



# A Systematic Review of Adverse Childhood Experiences and Resilience on High-Risk Behavior, Emotional and Somatic Symptoms

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## Abstract

**Objectives:** Harmful effect of adverse childhood experiences(ACEs) on health has been reported. This systematic review was conducted to focus on the impact of ACEs and the protective effect of resilience.

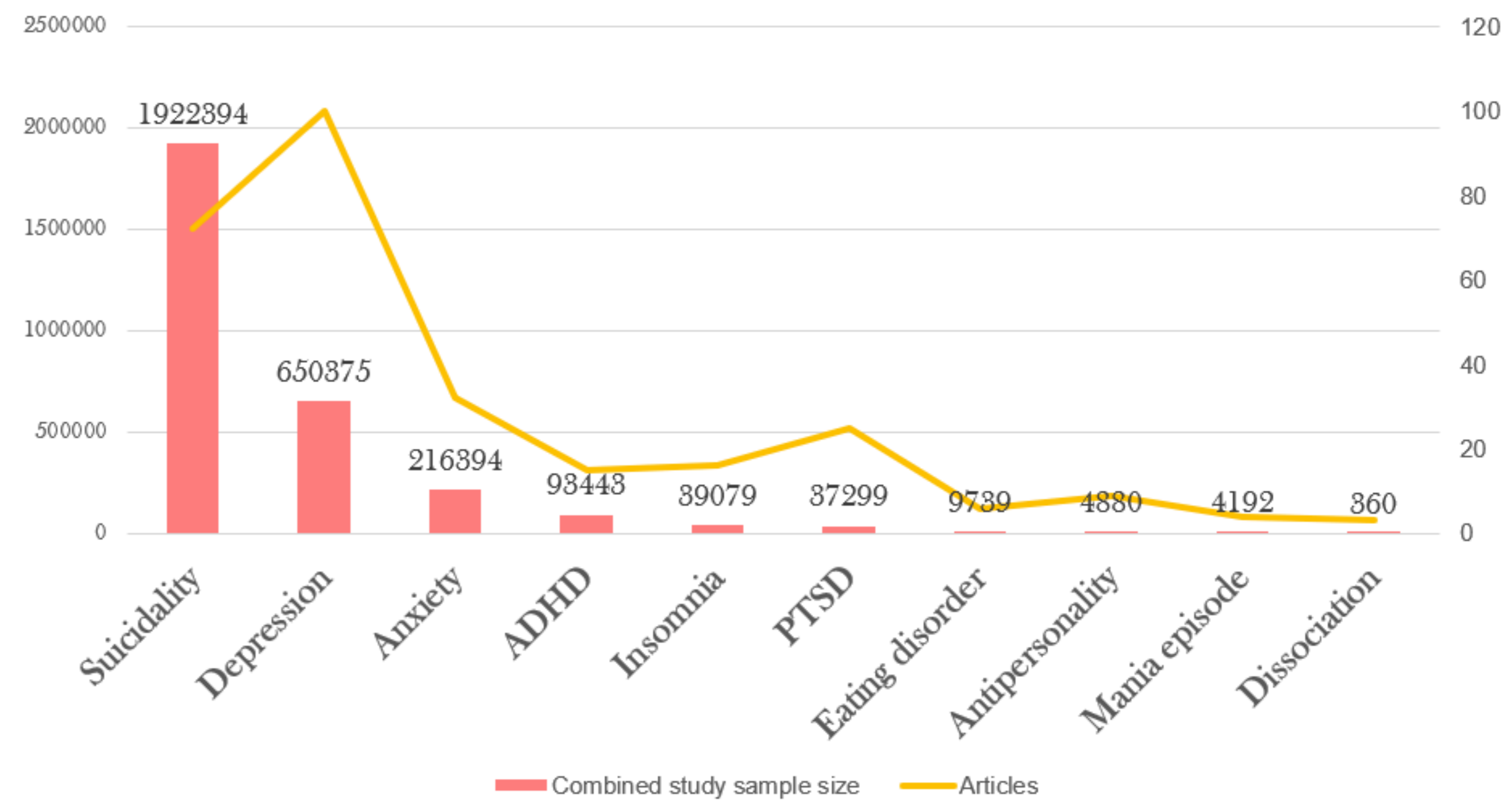
**Method:** A computerized search was performed for all publications available from 2015 up to May 25, 2021 through Pubmed, Web of science, PsychInfo, limited to literature in English and human studies. The search terms are ACE, adverse childhood experiences, childhood adversity, childhood abuse and resilience. Inclusion criteria were: 1) studies with outcomes of ACEs; 2) participants experienced ACEs prior to 18 years-old; 3)the publications were in peer-reviewed journals; Exclusion criteria were: 1) studies only with biomarkers changes; 2) studies with obscure symptoms.

