A Scoping Review about Migrants' Oral Health in South-South Contexts

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Objective: *To gather the available scientific evidence about the oral health of migrants in south-south contexts.*
Methods: *A scoping review methodology was applied through a comprehensive search in databases of scientific and grey literature: PubMed/Medline, Scopus, LILACS, EMBASE, Google Scholar and the International Centre for Migration, Health and Development. A descriptive analysis of the characteristics of the selected studies was conducted.*
Results: *The search yielded 23 papers. Seventeen studies (17/23, 73.9%) were conducted on the Asian continent and 91.3% (21/23) were cross-sectional. Studies were focused on oral health problems such as dental caries and periodontal disease with diverse findings when comparing immigrants with natives. Some studies found poor oral health indexes in migrants. Migrants face barriers to dental health services. Other oral health variables addressed in the studies were oral health–related quality of life, beliefs, knowledge and practices in oral health. Determining factors related to oral health were evidenced, such as migration status, sociodemographic, cultural, psychological, living, economic and material conditions, social support, oral health practices and previous oral and general health status. Studies reported conceptual and methodological gaps and limitations that must be considered when interpreting the results.*
Conclusion: *According to the scientific evidence, immigrant populations in south-south migratory contexts show poor oral health indicators, and this translates into social vulnerability in this group. Further research is needed to increase the scientific body about the social and contextual determinants in oral health and understanding of the social construction of this phenomenon.*
Key words: *dental health services, emigrants, immigrants, oral health*
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Oral health is acknowledged as an important public health topic that, according to the World Dental Federation (FDI), "is multi-faceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow, and convey a range of emotions through facial expressions with confidence and without pain, discomfort, and disease of the craniofacial complex"[1]. This concept, although closely associated with the absence of disease, should be interpreted within the framework of the broader concept of good general health[2]. Considering physical, mental and social well-being as a unit provides a holistic view of health, offering the opportunity to study health from

multiple perspectives, recognising that it is conditioned not only by issues, such as access to health services, but also by a variety of circumstances in which people are born, grow, live, work and age, known as the social determinants of health[3].

Migration is a phenomenon that impacts social, economic, demographic and health aspects in the origin and host countries. Although migration as a social phenomenon has numerous causes, most people migrate as an economic and labour project (these are "migrant workers") to support themselves and their families, although this can be intertwined with other political, academic or health reasons[4]. For the migrant population, social determinants influence the well-being of individuals in different ways and at different points in their migration process: the phase prior to migration, transfer, arrival, integration and, for some, their return[4].

When studying migration and health, it is important to understand that migrants are not a homogeneous group. As such, their needs or social determinants vary, generating different axes of inequality among migrants that have repercussions on their health status and quality of life[5-7]. When migration occurs in unfavourable circumstances from the pre-migration moment, through the migration process and according to the conditions in the destination country, migrants are under a potential axis of health inequity[5].

For some, migration can increase exposure to health risks, as in the case of migrant workers employed in precarious conditions and with little access to health care, but for others it may improve their health, for example when people flee a situation of persecution and fear of violence for a safe environment[4]; some who migrate may even find a better state of health than those who remain in the place of origin, a phenomenon known as the healthy migrant effect[8].

In the case of oral health, some studies have reported unfavourable oral health indicators due to carrying a heavier burden of disease from pre-migration processes, social factors and barriers to access to dental services[9,10], pointing to different axes of significant inequity in oral health[11]. Similarly, other authors have described how the state of oral health in immigrants deteriorates over time, reflecting that the healthy migrant effect is temporary[6].

It is currently estimated that there are around 272 million international migrants worldwide, almost two-thirds of whom are labour migrants[4]. A person who resides in a country other than their country of origin is recognised as a migrant; however, some who have never migrated are also considered migrants, such as children born abroad to migrant parents, usually known as second-generation migrants[4,12].

Although the United States of America continues to be the most frequent destination country, the number of migrant workers has been decreasing slightly in high-income countries and increasing in others. In 2017, 68% of migrant workers settled in high-income countries, 29% in middle-income countries and 3.4% in low-income countries. The change between 2013 and 2017 is notable: high-income countries experienced a decrease of 7 percentage points from 75% to 68%, while upper-middle–income countries registered an increase of 7 percentage points from 12% to 19% in the same period[4].

