


# BMJ Open Health risk behaviours among migrants by duration of residence: protocol for a systematic review and meta-analysis

Lisa Berg <sup>1,2</sup> Nina-Katri Gustafsson,<sup>1,2</sup> Helena Honkaniemi,<sup>1,2</sup> Sol Pia Juárez<sup>1,2</sup>

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<sup>1</sup>Department of Public Health Sciences, Stockholm University, Stockholm, Sweden

<sup>2</sup>Centre for Health Equity Studies, Stockholm University/Karolinska Institutet, Stockholm, Sweden

## Correspondence to

Dr Lisa Berg; [lisa.berg@su.se](mailto:lisa.berg@su.se)

## ABSTRACT

**Introduction** International migrants' health has often been found to deteriorate in new countries, partly due to changes in health risk behaviours such as alcohol consumption, tobacco use, physical inactivity, and poor dietary habits. However, limited efforts have been made to comprehensively evaluate the extent to which migrants adopt unhealthy risk behaviours with longer duration of residence. This systematic review and meta-analysis will summarise evidence on international migrants' behavioural patterns by duration of residence in multiple country contexts.

**Methods and analysis** PubMed/MEDLINE, Web of Science and ProQuest databases will be searched for quantitative or mixed-method observational studies published in peer-reviewed scientific journals between 1 January 2000 and 31 December 2019. Studies comparing foreign-born individuals by duration of residence will be included. Information on study characteristics, descriptive statistics and measures of effect will be extracted. All included studies will be quality assessed using a modified Newcastle-Ottawa scale. The review will include narrative synthesis and, if sufficient and comparable data are available, random effects meta-analyses. The review will be conducted in compliance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines.

**Ethics and dissemination** Ethical approval is not required since previously published information from peer-reviewed studies will be assessed. The results of this review will be published in peer-reviewed journals and presented at scientific conferences. Other forms of dissemination will include communication to broader audiences using well-established channels, including through university-based press releases. Progress will be regularly updated on the International Prospective Register of Systematic Reviews to ensure full transparency.

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## INTRODUCTION

In migration and public health research, there has been a growing interest in health risk behaviours, including alcohol consumption, tobacco use, physical inactivity and poor dietary habits. Changes in such behaviours have been identified as a key cause of migrants' health deterioration with longer residence in several contexts (so-called

## Strengths and limitations of this study

- This systematic review will be the first to compile 20 years of evidence on international migrants' health risk behaviours by duration of residence, across multiple country contexts, migrant groups and types of health risk behaviours.
- This review will identify recognisable patterns of behavioural change by duration of residence for specific health behaviours as well as for combinations of them.
- A health equity perspective using the PROGRESS-Plus framework will be incorporated into the review to explore inequalities in health risk behaviours beyond migration status.
- The review will additionally compare findings by duration of residence with changes over migrant generations and alternative conceptualisations of behavioural change by acculturation.
- High heterogeneity across studies may entail difficulties for performing and/or interpreting the narrative synthesis and meta-analysis.

unhealthy assimilation).<sup>1</sup> Although the adoption of unhealthy behaviours among migrants has been extensively studied in the past decades, findings remain scattered across specific migrant groups (eg, Asian Americans<sup>2-4</sup> and Latin Americans<sup>5-8</sup>) and often focus solely on specific health behaviours (eg, smoking,<sup>2 3 5 9</sup> substance use,<sup>7</sup> alcohol consumption,<sup>4 6 8</sup> physical activity<sup>10</sup> and diet<sup>11</sup>). Beyond specific populations and outcomes, limited efforts have been made to comprehensively summarise the existing literature.<sup>12</sup>

Researchers have long been interested in the processes by which migrants become similar (i.e., assimilated) to the native-born population. Migrants' behavioural and lifestyle changes have largely been attributed to acculturation, or the gradual adoption of norms and habits characteristic of the receiving country.<sup>13-15</sup> Due to difficulties in measuring acculturation, researchers have often come to use duration of residence as a

proxy among first-generation migrants. However, beyond acting as an indicator of acculturation, duration of residence measures could serve to identify migration stages during which the host context is particularly influential on the adoption of health risk behaviours, which can in turn shape migrants' long-term health. The findings of the proposed review will help to better explain the role of receiving country factors in migrants' health deterioration, and how risk behaviours may be responsible for maintaining (or increasing) avoidable health differences between natives and individuals with a foreign background.