**Results:** Four hundred and forty-eight studies, with a total of 38,906,358 participants and provided risk estimates of 29 outcomes, were included from the 2637 references identified by the search. Individuals with ACEs are at risk for emotional symptoms (associated with depression, suicidality, anxiety and attention deficit hyperactivity disorder), somatic symptoms (obesity, cardiovascular disease, asthma, and diabetes), and high-risk behaviors (violent behaviors, low educational attainment, criminal convictions and substance use disorders). Meanwhile, resilience was associated with reduced health risk and buffered risk of ACEs.

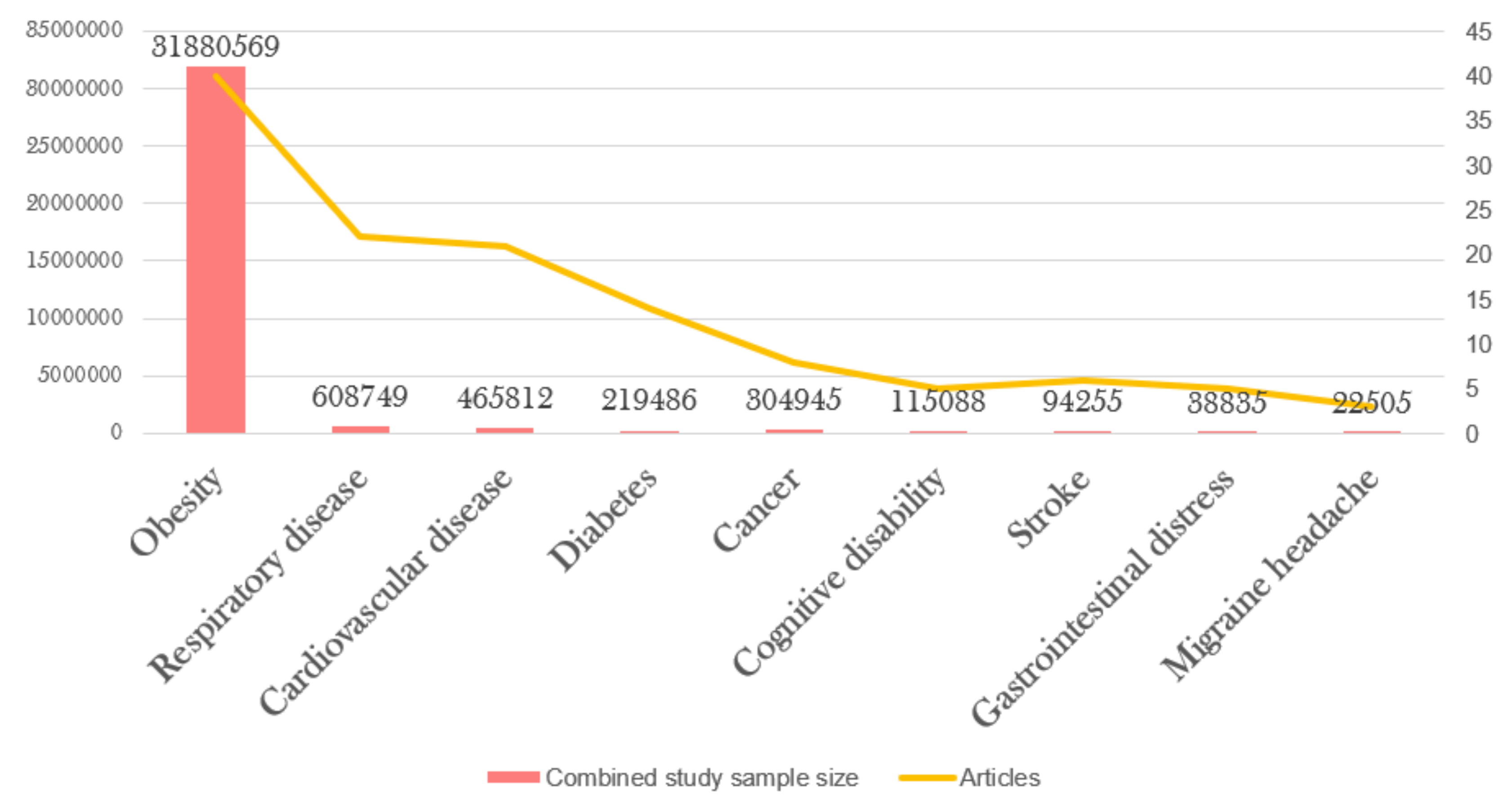
**Conclusion:** ACEs are associated with poor health outcomes, especially emotional and somatic symptoms and high-risk behaviors, in adolescents and adults, while resilience counteracts such effects.

