Systematic Review of Patient Preferences Studies for Drugs and Medical Devices Using Discrete-Choice Experiments

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OBJECTIVES

- We conducted a systematic review to examine the publication trend and study design of studies conducted discrete-choice experiments (DCEs) to evaluate patient preferences for drugs and medical devices in healthcare.

METHODS

- Search Strategy: We searched PubMed, Cochrane, and Embase using the index terms "patient preference" and "discrete choice experiment" on September 6, 2024.

- Inclusion/Exclusion Criteria: We included studies that used DCE as the primary approach to assess patient preferences for drugs or medical devices from related patients. Articles in languages other than English and those presented as comments, editorials, reviews, letters, or abstracts were excluded.

- Data Extraction: Extracted data included author, publication year, study subject(e.g., medicine, medical device), region(e.g., Europe, North America, Asia, others), funding source, analysis method(e.g., conditional logit model, mixed logit model, etc.), and attributes (e.g., effect, adverse event, convenience, cost, others/not reported (NR)).

- Statistical Analysis: The analysis encompassed publication trends, and trends by research characteristics (e.g., region, funding source, and analysis methods used). We applied the Mann-Kendall Trend Test to analyze publication trends over time. Additionally, we used the Fisher's Exact Test to compare the distribution of included attributes (e.g., effect, adverse event, cost, and convenience) across different studies, with a significance threshold of p = 0.05 and 95% confidence intervals.

RESULTS

- A total of 2,281 records were identified across PubMed, EMBASE, and Cochrane databases, with 925 duplicates removed. Following abstract screening of 1,896 records and full-text screening of 603 articles, 377 studies met the criteria for this review.
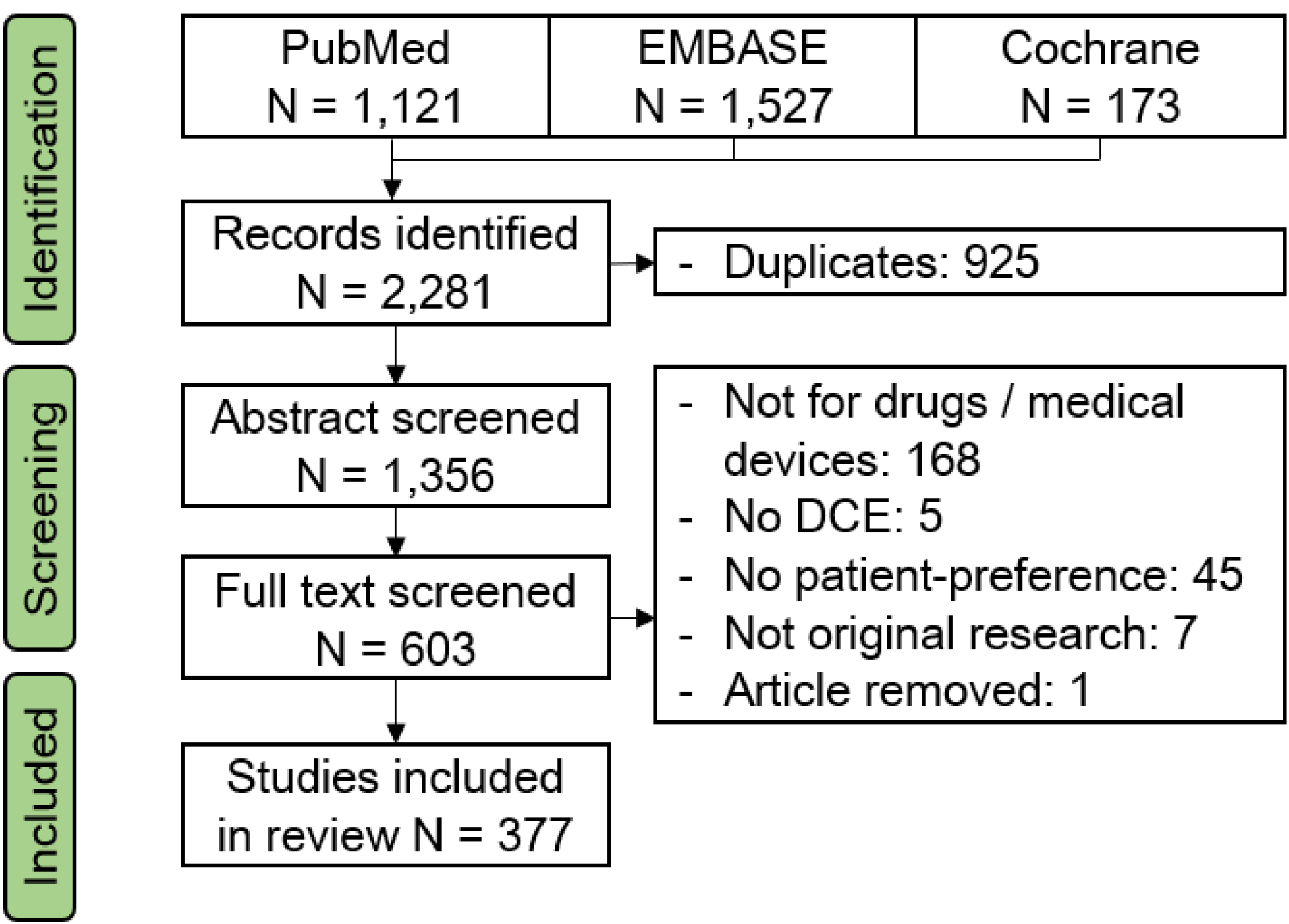

