Evidence and gaps in the literature on HIV/STI prevention interventions targeting migrants in receiving countries: a scoping review

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ABSTRACT

Background: Evidence suggests that migration increases vulnerability to human immunodeficiency virus (HIV) and other sexually transmitted infections (STI). However, there is limited knowledge about what has been done or needs to be done to address migrants’ vulnerability in receiving countries.

Objectives: A scoping review was carried out to map the existing literature in this field, describe its characteristics, identify gaps in knowledge and determine whether a Sexual and Reproductive Health and Rights (SRHR)-perspective was applied.

Methods: We used the Arksey and O’Malley framework and the Joanna Briggs Institute guidelines for scoping reviews and subsequent enhancements proposed by other authors. We searched three databases and grey literature to identify relevant publications.

Results: A total of 1,147 records were found across the three electronic databases and compiled. Of these, only 29 papers that met the inclusion criteria were included. The review shows that research in this field is dominated by studies from the USA that mostly include behavioural interventions for HIV and HBV prevention among migrants from Latin America and Asian countries, respectively. None of the interventions integrated an SRHR perspective. The intervention effects varied across studies and measured outcomes. The observed effects on knowledge, attitudes, perceptions, behavioural intentions and skills were largely positive, but reported effects on testing and sexual risk behaviours were inconsistent.

Conclusions: There is a need for good quality research, particularly in parts of the world other than the USA that will address all STIs and specifically target the most vulnerable subgroups of migrants. Further research requires greater scope and depth, including the need to apply an SRHR perspective and incorporate biomedical and structural interventions to address the interacting causes of migrants’ vulnerability to HIV/STIs.

Background

The current scope, impact and complexity of international migration has generated complex challenges including public health challenges for both host societies and the migrants themselves [1]. Current estimates suggest that there were approximately 272 million international migrants in 2019, an increase from 248 in 2015 and 173 million in 2000. Almost all countries in the world are involved as destinations, transit or origin [2]. However, there is no universally accepted definition of the term ‘migrant’. The term ‘migrant’ in this review refers to all persons who have moved to another country and stay there for at least 3 months, which is the limit for a tourist visa in most countries.

Migrant health status is a highly complex issue, and their health problems are often compounded by the migration process. Newly arrived migrants tend to have better health than the general population in their receiving and home countries. This phenomenon is known as the ‘healthy migrant effect’ or ‘healthy migrant paradox’ [3]. However, studies have shown that this phenomenon is outcome specific and related to individual sociodemographic characteristics, experiences faced throughout the migration process and time since immigration [3–5]. When it comes to infectious diseases including HIV/STIs, migrants are generally at an increased risk than the general population in their destination countries because of the experiences and circumstances surrounding the migration process including the socio-economic and political factors in both the home and receiving countries [6–8]. However, the relationship between migration, mobility and HIV/STIs has been described as complex and controversial and depending on the stage and prevalence of infections and conditions in country of origin, transit and destination [9].

Migration has been identified in some regions as an independent risk factor for human immunodeficiency...
virus (HIV) infection and a key driver of the pandemic, which remains a major global public health challenge [8]. For instance, in the most low prevalence countries, HIV affects migrants to a great extent, particularly those who come from high prevalence countries, who are often overrepresented among HIV infection cases that are being reported [8]. Similar patterns have been reported in the USA and Canada [10,11]. In the European Union (EU)/European Economic Area (EEA) member states, the proportion of migrants among new HIV diagnoses varies and can reach up to 70% in some countries [12]. Furthermore, the proportion of migrants among new HIV diagnoses being reported in high-income countries surpasses the percentage represented by foreign-born in the general population [13]. Even migrants from countries without high HIV prevalence are at an increased risk of HIV infection due to several social, economic and political factors throughout the migration process that create and increase vulnerability to HIV and other Sexually Transmitted Infections (STIs) in all migrants [8,12,14,15]. Thus, there is a need for effective targeted HIV/STIs prevention interventions in destination countries.

HIV/STI prevention interventions refer to all interventions or programmes aimed at preventing the acquisition, spread and consequences of HIV and/or other STI infections. These include different strategies aimed at preventing exposed individuals from becoming infected (primary prevention), stopping onward transmission (secondary prevention) and improving the quality of life of those affected (tertiary prevention) [16]. These strategies involve various types of interventions to reduce risky behaviours (behavioural interventions), prevent HIV/STI acquisition and transmission, e.g. condom, testing, antiretroviral and STI treatments, pre- and post-exposure prophylaxis (biomedical interventions) and/or address underlying social, economic, political or environmental factors that make some individuals or groups more vulnerable than others (structural interventions) [17].

The Joint United Nations programme on HIV/AIDS (UNAIDS) recommends a rights-based approach to HIV prevention programming in order to address the interacting causes of HIV risk and vulnerability and reduce new infections [18]. This approach is known as ‘combination HIV prevention’ and is defined as a rights-based approach that ‘relies on evidence informed, strategic and simultaneous use of complementary behavioural, biomedical and structural prevention strategies, which operate on different levels (e.g. individual, interpersonal, community, societal) to address the specific and diverse needs of key populations at risk of HIV infection’, including migrants [18]. This approach has its roots in the right to health as a fundamental human right and underlines the necessity to integrate sexual and reproductive health and rights (SRHR) in prevention efforts against HIV and other STIs [19]. The right to health further requires four key standard dimensions on healthcare services, i.e. availability (A), accessibility, acceptability (A) and quality (Q) also known as the AAAQ-framework. This framework has been formulated by the United Nations’ Committee on Economic, Social and Cultural Rights to articulate what the right to health meant in practice. The AAAQ concept stresses that healthcare services, including HIV/STI services should be available (in sufficient quantity), accessible (physically, economically including accessibility of information and without discrimination), acceptable (ethically and culturally appropriate, and sensitive to gender, age and diversity in the population) to all particularly the most vulnerable groups, and the services should be of good quality (medically and scientifically appropriate and of the highest quality) [20].

The World Health Organization (WHO) describes SRHR/HIV linkages as ‘concerted efforts in policy, programmes, and service delivery that support comprehensive sexual and reproductive health needs and rights of all people, including migrants, within a framework of gender equality and human rights’ [19]. SRHR encompasses the right of all individuals to make decisions concerning their sexual activity and reproduction free from discrimination, coercion and violence, and the right to a health system that provides the same opportunities (in terms of availability, accessibility, acceptability and quality) for all people to achieve the highest attainable health [21]. However, an SRHR perspective on HIV entails the recognition of the intrinsic connections between SRHR and HIV and the necessity of a bi-directional linkage between SRHR and HIV responses at the policy, systems and service delivery levels to achieve human rights, gender equality and the sustainable development goals [19].

