

Economic Burden of Esophageal Cancer: A Systematic Review of Global Evidence

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BACKGROUND

- Esophageal cancer (EC) is the sixth leading cause of cancer-related mortality globally and its incidence has risen in the United States in the past two decades^{1,2}
- Its prevalence differs across countries, but is most prevalent in South-east Asia³
- It accounted for an estimated 544,076 deaths globally in 2020³, contributing to significant economic burden for patients, caregivers and the society.
- Cost of illness studies, which are useful tools for policymakers, vary in the burden reported due to methodological differences^{4,5}

OBJECTIVES

- To systematically identify available evidence on the economic burden of esophageal cancer, summarize the cost of illness and describe the methodological differences and data sources utilized

METHODS

- We performed a comprehensive literature search on Pubmed, Embase, EconLit, and Cinahl from inception till December 28, 2022. Reference lists of eligible studies were screened to identify additional articles.
- Two reviewers independently completed the screening, study selection, data extraction and quality assessment. A third reviewer reconciled any differences.
- Study methodology details such as study design, approach, study perspective and patient identification method as well as cost (direct and indirect) components were extracted.
- All costs were reported in 2021 US dollars.

RESULTS

Table 1. Methodological Characteristics of Included Studies

Author; Country	Study Design; Approach	Study Perspective	Cost Type	Sample Size
North America				
Tramontano et al; USA	Retrospective; IB	NR	Direct medical	8,061
Yabroff et al; USA	Retrospective ; IB	NR	Direct medical	4,499
Soni et al; USA	Retrospective ; PB	NR	Direct medical	29
Kaye et al; USA	Retrospective ; PB	NR	Direct medical	8,566
Zaorsky et al; USA	Retrospective ; PB	NR	Direct medical	47,689
De Oliveira et al; Canada	Retrospective; IB	NR	Direct medical	4,349
Thein et al; Canada	Retrospective; IB	Payer	Direct medical	3,035
De Oliveira et al; Canada	Retrospective; IB	Payer	Direct medical	4,261
Europe				
Agus et al; UK	Retrospective; PB	Payer	Direct medical	205
Bachmann et al; UK	Prospective; PB	Payer	Direct medical	781
Hanly et al; Ireland	Retrospective; PB	NR	Indirect	336
Asia				
Li et al; China	Cross-sectional; PB	NR	Direct medical	1,261
Yang et al; China	Retrospective; PB	NR	Direct medical, direct non-medical and indirect	6,468
Guo et al; China	Cross-sectional; IB	Patient	Direct medical	14,967
Cai et al; China	NR	NR	Direct medical	NR
Hwang et al; Korea	Prospective; IB	Payer	Direct medical	1,436
Lai et al; Taiwan	Retrospective, PB	NR	Direct medical	13,564
Yang et al; China	Prospective; IB	Provider	Direct medical	NR
Han et al; Korea	Retrospective, PB	Societal	Direct medical, direct non-medical and indirect	NR
Cai et al; China	NR	NR	Direct medical	NR
Lee et al; Korea	Retrospective, PB	NR	Direct medical, direct non-medical and indirect	7,057
Huang et al; Taiwan	Retrospective; IB	Societal	Direct medical and indirect	18,191
Daroudi et al; Iran	Retrospective, PB	Societal	Direct medical, direct non-medical and indirect	68
Nahvijou et al; Iran	Retrospective, PB	Societal	Indirect	3,522
Rezaei et al; Iran	Retrospective, PB	NR	Indirect	4,845
Rohani et al; Afghanistan	Retrospective, PB	NR	Direct medical	293
Australia				
Gordon et al; Australia	Prospective, PB	Provider	Direct medical	1,100
South America				
Pinto et al; Brazil	Retrospective; IB	NR	Direct medical	35
De Carvalho et al; Brazil	Cross-sectional; PB	Societal	Direct medical	NR

