Ghiasi *et al. Globalization and Health* (2025) 21:42
https://doi.org/10.1186/s12992-025-01133-4

Globalization and Health

REVIEW Open Access

Strategies for improving migrant health in Iran: a realist review

Kanishka Ghiasi[1*], Ali Mohammad Mosadeghrad[2*], Hossein Dargahi[3], Ebrahim Jaafaripooyan[4] and Mahdi Abbasi[5]

Abstract

Background Migration is a growing global phenomenon and a recognized social determinant of health, contributing to significant health inequities between migrant and host populations. Iran, hosting an estimated 4.5 million migrants—including undocumented individuals—faces persistent challenges in ensuring equitable access to healthcare. This study identifies strategies to inform context-specific interventions within Iran's health system to improve migrant health.

Methods We conducted a realist review, searching PubMed, Science Direct, Scopus, Web of Science, Google Scholar, and grey literature from 2010 to 2024. Using the Intervention-Context-Mechanism-Outcome (ICMO) framework, we analyzed 67 studies to identify effective strategies for enhancing migrant health in Iran. Ritchie and Spencer's five-stage framework method was applied to analyse the data.

Results Twenty-seven strategies were identified. Mechanisms underpinning successful interventions included trust-building through intersectoral governance, reduction of financial barriers via inclusive insurance schemes, increased accessibility through cultural competency training, and improved service reach using digital health and community-based outreach. Iran-specific implications included the potential for piloting migrant-inclusive insurance for vulnerable groups and expanding culturally tailored services through community health workers.

Conclusion Contextual adaptation of global strategies can address systemic barriers and improve health equity for migrants in Iran. The findings offer evidence-based, actionable insights for policymakers seeking to localize global best practices within Iran's healthcare infrastructure.

Keywords Migrant health, Improvement, Strategies

*Correspondence:
Kanishka Ghiasi
kanishkaghiasi@gmail.com
Ali Mohammad Mosadeghrad
mosadeghrad@yahoo.com
[1]International campus, School of Public Health, Department of Health Management, Policy and Economics, Tehran University of Medical Sciences, Tehran, Iran
[2]Department of Health Management, Policy and Economics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran
[3]Department of Health Management, Policy and Economics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran
[4]Department of Health Management, Policy and Economics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran
[5]Health Services of Management, Sabzevar University of Medical Sciences, Sabzevar, Iran

Introduction

Migration is a growing global phenomenon and a recognized social determinant of health, contributing to structural inequities between migrant and host populations. Migrants often face distinct vulnerabilities shaped by displacement, legal status, and sociocultural dislocation, which create persistent barriers to accessing health services [1]. For clarity, the term "migrant" in this study refers to individuals who move across borders, either temporarily or permanently, for reasons such as safety, employment, or family reunification. This umbrella definition includes refugees, who flee persecution or conflict and are recognized under international law, and asylum seekers, whose legal protection claims are under evaluation [1].

In practice, these categories encounter varying degrees of exclusion from national healthcare systems, exacerbated by poor legal protection, cultural and language mismatches, financial barriers, and systemic discrimination [2]. Forcibly displaced populations reached 122 million globally by mid-2024, with most hosted in low- and middle-income countries (LMICs) a trend that places immense pressure on public health systems [3].

Iran is one such host country, with an estimated 4.5 million migrants, including 750,000 Afghans with Amayesh cards, 12,000 Iraqis with Hoviat cards, 586,000 Afghan passport holders, and a large population of undocumented individuals [4]. Amayesh and Hoviat cards are issued by the Iranian government and UNHCR to officially register Afghan and Iraqi refugees, respectively, offering limited access to public services and subsidized health insurance. However, unofficial estimates place Iran's migrant population as high as 6–8 million, including those excluded from formal registration.

Despite providing registered migrants with access to free primary healthcare, Iran's health system presents enduring barriers to equitable access. Exclusion from insurance schemes, unsafe housing, deportation risks, high out-of-pocket costs, and cultural insensitivity continue to undermine health equity particularly for women, informal workers, and undocumented groups [5–7]. While Iran is not a signatory to the 1951 Refugee Convention, it has supported humanitarian initiatives aligned with the Universal Declaration of Human Rights (UDHR) and the International Covenant on Economic, Social, and Cultural Rights (ICESCR) [8].

Globally, countries such as Germany, Thailand, and Colombia have pioneered promising strategies for improving migrant health. Germany's anti-discriminatory language guidelines have reduced clinical stigma [9]; Thailand's Health Insurance Card Scheme (HICS) has lowered out-of-pocket spending for undocumented workers [10]; and Colombia has integrated gender-responsive HIV services with migrant legal aid [11]. These examples demonstrate that targeted, equity-driven interventions can succeed even under constrained resources.

Despite international guidelines like the Global Compact for Migration (GCM), implementation remains context dependent. There is limited literature examining how global best practices can be adapted to national health systems in complex political and economic environments like Iran. While previous studies have explored migrant mental health or labor-specific interventions, few synthesize actionable strategies for national health systems grappling with undocumented, displaced, and refugee populations across care domains [12, 13].

This study addresses that gap. It applies a realist review approach to identify global strategies for improving migrant health and explores their contextual relevance to Iran's health system. By analyzing mechanisms, outcomes, and the structural barriers faced by host and migrant communities alike, this review offers grounded recommendations for local adaptation. The findings aim to support Iranian policymakers in designing inclusive, culturally competent, and resilient migrant health interventions.

Methods

This study employed a realist review approach to identify strategies for improving the health of migrants. A realist review is an appropriate method for synthesizing evidence on complex interventions by examining the causal relationships between interventions, contexts, mechanisms, and outcomes (ICMO) [14]. Health policies for migrants are inherently complex and context-specific, with strategies that succeed in one setting potentially failing in another. Unlike systematic reviews, which primarily aggregate evidence to identify cause-and-effect relationships, realist reviews delve deeper into understanding how and why interventions work or fail in specific circumstances.