Migrants are often identified as one of the ‘key populations’ for HIV prevention efforts within the global AIDS response [8,16]. Consequently, international, regional (e.g. EU) and national policies and guidelines for HIV prevention emphasise not only their increased risk and vulnerability but also the benefits of interventions targeting migrants for both the individual and the host society [8,22]. These policies and guidelines also highlight the necessity of integrating other STIs in the response to the HIV pandemic and all related preventative work because HIV and STIs are interconnected in many aspects for example, regarding transmission, behavioural factors and potential control measures [23,24]. However, migrants not only have special needs, but also face complex barriers in accessing available healthcare services in receiving countries, which exacerbates their risk and
vulnerability [7,8]. These barriers include legal status, discriminatory policies, stigma and discrimination within migrant groups and among health professionals, culture and language, knowledge and attitudes towards HIV and health care, racism and xenophobia, and low socioeconomic status [12,15].

Poor access or even a lack of access to available services can result in late HIV diagnosis and treatment with increased morbidity and mortality, as well as an increased risk of onward transmission and thus a high risk of post-migration infection [12,15,25]. The evidence suggests that there is a high level of post-migration acquisition of HIV, even though most of the migrants living with HIV were believed to have contracted HIV prior to migration [16,26,27]. Moreover, the decline in AIDS cases generated by HIV ARV therapy that has been reported across the EU has not been observed among the vulnerable migrant subgroup [28]; this suggests a failure of both primary and secondary prevention and the need for tailored interventions. However, there is limited knowledge about what has been done and what needs to be done in the field of HIV/STI prevention and migration. Specifically, what kind of preventive interventions have been implemented so far, whether they have been successful or not and whether the right (SRHR) perspective has been applied or not.

**Aim, research question and objectives**

The aim of this scoping review was to map the research done in this area, identify any existing gaps in knowledge and determine whether an SRHR-perspective was applied.

The following research question guided this review: What does the literature tell us about HIV/STI preventive interventions targeting migrants in the context of their receiving countries, its effects and the use of an SRHR perspective?

The specific objectives of this scoping review were to:

- identify relevant literature on HIV/STI prevention targeting migrants, both peer-reviewed,
- describe the characteristics of selected studies and interventions, and identify gaps,
- examine reported effects and underlying theories and determine whether an SRHR perspective has been taken into consideration.

**Methods**

**Protocol**

The review protocol was drafted using Arksey and O’Malley [29] and the Joanna Briggs Institute guidelines for scoping reviews [30] and subsequent enhancements proposed by other authors [31,32]. However, the PRISMA extension for scoping reviews checklist for reporting published in 2018 was used during manuscript writing [33].

The draft was revised by the authors who also discussed the research question, its purposes, the search strategy, the number of databases to be searched and the overall protocol. A Swedish version of the final protocol is available from the first author on request. This review is an update of an early report published in Swedish by the PHAS in 2018 that was not peer-reviewed [34].

**Information sources and search strategy**

We used a three-step search strategy as suggested by Arksey and O’Malley to identify relevant documents and papers [29]. The first author conducted an initial search of a number of bibliographic databases and key websites from their inception until 15 August 2016 to identify appropriate search terms and appreciate the standard and volume of available literature on this topic. This preliminary search was performed with the assistance of a research librarian, who helped customize search and build search terms. Relevant key and Medical Sub-Heading (MeSH) terms were identified at this step including key MeSH terms such as ‘Transient’ which was often combined with the term ‘Migrant’ to identify the study population. In addition, ‘Sexual violence’ and ‘Gender-based violence’ which are considered as risk factors for HIV/STIs and indicators of human rights violations including SRHR were identified as key terms [8]. Even key terms related to the essential standards of health services with respect to SRHR [20,21] were also selected and used in subsequent searches. The databases searched were PubMed, Web of Science, Scopus, Cochrane Database of Systematic Reviews, PROSPERO (International Prospective Register of Systematic Reviews), the Cochrane Library, the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and Web of Science. Additional sources involved key websites including the Public Health Agency of Sweden, World Health Organization, European Center for Disease Control, Centers for Disease Control and Prevention, and the Joint United Nations Programme on HIV/AIDS (UNAIDS). No existing scoping or systematic review on the topic was found after the preliminary search.

Thereafter, the Population, Intervention/Exposure, Comparison, Outcomes (PICO) and types (T) framework was used to define and systematise the literature search (See Table 1). A second search was then undertaken across all included databases after consultation with the research team. Three databases
(PubMed, CINAHL and Web of Science) that retrieved high numbers of records were then selected for the main search, which took place in September 2016. The third step involved hand searches and checking the reference lists of relevant papers, and documents.

The search strategy was not limited by study design, language or year. Upon completion, the searches from each database were documented and imported into a specific folder in the EndNote X7 software tool for managing bibliographies, citations and references and shared with other review team members. Thereafter, all duplicates were removed. Relevant documents and reports from key websites were also added to the folder as they were pertinent for the introduction and discussion.

A follow-up search of the three databases and grey literature sources was conducted in June 2019 after publication of the initial review as a non-peer reviewed report by the PHA in Swedish in 2018. The publication of the Swedish report took precedence over the peer-reviewed publication in accordance with the agreement [34]. This complementary search retrieved two systematic reviews and the reference lists of these reviews were also searched. Contrary to the current review, these two reviews were limited in terms of their type of interventions [35], target groups and contexts [36]. Appendix 1 shows an example of a complementary literature search in CINAHL database.

**Eligibility criteria**

Using the PICO framework, we created a search structure and selection criteria that formed the basis of pre-specified eligibility/inclusion criteria for the review. Selection criteria were further refined through an iterative process during the course of the work, depending on concept definitions (see Table 1). We included peer-reviewed journal papers if they focused on HIV/STI, targeted migrants and were published in English before 19 June 2019. We excluded papers that were published after 19 June 2019 or did not fulfil the inclusion criteria. Table 1 displays the search structure with inclusion and exclusion criteria.

**Selection of sources of evidence**

We used a two-stage selection process to assess the relevance of identified papers. First, the first author reviewed titles and abstracts to determine eligibility based on the defined inclusion and exclusion criteria (see Table 1). At this level, consultations with other research team members guided decisions about any uncertainty with a title or abstract. The second level involved two independent reviewers who reviewed full texts using the eligibility criteria. At this level, when differences arose, the reviewers consulted with the other team members to reach a consensus.

**Data charting process and data items**

Data extraction was performed by the first author and verified by the other team members and co-authors. The Transparent Reporting of Evaluations of behavioural and public health interventions with Nonrandomised Design (TREND) statement checklist was used to guide the extraction and charting of the data [37]. This statement consists of five main domains (title and abstract, methods, results and discussion) that include a checklist of 22 items on standard information about the publication (see S1 appendix). Additional information was added to identify the study source, authors, year of publication, country where the study was conducted, targeted issue and populations. Extracted data were compiled in two pre-tested standardised forms created in Microsoft Word after research team consultations. One table contained information about the study characteristics and the other described interventions in more details. The review team jointly reviewed all extracted data in a seminar. The charting forms can be found in an additional file. (See Appendix 2).

