

# Health literacy interventions for immigrant populations: a systematic review

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**Background:** Health literacy is considered a social health determinant that influences improvement in health, patient empowerment and reduction in inequalities. There is a lack of health literacy interventions for vulnerable social groups (i.e. immigrants), and nurses have shown little familiarity with the concept.

**Aim:** This study aimed to identify and analyse whether interventions directed at immigrant populations improve the functional (basic reading, writing and arithmetic skills), interactive (social and cognitive skills) and critical (advanced cognitive and social skills in critically analyzing information and making informed decisions) dimensions of health literacy, taking into account the role played by nursing in these interventions.

**Methods:** A systematic review of four databases including PubMed, PsycINFO, the Cochrane Library and ERIC was conducted to identify relevant articles published between 2000 and 2015. Thirty-four articles met the inclusion criteria, and nine articles used a validated instrument.

**Results:** Few specific health literacy interventions for immigrant populations were found. The main findings of the studies showed positive changes in functional health literacy. However, the interventions were less effective in improving interactive and critical health literacy.

**Limitations:** Several of the findings of this review were based on studies that had their own limitations. The assessment of the articles was not blinded, and the review was restricted to articles written in Spanish and English.

**Conclusions:** The interventions studied were reported as being effective in improving health literacy in immigrants, particularly the functional aspects. Regarding the role played by nursing, this review observed little involvement.

**Implications for Nursing and Health Policy:** It is important for educational strategies to include health literacy dimensions. The concept of health literacy should be included as a Nursing Outcomes Classification and in its subsequent validation taxonomy. To promote community health, health literacy must be a prioritized objective of health management and policies.

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## Conflict of interest

No conflict of interest has been declared by the authors.

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## Introduction

Health literacy (HL) is a concept that has been increasingly studied since the 1990s. Although the term was first coined in 1974, it was not until 1997 that it was proposed as a key element of health promotion (Kickbusch 1997). The World Health Organization (WHO) incorporated HL into its Health Promotion Glossary, defining it as follows: ‘Health literacy represents the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health’ (World Health Organization 1998). Although the literature has shown that HL is a powerful tool to reduce health inequalities, its use and effectiveness is unknown in immigrant populations.

Nutbeam (2000) identifies three levels of HL: Functional HL, which corresponds to the basic skills of reading, writing and arithmetic and consists of the level of knowledge and understanding of information about possible health risks and the use of health services; Interactive HL, which refers to more advanced social and cognitive skills that enable people’s active participation in health care (e.g. interaction with health professionals, access to and use of health systems); and Critical HL, which includes health-relevant decision-making, the provision of information on social and economic health determinants, and opportunities to achieve change at the political and organizational level. Thus, combining the more advanced cognitive skills with social communication skills allows for the empowerment of individuals to improve both their personal state of health and that of the communities in which they live (Nutbeam 2000).

During the 40 years that the concept of HL has been evolving, research has shown a lack of conceptual unanimity and therefore difficulty in implementing HL interventions, given the variability in objectives and methodological limitations (Berkman et al. 2010; Johnson et al. 2011). In Europe, the Health Literacy European Project (HLS-EU-Project) has proposed a conceptual model for HL that includes both medical assistance and a public health perspective (Sørensen et al. 2012). It also identifies the main factors affecting HL as well as the paths that link these factors to health outcomes.

Previous studies have demonstrated the impact of HL on health inequality (World Health Organization 2007), medical costs (Eichler et al. 2009), resources to gain access to care (Ku & Matani 2001), understanding of health information (Groene & Rudd 2011), safety and quality of care (The Australian Commission on Safety and Quality in Healthcare

2014) and health decision-making (Schloman 2004). Despite this evidence, two important gaps have been identified: the limited knowledge of HL among health professionals, in particular nurses (Groene et al. 2014; Macabasco-O’Connell & Fry-Bowers 2011), and the limited focus on vulnerable groups, including immigrants. For instance, the WHO report ‘Health Literacy. The Solid Facts’ (Kickbusch et al. 2013) warns of the low scores in HL among immigrant populations. In fact, some studies show that immigrant populations have poorer health, higher rates of hospital admissions, lower adherence to care and reduced use of health resources and prevention services (Bas-Sarmiento et al. 2015a; Zanchetta & Poureslami 2006). Other studies highlight the incompatibility of educational programmes and materials with the characteristics of immigrant populations (Berkman et al. 2011; Coulter & Ellins 2006). Therefore, the literature has recommended that HL interventions be evidence-based, culturally adapted and led by health professionals (European Commission 2009; U.S. Department of Health and Human Services 2010).