While some realist reviews have explored aspects of migrant health such as labor migration, mental health among refugees, and access to cross-border care this review uniquely focuses on identifying globally effective strategies and assessing their relevance and adequacy in Iran's health system an underexplored area in existing literature.

Figure 1 illustrates the relationship between interventions, contextual factors, mechanisms, and outcomes, highlighting the dynamic nature of the realist review approach. As shown, specific contexts activate mechanisms that lead to particular outcomes. This allows for a nuanced exploration of the interplay between these elements, making the approach well-suited for addressing the multifaceted challenges faced by migrant populations.

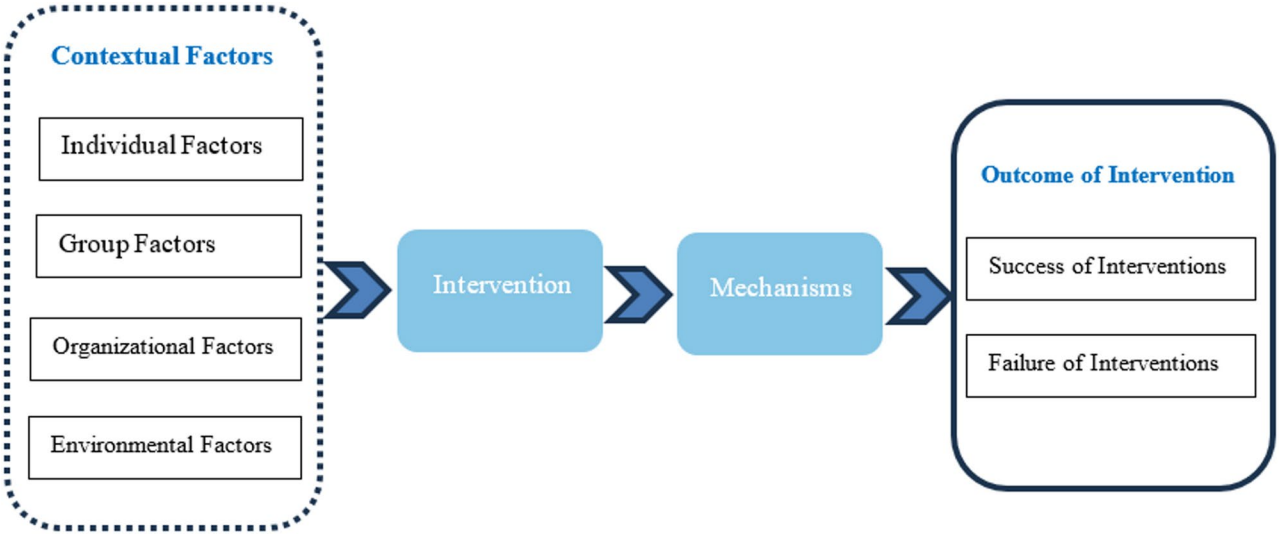

Fig. 1 Relationship between interventions, contextual factors, mechanisms, and outcomes

The seven-step realist review protocol proposed by Mossadeghrad et al. (2021) was employed to ensure methodological rigor and transparency. The sequential steps included: (1) defining research questions, (2) articulating the primary theory, (3) developing search strategies, (4) collecting, evaluating, and selecting evidence, (5) synthesizing evidence, (6) refining the intervention theory, and (7) formulating actionable recommendations. This structured framework provided a systematic and iterative approach to conducting the review [14].

Research questions and primary theory

The research questions guiding this study were: "What strategies are effective in improving the health of migrant populations?" and "What contextual factors and mechanisms contribute to the success or failure of strategies aimed at improving migrant health?" The primary theory posited that well-designed and implemented strategies addressing the specific needs of migrant populations—such as language barriers, discrimination, and financial constraints—would activate mechanisms fostering trust, accessibility, and equity in healthcare systems. During the evidence synthesis phase, this theory was iteratively refined to incorporate additional mechanisms, such as cultural competence training for healthcare providers and community-based participatory approaches, based on emerging patterns identified across the reviewed studies (Fig. 2).

Search strategy

A comprehensive search strategy was developed to identify relevant literature published between 2010 and 2024. The starting point of 2010 was chosen to capture developments aligned with global policy frameworks like the Global Compact on Migration and growing scholarly attention to migrant-inclusive health strategies (Fig. 3, 4).

The following databases were searched: PubMed, Science Direct, Scopus, Web of Science, and Google Scholar. Keywords included combinations of terms such as "Improving health," "Strategies" or "Interventions," and "Migrants' health" or "Refugees." Searches were limited to studies published in English and Persian to include both global and regional perspectives. Grey literature, including policy documents and reports, was also included to capture insights from non-academic sources (Fig. 5).

The inclusion criteria for this review were original research, review articles, and grey literature addressing migrant health policies and interventions. Studies not directly related to migrant health, without strategies/interventions, descriptive reports lacking implementation detail, or published outside the 2010–2024 timeframe were excluded.

The initial search yielded 1,630 articles. After removing 371 duplicates, titles and abstracts were screened, resulting in the exclusion of 1,012 irrelevant studies. A total of 247 articles were selected for full-text assessment. After detailed review, 180 articles were excluded. Ultimately, 67 studies met the inclusion criteria. Screening and review were conducted independently by two reviewers (KG and MA), with conflicts resolved by a third reviewer (AMM). A structured ICMO-based data extraction table was used to record intervention types, contextual conditions, mechanisms triggered, and outcomes.