**Critical appraisal of individual sources of evidence**

While scoping reviews do not generally include a quality assessment of studies, it is suggested that such an assessment could be valuable in improving rigor and interpretation [31]. We therefore used the TREND statement checklist to assess the quality of included studies. Each of the 22 items of the TREND checklist was assigned one point for a positive response and zero for a negative one. For multi-items that consisted of more than one question, each question was assigned the equivalent of 1/number of questions in the item. Thereafter, a total score for each paper was estimated by totalling all points for each individual item. The theoretical range was 0 to 22 points, with a higher score indicating ‘high quality’. The resulting scores were further collapsed as follows: papers that scored at least 17.6 (80%) out of 22 points were graded as a ‘high-quality study’, papers that scored less than 17.6 (79.7%) but at least 14.5 (66%) points were rated as a ‘medium quality study’ and those that scored less than 14.5 (66%) points were considered a ‘low-quality study’.

**Synthesis of results**

Due to the heterogeneity of the existing literature and the fact that grey literature mainly provided contextual information on the extent and reasons for the
vulnerability of migrant populations to HIV/STIs, and existing prevention strategies and approaches, the synthesis for this review was limited to peer-reviewed published work. It consisted in a numerical summary (quantitative analysis, e.g. simple numerical counts) and a thematic analysis (qualitative analysis) of components of both studies and interventions in the included papers [38].

**Results**

A total of 1,147 records were retrieved, and after duplicates were removed, 1118 remained. After abstracts and full-text screenings 1092 papers were excluded, and 27 were included in the initial report [34]. Two more papers were added after the complementary search [39,40]. Figure 1 illustrates the literature search and selection process.

**Study characteristics**

Most included papers (n = 26) reported single studies, but one paper contained two studies [41] and another overlap with a previously published paper [42,43]. The papers were predominantly (n = 16) from the USA of America (USA) [43–58] and published between 1993 and 2017. All studies were quantitative, except one in which a mixed methods design was used [59]. Half (n = 14) of the quantitative studies were randomised controlled trials (RCT) [42,43,45–48,52,54–56,58,60–62].

Most studies focused on HIV prevention (n = 16) followed by Hepatitis B Virus (HBV) prevention (n = 9) and mainly targeted migrants from Latin America [46–51,53,55–57,63] and Asian countries [40,42,43,45,52,54,58,61,62] respectively. The remaining focused on HIV/STI prevention among sub-Saharan African [64] and Caribbean [65] migrants, and sexual health promotion among migrants from Vietnam [59], sub-Sahara Africa, South East and Middle East Africa [39]. Most studies (n = 17) included both sexes/genders [39–43,45,48–50,52,54,58,61,62,64,66,67], seven focused exclusively on women [44,46,47,53,55,59,65] and five targeted only men [41,51,56,57,60]. The sample sizes ranged from 18 to 1500, with migrant shares varying from 55 to 100% across studies. The study populations in included papers were defined by migratory status alone [59,64] or in combination with country of birth [40,43,45–49,51,52,63], country of origin/citizenship [41,44,51,54–56,58,60–62,64,66,67], ethnic origin/race [39,42,43,46,47,50,51,53–56,65]. The concepts used to identify them included immigrants [56,60,66,67], migrants [40,41,59,63], first-generation migrants [65], refugees [64], related ethnicity/race [39,46,47,49–54,56], citizenship, birth or home country [44,45,48,58,60–62]. The oldest participant was
86 years old and the youngest was 13 years old. The majority (n = 20) of studies included at least three outcomes [39–41,44,46,47,49,51–53,55,57–60,63–66], and the most frequently measured outcome was knowledge (n = 22) [39–41,43,44,46–52,55,57,58,60–66]. Detailed characteristics of the included studies are described in Table 2.

**Critical appraisal within sources of evidence**

Only one [45] of the 29 studies achieved a score that met the criteria of a high-quality study. Ten of the studies met the medium quality criteria [42,43,46–48,54,56,58,62,67] and the remaining 18 were graded as low-quality studies [39–41,44,49–53,55,57,59–61,63–66].

**Intervention characteristics**

The interventions implemented in the included studies were predominantly behavioural (n = 25), either exclusively [39,41,43,44,46,48–50,55,59–61,63–66] or integrated with biological interventions [40,47,51–53,56–58,62]. Only four were exclusively biomedical [42,45,54,67].

Most of the 25 behavioural interventions largely involved exposure to prevention messages, education programmes through brochures, pamphlets, workshops, lectures, videos, media campaigns, theatre and drama to improve knowledge about HIV [41,44,46–50,55,57,60,63,65,66], HBV [40,43,52,58,61,62], HIV/STIs [47,53,55,64], sexual health [39], where to get tested [51] or receive condoms [44], and the ability to negotiate safe sex [47,53,55,65], communicate with one’s partner [47,49,53,65] and the community about HIV [66] or sexual health [39]. Behavioural interventions further aimed to address risky behaviours [41,47,49–51,53,55,57,59,60,63,65] and issues related to power in relationships [46,65], condom use promotion [41,44,46,47,53,55–57,59,60,64,66], HIV related stigma [49], social support [47] and internalised homophobia [57] as well as social norms [41,55,65] and gender roles [46] or mental [47] and sexual [65] health promotion.

The nine interventions that integrated behavioural and biological components [40,47,51–53,56–58,62] aimed to promote and increase the uptake of HIV [51,53,56,57] and HBV [40,52,62] testing and the HBV vaccine [58] or decrease chlamydia incidence [47]. The four interventions that only evaluated biomedical outcomes aimed to increase the uptake of the HBV vaccine [54] and testing [42,45,54] or monitoring pregnancy occurrence in HIV positive couples as a proxy of unprotected sex [67].

Sixteen of the interventions were theory-based [41,42,44–47,49,51–53,55–57,59,60,65]. The most commonly used theory was the social cognitive theory (n = 6), either alone [47,55] or combined with theories of gender and power [44,46,53], empowerment theory [56] or other theories [53]. The theoretical basis was unclear in 13 studies [39,40,43,48,50,54,58,61–64,66,67]. All theories used in the included studies are displayed in Table 4. None of the studies integrated an SRHR perspective.
| Authors, year and place | Study design | Sample size (n): (intervention/control) | Gender/ Sex: Male/ Female (%) | Age (years) | Country of origin (%) | Length of stay (years) | Outcome measures | Study period/ follow-up time (retention rate) |
|------------------------|-------------|----------------------------------------|-------------------------------|-------------|-----------------------|------------------------|------------------|---------------------------------------------|
| Juon et al., 2016, USA | RCT         | 232 (124/108)                          | Mixed (43/57)                 | Mean: 48.8  | China, Korea, Vietnam  | 1–41                   | Self-reported Hepatitis B Vaccination (verified with the medical records) | 23 months/at 7 months |
| Merchant et al., 2015, USA | RCT       | 150 (n = 50) and an ED (n = 50) and two community-based organizations (n = 50) | Mixed: (unclear)                | 27–47 years | The Dominican Republic, Puerto Rico, Guatemala, El Salvador, Mexico, Bolivia, Columbia, Ecuador, and Venezuela. (mean = 46) | 16.82 ± 10.52  | Comprehension of information (HIV knowledge Score) | 7 months/immediately after |
| Bastani et al., 2014, USA | RCT | 1,123 (543/580) | Mixed: 35/ 65                  | 18–64           | China, USA, Korea, Vietnam, Laos, Thailand | 0–54                  | HBV screening (Self-reported) | 7 months |
| Takahashi et al., 2013, USA | RCT | 877 (441/436) | Women: 40/ 60                   | 15 years         | China (35), Vietnam (32), Korea (34) | 14.97 ± 9.83         | Knowledge about HIV risk factors, Knowledge about prevention and condom use skills | November 2010 to July 2012/at 3 months |
| Juon et al., 2013, USA | RCT | 260 (130/130) | Mixed: 40/ 60                   | 16–74           | Laos (73.1), Thailand (21.5) | ≤ 10 years | HBV Knowledge, HBV testing and factors affecting testing | November 2009 and June 2010/ at 6 months |
| Chen et al., 2013, USA | RCT | 548 (274/274) | Women 18–50                     | Colomba (34), Cuba (13), Peru (8), USA (8), the Dominican Republic (6), and other 11 countries (5) | 9.2 (± 8.6) | Chlamydia incidence, condom use, get drunk, IPV, partner communication, perceived HIV risk, self-efficacy, HIV knowledge, norms, perceived barriers, intention to use condom, community prevention and depression | January 2008–April 2010/at 3–6- and 12-months |