Abbreviations: IB; Incidence-based; PB: Prevalence-based; NR: Not reported

Figure 1: PRISMA Flow Chart of Study Selection

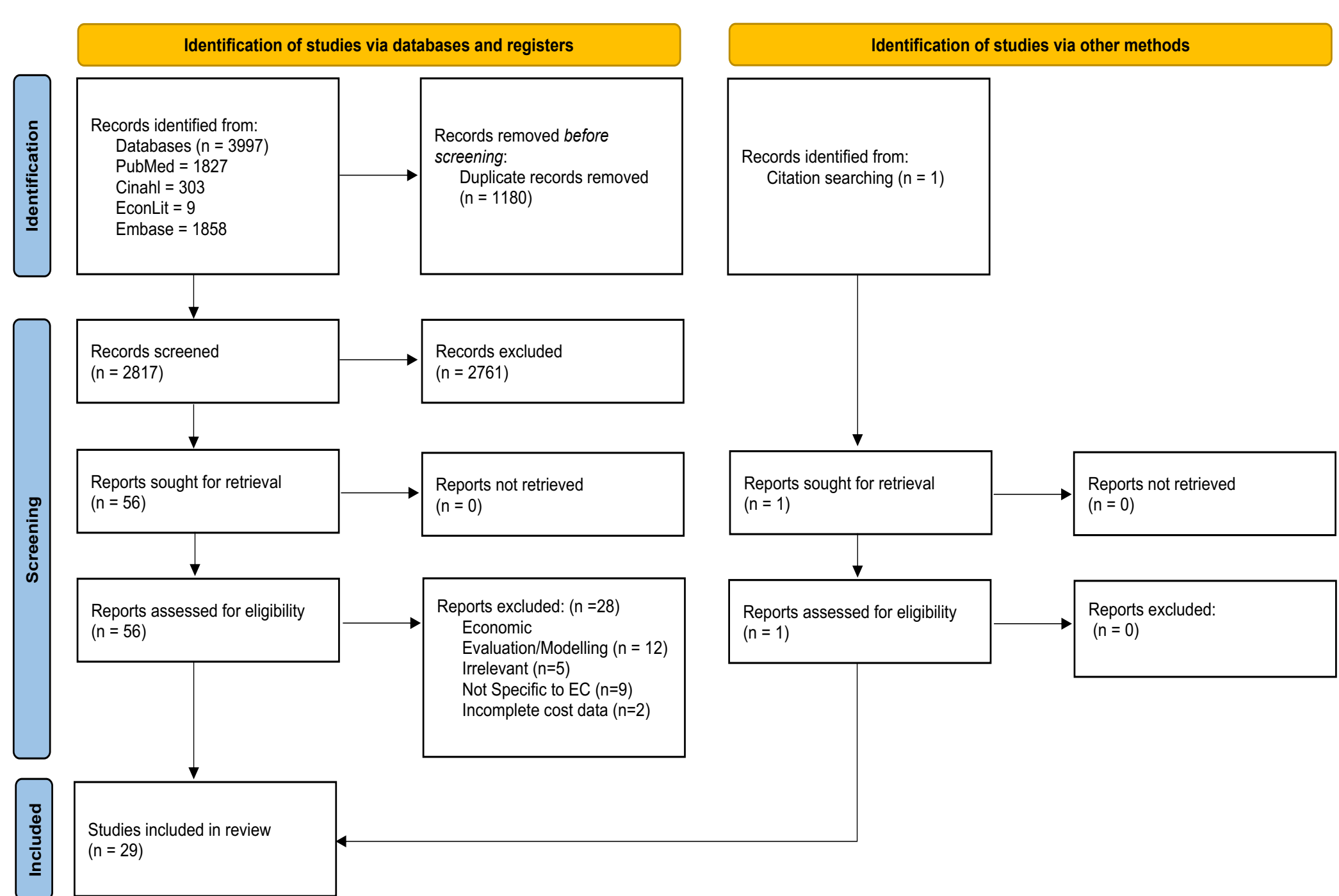
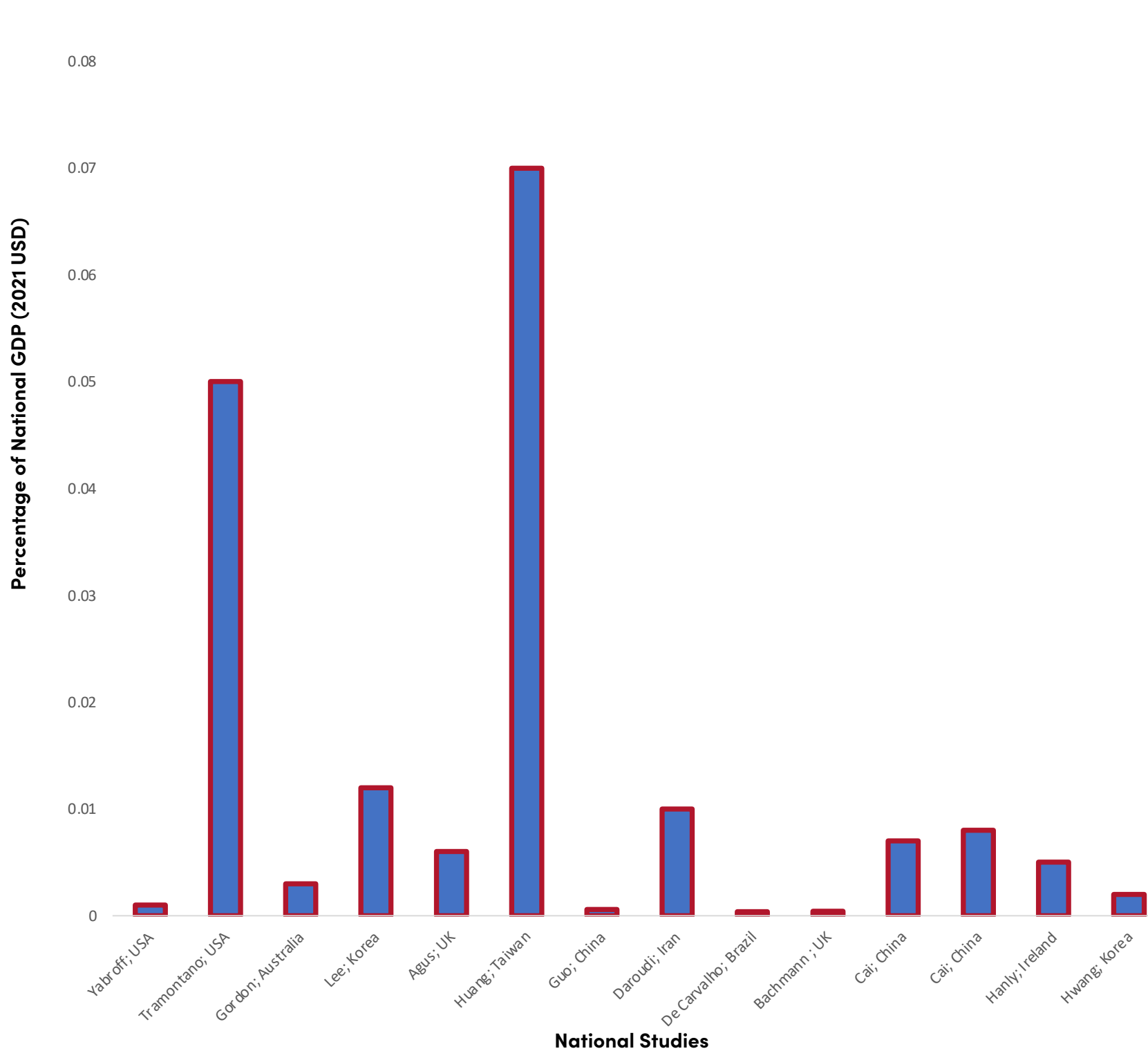


Figure 2: Total Cost as a Percentage of GDP (2021 USD)



- Most studies adopted a retrospective design (n=22; 75%) and a prevalence-based approach (n=19; 65%). Societal and payer perspectives were frequently utilized in the studies (n=10, 34%), but over half of the studies (n=16; 55%) did not clearly state the perspective.
- The human capital approach was used for studies that estimated indirect costs (n=8; 28%); however, many studies reported only direct medical costs of EC. In general, databases and literature were the most common data sources used.
- The total annual cost estimates reported for national studies ranged from US\$6.64 million to US\$10.48 billion. The economic burden of EC was estimated to range from <0.001% of the Gross Domestic Product in Brazil to 0.07% in Taiwan.

CONCLUSION

- Despite significant variations in methodologies and cost components in the reviewed studies, the results suggest that the esophageal cancer imposes moderate economic burden on the society
- The economic burden might be underestimated due to missing indirect costs
- There is need to capture all relevant cost components, including indirect costs to accurately capture the economic burden of EC



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REFERENCES



Presented at ISPOR 2023, Boston, May 7-10, 2023