The five-step framework analysis method by Ritchie and Spencer, which includes (1) familiarization with the data, (2) identification of a thematic framework, (3) indexing, (4) charting, and (5) interpretation, was used to analyze the data [15]. Patterns across the studies were examined to develop intervention-context-mechanism-outcome

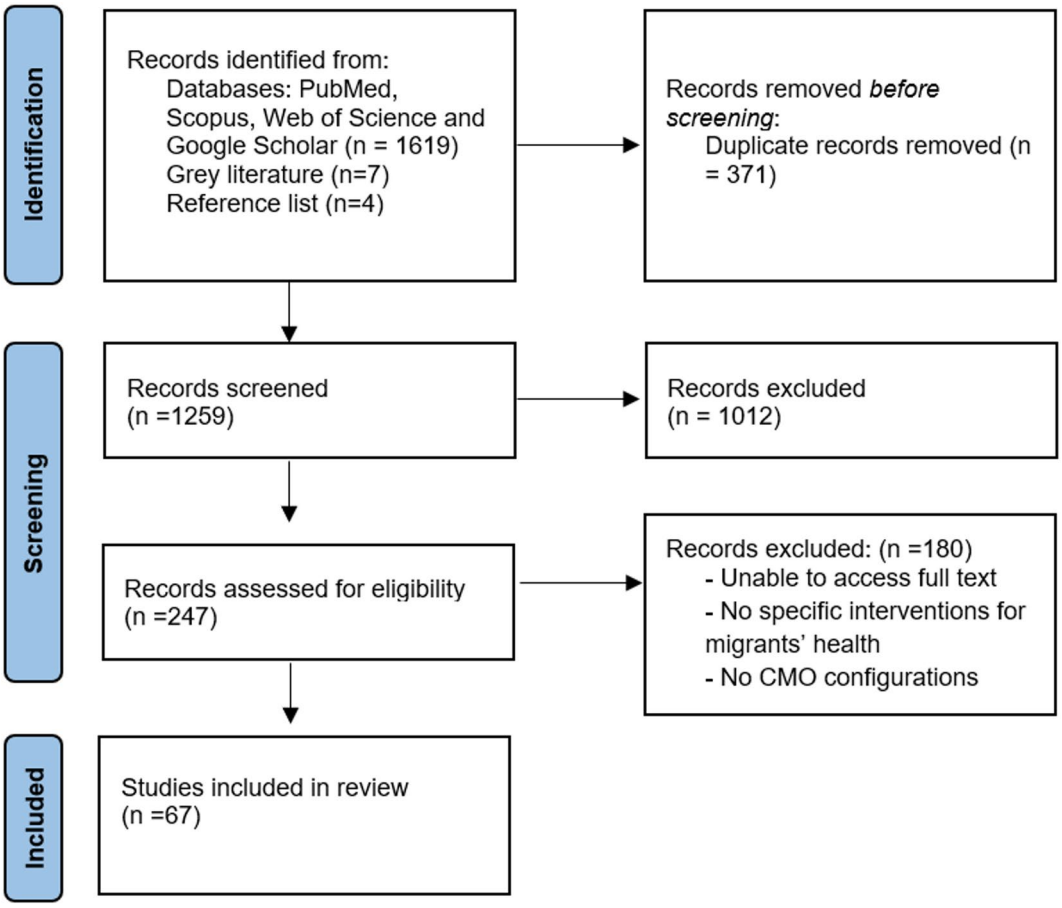

Fig. 2 PRISMA flow diagram shows the study selection process (based on PRISMA 2020 guidelines)

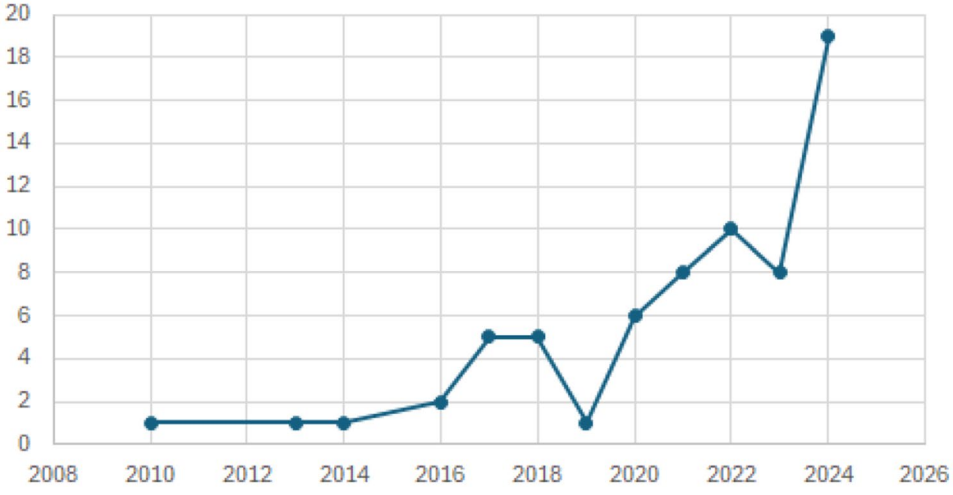

Fig. 3 Annual frequency of included migrant health studies (2010–2024)

