





BMJ Open Taking stock of vaccine hesitancy among migrants: a scoping review protocol

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To cite: Tankwanchi AS, Jaca A, Larson HJ, *et al.* Taking stock of vaccine hesitancy among migrants: a scoping review protocol. *BMJ Open* 2020;**10**:e035225. doi:10.1136/bmjopen-2019-035225

► Prepublication history for this paper is available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2019-035225>).

Received 25 October 2019
Revised 25 April 2020
Accepted 27 April 2020



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ABSTRACT

Introduction At the 72nd World Health Assembly of May 2019, WHO member states prioritised a global action plan to promote migrant and refugee health. Five months earlier, WHO had declared vaccine hesitancy—the reluctance to vaccinate despite the availability of vaccination services—as one of the top 10 threats to global health. Although vaccination is often a requirement for immigration, repeated outbreaks of vaccine-preventable diseases within certain immigrant communities in some host nations suggest that vaccine hesitancy could be a factor in their susceptibility to vaccine-preventable diseases. Studies of the prevalence and determinants of vaccine hesitancy among migrants globally seem to be lacking. This scoping review will (1) identify articles on vaccine hesitancy among migrants; (2) examine the extent and nature of the extant evidence; and (3) determine the value of undertaking a full systematic review.

Methods and analysis The framework for the scoping review proposed by the Joanna Briggs Institute will be used. The reporting will follow the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews checklist. Studies published in English or French between January 1999 and December 2019 will be drawn from most or all of the following multidisciplinary databases: Africa-Wide Information, Allied and Complementary Medicine, Cochrane Library, Cumulative Index of Nursing and Allied Health Literature, Embase, Index Medicus for the Eastern Mediterranean Region, International Bibliography of Social Sciences, Literature in the Health Sciences in Latin America and the Caribbean, Medline, Proquest Theses/Dissertations, PsycInfo and Web of Science. The search will include an extensive list of keywords to capture multiple dimensions of confidence and hesitancy vis-à-vis vaccines among migrants. Findings will be reported through summary narratives, tables, flowcharts and evidence maps.

Ethics and dissemination This review is exempted from ethical approval and will be published in a peer-reviewed open-access journal to ensure wide dissemination.

INTRODUCTION

Disparities in opportunity structures often compel people to move, internally or internationally. Therefore, migration is a universal phenomenon that affects most countries.

Strengths and limitations of this study

- This review will synthesise evidence of vaccine hesitancy among migrants over two decades.
- This review will glean out evidence from all WHO regions.
- This review will include both qualitative and quantitative studies published in English or French.
- The search, synthesis, and reporting of evidence will be guided by recommendations from the Joanna Briggs Institute and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews checklist.
- One possible limitation of this review is the potential exclusion of important studies not published in English or French.

Migrants are driven by many factors including the prospects of improving their access to work, civil, political and religious rights, security and healthcare.¹ One important aspect of healthcare that may affect migration is immunisation. People are often required to vaccinate in order to immigrate.^{2–4} In contrast, access to vaccination and continuity of care are more challenging for people on the move such as migrants, refugees or nomadic populations.^{5–6} Long after they have settled in the host country, vaccination coverage among migrants may still be suboptimal when compared with that of the general population.^{7–8} Vaccine sceptics and populist politicians in some host countries openly challenge the scientific consensus about the effectiveness and safety of vaccination.^{9–11} As a result, some migrants with pre-established concerns about vaccination may see their concerns reinforced, whereas others may succumb to anti-immunisation messaging and begin to question the benefits of some vaccines. The repeated measles outbreaks among Somali-Americans are instructive.^{12–14}

Measles, a highly contagious respiratory disease and the leading cause of



vaccine-preventable infant mortality worldwide, was declared eliminated in the USA in 2000.¹² Since the elimination, however, several outbreaks have occurred in various US states with index cases often linked to overseas travels.^{13–15} In 2011 and 2017, two measles outbreaks with a total number of 100 cases, 72% of which were members of the Somali community of Hennepin County, Minnesota, occurred in the USA.^{16,17} Prior to the 2011 outbreak, measles-mumps-rubella (MMR) vaccine coverage among 2-year-old Somali children in Minnesota had declined significantly from >91% in 2004 to 54% in 2010, as Somali parents began refusing MMR vaccine for their children owing to concerns of high autism rate in their community.^{11,18} By 2014, MMR vaccine uptake was down to 42% among 2-year-old Somali Minnesotan children.¹⁷ Many of these vaccine concerns and fears were also fuelled by local antivaccine activists and the author of a currently discredited Lancet study, now retracted, which associated the MMR vaccine with the development of autism.^{19,20}

