EE616

# CARDIOMETABOLIC DISEASES PREVENTION POLICY MODELS: A SYSTEMATIC REVIEW

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## Introduction

- Cardiometabolic diseases (CMDs) are the leading cause of disability and mortality, as well as contributing to rising healthcare costs worldwide.[1,2]
- To assess the best intervention, applying modelling approaches has proven beneficial to assist decision-making processes in public health and policies at various levels.[3,4]
- Several policy/decision models have been developed for CVD and T2DM, however, those models were developed for the management of patients with high risk of CVD or T2DM, or specific populations with single a CMD disease and focused on the results of economic evaluation studies rather than modelling appraisals.

### Aims

1. Provide a comprehensive overview of CMD policy models.
2. Conduct a critical appraisal on CMD policy models and its application for primordial prevention programmes.

## Methods and Materials

The preferred reporting items for systematic reviews and meta-analyses (PRISMA) guidelines were followed (registration number **CRD42022354399)**

### Eligibility criteria

| Inclusion | Exclusion |
|---|---|
| ▪ Adult population | ▪ Clinical studies, cell and animal studies |
| ▪ Models starting without any CMDs (disease free); could accommodate both health and economic outcomes | ▪ If they started with CMD and have only been for specific subgroups |
| ▪ The model could predict the long-term/lifetime outcomes (>10 years) and represents disease progression on CVD and T2DM; | ▪ Assessed the accuracy or cost-effectiveness of diagnostic tools, only focus on primary prevention with medication (i.e: statin use) |
| ▪ Limited to regulations/policy for population dietary targeting the general population or population-based prevention | ▪ Only assess the impact and association of specific conditions on CMD prevalence such as aging population, obesity, race etc. |
| ▪ Articles published in English | ▪ Only reported effectiveness |
| | ▪ Published as presentations, abstracts, commentaries, letters, and review |

### Search Strategy & Selection

- **Publication period**: 1st January 2000- 6th December 2022
- **Databases**: MEDLINE (Ovid), EMBASE (Ovid), CINAHL, Google Scholar, and Open Grey
- Medical Subject Heading (MesH) applied

### Data Extraction

- **Data extraction** : standardized spreadsheet table
- 20% double checking extraction

### Quality Appraisals

- Assessed using the Phillips et al. checklist[5] by three independent reviewers (SP, HF, YD).
- Disagreements resolved by seeking advice from co-authors (CG, GC, JL).