Figure 1. Flow chart of systematic review

1. Research Publication Trends

- The total number of studies were counted from 2004 to 2024. When adjusting the number in 2024, the number of included studies has rocketed since 2015, increased steadily over time (P<0.01).

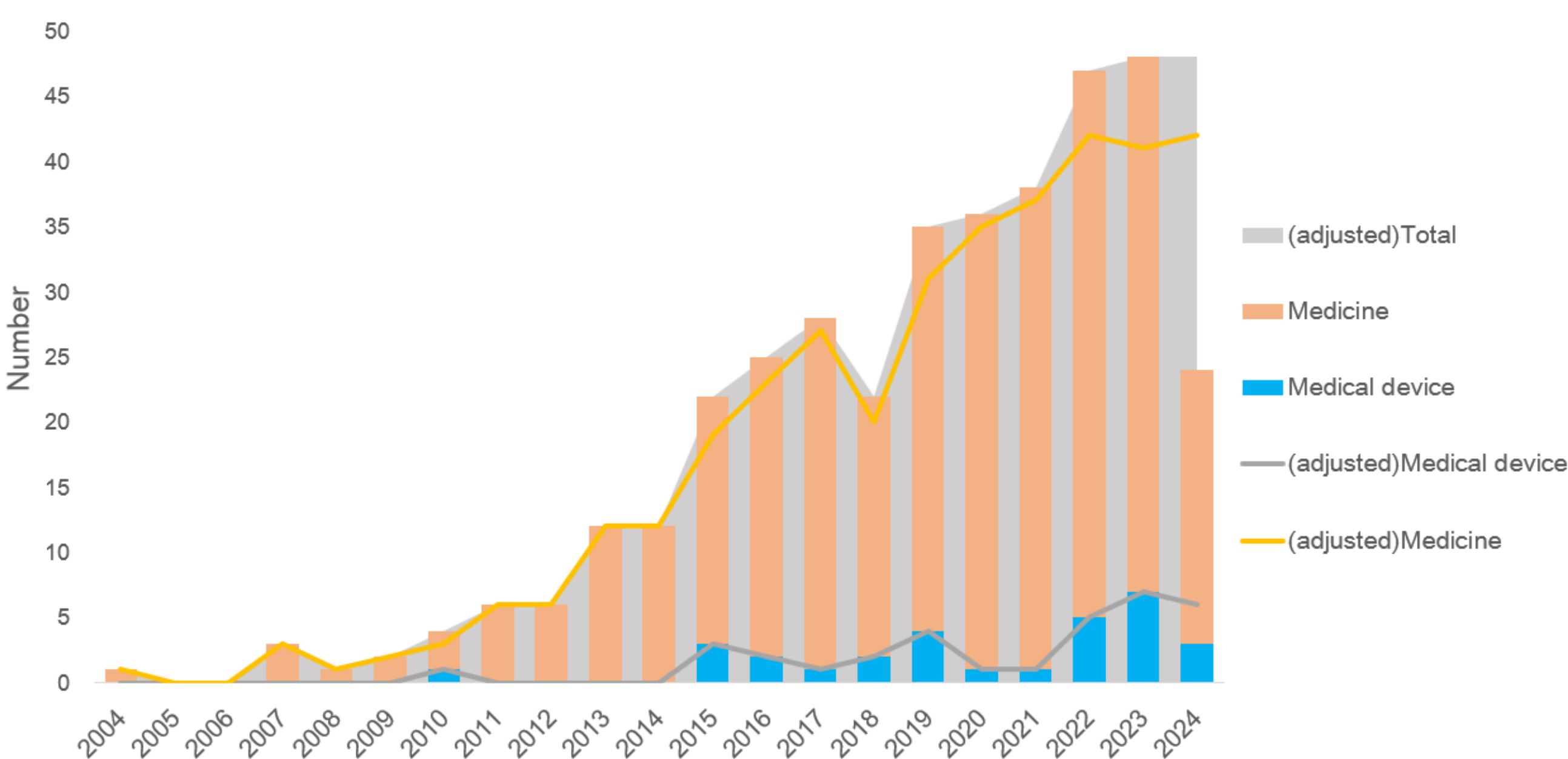- Research subjects were mainly Medicine (90.7%) across all studies.