(Continued)
Table 2. (Continued).

| Authors, year and place | Study design | Sample size (n): (intervention/control) | Sex/ Gender: Male/ Female (%) | Age (years) | Country of origin (%) | Length of stay (years) | Outcome measures | Study period/ follow-up time (retention rate) |
|-------------------------|--------------|----------------------------------------|-------------------------------|-------------|-----------------------|----------------------|------------------|------------------------------------------|
| Taylor et al, 2009a, USA and Canada Unclear (2005)/ Unclear Taylor et al 2009b, Canada | RCT | 460 (unclear) Mixed (unclear) | ≥ 50% were < | 45 years | China (100) | Unclear | HBV testing (primary), HBV Knowledge (secondary) |
| Peragallo et al, 2005, USA | RCT | 657 (404/253) Women | 18–44 | Mexico = 89.4%, Puerto Rico (10.6) | < 2 years (146), ≥ 2 years (162) | Knowledge about HBV | February 1999-October 2000/ at 3 and 6 months |
| McPhee et al, 2003, USA | RCT (Posttest-Only design with equivalent comparison group) | 1500 (500/500/500) Mixed | 18–79 | Vietnam (100) | 24–46 | Parents’ awareness, knowledge about HVB, Children vaccination | April 1998-March 2000/ at 2 years |
| Kocken et al, 2001, Netherlands | RCT, without concurrent controls/ historical | 589 (293/ 296) Men | 18–40 | Turkish Morocco | <3 (n = 70), >3 (n = 494) | Misunderstandings about HIV, Risk appraisal for HIV infection, Perceived benefits of condom use, Perceived barriers for condom use, Condom self-efficacy and Intention to use condom |
| Roberts et al, 2017, Australia | Pretest-posttest design (single group) | 18 (N/A) Mixed (30/70) | 14–21 | Sub-Saharan Africa, South-East Asia and Middle East (unclear) | Unclear | knowledge, confidence, attitudes and skills in relation to sexual health | 12 weeks |
| Rios-Ellis et al, 2015, USA | Pretest-posttest design | 579 (N/A) Mixed (43/57) | 25–44 | Foreign born (55), mainly from Mexico (97) | 14.8 ± 11.8 | HIV knowledge, Stigma, Risk perception and Willingness to discuss sexual risk with partner (communication) | 12 weeks |
| Authors and year | Theory | Target group | Setting | Deliverer | Unit and mode of delivery | Number and duration of session | Incentive | Language |
|------------------|--------|--------------|---------|-----------|---------------------------|-------------------------------|-----------|----------|
| RCT Juon et al, 2016 | None | Asian Americans | Home based (outreach) | Lay health advisor | Individual/Mails and phone calls | Three phone calls at month 1, 2 and 5 in 7 months | Yes | English, Chinese, Korean and Vietnamese |
| Merchant et al, 2016 | None | Spanish-speaking Latinos | Medicine clinic, Emergency department and CBOs | Research assistant/ HIV counselor | Group/Video and orally delivered | One 10 min (Orally delivered), one 15 min (Video) | Unclear | Spanish |
| Bastani et al, 2015 | Health behavior framework | Koreans | Churches | Lay health workers | Group/ small group discussion and print materials | Single session | Unclear | Korean |
| Juon et al, 2014 | PRECEDE–PROCEED planning model | Chinese, Koreans, Vietnamese | CBOs (churches, temples and schools) | Trained bilingual staff | Group/ information, role play video at the clinic and photo novel | One 30 min session | Unclear | Korean, Chinese and Vietnamese |
| Chen et al, 2013 | Health Behavior Framework (HBF) | Hmong residents in the USA | Homes | Lay health workers | Individual (educational sessions and navigation services through home visits) | One 45 min | Yes | Vietnamese/English |
| Juon et al, 2013 | None | Chinese massage parlor women | CBOs (churches, temples, and schools) | Trained bilingual educator | Group (2–8)/educational session | One 30 min session/group over 1–2 weeks-two 3 (intervention), one 2 h (control) | Yes | Mandarin and Cantonese |
| Takahashi et al, 2013 | Social Cognitive Theory and theories of gender and power | Chinese massage parlor worker women in the USA | Health center | Chinese female facilitators | Group educational session and distribution of safe sex kits and information about free anonymous HIV testing | Group (3–7)/role play, participatory sessions, videos and discussions | Five 2 hours sessions | Yes | Mandarin and Cantonese |
| Peragallo et al, 2012 | Social cognitive theory of behavior change | Hispanic women | Accessible Community sites | Bilingual and bicultural Hispanic women (Bachelor to doctoral degree) | Peer Educators (compañeros de salud) | Group/ small group activities and discussions, didactic teaching, DVD, role plays | Multiple sessions for HIV and one session for cancer program | Yes | Spanish |
| Rhodes et al, 2011 | Social cognitive theory and empowerment education | Heterosexual Latino men | The offices of CBPR partners in the homes of participants | Peer Educators (compañeros de salud) | Group/ small group activities and discussions, didactic teaching, DVD, role plays | Multiple sessions for HIV and one session for cancer program | Yes | Spanish |
| Authors and year | Theory | Target group | Setting | Deliverer | Unit and mode of delivery | Number and duration of session | Incentive | Language |
| Wingood et al, 2011 | Social cognitive theory and theory of gender and power | Latina women | County HIV/AIDS office | Latina health educators | Group (7–8)/group discussions, role paying and teaching activities | Four 2.5 hours sessions during 4 consecutive weeks | Yes | Spanish |

