

# DOHaD in developing nations

## A systematic review exploring gaps in DOHaD population studies

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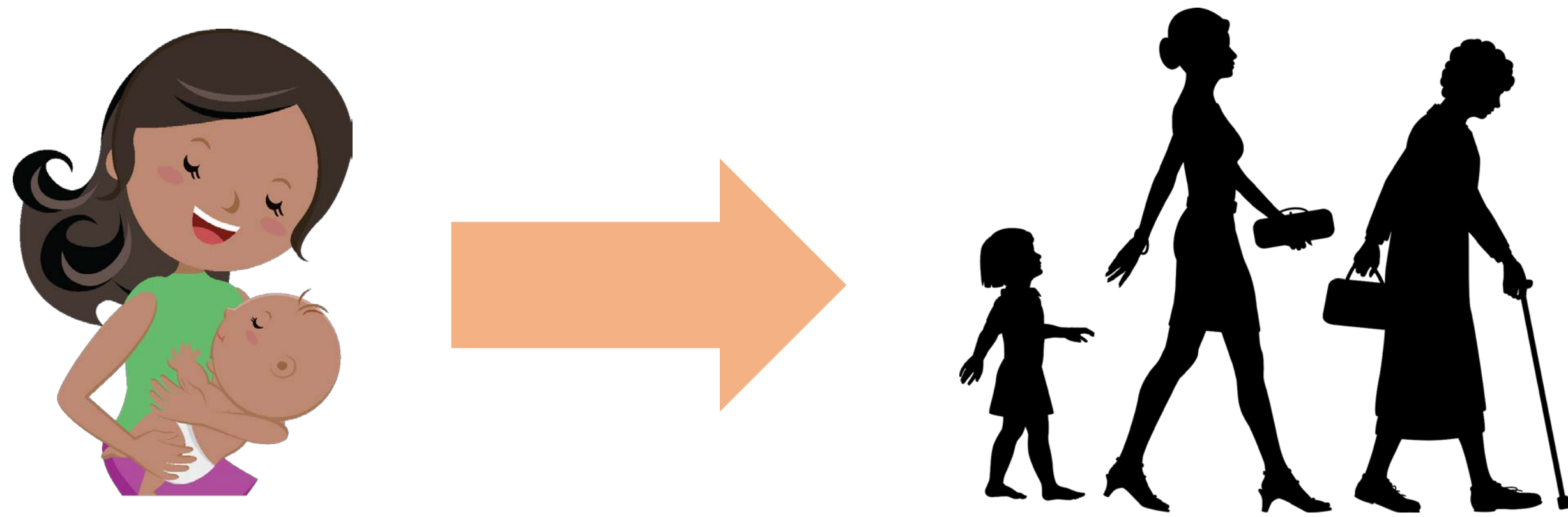
### What's the issue?

- Non-communicable diseases (NCDs) are the number one cause of death worldwide<sup>1</sup>.
- Over 85% of premature NCD-related deaths occur in low and middle income countries<sup>1</sup>.
- The DOHaD paradigm points to the potential of early-life intervention as an opportunity for optimising later-life health<sup>2</sup>.

### Purpose

Given the NCD burden in low and middle income countries, where are DOHaD investigations taking place and is this focus appropriate and ethical?

### Exploring what relationship?



- Maternal nutrition or body size during pregnancy
- Offspring birth size
- NCD incidence, mortality and related-risk factors  $\geq 2$ -years-old

### Methods

- Search for journal articles across Scopus, Medline and EMBASE, published up until May 23 2018.
- Keyword examples: DOHaD, FOAD, birth factor, early life, maternal diet, maternal nutrition, NCD, obesity, overweight, risk, diabetes, cardiovascular disease, diabetes, later life.