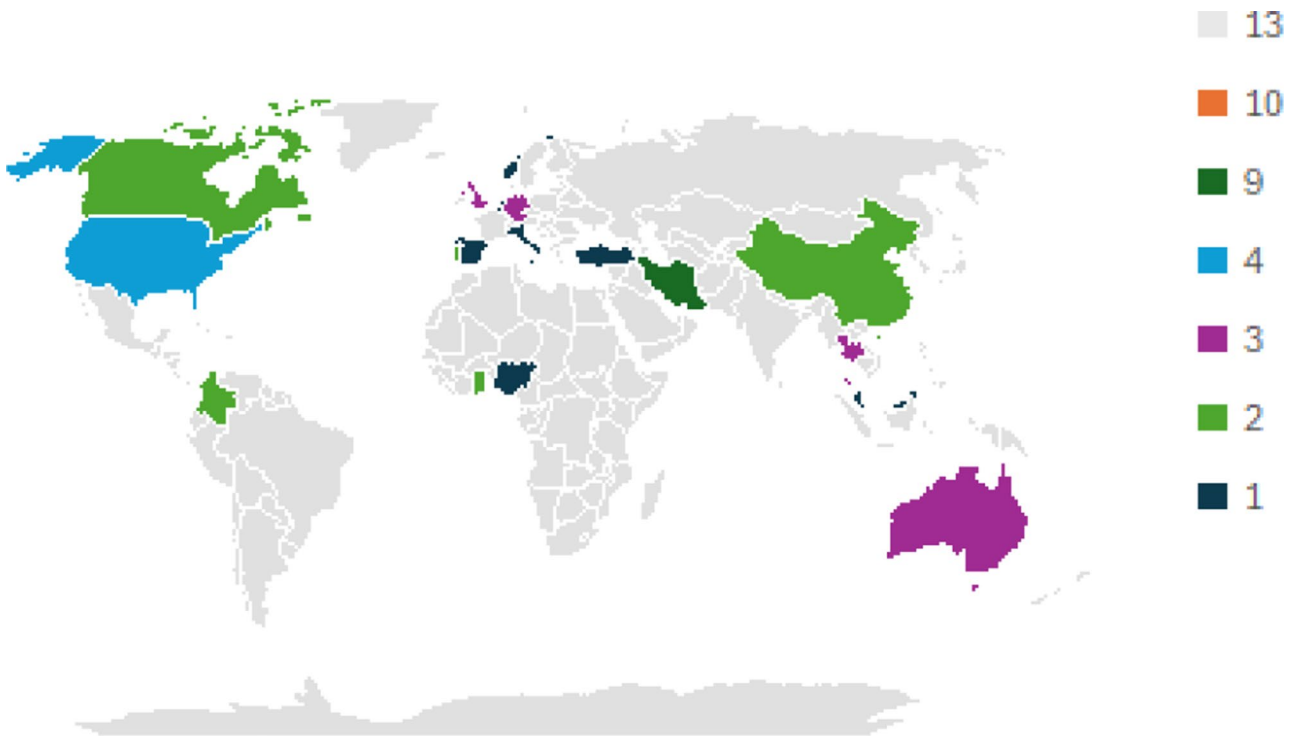

Fig. 4 Geographic origin of included studies (*N* = 67)

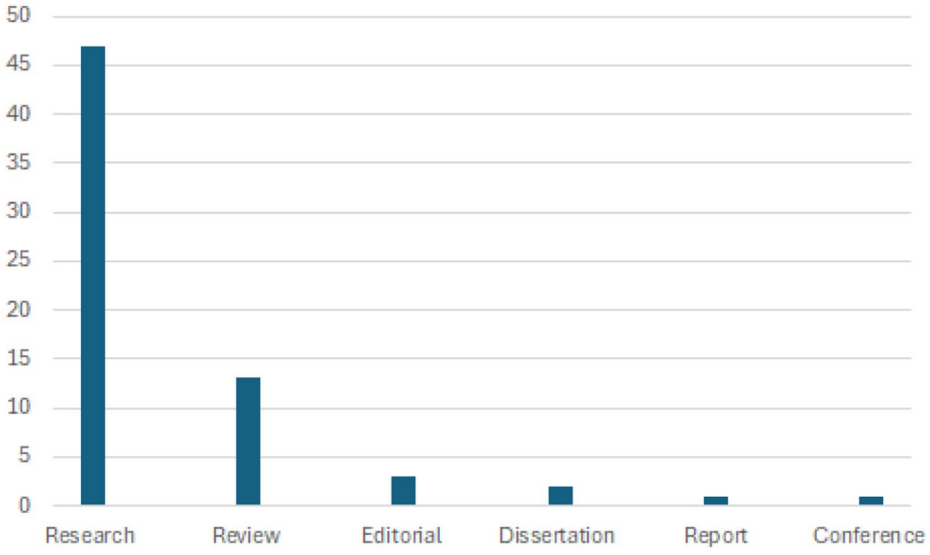

Fig. 5 Types of documents analyzed in the review

(ICMO) configurations, facilitating the refinement of the initial theory based on the reviewed evidence.

Data analysis

Data were analyzed using the five-step framework method by Ritchie and Spencer [15], consisting of: (1) familiarization with the data, (2) identification of a thematic framework, (3) indexing, (4) charting, and (5) interpretation. This method supported the identification and synthesis of intervention–context–mechanism–outcome (ICMO) configurations, which were used to refine the initial theory and map findings across health system components.

Study strengths

This study's strengths include Use of realist methodology and ICMO logic, enabling nuanced interpretation of complex interventions, Bilingual scope (English and

Persian), improving local relevance, Inclusion of policy grey literature. Dual screening and consensus-based resolution, ensuring methodological rigor.

Results

Characteristics of included studies

A total of 67 documents published between 2010 and 2024 were included in the review. The volume of research on migrant health has grown over the past decade, with a notable surge beginning in 2020. The highest number of publications occurred in 2024 ($n = 19$), followed by consistent outputs in 2022 ($n = 10$), 2021 ($n = 8$), and 2023 ($n = 8$). Earlier years, particularly before 2017, contributed relatively few studies, reflecting the emerging nature of this field. The steady increase in recent years likely reflects rising global policy interest and pandemic-driven attention to vulnerable populations, including migrants.

The distribution of included studies ($N = 67$) per country or region. Global ($n = 13$), EU-specific ($n = 10$), and Iran ($n = 9$) represented the most frequently studied regions. Countries such as the USA, UK, Germany, and Thailand also contributed significantly, while several others, including Spain, Portugal, and Ghana, had lower but notable representation. The frequency distribution indicates both high-income and low- and middle-income countries (LMICs) contributed to the migrant health literature between 2010 and 2024.

Regarding document type, the majority of included studies were empirical research articles ($n = 47$), followed by review articles ($n = 13$). Editorials ($n = 3$), dissertations ($n = 2$), reports ($n = 1$), and conference proceedings ($n = 1$) constituted a smaller portion of the dataset. This distribution underscores that peer-reviewed empirical research comprises the predominant evidence base informing migrant health strategies in the reviewed literature.