(Continued)
| Authors and year | Theory | Target group | Setting | Deliverer | Unit and mode of delivery | Number and duration of session | Incentive | Language |
|-----------------|--------|--------------|---------|-----------|--------------------------|------------------------------|-----------|----------|
| Taylor et al, 2009a | None | Chinese | Participants’ Homes | Lay health workers (Bicultural, trilingual Chinese Americans/ Canadians) | Individual/ video and pamphlets through home visits | Unclear | Yes | Mandarin/ Cantonese |
| Taylor et al, 2009b | None | Chinese | CBO ESL schools | ESL teachers | Group (class sessions) | Three hours session | Yes | Mandarin/ Cantonese |
| Peragallo et al, 2005 | Social cognitive theory of behavior change | Low-income Latino women in Canada | Unclear | Bicultural staff and HIV counselor | Group (hands on activities, role playing, skill demonstration and homework) | Unclear | Unclear | Spanish/ English |
| McPhee et al, 2003 | None | Vietnamese American parents | ESL teachers | Media, community members and staff | Community/radio spots, oral presentation, and broadcast announcements | Over 2 years | Yes | Vietnamese |
| Kocken et al, 2001 | Health belief model | Turkish and Moroccan men in the Netherlands | Peer educator | Group (lectures and discussions) | One, 75 min | Unclear | Arabic |
| NRCT Roberts et al, 2017 | None | Migrant Resource Centre | Staff and peer educator | | 5 or more sessions/week | | | |
| Rios-Ellis et al, 2015 | Airihihenbuwa and Webster’s PEN-3 model and Elder et al.’s framework | Underserved Latino in the USA | Community venues | Peer HIV positive and their relatives | Group (interactive group education and brochures) | One, 60–90 min | Yes | Spanish/ English |
| Galvan et al, 2015 | None | Migrant shelters | Lecturer, peer, pamphlets | Group (group lecture, peer education and pamphlet) | One 30 min (peer), one 5 h lecture | Unclear | Spanish |
| Veldhuijzen et al, 2012 | None | Chinese migrants | Community venues | Staff/community members | Community campaign | 12 months | | |
| Drummond et al, 2011 | None | West African Refugees in Australia | Community hall | Peer educators | Group (workshops) | Unclear | Yes | English |
| Vega et al, 2011 | Social identity theory | Latino gay men in the USA | CBOs | Bilingual program staff | Group (exposition and discussion) | 5 sessions of unclear duration in 5 weeks | Yes | Spanish/ English |
| Martinez-Donate et al, 2010 | Social-ecological framework and social marketing principles | Latino MSM who identify themselves as heterosexual in the USA | Community venues | Media | Community (mixed campaign) | 7 months | Yes | Spanish |
| Authors and year | Theory | Target group | Setting | Deliverer | Unit and mode of delivery | Number and duration of session | Incentive | Language |
|-----------------|--------|--------------|---------|-----------|--------------------------|------------------------------|-----------|----------|
| (Continued) | | | | | | | | |
| (Continued) | | | | | | | | |
| Authors and year | Theory | Target group | Setting | Deliverer | Unit and mode of delivery | Number and duration of session | Incentive | Language |
|------------------|--------|--------------|---------|-----------|---------------------------|-------------------------------|-----------|----------|
| Bertens et al, 2008 | Problem-based learning (PBL), Trans theoretical Model (TTM), Self-regulated learning and observational learning | Afro-Caribbean women in the Netherlands | Homes | Peer health educators | Group (Group interaction and discussion) | Five sessions, unclear duration | Yes | Antillean/Surinamese |
| Martin et al, 2005 | None | Latino Migrants in the USA | Homes and Community venues | Peer community health workers | Individual/Group (education session) | One session, unclear | Unclear | Spanish |
| Martijn et al, 2004 | Theory of planned behavior | Arab speaking migrants in the Netherlands | Refugee shelters | Lay health worker and Professional Health advisor | Group (group lectures and discussions) | One session, 150 min | Unclear | Turkish/Arabic |
| Busza et al, 2004 | Community mobilization | Vietnamese illegal migrants sex workers in Cambodia | MSF clinics and drop-in centers | MSF Clinic staff | Group (participatory education, workshops, skills building) | Unclear | Unclear | Vietnamese |
| Kapplan et al, 2002 | None | HIV positive Ethiopian and their sexual partners. | Regional HIV center | Ethiopian Cultural mediators/case Managers (CMs) | Individual or couple/ Counselling | One session, 150 min | Unclear | Amharic |
| Raj et al, 2001 | Social cognitive theory, empowerment model based on Freirian concept, self-in-relation, diffusion and innovation and theory of gender and power (Intervention 1), theory of reasoned action and health belief model (Intervention 2) | Hispanic women in the USA | Community center and community clinic | Community health worker | Group (education sessions) | 12 sessions, | 90 min, 12 weeks |
| Shtarkshall et al, 1993 | None | Ethiopian migrants in Israel | Unclear | Authors | Group (education session) | 3 days | Unclear | Hebrew |
The interventions were culturally and linguistically adapted to the target populations and mainly delivered at group level (n = 21) [41–50,53,55–57,59–61,63–66] as outreach activities by lay health advisors/peer educators [39,41,44–46,50,52–54,56,58,60,62–65]. Nevertheless, two of the interventions consisted of media campaigns alone [51] or combined with other delivery modes [58]. The settings varied across studies and consisted of different community venues [39,40,42,43,45,47,49–51,53,56–58,60,64], migrant shelters [41,63], participants' homes [30,52,54,56,62,65], healthcare settings [44,46,48,53,59,67] and language schools [61]. The setting was not specified for one intervention [66]. Eleven of the interventions included a single session [41–43,45,48–50,60,61,63,67,68]; other interventions included two [44], three [54,61], four [46] or multiple sessions [39,40,47,51,53,56–58,65]. The number was not specified in three of the interventions [59,61,64]. The duration of sessions ranged from 10 minutes to 2 years. Incentives were provided for attendance in more than half (n = 16) of the interventions [43,44,46,47,49–51,54–56,58,61,62,64,65]. Other intervention details are illustrated in Table 3.

**Intervention effects**

**Effect on knowledge, attitudes and perceptions**

The interventions showed a positive effect on knowledge about sexual health [39], HIV/STIs [64], HIV [41,44,46–49,55,57,60,63,65,66], HBV [43,52,58,61,62], HVC and HIV testing services/locations [57]. However, the positive effect observed in the intervention group at the 6-month mark in Peragallo et al.’s (2012) study was not maintained at the 12-month follow-up [47]. A positive effect was also reported on attitudes towards sexual health [39], condom use [41,66] and HIV related stigma [49,66].

Reported effects on HIV risk perception [51,60,65], as well as the perceived ability to communicate with the community about HIV [59,66] or deliver safe sex messages to friends [39] were generally positive, except in Peragallo et al. (2012) in which no effect was demonstrated on perceived risk [47]. Positive effects were also observed on connectedness [57] and perceptions about cultural/traditional norms [46,65]. Despite this, Peragallo et al.’s (2005) early study detected no effect on safer sex peer norms [55].

**Risk reduction and sexual risk behaviours and intentions**

Reported effects on risk reduction and sexual risk behaviour outcomes varied across studies and outcomes. Despite reporting a positive effect on risk reduction behaviour intention in a previous study [55], Peragallo et al. (2012) identified no effect on self-efficacy for HIV prevention in a subsequent study [47]. Other studies showed positive effects on perceived behaviour control [41], intention [65], skills [59], and self-efficacy to negotiate safer sex [46,53] and communicate with partner [47,55,65]. Likewise, positive effects were observed on feelings of power in relationships [46], self-esteem [57], sexual assertiveness [65], as well as the intention to use condoms [47,53]. However, the positive effect on the intention to use condoms observed in Peragallo et al. (2012) at 6 months was not maintained at 12 months [47]. Positive effects were also reported on safer sex outcomes such as condom use [46,47,53,56,59], as well as related skills [44] and self-efficacy [46,60].