Table 1. List of inclusion and exclusion criteria

Inclusions	Exclusions
<ul style="list-style-type: none"><li>• Human subjects</li><li>• Original articles</li><li>• Observational studies</li><li>• English language</li></ul>	<ul style="list-style-type: none"><li>• Animal subjects</li><li>• Systematic reviews, meta-analyses, commentaries</li><li>• Experiments, RCTs</li><li>• Other languages</li></ul>

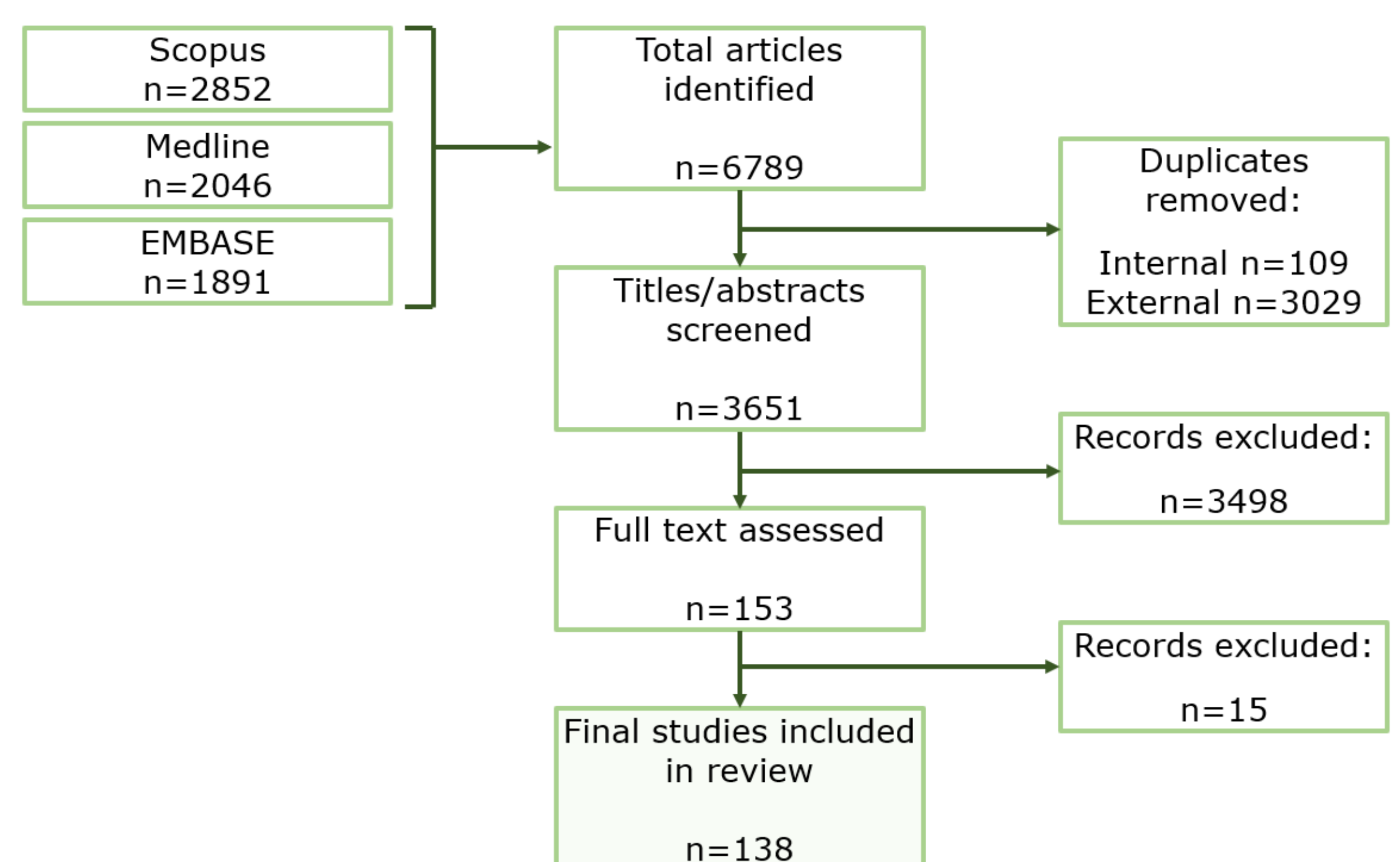


Figure 1. Flow diagram of systematic review methods using PRISMA guidelines

### Results

- The 138 articles included in this review were based on populations from 41 different countries.
- Distribution of studies by region:
  - 50.3% Western Europe
  - 15.7% East Asia
  - 12.5% North America
  - 8.1% Latin America & the Caribbean
  - 5% Australasia
  - 3.1% South Asia
  - 1.9% Middle East
  - 1.9% The Africas
  - 1.2% Central Asia