Likewise, during a 2011 measles outbreak in Norway, 8 of 10 cases (80%) identified were from the Somali community of Oslo.²¹ Although there is evidence of low measles vaccine uptake among Somali migrants in the USA and Norway, we do not currently know how prevalent this issue is among Somalis living in other Western nations or non-Western host countries with a much larger Somali diaspora (eg, Ethiopia, Kenya and Yemen). It is also unclear whether, and if so why, Somali migrants might be more represented among non-vaccinators than other African migrants. Emerging evidence from England reveals that human papillomavirus (HPV) vaccine acceptance could be very low among UK-based immigrant parents from Eastern, Southern and Western Africa due to fears that their young daughters might become promiscuous and even infertile after HPV vaccination.²²

When vaccination services are available yet underutilised and barriers to access are reduced, then psychosocial

processes more so than structural factors may better explain low vaccination uptake. One such factor that conspires against universal vaccination coverage and is gaining currency in the literature is 'vaccine hesitancy'.²³ Broadly defined as the reluctance to vaccinate despite the availability of vaccination services, vaccine hesitancy entails a continuum of complex and context-specific attitudes and behaviours, ranging from total acceptance to complete refusal, and varying across time, place and vaccines. Underlying factors of hesitancy are issues of confidence, complacency and convenience.^{24,25} The authoritative working group on vaccine hesitancy appointed by the WHO's Strategic Advisory Group of Experts on Immunization (SAGE) has developed a multilevel explanatory model of vaccine hesitancy encompassing contextual influences (eg, religion, communication and media environment, politics and so on), individual/group factors (eg, beliefs, attitudes and motivation about health, trust in health system, past experience with vaccination, peer influence and so on), and vaccine-specific and vaccination-specific determinants (eg, cost, vaccination schedule, mode of administration and so on).²⁴ Vaccine hesitancy theories and models may help to explain why some vaccine-hesitant individuals may accept all vaccines but remain concerned or unsure about vaccines, may shun or delay some vaccines yet accept others, or may refuse all vaccines.^{25–29}

As a core topic, vaccine hesitancy is relatively new, with only six articles using the phrase in either the title or abstract between 2009 and 2011.²⁹ Even its definition is still evolving while its qualification as a behaviour has been called into question.^{30,31} Yet, the resurgence and repeated outbreaks of vaccine-preventable diseases like measles that were considered eliminated in some Western countries have prompted WHO to declare vaccine hesitancy as one of the world's top 10 threats to global health in 2019.³² If vaccine hesitancy is indeed a global threat to health and if migrant communities are potential 'hotspots' for vaccine hesitancy, then its prevalence and determinants within these communities must be examined. The overall aim of this scoping review is to take stock of the current evidence of vaccine hesitancy among migrants. Toward this end, the proposed review will address the following objectives:

1. Identify evidence of vaccine hesitancy among migrant individuals and communities.
2. Examine the extent and nature of the extant evidence.
3. Determine the value of undertaking a full systematic review.

Given the relative recency of vaccine hesitancy as a research area and given that we are not aware of any comprehensive evidence of vaccine hesitancy among migrant populations, the previously mentioned objectives are suitable and consistent with the 'reconnaissance' purpose of the scoping review.³³ Scoping will also allow us to identify and define crucial concepts, gaps in the literature, and types and sources of evidence to inform practice, policy and research.³³ In choosing to focus on vaccine hesitancy, neither do we imply nor believe that

Table 1 PICO elements for study selection criteria

Participant/ population	Intervention	Comparators	Outcomes
Diaspora, émigrés, emigrants, migrants, immigrants, refugees, foreigners, foreign-born, newcomers	Immunization, vaccination, vaccine-related communication	General population, non-migrant, local, native population, no comparator	Vaccine confidence, vaccine uptake, vaccine refusal, vaccine hesitancy, vaccine delay, missed schedule of vaccine, non-medical vaccination exemption

PICO, Participants, Intervention, Comparators and Outcome.