Synthesis of strategies by WHO health system building blocks

Across the WHO's six building blocks, 27 unique global strategies were identified and analyzed through the ICMO framework. Table 1 summarizes the intervention types, contexts, mechanisms, and reported outcomes.

The most frequent mechanisms that contributed to improved migrant health outcomes included trust-building, legal inclusion, financial protection, and cultural safety. Trust was fostered through mechanisms such as community participation, anti-bias training, and culturally competent care led by community health workers (CHWs). Legal inclusion was achieved through anti-discrimination policies and universal health coverage reforms, which increased institutional accountability and reduced fear of exclusion. Financial protection came through subsidies, cash transfers, and insurance access for undocumented and informal workers this significantly increased service utilization and reduced catastrophic spending. Culturally safe practices, including multilingual messaging, adapted mental health care, and inclusive reproductive services, supported adherence and improved patient satisfaction.

The contexts that shaped these outcomes varied widely. Fragile or post-conflict states, exclusionary immigration laws, urban informal settlements with limited access, and digital infrastructure limitations all moderate the mechanisms' effectiveness. Importantly, mechanisms did not function uniformly across settings. For instance, anti-bias training was only effective in contexts where basic provider infrastructure was intact. Financial incentives worked better when they included non-restrictive identity requirements. Community governance interventions had higher impact where migrant populations had pre-existing organizational structures.

The review also identified gaps. Mental health and eldercare services received relatively limited strategic focus. Digital innovations such as blockchain or health passports were often pilot-based and lacked evidence of scalability. Few studies addressed data integration across public-private systems or transnational care continuity for cross-border migrants. Table 1 presents a detailed summary of these ICMO configurations by domain.

Integrated synthesis and Iran-relevant implications

Several global interventions are especially applicable to Iran's migrant health system. Insurance expansion models, like Thailand's HICS, are relevant for extending coverage to undocumented and informal workers. CHW-led perinatal networks can support Afghan women in rural and underserved regions. Mobile vaccination units and ID-free service models align with Iran's need to reach unregistered migrants and avoid legal barriers. Anti-discrimination frameworks and cultural competency training can improve trust and service uptake across ethnic and legal divides.

These insights support the local adaptation of global best practices within Iran's specific governance, funding, and sociopolitical constraints. Iran's decentralized delivery network, partnerships with humanitarian actors, and longstanding engagement with Afghan refugee populations offer a viable foundation for implementation.

Discussion

Governance

Effective governance is fundamental to advancing migrant health equity by fostering trust, reducing systemic discrimination, and improving institutional accountability. Multi-stakeholder governance models that include government, civil society, and private actors have facilitated migrant inclusion and integration. These approaches are highly applicable with modifications

Table 1 Interventions and their context, mechanism, outcomes, and Article sources based on WHO Building blocks

WHO Building Blocks	Intervention (I)	Context (C)	Mechanism (M)	Outcome (O)	Sources
Governance	Developing intersectoral collaboration	Conflict/post-conflict areas; absence of state capacity	Multi-stakeholder initiatives → synergistic resource-sharing	Scalable migrant integration programs	Buyuktanir (2016) Schwerdtle et al. (2020) Street G (2023) Liu G& Tsasis P (2024) [35–36, 58, 59]
	Enforcing anti-discrimination policies	Local policies neglect migrant-specific equity	Legal accountability + advocacy → Institutional adoption of equity audits	Reduced health disparities (measured via access gaps)	Nordström & Kumar (2020) Deodati et al. (2022) Alarcão V et al. (2024) Butkus et al. (2017) [16–17, 60, 61]
	Aligning SDOH policies across governance levels	Fragmented regional service provision	Policy harmonization → shared KPIs for migrant health	Improved cross-border service coordination	Galanis et al. (2022) Rungan et al. (2024) [16–17,18,37]
	Integrating vulnerability assessments into SDOH frameworks	Hostile immigration policies exacerbate disparities	Evidence-based targeting → justifies priority funding for high-risk groups	20% reduction in migrant mortality rates	Morey (2018) Kweon et al. (2024) Tenorio et al. (2024) [38–39, 57]
	Co-designing inclusive communities	Nationalist narratives fuel exclusion	Participatory governance + pro-diversity narratives → disrupt "us vs. them"	Increased social cohesion indices (e.g. trust surveys)	Visintin et al. (2018) Heath et al. (2014) Ayo Amen et al. (2024) Marques MJ et al. (2024) Gregurović M (2021) [40–41, 62, 63, 64]
Financing	Expanding health insurance for informal workers	Kayayei migrants in Ghana face cash-based healthcare exclusion	Subsidized premiums + mobile enrollment → formalize access	30% increase in preventive care visits	Lattof (2018) Abubakari et al. (2021) [42, 43]
	Mandating the inclusion of undocumented migrants	Thailand's HICS excludes undocumented groups	Legal reforms → insurers cannot deny coverage based on status	50% drop in out-of-pocket spending (ER visits)	Suphanchaimat (2017) Loganathan et al. (2019) [11, 44]
	Providing targeted financial assistance	COVID-19 exacerbated affordability crises for Thai migrant workers	Cash transfers + waived co-pays → removes cost barriers	2x higher service utilization (pilot data)	Uansri et al. (2023) Zhang et al. (2020) [20, 45]
	Scaling government-funded subsidies	Nigeria's catastrophic out-of-pocket spending (e.g. GIFSHIP non-adoption)	Progressive financing (tax-funded subsidies for the poorest)	40% reduction in treatment abandonment	Hayatudeen et al. (2024) Thomas et al. (2021) [21, 26]
	Allocating equitable funding for migrant services	Chinese migrants avoid care due to cost	Ring-fenced budgets for migrant clinics → guarantees resource availability	25% rise in chronic disease management	Zhang et al. (2020) Su et al. (2023) [45, 46]
Health System Information	Implementing digital immunization tracking	Mobile populations lose paper records	Blockchain-based health passports + CHW verification	40% ↑ vaccine completion	Thomas (2021) Adel El Arab (2023) [26, 29]
	Establishing anti-bias language guidelines	Public health research reinforces stereotypes	Mandatory training + inclusive terminology standards	25% ↑ trust in health services	Kajikhina (2023) Oh (2024) [10, 47]
	Reducing intersectional stigma	Racialized migrant women face compounded barriers	Gender-sensitive modules + peer educator networks	35% ↑ service utilization	Espinoza-Kulick (2022) [48]
	Deploying mobile vaccine clinics	Undocumented migrants avoid formal health facilities	Pop-up clinics + no-ID-required registration	50% ↑ first-dose coverage	Immordino (2022) De Vos Klootwijk Kersten CA [27, 65]
Health Workforce	Conducting anti-bias training for providers	Stigma/discrimination against sub-Saharan African migrant women in healthcare	Specialized education on implicit bias + patient-centered communication	30% ↑ trust; 25% ↑ consistent care-seeking	Arrey et al. (2016) Wirtz et al. (2021) [49, 50]
	Providing cultural competency training	Linguistic/cultural barriers limit mental health access	Workshops on migrant mental health needs + interpreter protocols	20% ↑ treatment adherence; 15% ↓ symptom severity	Rousseau & Frounfelker (2018) Bäärnhielm & Schouler-Ocak (2022) [51, 52]
	Designing culturally adapted mental health services	Health belief differences delay help-seeking (e.g. perinatal depression)	Co-designed interventions with traditional healing	40% ↑ service utilization; 35% ↑ patient satisfaction	Gardner et al. (2024) Shorey et al. (2021) [22, 23]