## Aim of study

The theoretical framework of HL according to the dimensions described by Nutbeam (2000) – i.e. functional, interactive and critical – combined with the health-relevant areas of the HLS-EU Project – that is health assistance and care, disease prevention and health promotion (Sørensen et al. 2012) – were used in this study, which aimed to identify and analyse whether interventions targeted to immigrant populations improved the functional, interactive and critical aspects of HL while accounting for the role played by nurses in these interventions.

## Methods

### Search methods

The PubMed MEDLINE, Cochrane Library, Educational Resource Information Center (ERIC) and Psychological Information (PsycINFO) databases were the four databases used in this systematic literature review. Searches were limited to articles from January 2000 to October 2015. The primary electronic literature search was conducted in November 2015. The use of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA; Moher et al. 2009) and the Cochrane collaboration tool (Higgins & Green 2011) enabled authors to follow guidelines to complete the systematic review. The inclusion and exclusion criteria are shown in Appendix S1.

The search strategy was based on the use of the MeSH thesaurus for the index term 'health literacy' combined with the free terms 'intervention', 'immigrant', 'migrant', 'immigrant population' and 'literacy' using the Boolean operators 'AND' and 'OR'.

By reviewing the articles' titles and abstracts, two reviewers independently selected potentially eligible articles. Studies meeting the inclusion criteria were read in their entirety and assessed for final inclusion. Any discrepancies and doubts regarding the inclusion of a study were resolved by the participation of a third reviewer.

### Search outcome

The initial number of identified records from the four databases based on the inclusion criteria was 1627. The abstracts of these 1627 articles were obtained and reviewed by the first author; 556 duplicates were subsequently removed, and 1071 remained. At this stage, two authors became involved in the process of selecting articles, debating their eligibility, and resolving disagreements. The full texts of 77 potentially relevant articles were selected. After

a detailed analysis of each study, 34 studies were included (see the PRISMA flow diagram in Fig. 1). Of these, studies that used an instrument validated specifically to measure HL were selected, leading to the inclusion of nine interventions. Articles were removed for the following reasons: the samples did not meet the inclusion criteria (3); a specific HL intervention was not implemented (4); HL was not specifically assessed (16); and the study protocols were not described (2).

### Quality appraisal

Quality assessments were performed using EQUATOR Network checklists according to the methodological design of the studies. For randomized controlled trials, the CONSORT statement (*Consolidated Standards for Reporting of Trials*) was used (Moher et al. 2010); for non-randomized trials, TREND (*Transparent Reporting of Evaluations with Non-randomized Designs*) was used (Des Jarlais et al. 2004); and for mixed designs, the *Guidelines for Conducting and Reporting Mixed Research for Counsellor Researchers* (Leech & Onwuegbuzie 2010) were applied.