This clear shift in destination countries for some migrant workers may be due in part to economic growth in upper-middle–income countries, to changes in labour immigration regulations in high-income countries, or both factors[4]. As the number of migrants increases globally, so too does the number of research publications analysing migratory processes. However, the majority of research is conducted in developed countries from the perspective of their being a destination country; that is, the classic migration process in the south-north direction is most often analysed, i.e., migrants from developing countries moving to developed countries[4,5].

Understanding that migration is not uniform throughout the world but responds to economic, geographic, demographic and other factors that determine migration patterns, migration 'corridors', intraregional migration or south-south migration[4], and that research on oral health in these contexts is scarce[5], the aim of the present scoping review was to gather the available scientific evidence about the oral health of migrants in south-south contexts.

Materials and methods

A scoping review was conducted following the preferred reporting items for systematic reviews and meta-analyses (PRISMA) model for scoping reviews (http://www.prisma-statement.org/Extensions/ScopingReviews). We also consulted and adopted the methodology proposed by the Joanna Briggs Institute[13] and the Arksey and O'Malley methodological framework for scoping studies[14]. According to the inclusion criteria proposed for systematic reviews, the protocol for scoping reviews should not be registered in the International Prospective Register of Systematic Reviews (PROSPERO) (https://www.crd.york.ac.uk/prospero/#aboutregpage).

Table 1 Search strategy.

Database	Search strategy
Scopus	((TITLE-ABS-KEY (immigration) OR TITLE-ABS-KEY (immigrants))) AND ((TITLE-ABS-KEY ("oral health") OR TITLE-ABS-KEY ("dental caries") OR TITLE-ABS-KEY ("periodontal diseases") OR TITLE-ABS-KEY ("dental care") OR TITLE-ABS-KEY ("dental health services")))
PubMed	Search (((((("Emigration and Immigration"[Mesh])) OR "Human Migration"[Mesh]) OR "Undocumented Immigrants"[Mesh]) OR ("Emigrants and Immigrants"[Mesh])) OR ("Transients and Migrants"[Mesh]))) AND ((((((("Dental Health Services"[Mesh]) OR "Dental Care"[Mesh]) OR "Periodontal Diseases"[Mesh]) OR "Dental Caries"[Mesh]) OR "Dental Health Surveys"[Mesh]) OR "Oral Health"[Mesh])
Embase	((immigration:ab,ti OR immigrants:ab,ti) AND ('oral health':ti,ab,kw OR 'dental caries':ti,ab,kw OR 'periodontal disease':ti,ab,kw OR 'dental care':ti,ab,kw OR 'dental health service':ti,ab,kw))
LILACS	tw:((inmigración OR inmigrantes) AND (salud oral OR caries dental OR enfermedad periodontal OR servicios de salud oral)) AND (db:("LILACS" OR "BBO" OR "BINACIS")) AND (year_cluster:[2010 TO 2020])

Research question

In accordance with the research purposes, the population, concept and context (PCC) question was as follows: What scientific evidence is available about the oral health situation in migrant populations in south-south contexts and their social determinants?

- population: migrant groups in south-south contexts;
- concept: oral health and its social determinants;
- context: south-south movement.

In this study, south-south migration studies were defined as those including migrants proceeding from Asia (excluding Japan), Africa and Latin America (with these same destination regions), and excluding destination countries in North America, Europe, Australia and Oceania.

Search process for identifying relevant studies

A comprehensive search was conducted of peer-reviewed and grey literature to locate publications relevant to the research topic. Four electronic databases were included: PubMed/Medline, Scopus, LILACS (Latin-American and Caribbean Health Sciences Literature) and Embase (the Excerpta Medica Database). The search was complemented by adding Google Scholar and the International Centre for Migration Health and Development (https://icmhd.ch/). The detailed search strategy used in the databases employing medical subject headings (MeSH) terms and keywords is shown in Table 1.

The search was focused on original research studies published in Spanish, English and Portuguese, and no time range was applied. Theses and other academic degree works relating to the aim of this review were also included. Letters to the editor, editorials, systematic and theoretical reviews, summaries of conferences, historical papers and book summaries were excluded.