Table 1 (continued)

WHO Building Blocks	Intervention (I)	Context (C)	Mechanism (M)	Outcome (O)	Sources
Medical Products	Developing inclusive medicine access policies	Legal restrictions + language barriers limit medical access	Multilingual prescription guides + community health navigators	35% ↑ access to essential medicines	Adel El Arab et al. (2023) Johansen et al. (2024) [29, 53]
	Implementing migrant-inclusive vaccination programs	Legal/administrative barriers exclude migrants from vaccines	Non-ID registration + mobile outreach clinics	50% ↑ vaccination rates in migrant groups	Immordino et al. (2022) Kajikhina et al. (2023) [27, 10]
	Launching multilingual health literacy campaigns	Misinformation deters migrants from medical services	Culturally tailored messaging + trusted community leaders	40% ↑ healthcare engagement	Johansen et al. (2024) Kajikhina et al. (2023) [53, 10]
Service Delivery	Forming cross-sector resettlement partnerships	Peripheral neighborhood relocation of VMRWG	NGO-public health joint service hubs + mobile clinics	40% ↑ service access; 30% ↓ disparities	Correa-Salazar et al. (2023) Dias et al. (2021) [54, 55]
	Designing austerity-responsive eldercare models	Institutional silos + budget cuts	"Pronto Badante" peer networks + shared resource pools	35% ↑ care provision efficiency	Seiffarth & Aureli (2022) Han & Tian (2024) [30, 31]
	Applying Adaptive Leadership Frameworks	Complex migrant health needs	Real-time data dashboards + rapid response teams	25% ↑ resource optimization	Riza et al. (2020) Pavli & Maltezou (2017) [32, 56]
	Creating tiered integration systems	Unique community needs (e.g. Roma refugees)	School-based health portals + community advisory boards	50% ↑ priority population engagement	Rungan et al. (2024) Theodosopoulos et al. (2024) [37, 25]
	Establishing tiered interpretation systems	Language barriers in clinical settings	Certified interpreters + AI-assisted translation protocols	60% ↑ communication accuracy	Pocock et al. (2020) Bäärnhielm & Schouler-Ocak (2022) [28, 52]
	Building CHW-led maternity networks	Cultural mismatches in perinatal care	Bilingual doula programs + cultural safety audits	45% ↑ positive birth outcomes	Shorey et al. (2021) Davis et al. (2018) [23, 34]
	Setting up anti-discrimination clinics	Systemic bias in healthcare	Mandatory implicit bias training + patient advocacy units	30% ↑ equitable service utilization	Oh & Kim (2024) Espinoza-Kulick & Cerdeña (2022) [47, 48]

to Iran's context, particularly given its experience with refugee populations but need adaptation to address centralized decision-making structures. For instance, intersectoral collaboration in municipalities with limited health focus on migrants has contributed to reducing local health disparities [16, 17]. In Italy, coordinated governance across regional and national levels helped streamline healthcare access for undocumented groups [17, 18], demonstrating a model that is moderately applicable to Iran if implemented alongside decentralization reforms. These examples highlight the role of context specifically, political will and decentralization in activating mechanisms such as participatory governance and equity audits.

Germany's introduction of inclusive language guidelines is a compelling example of how minor but intentional policy changes can shift provider behaviors and improve trust between migrants and health systems [9]. This low-cost intervention is highly applicable to Iran's health system and could be rapidly implemented through Ministry of Health directives. Similarly, countries like Sweden and Canada, which rank highly on the Migrant Integration Policy Index MIPEX, show that inclusive governance frameworks lead to better health outcomes compared to exclusionary policies [19]. While these comprehensive models are aspirational for Iran, selected components could be adapted to local capacity.