Duration of residence measures could arguably be employed as a public health instrument to increase understanding of migrants' health changes in the receiving context. Considering the social and economic implications of such large-scale health risks,<sup>16</sup> it should be a public health priority to confirm whether migrants generally adopt health risk behaviours with increasing time in the receiving country, and whether this pattern persists across subsequent generations. Furthermore, it is crucial to identify migrant groups that are particularly at risk of adopting negative health behaviours with longer residence based on their countries and regions of origin, that is, due to relevant premigration characteristics.<sup>17</sup> Together, the findings of the proposed review can help to identify opportunities for effective prevention of migrants' health deterioration over time.

## Aims

To the best of our knowledge, no systematic evaluation of the existing literature on migrants' health risk behaviours by duration of residence has been published to date. This systematic review and meta-analysis will aim:

**Aim #1:** To systematically review and synthesise the evidence on changes in health risk behaviours, that is, alcohol consumption, drug and tobacco use, physical inactivity and poor dietary habits, among international adult migrants by duration of residence.

**Aim #2:** To identify recognisable patterns of migrant health risk behaviours by duration of residence, and whether these tend to converge with those of the native-born population.

**Aim #3:** To examine how changes in health risk behaviours extend beyond duration of residence and across migrant generations.

**Aim #4:** To determine how changes in health risk behaviours by duration of residence compare to changes by acculturation.

**Aim #5:** To identify methodological pitfalls and knowledge gaps in the literature, as well as to provide specific recommendations for future research.

## METHODS AND ANALYSIS

This systematic review will be conducted in compliance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.<sup>18</sup>

The PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) checklist was followed when writing the protocol.<sup>19</sup>

## Selection criteria

Studies will be evaluated and selected according to the criteria outlined below.

## Study designs and types of studies

The systematic review will consider empirical studies utilising quantitative or mixed methods with observational (ie, cross-sectional, cohort, case-control, etc) data. Qualitative and non-observational studies (eg, randomised control trials) will be excluded. Only original articles published in peer-reviewed scientific journals will be assessed, thereby excluding grey literature such as government reports, institutional documents, dissertations (excepting sections published as peer-reviewed articles), books, book chapters, conference abstracts or proceedings, commentaries, blogs, newsletters or any opinion-based publications.

## Participants

This review will assess studies on international migrants, defined by the International Organisation for Migration as 'any person who changes his or her country of usual residence'.<sup>20</sup> Studies will include migrants across all countries/regions of origin and destination, irrespective of their reason for migration. The review will exclude studies on internal migrants; circular and return migrants; temporary migrants; and minority groups indistinguishable by their foreign-birth status. Only studies examining adults aged 18–64 years at the time of assessment (including individuals who migrated as children) will be included. Migrant groups which are, on average, above or below 18–64 years will be excluded, given that both youth and retirement represent unique life-course transitions that can lead to different lifestyle choices and behavioural changes influenced by factors beyond migration.<sup>21–23</sup>

## Exposure

Studies will be considered if they compare health risk behaviours among foreign-born individuals by duration of residence (ie, time spent in the destination country), including in reference to native-born individuals with or without foreign-born ancestry (ie, second, third or fourth-plus generations). From the identified studies, additional information on acculturation instruments based on alternative proxies (eg, language use, cultural orientation, etc) will be considered for first-generation migrants and analysed in relation to duration of residence measures. Studies will be excluded if no measure of duration of residence is included in relation to the outcome of interest.

## Outcomes

Studies will be included if they use measures of one or more of the following health risk behaviours: substance use, including alcohol, drug (ie, illicit substances), and

tobacco (ie, cigarettes, smokeless tobacco products) use; physical inactivity; and poor dietary habits. The systematic review will not include studies focusing on other types of health risk behaviours (eg, sexual risk behaviours); health outcomes of health risk behaviours (eg, cardiovascular health, related hospitalisations or mortality, etc.); consequences of health risk behaviours (eg, driving under the influence, criminality, etc); nor findings pertaining to attitudes or knowledge regarding health behaviours.

### Information sources and search strategy

The search will be conducted in the PubMed/MEDLINE, Web of Science and ProQuest databases. Only peer-reviewed publications written in English and published between 1 January 2000 and 31 December 2019 will be included. Searches will be performed using a basic string template combining search terms related to the population, exposure and outcome components of the research question (eg, 'migrant', 'duration of residence' and 'alcohol', respectively) using Boolean operators (AND, OR and NOT), truncation and wildcard limiters. Based on this template, individual search strings will be created for each database, using controlled vocabulary when appropriate. The search string template has been developed by a project team member with previous experience and expertise in systematic reviews, with input from the rest of the review team members. The search string template is included in online supplemental appendix 1. In addition to the search string, backward and forward citation searching will also be used to identify articles for potential inclusion.