## Results

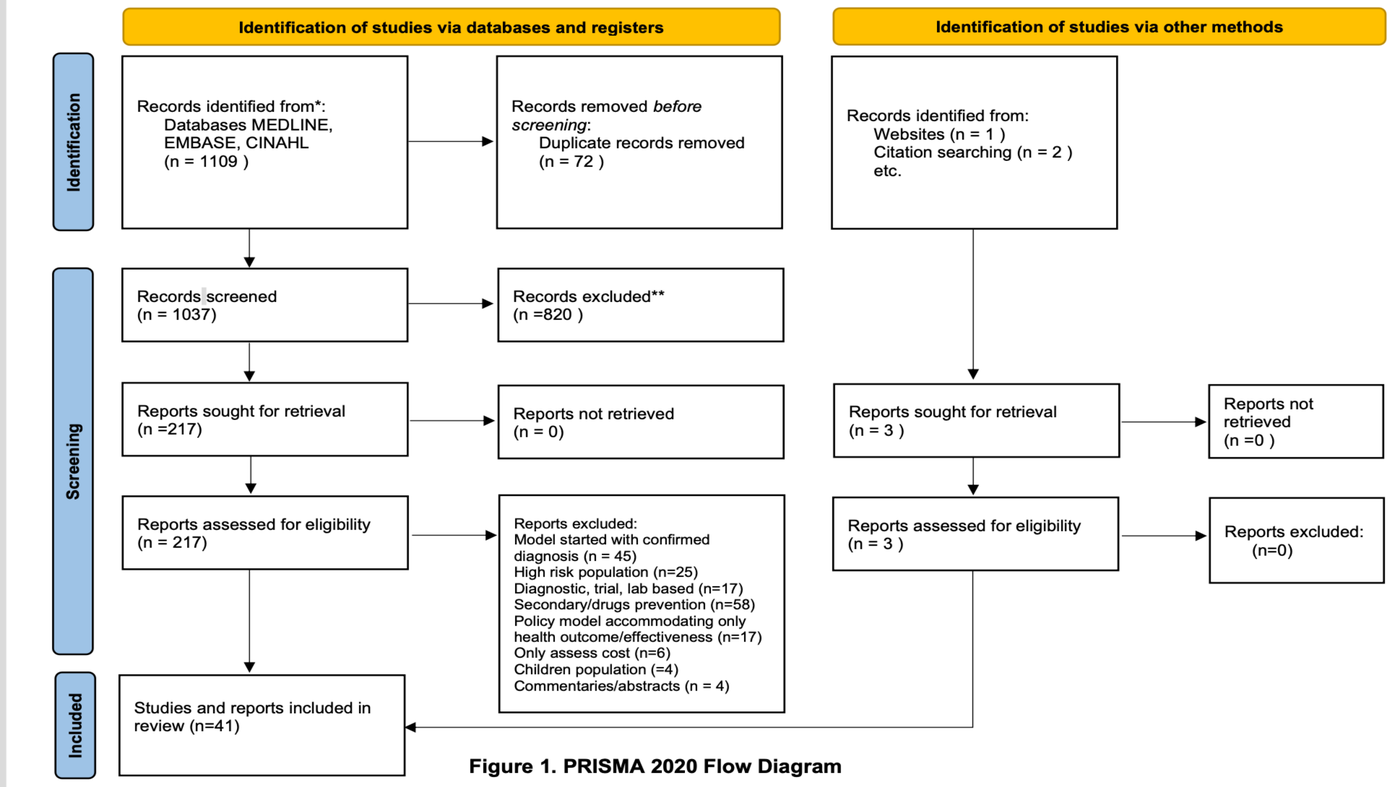


**Figure 1. PRISMA 2020 Flow Diagram**

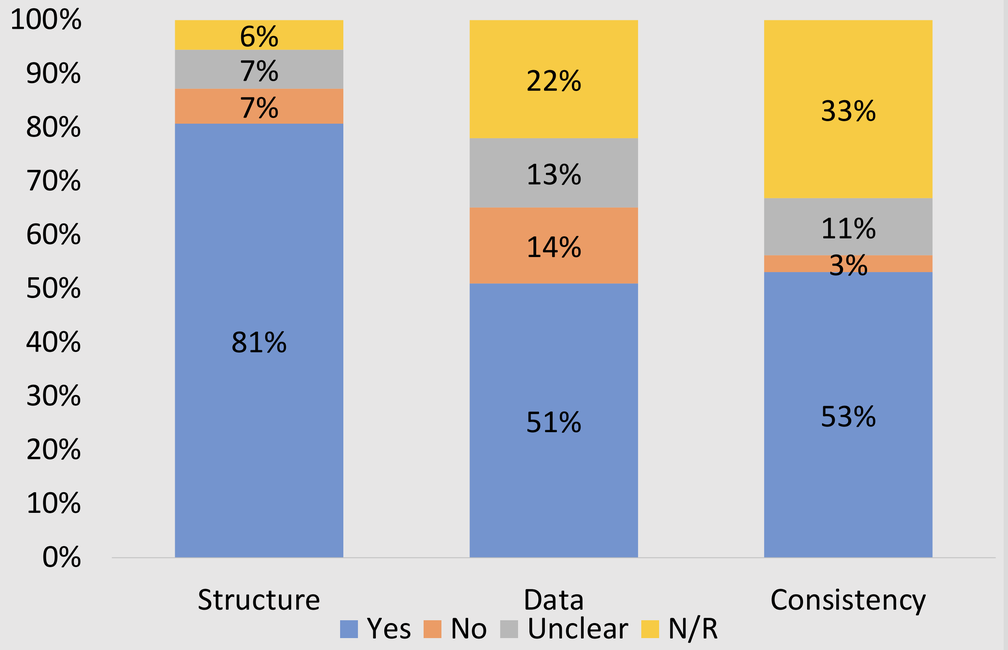


**Figure 3. Quality Appraisal Results**

**Countries (n=41)**: Australia (n=5), New Zealand (n=1), US (n=12), Canada(n=2), UK (n=7), Argentina (n=3), Netherland (n=1) , Mexico(n=1), Brazil (n=1), China (n=3), India (n=1), Japan (n=1), South Africa (n=1), multi countries including Syria (n=2)