**Table 3** Data charting template

Data	Data description
Study reference	Name and surname of authors, publication year
Article type	Quantitative, qualitative, mixed methods, research, review, policy, perspective, comment, letter, unpublished report, media article
Region of origin	WHO region where country of study is located
Purpose	Overall aim and objectives of the study
Population	Main characteristics of populations, communities and individuals participating in the study
Country of immigration	Host country where migrant participants reside
Country of national origin	Foreign country where migrants or parents of second-generation immigrants came from
Country of transit	Country where migrants may have resided as refugee before relocating in current host country
Place of residence	Neighbourhood, city or state where migrant participants reside
Location of immunisation centre	Neighbourhood, city or state where vaccination service is provided
Religion	Main religion of migrants
Native language	First language primarily spoken by migrants
Ethnic/racial identity	Ethnic or racial group of migrants
Comparator	Outgroup members with whom migrants are compared
Concept	Underlying determinants of vaccine hesitancy explored by study
Intervention	Types of intervention attempted or evaluated by study (eg, vaccine administration, health communication, policy, etc)
Outcome	Outcomes from intervention (eg, increase, decrease or steady state in vaccination rate)
Vaccine	Specific vaccine that is accepted, delayed or rejected
Findings	Relevant key findings from study

population-level studies and from primary research to review articles, policy reports and commentaries.

Types of participants

Target participants for this review are migrant populations, migrant communities and migrant individuals, including parents, expecting parents, childfree adults and children. We define migrants as including all individuals whose country of national origin (or whose parents' country of origin) is different from their country of

residence, irrespective of the manner of entry and legal/documentated status in the host country. Further details on participants are provided in [tables 1 and 2](#).

Concept

The concept or principal focus explored by this scoping review is vaccine hesitancy. As described in the previous section of this protocol, vaccine hesitancy is an inclusive concept that encompasses varying degrees of indecision about vaccination in general or certain vaccines in particular. Underlying factors of hesitancy include issues of confidence (do not trust vaccine or provider), complacency (do not perceive a need for a vaccine) and convenience (access).²⁵ The final report from the SAGE Working Group on Vaccine Hesitancy states: 'Vaccine-hesitant individuals *may accept* all vaccines *but remain concerned* about vaccines, some may refuse or delay some vaccines, but accept others; some individuals may refuse all vaccines'.²⁴

Context

The context in this review could include the WHO regions of the studies, migrants' host country, their home or origin country, their cultural heritage (eg, religion, language and health-seeking traditions), their residential neighbourhood and the location/place where vaccination services are provided.

Searching

One of the most comprehensive systematic reviews of published literature on vaccine hesitancy to date was published in 2014 by members of the SAGE Working Group on Vaccine Hesitancy which includes one of the senior coauthors of this protocol.²⁹ We will build on that 2014 publication, identifying relevant studies for our scoping review through several of the same databases included in that systematic review. All or most of the following databases will be searched from 1 January 1999 to 31 December 2019: Africa-Wide Information, Allied and Complementary Medicine, Cochrane Library, Cumulative Index of Nursing and Allied Health Literature, Embase, Index Medicus for the Eastern Mediterranean Region, International Bibliography of Social Sciences, Literature in the Health Sciences in Latin America and the Caribbean, Medline, Proquest Theses/Dissertations, PsycInfo and Web of Science. Given that we aim at examining both the scientific and grey literature, we will also search Google and Google Scholar in addition to the multidisciplinary mainstream and regional databases listed earlier. Last, we will contact the authors of all studies included in our synthesis to identify potential additional sources. We anticipate that the search for articles will be run across all databases between May and June 2020.

To the extent possible, we will abide by the PRISMA-ScR checklist to select relevant studies. Studies will be selected according to elements of the PICO (Participants, Intervention, Comparators and Outcome) model,⁴⁰ as outlined in [table 1](#). To capture multiple dimensions of

vaccine hesitancy among migrants, the search strategy will include the non-exhaustive list of keywords and medical subject headings in [table 2](#). Once retrieved, all articles will first be screened by title and abstract by at least two reviewers to ascertain their relevance. When in doubt, the full article will be scanned to further determine its relevance or decide on its exclusion. Reference lists of relevant articles will also be perused to ensure literature saturation.