## Results

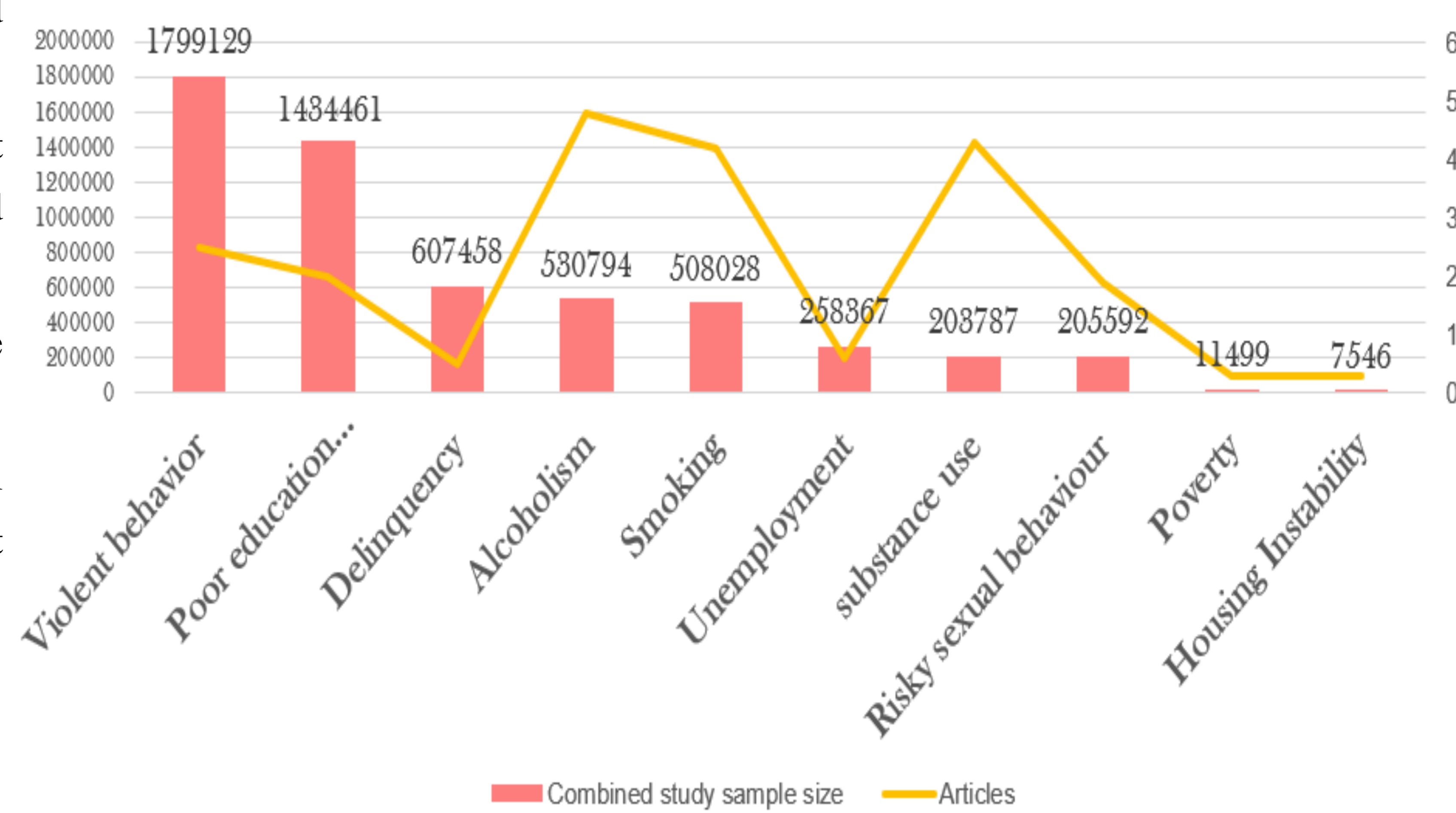
### Outcome of Mental Diseases



### Outcome of Somatic Symptoms



### Outcome of High-Risk Behavior



## Background

- ACEs encompass various forms of physical and emotional abuse, neglect, and household dysfunction experienced before the age of 18.
- Prevalence: About 70% of elementary school students in Taiwan reported that they had experienced at least one type of ACE, and nearly 30% reported they had experienced four or more types of ACEs.\*
- The Centers for Disease Control and Prevention (CDC) estimates that the lifetime costs associated with child maltreatment at \$124 billion.
- It has been suggested that dysregulation of the hypothalamic–pituitary–adrenal axis may be an mediator of the relationship between early adversity and adult disease.