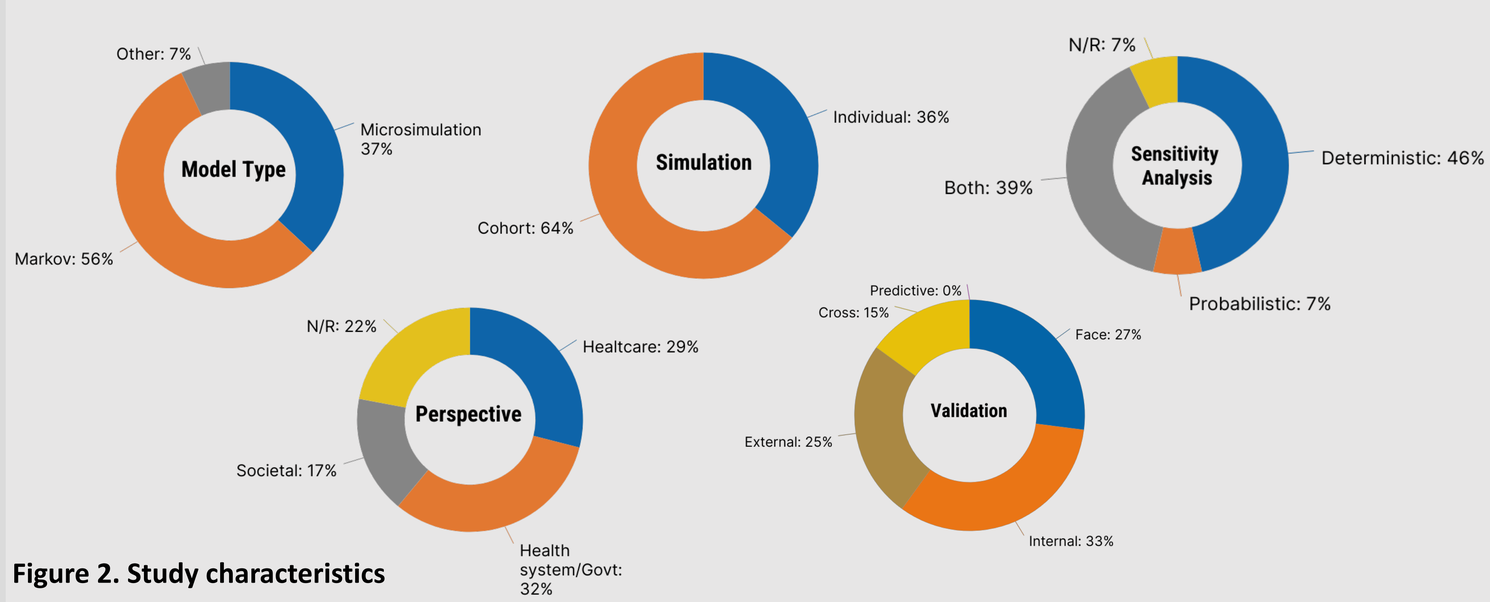


**Figure 2. Study characteristics**

## Conclusions

- Our systematic review not only summarised but also appraised the quality CMDs models. There is heterogeneous results in terms of model structure, simulation level, type of data used, as well as its overall modelling quality.
- Markov is the most common model applied, and cohort simulation is useful when the decision focused on the overall impact of a health intervention on a large population-level.
- Designing and documenting the conceptual model is important.
- If the data available, incorporating the modifiable risk overtime and considering societal perspective is potentially beneficial.
- Specifying model uncertainty, sensitivity analysis, and validation test is recommended.
- The use high quality and representative data is recommended.

## References

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