Extracting and charting the results

It is standard in scoping reviews to illustrate the numerical outputs from the search and the inclusion decision process by means of a PRISMA flowchart. Our flowchart will clearly describe the review decision process, results from the search, removal of duplicate citations, study selection, full retrieval, any additions from reference list scanning and final summary presentation. In scoping review, ‘charting the results’ is an iterative process which involves the extraction of relevant data from all the studies included in the review.³³ To enable consistency in data extraction among reviewers, we have developed a data charting template ([table 3](#)) to record characteristics of articles included and key data pertinent to the objectives of our review. We anticipate refinement (or consolidation) of this form after data from a small sample of studies (two to three) have been charted independently by two or more reviewers. We anticipate that results of the review will include both quantitative and qualitative data. We will present these results through summary narratives and visuals such as evidence ‘maps’ and tabular presentations.

Protocol registration

This protocol is not registered in the International Prospective Register of Systematic Reviews (PROSPERO) because this registry does not accept scoping reviews.⁴¹

Patient and public involvement

This review will be based solely on published articles and will not involve any patients or the public.

ETHICS AND DISSEMINATION

This review will be based on published works, and thus is exempted from formal ethical approval. It will be published in a peer-reviewed open-access journal to ensure wide dissemination.

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Funding AJ and CSW are supported by the South African Medical Research Council. SHV is supported, in part, by a grant from the National Institutes of Health (P30MH062294).

Disclaimer The funders had no role in the design and writing of the protocol or the decision to submit it for publication.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not required.

Provenance and peer review Not commissioned; externally peer reviewed.

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REFERENCES

- 1 United Nations Development Programme (UNDP). *Human development report 2009. overcoming barriers: human mobility and development*. New York: Palgrave Macmillan, 2009.
- 2 U.S. Citizenship and Immigration Services (USCIS). *Applicability of medical examination and vaccination requirement. USCIS policy manual*. Washington, DC: USCIS, 2017.
- 3 Center for Disease Control and Prevention. Vaccines for immigrants and refugees. Available: <https://www.cdc.gov/vaccines/adults/rec-vac/immigrants-refugees.html> [Accessed 18 Mar 2020].
- 4 Hong M-K, Varghese R, Jindal C, *et al*. Refugee policy implications of U.S. immigration medical screenings: a new era of Inadmissibility on health-related grounds. *Int J Environ Res Public Health* 2017;14:1107.
- 5 World Health Organization (WHO). *Promoting the health of refugees and migrants. draft global action plan, 2019 – 2023*. Geneva: WHO, 2019.
- 6 Markkula N, Cabieses B, Lehti V, *et al*. Use of health services among international migrant children – a systematic review. *Global Health* 2018;14:52.
- 7 Mipatrini D, Stefanelli P, Severoni S, *et al*. Vaccinations in migrants and refugees: a challenge for European health systems. A systematic review of current scientific evidence. *Pathog Glob Health* 2017;111:59–68.
- 8 Awoh AB, Plugge E. Immunisation coverage in rural-urban migrant children in low and middle-income countries (LMICs): a systematic review and meta-analysis. *J Epidemiol Community Health* 2016;70:305–11.
- 9 Kennedy J. Populist politics and vaccine hesitancy in Western Europe: an analysis of national-level data. *Eur J Public Health* 2019;29:512–6.
- 10 Camargo K, Grant R. Public health, science, and policy debate: being right is not enough. *Am J Public Health* 2015;105:232–5.
- 11 Dyer O. Measles outbreak in Somali American community follows anti-vaccine talks. *BMJ* 2017;357:j2378.
- 12 Katz SL, Hinman AR. Summary and conclusions: measles elimination meeting, 16–17 March 2000. *J Infect Dis*;2004:S43–7.