Study screening and selection

Two reviewers (AMMP and AAAS) searched independently to identify titles and abstracts of potentially eligible studies. Articles with information in the abstract that fit the eligibility criteria were included, and the papers were selected for a full reading. The reviewers also checked the reference lists of the selected papers for studies not identified in the initial searches, and all papers selected for inclusion in the review were processed for data extraction. No software was used for screening and selection of the studies. To guarantee the quality process, the authors conducted a pilot test with five articles and calculated a simple concordance index, with a score of 85%.

Collating, summarising and reporting findings

The following variables were described for each study: author, country, year of publication, conceptual framework used in the justification of the study, type of study, data collection methodology, type and size of sample, country of origin, migration status characteristics, central topics (health services accessibility, dental caries, periodontal disease, other oral pathologies, risk factors), main findings, limitations/gaps, conclusions, recommendations and general comments.

Results

The initial search resulted in 462 records (458 obtained by database searching and 4 by additional searches). After removal of duplicates, 364 records were selected for title and abstract review, 329 of which were excluded, and 35 articles remained for full text reading. Ultimately, 23 publications were included[15-37]. The reasons for exclusion are shown in Fig 1.

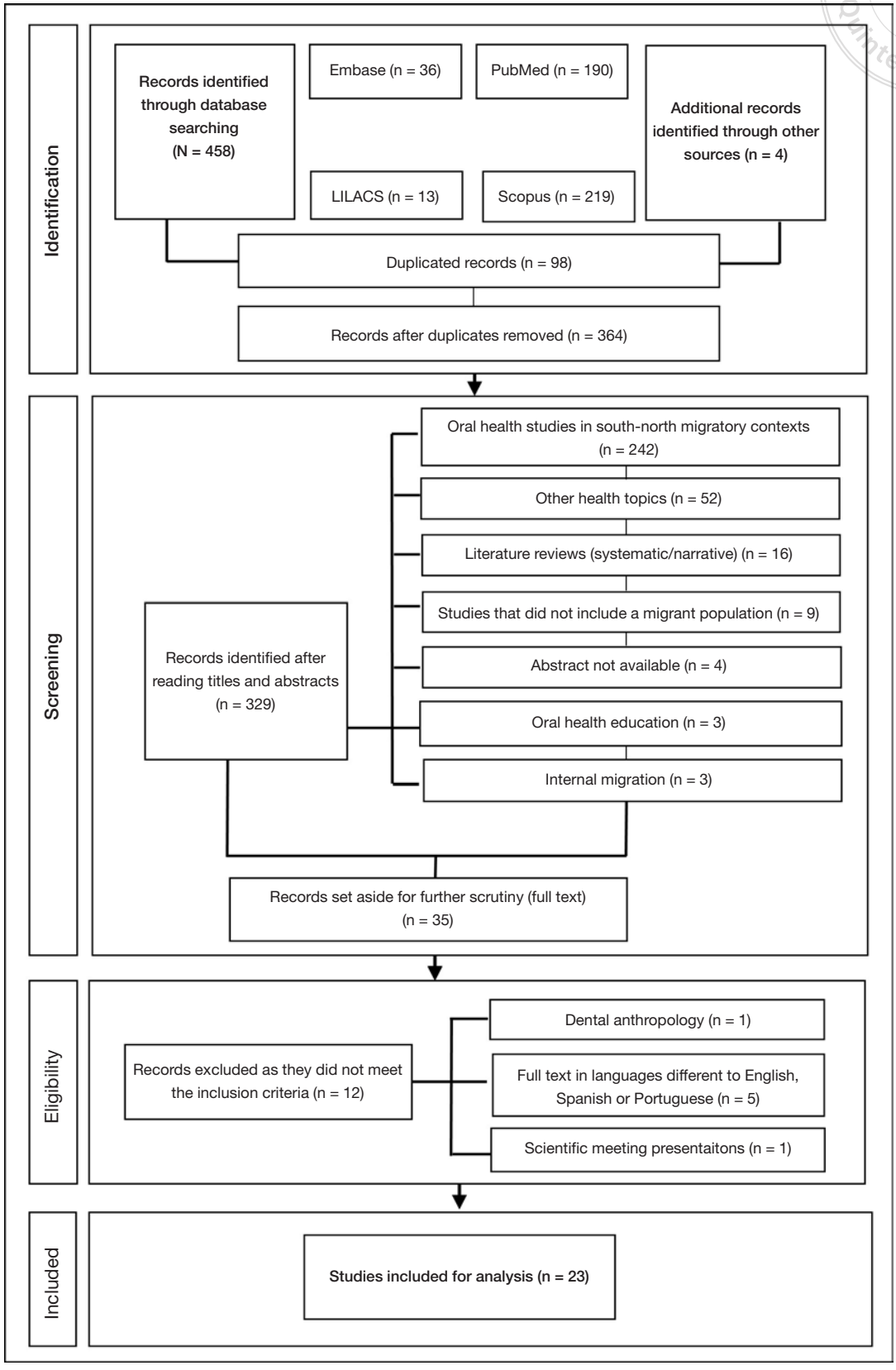

Fig 1 Study selection process.