The reported effects on outcomes related to sexual risk behaviours were conflicting. While Peragallo et al. (2012) and Vega et al. (2011) demonstrated positive effects on intimate partner violence (IPV), drunkenness [47] and the number and type of sexual partners [57], respectively, Martinez-Donate et al. (2010) recognised contrasting effects on the number of incidences of unprotected sex with female partners between bisexual and heterosexual men [51]. However, the number of unprotected female sexual partners decreased in both groups, as well as the number of incidences of unprotected anal sex with male partners and unprotected male sexual partners among bisexual men during the post campaign [51].

**Effect on testing and vaccination behaviours and intentions**

The reported effects on HIV and HBV testing behaviours and intentions were also inconsistent across studies. Some studies reported positive effects [42,45,52,56], while others showed limited/no changes [49,53,62] or even negative effects [51] after the interventions. Positive effects were also observed on HBV vaccination behaviours [54], chlamydia [47] and pregnancy [67] incidence/occurrence.

**Discussion**

This scoping review shows that research in this field is dominated by studies from the USA [43–58] that mostly include behavioural interventions for HIV and HBV prevention among migrants from Latin America [46–51,53,55–57,63] and Asian countries [40,42,43,45,52,54,58,61,62], respectively. None of the interventions integrated a SRHR perspective. The intervention effects varied across studies and measured outcomes. The observed effects on knowledge, attitudes, perceptions, behavioural intentions and skills were largely positive, but reported effects on testing and sexual risk behaviours were inconsistent.

**Lack of studies outside the USA**

The review has revealed a scarcity of studies from outside the USA, including Europe. This might be an
indication that HIV/STI prevention programmes targeting migrants in Europe are not systematically evaluated or published in peer-reviewed journals. This emphasises the need for interdisciplinary teams including scientists, policy makers and representatives from migrant groups with clear roles for designing, implementing and evaluating interventions and disseminating its findings. Another possible explanation is that the main research focus in this field might be on observational studies that describe prevalence, experiences, perceptions, needs and risk factors for HIV/STI among migrants rather than intervention studies that evaluate prevention programmes. Diaz et al. (2017) argued in their scoping review on interventions to improve migrant health that the paucity of studies in this field might be a consequence of the challenges faced in undertaking such research or the lack of priority of immigrants’ health in research policies [69].

Vulnerable subgroups (of migrants) and other STIs not specifically targeted

The literature review also reveals that most studies focused on the prevention of HIV and HBV among migrants from Latin America [46–51,53,55–57,63] and Asian countries [40,42,43,45,52,54,58,61,62], respectively. HIV/STIs were mentioned only in four studies [47,53,55,64] and sexual health promotion in just two [39,65]. Migrants from sub-Saharan Africa were included only in four studies [39,64,66,67], despite being overrepresented among reported HIV cases in most receiving countries and thus a priority group or key population for prevention efforts. Moreover, migratory status was defined in different ways (country of birth/citizenship, ethnicity, reasons for migration) and several terms were used to identify the study population in the included papers. This confirms the lack of internationally accepted definitions to identify people who leave their countries to live/settle in other countries. The wide use of all-encompassing terms such as migrants, immigrants, ethnic origin and citizenship disregards the heterogeneity of this group making it difficult to focus on specific subgroups with increased vulnerability. For instance, vulnerable subgroups, such as migrant youth [39], men who have sex with men [51,57], transgender people, sex workers [59], people living with HIV [67], asylum seekers and undocumented migrants were rarely targeted in the included studies. The vulnerability of refugees, asylum seekers and undocumented women was highlighted in a study conducted in Belgium and the Netherlands that showed that most of them were extremely vulnerable to violence including sexual violence such as rape and sexual exploitation, which involve an increased risk for HIV/STIs [70].

Improvement in knowledge, attitudes and intentions, but reported effects on testing and sexual risk behaviours were inconsistent

This review further shows that intervention effects vary across studies and measured outcomes. While effects on knowledge, attitudes, perceptions, behavioural intentions and skills were largely positive, the reported effects on testing and sexual risk behaviours were inconsistent and varied across studies from positive to negative, limited or no effect. This suggests that changing people’s (sexual) behaviours is challenging, and that knowledge and information explain only a small part of behaviour as there might indeed be other factors that play a crucial role in determining these behaviours [71]. Other studies have suggested that the fear of stigma and legal consequences of a positive HIV test may prevent migrants from being tested [15,72]. Moreover, while testing is voluntary and free, access to treatment for certain migrant subgroups may be limited in some countries [73]. Despite these factors, this review shows a lack of studies that evaluated structural factors that can limit migrants’ access to treatment and prevention services and thus increase their vulnerability.

Prevention strategies incorporating structural interventions are needed

It is evident that most interventions in this review were behavioural [39,41,43,44,46,48–50,55,59–61,63–66] and focused on changing knowledge, perceptions, behaviour and attitudes through exposure to media campaigns, information or education programmes. In some studies, the behavioural interventions also included biomedical outcomes, such as HIV [51,53,56,57] and HBV testing [40,52,62] and HBV vaccination [58] or chlamydia incidence [47]. Only four of the studies included interventions that exclusively evaluated biomedical outcomes [42,45,54,67] and another just two/four evaluated traditional views on gender roles [46], IPV [47] and HIV related stigma that could be considered as structural indicators. However, none of the included studies addressed structural factors such as policies and laws that could limit migrants’ access to available services. Laws, policies and practices, as well as cultural and societal norms, shape the socio-environmental context in which HIV risk and preventive practices are generated [17] and can thus jeopardise preventive work and access on equal terms. Aung et al., (2017) underlined in their systematic review the need for interventions that also address the broader health system and structural factors that contribute to late HIV diagnoses in vulnerable subgroups of migrant populations and thus further transmission and poorer health outcomes [35]. However, the issue is not to
replace behavioural and biomedical interventions with structural interventions but rather to incorporate them into a comprehensive, multilevel and multisectoral response [17].