- 13 Fiebelkorn AP, Redd SB, Gallagher K, *et al.* Measles in the United States during the postelimination era. *J Infect Dis* 2010;202:1520–8.
- 14 Gastañaduy PA, Redd SB, Fiebelkorn AP, *et al.* Measles - United States, January 1-May 23, 2014. *MMWR Morb Mortal Wkly Rep* 2014;63:496–9.
- 15 Arciuolo RJ, Brantley TR, Asfaw MM, *et al.* Measles outbreak among members of a religious community—Brooklyn, New York, March–June 2013. *MMWR MMWR Morb Mortal Wkly Rep* 2013;752.
- 16 Gahr P, DeVries AS, Wallace G, *et al.* An outbreak of measles in an undervaccinated community. *Pediatrics* 2014;134:e220–8.
- 17 Leslie TF, Delamater PL, Yang YT. It could have been much worse: the Minnesota measles outbreak of 2017. *Vaccine* 2018;36:1808–10.
- 18 Hewitt A, Hall-Lande J, Hamre K, *et al.* Autism spectrum disorder (ASD) prevalence in Somali and Non-Somali children. *J Autism Dev Disord* 2016;46:2599–608.
- 19 Deer B. How the case against the MMR vaccine was fixed. *BMJ* 2011;342:c5347.
- 20 Godlee F, Smith J, Marcovitch H. Wakefield's article linking MMR vaccine and autism was fraudulent. *BMJ* 2011;342:c7452.
- 21 Vainio K, Rønning K, Steen TW, *et al.* Ongoing outbreak of measles in Oslo, Norway, January–February 2011. *Euro Surveill* 2011;1–3.
- 22 Mupandawana ET, Cross R. Attitudes towards human papillomavirus vaccination among African parents in a City in the North of England: a qualitative study. *Reprod Health* 2016;13:97.
- 23 Hickler B, Guirguis S, Obregon R. Vaccine special issue on vaccine Hesitancy. *Vaccine* 2015;33:4155–6.
- 24 World Health Organization. *Report of the SAGE Working group on vaccine Hesitancy*. Geneva, Switzerland: WHO, 2014.
- 25 MacDonald NE. Definition Vaccine hesitancy Scope and determinants. *Vaccine* 2015;33:4161–4.
- 26 Goldstein S, MacDonald NE, Guirguis S, *et al.* Health communication and vaccine hesitancy. *Vaccine* 2015;33:4212–4.
- 27 Salmon DA, Dudley MZ, Glanz JM, *et al.* Vaccine hesitancy: causes, consequences, and a call to action. *Vaccine* 2015;33 Suppl 4:D66–71.
- 28 Williams SE. What are the factors that contribute to parental vaccine-hesitancy and what can we do about it? *Hum Vaccin Immunother* 2014;10:2584–96.
- 29 Larson HJ, Jarrett C, Eckersberger E, *et al.* Understanding vaccine hesitancy around vaccines and vaccination from a global perspective: a systematic review of published literature, 2007–2012. *Vaccine* 2014;32:2150–9.
- 30 Bedford H, Attwell K, Danchin M, *et al.* Vaccine hesitancy, refusal and access barriers: the need for clarity in terminology. *Vaccine* 2018;36:6556–8.
- 31 Peretti-Watel P, Larson HJ, Ward JK, *et al.* Vaccine hesitancy: Clarifying a theoretical framework for an ambiguous notion. *PLoS Curr* 2015;7:6844c80ff9f5b273f34c91f71b7fc289.
- 32 World Health Organization. Ten threats to global health in 2019, Geneva, 2019. Available: <https://www.who.int/emergencies/ten-threats-to-global-health-in-2019> [Accessed 18 Mar 2020].
- 33 Peters MDJ, Godfrey CM, Khalil H, *et al.* Guidance for conducting systematic scoping reviews. *Int J Evid Based Healthc* 2015;13:141–6.
- 34 Ottersen OP, Dasgupta J, Blouin C, *et al.* The political origins of health inequity: prospects for change. *Lancet* 2014;383:630–67.
- 35 Onarheim KH, Melberg A, Meier BM, *et al.* Towards universal health coverage: including undocumented migrants. *BMJ Glob Health* 2018;3:e001031.
- 36 Abubakar I, Aldridge RW, Devakumar D, *et al.* The UCL–Lancet Commission on migration and health: the health of a world on the move. *Lancet* 2018;392:2606–54.
- 37 Larson HJ, de Figueiredo A, Xiaohong Z, *et al.* The state of vaccine confidence 2016: global insights through a 67-country survey. *EBioMedicine* 2016;12:295–301.
- 38 Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol* 2005;8:19–32.
- 39 Levac D, Colquhoun H, O'Brien KK. Scoping studies: advancing the methodology. *Implement Sci* 2010;5:69.
- 40 Tricco AC, Lillie E, Zarin W, *et al.* PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med* 2018;169:467–73.
- 41 National Institute of Health Research. International prospective register of systematic reviews: inclusion criteria. Available: <https://www.crd.york.ac.uk/prospero/#guidancenotes> [Accessed 18 Mar 2020].