General characteristics of the studies

Regarding the countries where the studies were conducted, the majority were carried out in Asia (n = 17; 73.9%)[15-31], and the remaining studies (n = 6; 26.1%) in Latin America[32-37]. It is important to highlight that there were no studies conducted in African countries. The studies were conducted with samples of Asian and Latin-American origin. When the theoretical framework to justify the study is considered in the background, the approach employed in 52.2% (n = 12)[15-18,20,23-25,28,31,32,36] used the Inequalities in Oral Health (IOH) model, 30.4% (n = 7)[15,18,24,29,34,35,37] employed the Social Determinants of Health model[3,38], and 4.3% (n = 1) mentioned a model related to accessibility to health services[21], specifically the Aday and Andersen model[39]. One study[30] (4.3%) mentioned a conceptual framework related to the relationship between acculturation and oral health[40]. Five studies (21.7%) did not specify a clear conceptual framework in the study background[19,22,26,27,33]. Regarding the methodological designs of the studies, 91.3% (n = 21) were cross-sectional[16-21,23-37], and the remaining two (8.7%) used a cohort design[15] and an intervention study[22]. The data collection methods were diverse; six studies (26.1%) used surveys or questionnaires[16,19,21-23,25], seven (30.4%) carried out mainly clinical examinations[17,27,29-31,35,37] and ten (43.5%) combined both methodologies[15,18,20,24,26,28,32-34,36]. Finally, the studies considered different age groups: 43.5% (n = 10) were carried out on minors[16,17,20,24,28,31,33-36], 47.8% (n = 11) were conducted on adults[15,18,19,21-23,25-27,29,30], and 8.7% (n = 2) included both age groups[32,37].

Oral health status: dental caries and periodontal disease

Regarding oral health clinical indicators, 69.6% (n = 16) of the studies performed a clinical examination for caries and/or periodontal disease[15,18,20,24,26-37] and one (4.3%) evaluated the presence of enamel defects in the canines[17]. Five studies (21.7%) reported higher rates of caries in migrants in comparison with natives[20,24,28,31,33]. One study (4.3%) reported an analogous decayed, missing and filled permanent teeth (DMFT) index but with a higher number of decayed teeth in migrants than those that had been filled in natives[32]. Two studies (8.7%), both carried out on schoolchildren in Chile, calculated the DMFT indices of primary teeth and permanent teeth and found higher indices and a higher prevalence of dental caries in the native population[34,35], with some slight differences according to the indicator used and other sociodemographic factors. In the case of migrant adults, the frequency of untreated dental caries was 54.8% in one study conducted by Lee et al[27] in 2019, and 90.3% in another study conducted on foreign domestic workers by Gao et al[18] in 2013. A study on caries and psychological distress in Ethiopian immigrants in Israel found that in subjects with psychological distress, dental caries exceeded the values for subjects not in distress by nine times[15]. Finally, a study conducted in India found a significant association between the prevalence of dental caries and dietary habits in migrants[30].

Nine studies (39.1%) evaluated periodontal health[15,18,24,27,29,32,34,35,37], four of which (17.4%) compared periodontal indices of migrants with their counterparts using various measurements[24,32,34,35]. Three studies (13%) used the Oral Hygiene Index (OHI); one reported worse indexes in migrants[32] and the other two reported worse indicators in natives[34,35]. One study (4.3%) reported a higher frequency of "gingival bleeding" in natives and "healthier gums" in immigrants[24]. One study (4.3%) examined gingival inflammation (GI) in both primary and permanent teeth of patients, and in both cases, inflammation was higher in migrants[35]. These studies were conducted on schoolchildren. The other five studies (21.7%) reported gingival health only in migrants[15,18,27,29,37]. The presence of dental calculus was reported in three studies (13%), with frequencies of 29.7%[27], 53.0%[18] and 67.3%[37]. Likewise, one of them (4.3%) reported the presence of superficial and deep periodontal pockets in 39% and 7%, respectively, of the migrants studied[18]. Lastly, a study relating gum disease to psychological distress found that in subjects with psychological distress, periodontal disease increased by 40%[15].