In Iran, where registered refugees have free access to Primary Health Care PHC, but undocumented migrants face administrative barriers, inclusive policy reforms require intersectoral collaboration. For example, the "Health Houses for Refugees" initiative in Tehran a partnership between the Ministry of Health and UNHCR has improved PHC access for Afghan refugees, yet service gaps persist for irregular populations due to documentation requirements. This demonstrates that partnership models are highly applicable but require expansion to cover undocumented groups. Additionally, in Sistan-Baluchestan province, mobile health units targeting border communities have demonstrated how decentralized governance can extend care to hard-to-reach migrants, though funding constraints limit scalability. These localized solutions are highly applicable to other border regions but require sustainable financing mechanisms.

Financing

Financial barriers remain among the most pressing challenges faced by migrant populations, especially

undocumented individuals who are typically excluded from public insurance schemes. Thailand's Health Insurance Card Scheme HICS, which demonstrated that every dollar invested in migrant coverage yielded three dollars in savings through reduced emergency care usage [10], is highly applicable to Iran's context and could build on existing humanitarian health financing structures. During the COVID-19 pandemic, targeted subsidies and co-pay waivers effectively mitigated financial barriers for migrant workers [20], representing a crisis-responsive model that is highly applicable to Iran's emergency preparedness planning. Nigeria's GIFSHIP program enhanced coverage among vulnerable groups [21], offering lessons that are moderately applicable to Iran but would require adaptation to local insurance frameworks.

For Iran, where registered refugees have limited but structured access to PHC, extending subsidized coverage through tiered or community-based insurance schemes could reduce disparities for undocumented populations and align with broader UHC objectives. Community-based insurance models are highly applicable given Iran's PHC infrastructure but require pilot testing in provinces with high migrant density. The Imam Khomeini Relief Committee's existing networks could serve as implementation platforms for such pilots.

Health workforce

Provider-level discrimination and lack of cultural competence are persistent barriers to equitable healthcare access for migrants. Implicit bias training programs, proven effective for sub-Saharan African migrant women [22, 23], are highly applicable to Iran's health workforce and could be integrated into existing continuing education systems. Interventions that align with cultural beliefs such as co-designed perinatal mental health services, enhance service utilization and patient satisfaction. These participatory approaches are highly applicable to serving Afghanistan's migrant populations in Iran but require investment in community engagement mechanisms.

A study in Nigeria underscored the importance of systemic reforms, noting that training, performance incentives, and infrastructure investment are essential to address workforce shortages in rural and migrant-heavy areas [24]. These findings are moderately applicable to Iran's border provinces, where similar workforce challenges exist but require adaptation to local resourcing constraints. Integrating community health workers CHWs into formal systems has reduced care disparities, particularly in hard-to-reach or marginalized communities [25]. This strategy is highly applicable to Iran's Behvarz network but would require additional training in migrant health needs and cultural sensitivity.

Health system information

Robust health information systems play a critical role in combating misinformation, promoting health literacy, and ensuring service continuity for mobile populations. Digital solutions like blockchain-based immunization records, successfully implemented for undocumented migrants elsewhere [26, 27], are highly applicable to Iran's context but require investment in technological infrastructure and staff training. A mobile application in Colombia facilitated HIV testing and linkage to care among Venezuelan migrants, demonstrating an approach that is moderately applicable to Iran's Afghan population but would need Dari/Pashto language adaptation [12].

In Malaysia, digital maternal health monitoring systems improved outcomes for migrant women [28], representing a model that is highly applicable to Iran's PHC system but requires gender-sensitive design considerations. Guidelines promoting inclusive and non-stigmatizing language have been shown to build institutional trust [10], an intervention that is highly applicable and low-cost for Iran's health facilities.

For Iran's national electronic health record SIB system, incorporating flexible, low-barrier, multilingual access points e.g., Dari, Pashto, Arabic could significantly improve digital inclusion for migrant groups. This adaptation is highly applicable but requires coordination between the Ministry of Health and migrant community representatives to ensure cultural appropriateness.

Medical products, vaccines, and technologies

Legal and administrative exclusions often prevent migrants from accessing essential medicines and preventive services. Inclusive vaccination campaigns, achieving 90% coverage in Italy's undocumented communities [27], are highly applicable to Iran and could leverage existing mobile health units in border provinces. Community-driven outreach using respondent-driven sampling, as implemented for HIV services in Colombia [11], is moderately applicable to Iran but requires adaptation to local epidemiological profiles and trust-building with hidden populations.

For Iran, mobile clinics and community health navigators could be strategically deployed in provinces with high migrant density, particularly to address vaccine hesitancy and access gaps during outbreaks or emergencies. This approach is highly applicable given Iran's experience with Behvarz workers but needs additional training in migrant-specific health communication strategies.

Service delivery

Service delivery innovations that respond to local contexts have been pivotal in enhancing migrant health equity. Programs like Pronto Badante in Tuscany that improved eldercare access through peer networks [30]

are moderately applicable to Iran's context and could be adapted for migrant elderly care in urban centers. Adaptive leadership and integrated care systems utilizing real-time data dashboards [31, 32] are highly applicable to Iran's hospital systems but require investments in health information technology.

Language barriers have been addressed through certified interpreters and AI-assisted translation, improving communication quality and reducing misdiagnosis [33, 38]. While interpreter services are highly applicable to Iran's clinical settings, AI solutions are currently moderately applicable due to infrastructure limitations. In maternal health, culturally sensitive models using trained doulas and CHWs have improved birth outcomes among migrant women [23, 34]. These models are highly applicable to serving Afghanistan's migrant women in Iran but require partnerships with community-based organizations.

Synthesis and policy implications

Across all domains, this review highlights that successful strategies share common mechanisms: trust-building, legal and financial inclusion, cultural alignment, and participatory governance. These mechanisms are not universally effective in isolation; they are activated by enabling contexts such as inclusive legislation, institutional collaboration, and system readiness. The realist lens thus offers a nuanced understanding of "what works, for whom, and under what conditions."

For Iran, global strategies are most transferable when they: Leverage existing infrastructure, such as the Behvarz network, PHC system, or SIB digital record platform, address well-documented implementation challenges, including centralized governance, inconsistent migrant registration, and linguistic barriers, Align with sociopolitical and cultural norms, particularly in marginalized and border communities.