## Method

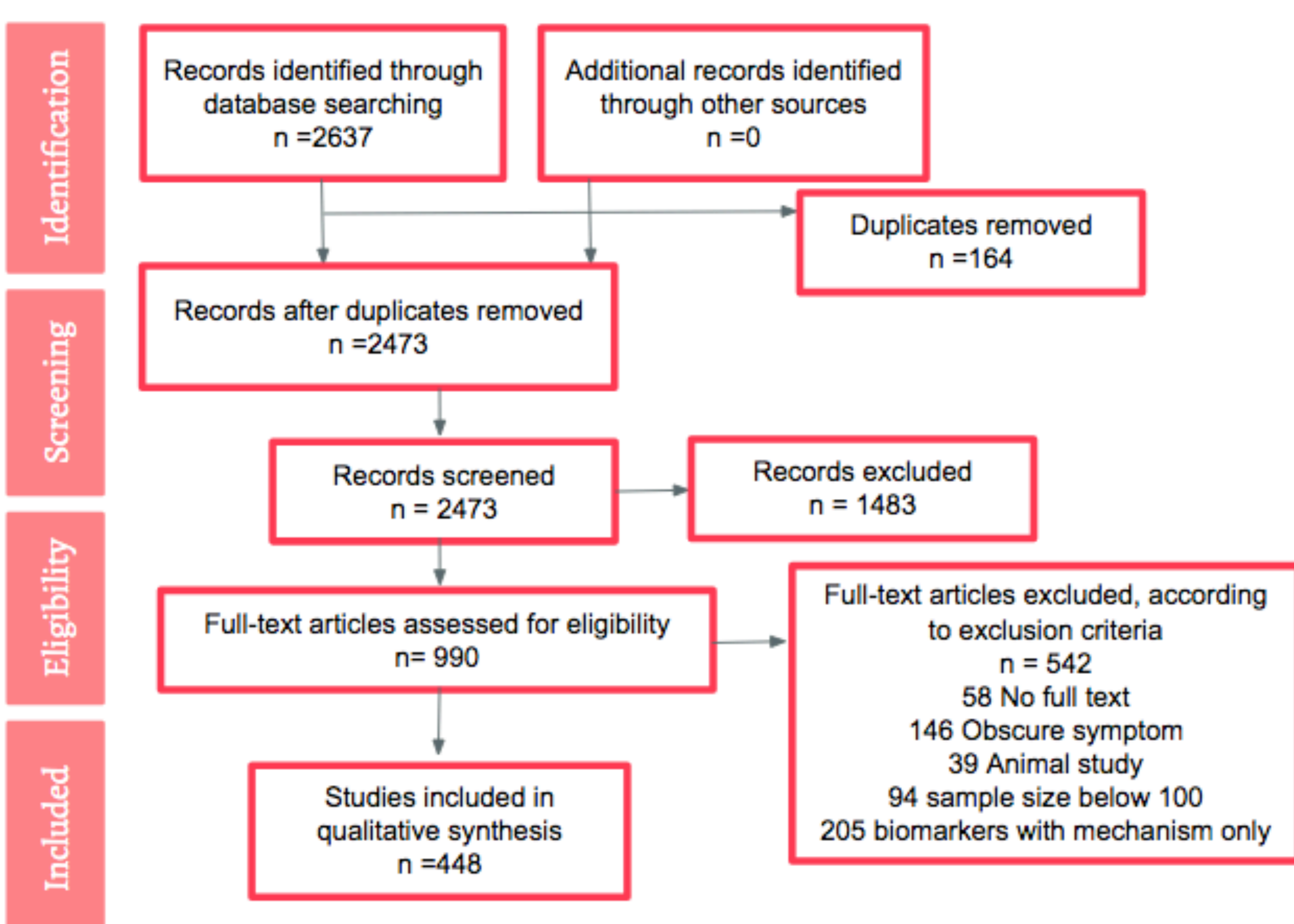


Figure 1. Study selection flow chart.

Record excluded included review or case report, sample inappropriate, or no relevant ACE.

## Reference:\*

Feng, J. Y., Hsieh, Y. P., Hwa, H. L., Huang, C. Y., Wei, H. S., & Shen, A. C. T. (2019). Childhood poly-victimization and children's health: A nationally representative study.

Factors of Resilience	Subgrouping of each factors	Articles	Combined study sample size
Individual factors	Personal Strength	3	1188
	Social Competence	3	1518
Familial factors	Family Cohesion	5	2682
Community/Society factors	Social Resource	5	2002
Articles with all factors discussed		5	2952

## Conclusion

- ACEs have been associated with health consequences including somatic and mental conditions, risk behaviors. By identifying and validating psychosocial and somatic risk factors and diagnostic markers one might improve the development of innovative treatment options for individuals suffering from ACE-related disorders.
- Resilience protects against ACE-associated poor health outcomes, thereby serving as a potential interventional target in populations with ACEs.