Other oral health aspects evaluated in the studies

Eight studies (34.8%) included in this scoping review explored other conditions related to oral health[16,17,19,21-23,25,32]. One study conducted in Israel by Davidovich et al[16] compared oral hygiene habits in preschool children from an Ethiopian background with natives in low socioeconomic neighbourhoods. A difference was reported, despite the fact that the parents of Ethiopian descent had lived in Israel for at least 20 years[16]. Another study conducted in Israel by the same authors on the same sample of immigrants focused on the concept of infant oral mutilation (IOM), mainly the removal of incipient canine teeth in babies[17]. This practice was more frequent in immigrants than in native Israelis[17]. A study conducted in Taiwan showed that the level of caries-related knowledge, attitudes and oral health behaviours was lower in immigrant mothers than in natives[19].

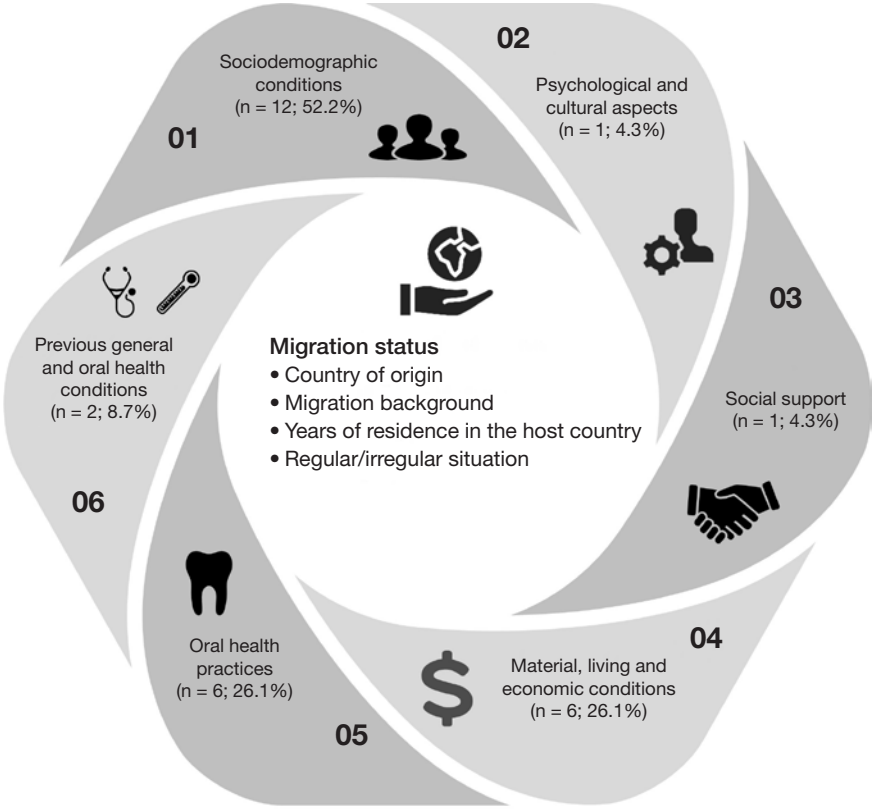

Fig 2 Factors and variables related to oral health considered in the included studies (n = 23). Percentages are not mutually exclusive.

Use of and access to oral health services was explored in a study carried out in adults in Israel and disparities in primary dental care were found based on immigrant and ethnic minority status, a situation that depends on sociodemographic factors[21]. Research conducted in migrant women from multicultural families in Taiwan showed that they were aware of the importance of oral health, but their opportunity to receive education through oral-health–related programs was limited[23]. As such, these migrant women experience some barriers to access to dental care. Another study conducted by Hsu et al[22] demonstrated the effect of a lay health advisor (LHA) and an oral health training curriculum on improvement of oral hygiene behaviours and access to dental care for immigrant children.