Figure 2. The number of research publications

2. Analysis of Research Characteristics

- Region: Europe and North America has been the mainstay. Asia appeared late in 2012 but had shown a significant increase in the proportion afterwards (p<0.01).

- Funding Sources: Research funded by public sources first appeared in 2009, accounting for 24.4% of studies. The publication of public funded studies had shown a significant increase over time (p<0.01).

- Analysis methods: Studies conducted by Latent Class Model (p=0.047) and Bayesian model (p<0.01) had been significantly increased.
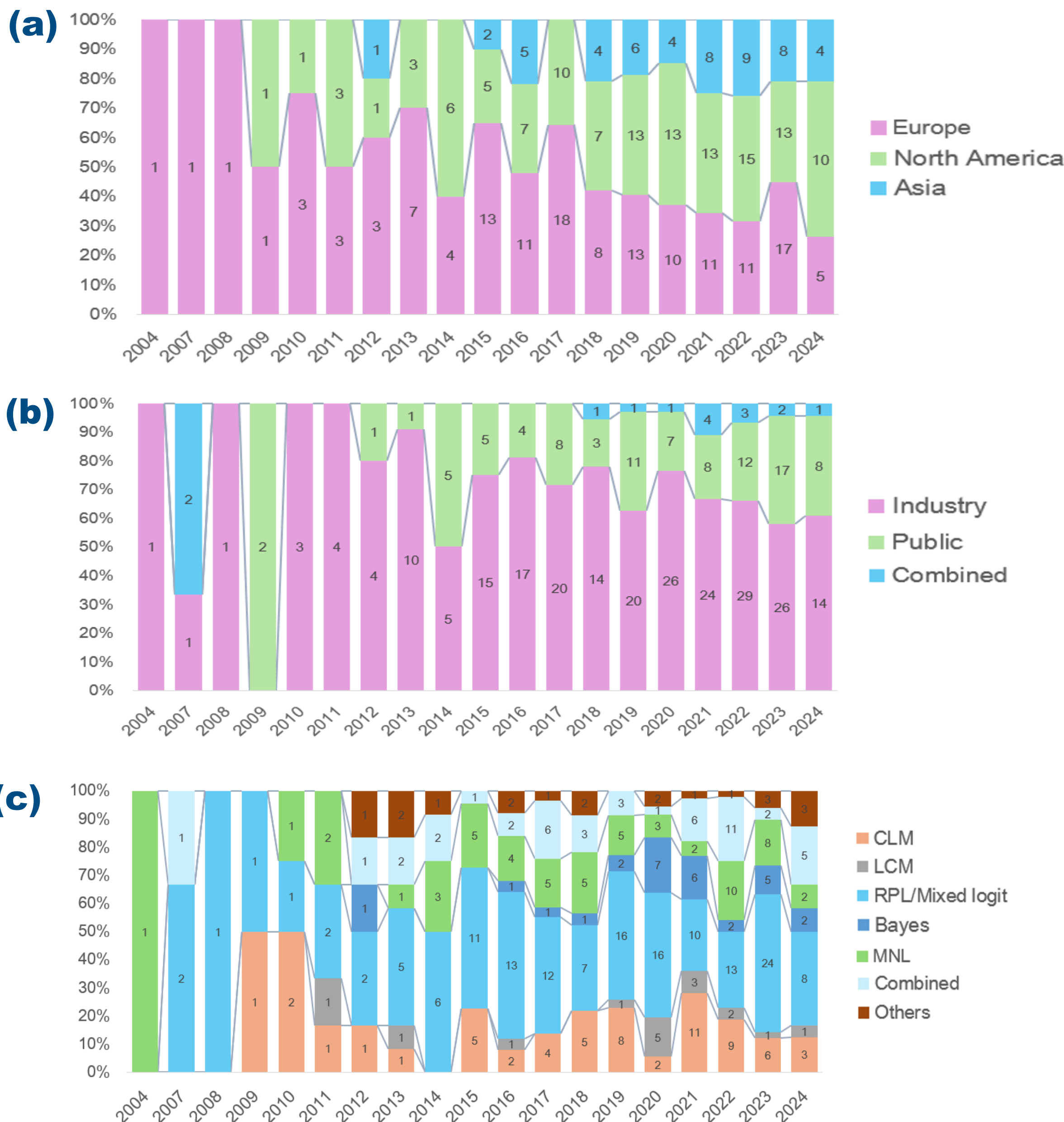
CLM - Conditional Logit Model; LCM - Latent Class Model; RPL/Mixed Logit – Random Parameters Logit / Mixed Logit Model; Bayes - Bayesian Method; MNL - Multinomial Logit Model)