**The right perspective without specifically integrating SRHR**

The review further reveals that almost all interventions in the included studies aimed at improving availability, accessibility, acceptability and quality of HIV/STIs prevention programs targeting migrants suggesting thereby the application of the UN’s AAA-Q concept on the right to health [20]. Thus, none of the interventions specifically integrated a SRHR perspective that goes beyond a disease specific to a holistic perspective that recognizes the inherent connections between SRHR and HIV and the necessity of a bi-directional integration of SRHR and HIV services [19]. The starting point for most interventions in the included papers is that migration increases vulnerability towards HIV/STIs and that HIV-related care and preventative work needs to be responsive to the needs of migrants in order to improve access (32). This involved using outreach activities, mother tongues and peer educators or key persons from target groups. McMahon & Ward (2012), in their ‘realist review’ of evidence to guide targeted approaches to behavioural HIV prevention aimed at migrants in host countries, also found that incorporating cultural values into the intervention content and using appropriate languages (‘mother tongue’) and settings are critical elements in culturally appropriate HIV prevention programmes [28]. Although the UN’s AAA-Q concept is in line with a rights perspective, it does not systematically involve the integration of an SRHR perspective into the preventive work to address pregnancy, gender-based violence and inequality issues [19]. For example, condom use was only promoted for the prevention of HIV/STIs, but not for unintended pregnancies. Moreover, intimate partner violence was addressed as a risk factor for HIV/STI transmission, not as a violation of rights [47]. It is more about fulfilling the individual right to access services and be protected from HIV/STIs without a full scope of SRHR needs. HIV and SRHR linkages may not only prevent the spread of HIV/STIs, but also promote SRHR, reduce HIV-related stigma and discrimination and increase access to and utilisation of both HIV and SRHR services for vulnerable and marginalised subgroups of migrants, including transgender people, injecting drug users, sex workers, migrant youth and people living with HIV/AIDS. Future research in this field should therefore take this into consideration.

**Limitations**

The aim of a scoping review is to map a research area, summarise research results and identify knowledge gaps in the existing literature [31]. Nevertheless, it is vital to evaluate the evidence. One of the limitations of this review is that most of the included studies were graded as medium or low-quality studies according to the checklist in the ‘TREND statement’ [37]. Several studies in the included papers lack information on theories, randomisation procedures, sample size calculations and the validation of measurement instruments. Some of the studies have large dropouts and there is no information on how dropouts and missing data were handled. Outcome measures in most of studies were self-reported and it is unclear in some studies whether blinding was applied. In a number of studies, measurements took place immediately after the intervention or during a short follow-up. There are also issues about the generalisability of the results in several studies due to the use of a non-random sampling strategy and there exists a lack of information about whether the study populations were similar to the target groups. Moreover, in several studies that included theory-based interventions, the results were not interpreted accordingly.

Another limitation is that the inclusion and exclusion criteria, as well as the definition of the term migrant used in the review, have led to the exclusion of some studies where the proportion of migrants (foreign-born) was not specified or because they represented less than 50% of the sample. The focus in these studies was on ethnicity rather than migration. For the same reason, no study on African migrants to the USA or the UK has been included because they were referred to as African Americans and ‘Black Africans’, respectively, without data on the country of birth or whether they were foreign-born. It is therefore possible that some literature of relevance to the research question has not been included.

**Conclusion**

Existing research on HIV/STI prevention targeting migrants is limited and dominated by moderate to low-quality studies from the USA that lacked an SRHR perspective. These studies largely evaluated HIV and HBV behavioural interventions targeting Hispanic and Asian migrants, respectively, and where the UN’s AAAQ concept on the right to health is applied without specifically integrating an SRHR perspective. There is a need for good quality research, particularly in parts of the world other than the USA that will address all STIs and specifically target the most vulnerable subgroups of migrants. Further research requires greater scope and depth, including the need to apply an SRHR perspective, and
incorporate biomedical and structural interventions to address the interacting causes of migrants’ vulnerability to HIV/STIs.

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Author contributions
The first author (FKNK) performed the literature search. All authors made substantial contributions to the analysis and interpretation of identified literature. The first draft of the manuscript was written by the first author and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Paper context
HIV disproportionately affects migrants in Sweden. This scoping review was commissioned by the Public Health Agency of Sweden. Existing research is limited and dominated by HIV and HBV behavioural intervention studies from the USA that lacked a SRHR perspective. More research is needed, particularly outside the USA. Such research should tackle all STIs, specifically target vulnerable migrants, adopt an SRHR perspective and incorporate biomedical and structural interventions to address the interacting causes of migrants’ vulnerability.

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References
[1] Gushulak B, Weekers J, MacPherson D. Migrants and emerging public health issues in a globalized world: threats, risks and challenges, an evidence-based framework. 2010;2:e10. Emerging Health Threats.
[2] United Nations Department for Economic and Social Affairs. International migrants numbered 272 million in 2019, continuing an upward trend in all major world regions. Population Facts [Internet]. 2019 [2020 Jun 25]; (No. 2019/4). Available from: https://www.un.org/en/development/esa/population/migration/publications/populationfacts/docs/MigrationStock2019_PopFacts_2019-04.pdf.
[3] La Parra-Casado D, Stornes P, Solheim EF. Self-rated health and wellbeing among the working-age immigrant population in Western Europe: findings from the European social survey (2014) special module on the social determinants of health. Eur J Public Health. 2017;27:40–46.
[4] Pfarrwaller E, Suris J-C. Determinants of health in recently arrived young migrants and refugees: a review of the literature. Italian Journal of Public Health [Internet]. 2012; 9. Available from: https://iiphjournal.it/article/viewFile/7529/6788
[5] Setia MS, Lynch J, Abrahamowicz M, et al. Self-rated health in Canadian immigrants: analysis of the longitudinal survey of immigrants to Canada. Health Place. 2011;17:658–670.
[6] Rechel B, Mladovsky P, Devillé W, et al. Migration and health in the European Union: an introduction. In: Rechel B, Mladovsky P, Devillé W, et al., editors. Migration and health in the European Union. Berkshire: Open University Press; 2011. p. 3–8.
[7] Smith H QX Migration and women’s reproductive health. In: Social determinants of sexual and reproductive health: Informing future research and programme implementation [Internet]. World Health Organisation; [95–107]. 2010. Available from: https://apps.who.int/iris/bitstream/handle/10665/44344/9789241599528_eng.pdf.
[8] The Joint United Nations programme on HIV/AIDS (UNAIDS). Migrants. 2014 [2016 Sept 16]. In: The Gap Report [Internet]. Geneva: UNAIDS, [156–169]. Available from: http://www.unaids.org/sites/default/files/media_asset/UNAIDS_Gap_report_en.pdf.
[9] Vearey J. Mobility, migration and generalised HIV epidemics: a focus on sub-Saharan Africa. In: Thomas F, editor. Handbook of migration and health. Northampton: Edward Elgar Publishing; 2016. p.340-356.
[10] Centers for Disease Control and Prevention. HIV surveillance report, 2015: CDC, 2016 [2017 May 15]. Available from: https://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-2015-vol-27.pdf.
[11] Public Health Agency of Canada. Summary: estimates of HIV incidence, prevalence and proportion undiagnosed in CANADA, 2014 Ottawa: Public Health Agency of Canada; 2015 [2017 Jun 20]. Available from: https://www.canada.ca/content/dam/canada/health-canada/migration/healthy-canadians/publications/diseases-conditions-maladies-affections/hiv-aids-estimates-2014-vih-sida-estimations/alt/hiv-aids-estimates-2014-vih-sida-estimations-ang.pdf.
[12] European Centre for Disease Prevention and Control (ECDC). HIV and migrants. Monitoring implementation of the Dublin Declaration on Partnership to Fight HIV/AIDS in Europe and Central Asia: 2017 progress report. Stockholm: ECDC; 2017 [Cited 2020 Apr 20]. https://www.ecdc.europa.eu/sites/portal/files/documents/HIV%20and%20migrants.pdf.
[13] Ross J, Cunningham CO, Hanna DB. HIV outcomes among migrants from low-and middle-income countries living in high-income countries: a review of recent evidence. Curr Opin Infect Dis. 2018;31:25.
[14] European Centre for Disease Prevention and Control (ECDC), Migrant health: sexual transmission of HIV within migrant groups in the EU/EAA and implications for effective interventions. Stockholm: ECDC; 2013 [Cited 2020 Apr 20]. Available from: http://ecdc.europa.eu/en/publications/Publications/Migrant-health-sexual-transmission.pdf.