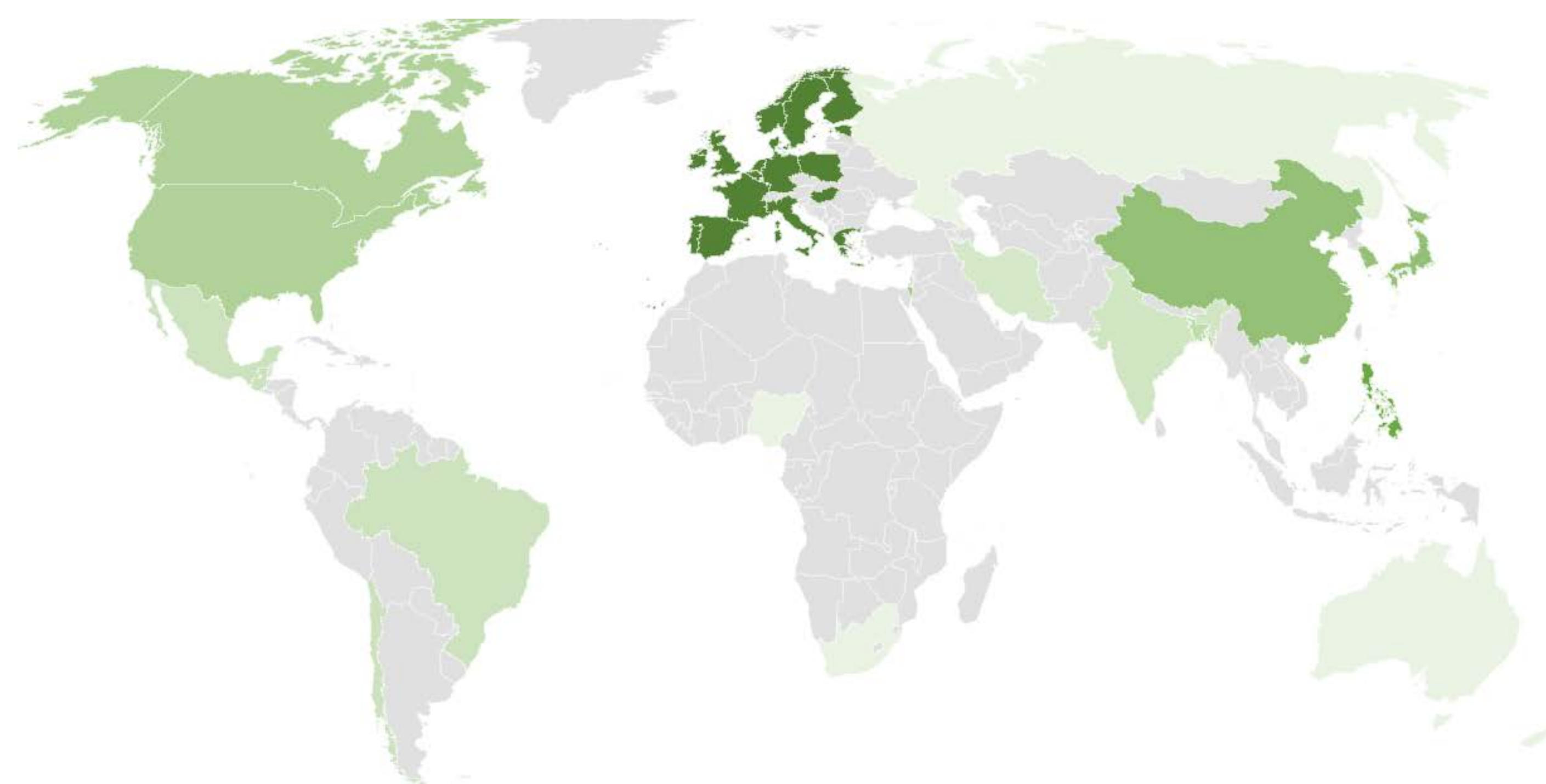


Figure 2. Location of DOHaD studies by region<sup>3</sup>

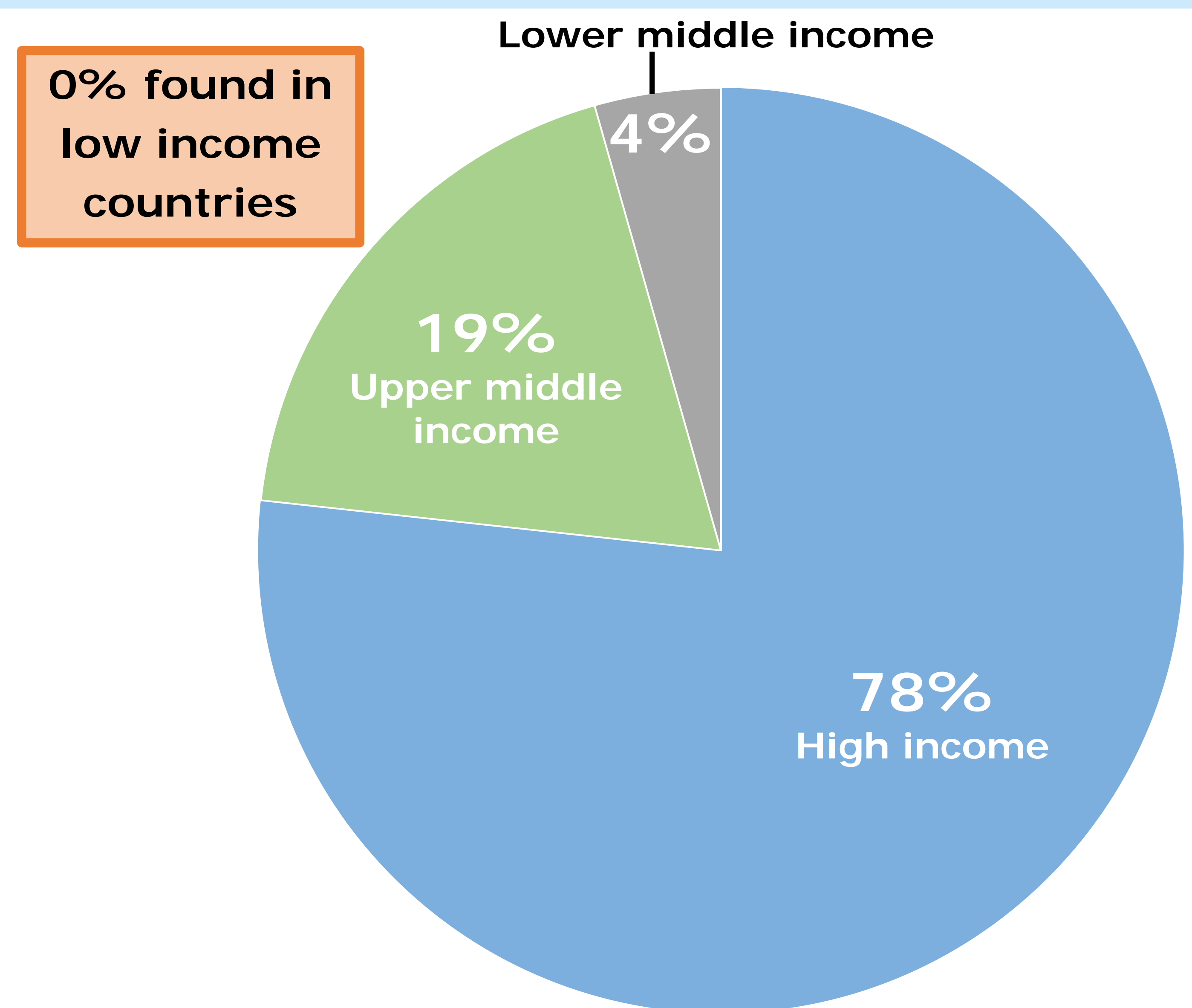


Figure 3. Location of DOHaD studies by World Bank income classification<sup>3</sup>

### Conclusions

- The majority of DOHaD research is based in high income countries despite the disproportionate NCD burden in low and middle income countries.
- To improve the health of vulnerable communities, there needs to be a global effort of focusing resources and research in these populations.

### Limitations

- The scope of this study does not include preconception health.
- Although the search terms were broad, it is possible potentially eligible studies have been missed.
- Only studies in the English language were included.

### References

1. World Health Organization. Noncommunicable diseases. Geneva: World Health Organization; 2017 [cited 2018 May]; Available from: <http://www.who.int/mediacentre/factsheets/fs355/en/>.
2. Hanson M, Gluckman P. Early developmental conditioning of later health and disease: physiology or pathophysiology? *Physiological Reviews*. 2014;94(4), 1027-1076.
3. The World Bank. World bank country and lending groups. Washington: World Bank Group; 2019 [cited August 2019]; Available from: <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>.