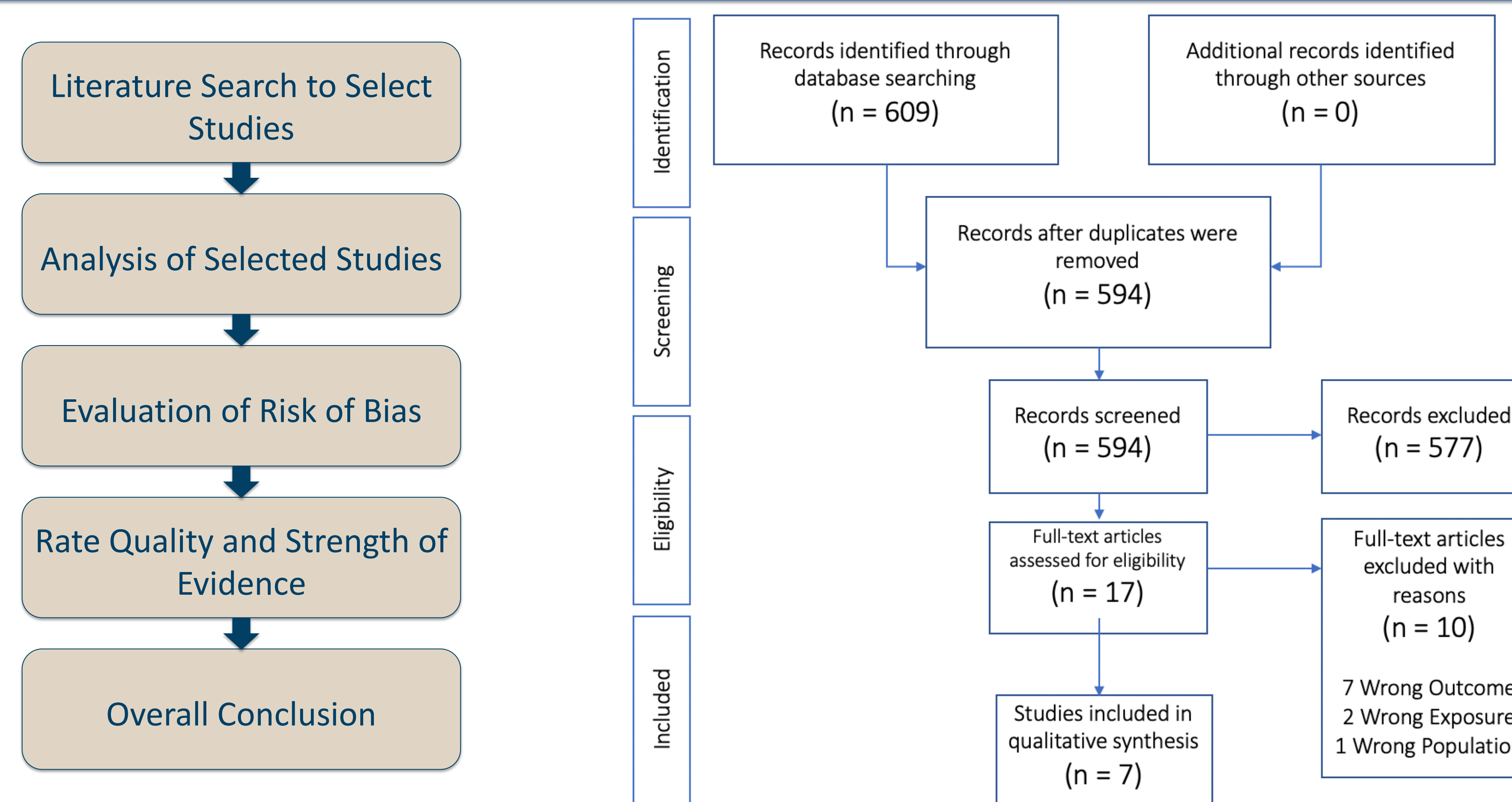
**Population:** Adults aged 65+

**Exposure:** Hurricane on East/Gulf Coast

**Comparator:** Varies

**Outcome:** Emergency Department Visits

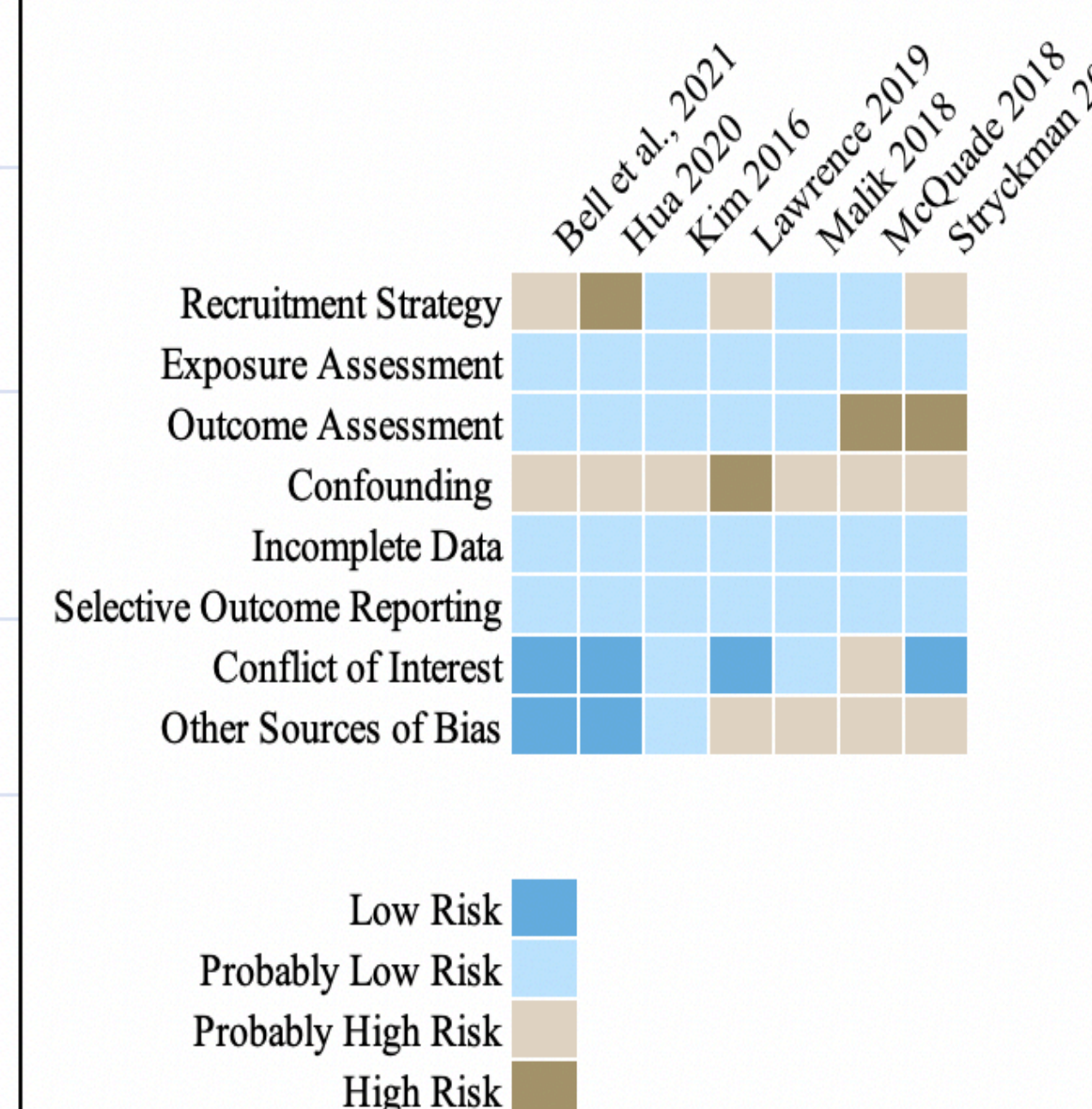
## METHODS



## RESULTS

Article	Population	Exposure	Outcome Assessment	Comparator	Location
Bell et al., 2021	Medicare Beneficiaries	Hurricanes Frances, Ivan, Wilma, Rita, Katrina, Ike, Irene, and Sandy	All-cause hospitalization	Self-Case Controlled	Various
Hua et al., 2020	Medicare FFS beneficiaries in assisted living communities	Hurricane Irma	Number of emergency department visits	Admissions in 2017 vs 2016	Florida
Kim et al., 2016	Residents of Nassau and Suffolk counties in Long Island	Hurricane Sandy	Number of emergency department visits	Admissions from pre- and post-sandy	Long Island, New York
Lawrence et al., 2019	Dual-eligible Medicare-Medicaid beneficiaries	Hurricane Sandy	Outpatient, hospitalization, and emergency department visits	Admissions during the identical time window in the 5 years before and 1 year after	New York
Malik et al., 2018	Adults aged 65 years and older	Hurricane Sandy	Emergency department visits and inpatient hospitalizations	Antecedent 2012 baseline	New York City
McQuade et al., 2018	Patients aged 65 and older	Hurricane Sandy	Emergency department or hospital admission	Prior and subsequent years	New Jersey
Stryckman et al., 2017	Patients admitted to an emergency department or hospital	Hurricane Sandy	Hospital admissions through the E.D. pre and post-storm	All states except F.L., SC, NC, VA, DC, MD, DE, PA, NY, CT, RI, MA, NH, and VT during the previous week and equivalent weeks the year prior.	New Jersey

Risk of bias was rated **probably low risk** across most studies. Risk of bias was probably high risk for recruitment strategy and confounding



## CONCLUSIONS

From the seven studies analyzed, there was a **sufficient evidence** suggesting that exposure to a hurricane led to an increase in emergency department visits in the elderly population

These studies accounted for different storms, different locations and different time periods and found the similar results for each population studied

Emergency department care is unlikely to decrease in the future given the prediction of climate change effects on hurricanes

In lieu of pursuing this exact research question, further research should be placed into developing an effect disaster preparedness response and understanding the chronic effects of hurricane exposure on both mental and physical health

## ACKNOWLEDGEMENTS

I extend my thanks to Dr. Price for his guidance and support in conducting this systematic review, and to my peers for their feedback and support.

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