[15] Alvarez-del Arco D, Monge S, Azcoaga A, et al. HIV testing and counselling for migrant populations living in high-income countries: a systematic review. Eur J Public Health. 2013;23:1039–1045.

[16] European Centre for Disease Prevention and Control. HIV and migrants. Monitoring implementation of the Dublin declaration on partnership to fight HIV/AIDS in Europe and Central Asia: 2018 progress report. Stockholm: European Centre for Disease Prevention and Control (ECDC); 2019.

[17] Rotheram-Borus MJ, Swendeman D, Chovnick G. The past, present, and future of HIV prevention: integrating behavioral, biomedical, and structural intervention strategies for the next generation of HIV prevention. J Annual Review of Clinical Psychology. 2009;5:143–167.

[18] The Joint United Nations Programme on HIV/AIDS (UNAIDS). Combination HIV prevention: tailoring and coordinating biomedical, behavioural and structural strategies to reduce new HIV infections. A UNAIDS Discussion Paper. Geneva: UNAIDS; 2010 [Cited 2020 Apr 20]. http://www.unaids.org/sites/default/files/media_asset/JC2007CombinationPrevention_paper_en_0.pdf.

[19] The interagency working group on SRHR and HIV linkages (IAWG), SRHR and HIV Linkages: navigating the work in progress 2017:IAWG;2017 [Cited 2020 May 20]. http://srhivlinkages.org/wp/wp-content/uploads/IAWG_navigating-work-in-progress-2017.pdf.

[20] World Health Organization. The right to health fact sheet no. 31. Geneva: WHO; 2008. Available from: http://www.who.int/hhr/activities/Right_to_Health_factsheet31.pdf.

[21] Starrs AM, Ezech AC, Barker G, et al. Accelerate progress—sexual and reproductive health and rights for all: report of the Guttmacher–Lancet Commission. Lancet. 2018;391:2642–2692.

[22] Alvarez-del Arco D, Monge S, Caro-Murillo AM, et al. HIV testing policies for migrants and ethnic minorities in EU/EFTA member states. Eur J Public Health. 2014;24:139–144.

[23] Steen R, Wi TE, Kamali A, et al. Control of sexually transmitted infections and prevention of HIV transmission: mending a fractured paradigm. Bulle World Health Organ [Internet]. 2009;87:858–865.

[24] European Centre for Disease Prevention and Control (ECDC). A comprehensive approach to HIV/STI prevention in the context of sexual health in the EU/EAA: ECDC; 2013 [Cited 2020 Apr 20]. http://ecdc.europa.eu/en/publications/Publications/HVI-STI-prevention-comprehensive-approach-in-the-context-of-sexual-health-EU-EAA.pdf.

[25] Chen NE, Gallant JE, Page KR. A systematic review of HIV/AIDS survival and delayed diagnosis among Hispanics in the USA. J Immigr Minor Health. 2012;14:65–81.

[26] Fakoya I, Álvarez-del Arco D, Woode-Owusu M, et al. A systematic review of post-migration acquisition of HIV among migrants from countries with generalised HIV epidemics living in Europe: implications for effectively managing HIV prevention programmes and policy. BMC Public Health. 2015;15:581.

[27] Alvarez-del Arco D, Fakoya I, Thomadakis C, et al. High levels of postmigration HIV acquisition within nine European countries. AIDS. 2017;31:1979–1988.

[28] McMahon T, Ward PR. HIV among immigrants living in high-income countries: a realist review of evidence to guide targeted approaches to behavioural HIV prevention. Syst Rev. 2012;1:1.

[29] Arksey H, O’Malley L. Scoping studies: towards a methodological framework. J Int J Social Res Methodol. 2005;8:19–32.

[30] Joanna Briggs Institute. Joanna Briggs Institute Reviewers’ Manual: 2015 edition/Supplement: The Johanna Briggs Institute (JBI); 2015 [Cited 2019 Aug 14]. http://joannabriggs.org/assets/docs/sumari/Reviewers-Manual_Methodology-for-JBI-Scoping-Reviews_2015_v2.pdf.

[31] Daudt HM, van Mossel C, Scott SJ. Enhancing the scoping study methodology: a large, inter-professional team’s experience with Arksey and O’Malley’s framework. BMC Med Res Methodol. 2013;13:48.

[32] Levac D, Colquhoun H, O’Brien KK. Scoping studies: advancing the methodology. Implement Sci. 2010;5:69.

[33] Tricco AC, Lillie E, Zarin W, et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. Ann Intern Med. 2018;169:467–473.

[34] Folkhälsoomyndigheten. Hiv- och STI-prevention och sexuell och reproduktiv hälsa för migranter. Stockholm: Folkhälsoomyndigheten; 2018.

[35] Aung E, Blondell SJ, Durham J. Interventions for increasing HIV testing uptake in migrants: a systematic review of evidence. AIDS Behav. 2017;21:2844–2859.

[36] Ghimire S, Hallett J, Gray C, et al. What works? Prevention and control of sexually transmitted infections and blood-borne viruses in migrants from Sub-Saharan Africa, Northeast Asia and Southeast Asia living in high-income countries: a systematic review. Int J Environ Res Public Health. 2019;16:1287.

[37] Des Jarlais DC, Lyles C, Crespaz N. Improving the reporting quality of nonrandomized evaluations of behavioral and public health interventions: the TREND statement. Am J Public Health. 2004;94:361–366.

[38] Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3:77–101.

[39] Roberts M, Lobo R, Sorenson A. Evaluating the sharing stories youth theatre program: an interactive theatre and drama-based strategy for sexual health promotion among multicultural youth. J Health Promot J Aust. 2017;28:30–36.

[40] Veldhuijzen IK, Wolter R, Rijkhorst V, et al. Identification and treatment of chronic hepatitis B in Chinese migrants: results of a project offering on-site testing in Rotterdam, The Netherlands. J J Hepatol. 2012;57:1171–1176.

[41] Martijn C, De Vries NK, Voorham T, et al. The effects of AIDS prevention programs by lay health advisors for migrants in The Netherlands. Patient Educ Couns. 2004;53:157–165.

[42] Joon H-S, Lee S, Strong C, et al. Effect of a liver cancer education program on hepatitis B screening among Asian Americans in the Baltimore-Washington metropolitan area, 2009-2010. Prev Chronic Dis 2014;11:130258.

[43] Joon H-S, Park BJ. Effectiveness of a culturally integrated liver cancer education in improving HBV knowledge among Asian Americans. Prev Med. 2013;56:53–58.