Oral health beliefs and behaviours were explored by Sivakumar et al[25] in Tibetan immigrants, and they found that oral health hygiene practices were high in study participants (i.e., tooth brushing). Although the perceived seriousness of oral health was high among the migrant participants, the perceived benefit of dental treatment was relatively low[25]. Cultural aspects related to migratory processes are involved and they need to be examined more deeply in future studies. Finally, oral health–related quality of life (OHRQoL) was analysed in a study conducted in Chile but no statistically significant differences were found between groups (Chilean natives and Peruvian immigrant women)[32].

Variables and determinant factors of oral health status and access to health services

Figure 1 shows the variables considered when analysing the studies included in this scoping review. Migratory status is related in all the studies, complemented by elements such as years of residence in the country of origin, whether migrants' residence and work status had been regularised, and migratory background (parents' country of origin in studies conducted on children). Other factors related to oral health and access to health services considered more frequently in the analysis of findings were sociodemographic aspects[15,18,19,21,26,29-34,37], psychological/cultural aspects[15], social support[15], material, living and economic conditions[18,21,23,26,31,33], oral health practices[16,18,20-22,30] and previous general/oral health conditions[21,35].

Limitations and gaps reported in the studies

The studies reported some methodological limitations. These conceptual and methodological gaps should be identified and mitigated in further research to increase the reliability of findings about the relationship between migration and oral health in south-south contexts.

- Type and size of the sample: This determines the difficulty of generalising the results to the entire immigrant population in the countries where the studies were carried out. Some studies were done with small samples, and in many cases, participants were recruited by convenience method or snowballing[18-22,24,25,28,32,36].
- Use of self-reported questionnaires: In many cases, immigrants and natives may have under- or overestimated their true situation when reporting[19,21,25,28,34,35].
- Methodological design of the study: The cross-sectional nature of studies does not allow for the establishment of causal relationships. Moreover, some studies did not use control groups to make comparisons[20,27,28,36].
- Lack of information on other variables of interest that would complement the objectives of the study: Considering the availability of the data, the studies acknowledged the lack of social and contextual variables that could explain the relationship of migration to indicators of oral health and access to health services[17,26,31,36].
- Selection bias for the proxy variable of migration status: One study defined the migrant status of a child based on the family's household registration information[31], and some families living for several years in the host country may have been assigned to the native group.
- Seven studies did not declare limitations in their methodology[15,16,23,29,30,33,37], which affects the quality of the report.

Discussion

Main findings

This scoping review, focused on migration and oral health in south-south contexts, included 23 articles characterising epidemiologically pathologies such as caries and periodontal disease and evaluating use of and access to dental health services, quality of life, habits, knowledge and practices in oral health and hygiene. In general terms, the results showed the situation of vulnerability in which the immigrant population finds itself, which translates into less favourable oral health indicators when compared with the native population, and such migrant populations face barriers to accessing health services. These involve factors specific to the individual and social factors related to the country of origin and host. To the best of the present authors' knowledge, this is the first compilation of scientific evidence that explores the oral health situation and its determinants in such migratory contexts.

Scientific evidence of factors determining oral health in migrants

Diverse results were found in the present review of oral health indicators. Some differences were found in the results of clinical examinations, mainly regarding dental caries[41]. When comparing the frequency of dental caries in natives and immigrants, the findings are consistent with those reported in the literature indicating that the latter have higher rates of caries than their native counterparts, and natives have a greater number of filled teeth[28]. Interestingly, two studies conducted in Chile found that in the school population, Chileans had a higher incidence of caries than immigrants[34,35]. In the case of periodontal disease, the results were also dissimilar, but some studies found worse periodontal health in migrants than in the native population[32,35]. Although the literature comments extensively on the healthy migrant effect, in time, migrants acquire the same morbidity profile as the local population, and in some cases, there is evidence of greater prevalence of poor oral health and less use of health services.

Migratory status is a social determinant that influences disparities and inequities in the state of oral health[5,41]. Immigrants have a series of unmet basic needs, which leads to them being considered as a particularly vulnerable group[11]. The unsatisfactory state of oral health in this population suggests that social factors influence this condition and that, in addition to the acculturation phenomena[42], they may be affected more frequently in comparison to other social groups. These determinants act from the pre-migratory phase; the conditions in the country of origin affect migrants throughout the entire migratory process until their installation in their new country of residence[5]. Occasionally, migrants' state of health may not have been negatively affected when their migratory process was favourable and they may even present better health indices than the native population, but after a certain period of residence in the new country, there is a trend towards deterioration of their health status, demonstrating the temporary nature of the healthy migrant effect[6].