Figure 4. Trend in the Number of Publications by (a) Research Region; (b) Funding Source; (c) Analysis Method

3. Comparison of Included Attributes

- Compared to the studies done on medical devices, those of medicines were more likely to include attributes related to benefit (P<0.01) and adverse events (P=0.04).

- According to funding sources, public funded studies were more likely to include attributes related to cost compared to industry funded studies (P<0.01). On the other hand, industry funded studies were more likely to include attributes related to convenience (P=0.013).
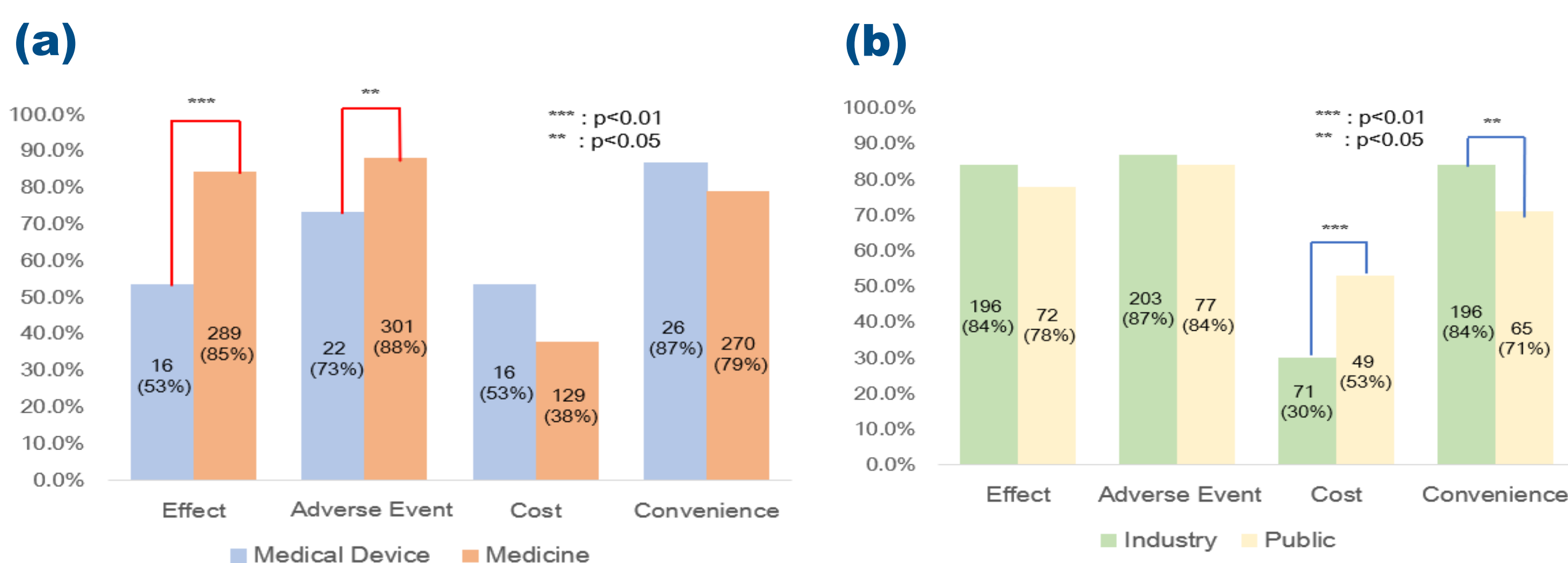

Figure 3. Number of Included Attributes by (a) Medicine and Medical Device Research; (b) Funding source

DISCUSSIONS & CONCLUSIONS

- This study comprehensively and systematically reviewed DCE studies on patient preference. Since 2015, a notable increase in studies on medicine reflects expanding global interest, particularly in Europe and North America, with Asia emerging as a strong contributor since 2012.

- Compared to medical device studies, medicine-focused research more frequently includes attributes related to benefits and adverse events. There is a need for future reviews that include more studies on medical devices.

❖ **REFERENCES**
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