### Identification and selection of studies

One reviewer will conduct the initial search in selected databases and import references into the EndNote X8 reference manager,<sup>24</sup> removing duplicates and non-relevant studies by language and publication type. The remaining references will be imported into the Covidence review toolkit.<sup>25</sup> Two reviewers will independently review and perform a first selection of relevant papers by title and abstract, then by full-length article, based on inclusion criteria. The final decision for inclusion or exclusion of the full-length articles will be taken jointly by these reviewers. Any conflicts in the title/abstract or full-text stages will be resolved in discussions with the other two review team members. Reasons for exclusion will be specified in the final selection of full-text articles. A PRISMA flow chart<sup>18</sup> will be used to document the full selection process.

### Data extraction

A piloted and standardised data extraction form will be used to extract relevant data from the selected studies (online supplemental appendix 2). Extracted data will include general information (eg, study authors, publication year, country), study characteristics (eg, study design and methodology, sampling characteristics), sample characteristics (eg, sample size, age range, gender proportion,

socioeconomic information) and details about exposure and outcome measures and statistical analyses (eg, analytical approach, effect measures, control variables). Data extraction will be done in review pairs, where data are extracted by one reviewer and verified by a second. Disagreements regarding missing or unclear information will be resolved in discussions with the other review team members, or by contacting study authors when necessary.

### Quality assessment

Each included study will be independently and systematically assessed for quality by two researchers, using modified versions of the Newcastle-Ottawa Scale for cross-sectional studies (based on original case-control version) and cohort studies.<sup>26</sup> A third researcher will independently check the assessments for completeness and accuracy. Disparities between quality ratings will be resolved in discussions between all review team members. The quality ratings will be used to guide data analysis and the interpretation of results from the meta-analyses.

### Data synthesis

A summary of descriptive statistics and measures of effect will be provided. Relative measures and associated significance levels of differences in health risk behaviours by exposure will be reported. Data will be synthesised and presented by type of health risk behaviour and population characteristics (eg, sex, country/region of origin and destination).

In order to apply an equity lens to the systematic review, the PROGRESS-Plus framework will also be used to synthesise results according to factors which stratify health inequities beyond migration status (eg, gender, socioeconomic status and age).<sup>27</sup> The framework has been recommended by the Campbell and Cochrane Equity Methods Group, in relation to the PRISMA-Equity Extension,<sup>28</sup> to be used when reporting on equity-focused systematic reviews.

### Narrative synthesis

Data will be synthesised using a narrative synthesis approach that follows the Synthesis Without Meta-analysis guidelines<sup>29</sup> as a complement to the PRISMA guidelines. This checklist was developed to promote transparency and guide clear reporting in systematic reviews using narrative synthesis of quantitative data. The purpose of the narrative synthesis will be to explore patterns of health behaviours based on exposure, especially when meta-analysis is not feasible.

### Meta-analysis

If sufficient and comparable information is available, random effects meta-analyses<sup>30</sup> will be performed to provide summary estimates by specific health risk behaviours and migrant populations. When necessary, estimates may be transformed to facilitate meta-analysis (eg, by dichotomising estimates for continuous measures or alternating between dichotomous measures). Meta-analysable results will be presented using Forest plots.



Recommendations from the Meta-analysis of Observational Studies in Epidemiology Group will be followed when reporting results from the meta-analyses.<sup>31</sup>

$I^2$  statistics will be reported to indicate the proportion of variance in meta-analysed estimates attributable to differences in study characteristics (ie, study heterogeneity).<sup>32</sup> Given sufficient data, subgroup and sensitivity analyses will be performed to examine heterogeneity in the findings by population, exposure and outcome, and to exclude low quality evidence. Meta-analysis will be performed using the metan function in Stata V.13.<sup>33</sup>

Finally, robustness of findings will be assessed using a standardised tool (eg, Risk of Bias in Non-Randomised Studies of Exposures).<sup>34</sup>

### Patient and public involvement

This systematic review will not include any patient and public involvement.

### ETHICS AND DISSEMINATION

Ethical approval is not required since only published information from peer-reviewed studies will be included. The results of this review will be presented at scientific conferences and published in peer-reviewed journals. Other forms of dissemination will include communication to broader audiences using well-established channels, including through university-based press releases. Our progress will be regularly updated on the International Prospective Register of Systematic Reviews to ensure transparency.

### AMENDMENTS

If the published protocol needs to be amended, dates of all amendments, a description of the changes made and the rationale for these changes will be provided in the final systematic review report.

**Contributors** SPJ and HH conceived the study. LB, N-KG, HH and SPJ planned and designed the study. HH developed the search strategy with input from all authors. LB and SPJ drafted the manuscript and N-KG and HH made substantial contributions. All authors approved the final version submitted for publication. LB and SPJ are the guarantors.

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### ORCID iD

Lisa Berg <http://orcid.org/0000-0002-8707-180X>

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