Iran's contextual strengths like an expansive PHC system, a history of refugee engagement, and humanitarian partnerships create opportunities for adaptation. However, challenges remain, including fragmented governance, limited insurance integration for undocumented groups, and lack of sustained cultural responsiveness in mainstream services.

Key policy recommendations include

- Piloting inclusive insurance schemes for undocumented and migrants with temporary or limited legal status.
- Scaling up CHW networks with training in cultural competence and gender sensitivity.
- Investing in multilingual health communication and interpretation infrastructure.
- Enhancing digital inclusion through mobile outreach and telehealth for migrants.
- Institutionalizing anti-discrimination training and equity audits at provider levels.

Sustained political commitment, intersectoral coordination, and migrant community engagement are essential to institutionalizing these changes. Adopting a context-sensitive, equity-driven approach can help Iran move toward inclusive health system strengthening, ensuring that no population is left behind.

Conclusion

This realist review underscores a consistent finding across global evidence: health system reforms that are context-sensitive, equity-driven, and aligned with institutional readiness can significantly improve health outcomes for migrant populations. These insights lead us to our Final Theory for Improving Migrant Health: contextually grounded interventions applied across the six WHO health system building blocks and activated by supportive individual, organizational, and systemic enablers can trigger mechanisms such as trust-building, barrier reduction, and cultural responsiveness. When these mechanisms function in synergy, they enhance service utilization, improve health equity, and reduce disparities for migrants.

Within Iran's health system, several global strategies stand out as especially transferable. Thailand's inclusive migrant insurance scheme (HICS), for example, illustrates how extending financial coverage can reduce catastrophic spending and increase service uptake [10]. A targeted pilot phase focusing initially on vulnerable subgroups such as pregnant women and children could offer a pragmatic entry point for Iran.

Culturally and gender-sensitive service delivery is another critical dimension. Colombia's HIV programs and Australia's trauma-informed care models both emphasize provider training in cultural competence directly relevant to the needs of Afghan and Iraqi migrants in Iran. Similarly, Italy's mobile vaccination campaigns (with up to 90% coverage among undocumented migrants) and Ghana's peer-led outreach structures provide practical models for Iran's Behvarz and Moragheban-e-Salamat networks to replicate in migrant-dense areas [27, 68].

Systemic reforms, too, are essential. Germany's inclusive language guidelines [9] and Colombia's outreach using respondent-driven sampling [11] demonstrate the value of communication equity and non-coercive access strategies critical for engaging hard-to-reach or undocumented populations. With appropriate political will, legal reform, and infrastructure support, these models can be

adapted to Iran's existing primary health care (PHC) and digital systems.

Adaptation, not replication, is the operative principle. Iran's health reforms must be tailored to the country's centralized governance model, legal constraints on undocumented populations, multilingual demographics, and geopolitical realities. Insurance expansion, culturally responsive training, digital inclusion, and migrant-led outreach are not isolated tactics. They are interdependent pillars of a cohesive, equity-oriented health strategy.

Ultimately, migrant health is not a peripheral concern it is central to the resilience and integrity of Iran's health system. Prioritizing migrant-inclusive reforms is not just a humanitarian imperative but a strategic investment in universal health coverage, public trust, and national well-being.

Limitations

This review highlights effective strategies for enhancing migrant health but has notable limitations. Firstly, it relies on secondary data, which may restrict the analysis depth due to inadequate information on implementation processes and contextual factors. This affects the understanding of context-mechanism-outcome (CMO) configurations, complicating the evaluation of specific strategies across varied settings. Additionally, the global perspective means findings may need adaptation to local environments, such as Iran. The complexity of migrant health issues and the diverse strategies presented made it difficult to thoroughly cover all associated CMO configurations. Furthermore, a focus on studies published in English and Persian may exclude valuable insights from other languages, introducing potential bias. Future research could tackle these gaps by examining specific strategies in detail, investigating implementation processes, and refining CMO configurations. Areas of interest could include culturally tailored interventions, digital health technologies for underserved populations, and intersectional challenges faced by migrants. Addressing these aspects would enhance targeted recommendations for improving migrant health.

Abbreviations

WHO	World Health Organization
NGOs	Non-Governmental Organizations
UDHR	Universal Declaration of Human Rights
ICESCR	International Covenant on Economic, Social, and Cultural Rights
GCM	Global Compact for Safe, Orderly, and Regular Migration
CHWs	Community Health Workers
HIV	Human Immunodeficiency Virus
COVID-19	Coronavirus Disease 2019
ER	Emergency Room
SDOH	Social Determinants of Health
KPIs	Key Performance Indicators
CMO	Context-Mechanism-Outcome
ICMO	Intervention-Context-Mechanism-Outcome
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
HICS	Health Insurance Card Scheme (Thailand)
GIFSHIP	Government-Funded Subsidized Health Insurance Program (Nigeria)
MIPEX	Migrant Integration Policy Index (used in Canada and Sweden)
Amayesh cards	Identification cards for Afghan refugees in Iran
Hoviat cards	Identification cards for Iraqi refugees in Iran

Acknowledgements

This article is part of the Ph.D. dissertation of Dr. Kanishka Ghiasi, a student from Afghanistan at Tehran University of Medical Sciences. The authors would like to extend their sincere gratitude to Tehran University of Medical Sciences and to Professor Ali Mohammad Mosadeghrad for his valuable intellectual contributions to this study.

Author contributions

KG and AMM participated in the design of the study. KG, AMM, HD, EJ, and MAundertook the literature review process. All authors drafted the manuscript. Allauthors read and approved the final manuscript.

Funding

No funding for this study.

Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Tehran University of Medical Science [Approval ID: IR.TUMS.SPH.REC.1400.260]

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Received: 27 April 2025 / Accepted: 26 June 2025
Published online: 29 July 2025

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