The literature also establishes that the migratory process can have an impact on mental health related to challenges migrants face in the adaptation process in the social, labour and educational spheres[43]. Symptoms of psychological distress may impact general and oral health, as reported in a study included in the present review[15]. Another study showed the impact of oral health conditions on individual psychological dimensions[44]. Closely linked to subjective well-being is the variable called social support, since migration involves many changes in daily life for individuals and this can affect oral health indicators, the profile of use of health services, and behaviours and practices[45]. This is borne out by the results found in a systematic review focusing on the issue of immigrants and ethnic minorities; however, this scoping review identified only one study on the impact of social support on oral health evaluated in Ethiopian immigrants residing in Israel[15].

Taking other indicators into account, OHRQoL has predominated in scientific approaches in recent decades, especially in examining the impact of variables that influence the subjective perception of well-being compared to physical, social, psychological and functional dimensions[46]. A systematic review of the subject in question showed that the impact on OHRQoL for immigrants with less time living in the host country or children of a foreign mother was more negative[47]. However, only one study carried out in Chile evaluated this condition and found no statistically significant correlations, although it is worth noting that the research was conducted in a specific population of pregnant women[32]. Similarly, some studies evaluated knowledge and practices in oral health[16,19,25]; the results were strongly associated with the geographic context where they were conducted and according to the particular experiences of each population group and their intervening cultural factors, whereas others related to the availability of health promotion and education programmes[48].

Health services constitute an intermediate determinant that impacts disparities and inequities in health[49]. Only two studies in this scoping review focused on this aspect[21,22]. This is a vital point, as the most vulnerable people who require better health care are those who receive the least. This has been called the inverse care law, and it has been studied in other geographical contexts in relation to access to dental care[50]. However, studies included in this scoping review did not investigate elements relating to availability of policies and programmes to provide oral health care to the migrant population in these contexts.

Scope and limitations of this scoping review

It is striking that almost three-quarters of the scientific investigation on migration and oral health in south-south contexts has been conducted on the Asian continent, with research in Latin America making up the remaining quarter, while no studies conducted in Africa were found. This may be due to two factors: the fact that migration within or between these continents is mainly south-north, and that scientific investigation in this region is still scarce or has not been published in high impact or indexed journals and therefore could not be included in this examination of intraregional migration.

Further, the fact that over 90% of the studies were cross-sectional and with a purely descriptive scope indicates that this issue is still in an exploratory and descriptive phase without progressing to seeking alternative analyses. Despite being in an early stage, only study designs with quantitative approaches are supported by surveys, clinical examinations or both, whereas qualitative studies allowing a deeper interpretation of south-south migration and the phenomena that underlie it are not included. Such research may enhance understanding of the social construction of health-disease phenomena in a holistic and comprehensive way.

In the theoretical models, the determinants and social inequalities in health were the conceptual framework most frequently applied. The descriptive and/or exploratory scope of the chosen methodological designs reviewed afforded a better understanding and discussion of the findings in light of the scientific literature. However, in conducting the analysis and presenting results in accordance with the objective and the research question, some limitations and knowledge gaps are evident. Although the methodological procedures to conduct this scoping review were followed carefully through a comprehensive search in different databases, possible grey literature or unpublished studies in the analysed context should not be overlooked. No quality assessment of the included studies was conducted since the objective of this review was exploratory in nature.

Conclusion

The scientific evidence suggests that the migrant population in south-south migratory contexts is especially vulnerable socially, and this translates into poor oral health indicators; however, definitive research is still in the process of development, and studies in other geographic contexts and concerning the use of other methodologies that allow recognition, analysis and understanding of the social and contextual factors in both origin and host

countries of the immigrant populations are particularly lacking. A larger body of evidence may be useful in implementing public policies and strategies based on social reality to improve access to health services and inclusive strategies in education, health promotion and disease prevention.

Conflicts of interest

The authors declare no conflicts of interest related to this study.

Author contribution

Drs Andrés M MURILLO-PEDROZO and Andrés A AGUDELO-SUAREZ participated in the conception and project design. All the authors participated in the data analysis, critical review and approval of the final version. All the authors take responsibility for and guarantee all the aspects included in the paper.

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