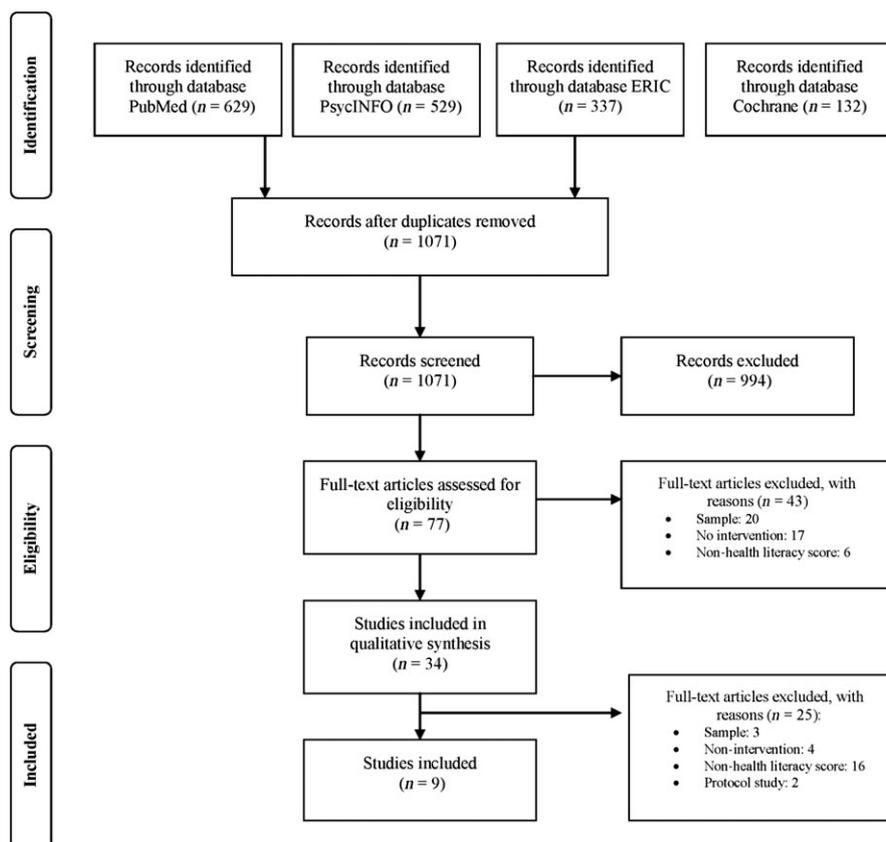


Fig. 1 Prisma Flow Diagram: selection of studies for systematic review (Source: Moher et al. 2009).

## Analysis

The data that were fundamental to the analysis were summarized in previously designed evidence tables. Studies were distributed according to the following characteristics: (1) study, topic and setting, (2) design and participants, (3) intervention, (4) professionals and (5) themes.

Due to the high variability in the measuring strategies and tools used, as well as the wide range in the monitoring times applied in the different studies, it was not possible to perform a joint statistical analysis of the data. Consequently, a narrative analysis was conducted. The outcomes of the selected articles were grouped by dimension (functional, interactive and critical HL) and the health-relevant area of the HLS-EU Project (assistance and care, prevention and health promotion).

## Results

### General results

Table 1 presents the summary of the included studies, the themes identified and the role played by nursing. Of the studies included, four used quasi-experimental designs with pre- and post-test measurements of only one group. Two used a mixed design with an initial qualitative phase prior to the implementation of the intervention to analyse the opinions and needs of the target population followed by a quasi-experimental design with pre- and post-test measurements. The study by Yung-Mei et al. (2015) was qualitative in nature both in the design and implementation of the intervention programme and in its assessment. Only the Van Servellen et al. (2005) and Soto-Mas et al. (2015a) studies were randomized controlled trials.

The sample size varied considerably between studies, with a range from 18 (Sheppard et al. 2008) to 192 subjects (Buckley et al. 2015). Most of the studies were conducted with Latinos who had low incomes in the United States who were monolingual Spanish speaking and had less education and less command of the English language.

The interventions were conducted face-to-face, mainly in community settings (immigrants' associations and religious centres) and occasionally in the participants' own homes (Sheppard et al. 2008). Only the Van Servellen et al. (2003, 2005) studies were implemented in a health centre.

Regarding the strategies used in the interventions, those that were shown to be the most effective in this review were as follows: use of the participants' native language; a review of the scientific literature as a source of information prior to the development of the intervention (Van Servellen et al. 2003; Yung-Mei et al. 2015); the use of an initial qualitative phase to identify the needs, opinions and/or beliefs of the

users; the participation of the target population in the development and design of the programme (Sheppard et al. 2008; Soto-Mas et al. 2015b; Stockwell et al. 2010; Van Servellen et al. 2003); the use of techniques to reach a consensus between the community, professionals and the research team (Soto-Mas et al. 2015b; Yung-Mei et al. 2015); individual review sessions of the main components to ensure their complete assimilation (Van Servellen et al. 2005); the participation of other users who were from the same culture and/or had experienced the same situations in the past (Sheppard et al. 2008); and, finally, the incorporation of material prepared by the immigrants themselves (Soto-Mas et al. 2015b).

### Effects of interventions on functional, interactive and critical health literacy

Appendix S2 shows the summary of the main instruments measured with the results by health literacy dimension and other secondary outcomes.

Functional HL, acquired knowledge and the modification of health behaviour were the most frequently assessed variables. Behavioural variables included adherence to treatment (Van Servellen et al. 2003, 2005), decision-making skills (Sheppard et al. 2008), the adoption of preventive behaviour such as screening (Ross et al. 2010) and the reasonable use of antibiotics (Stockwell et al. 2010).

All the interventions proved to be effective in improving functional HL, with an increase observed in the HL scores on the questionnaires used (most of the instruments used measured functional HL exclusively), and in improving the level of knowledge acquired by participants (Ross et al. 2010; Sheppard et al. 2008; Stockwell et al. 2010; Van Servellen et al. 2003, 2005; Yung-Mei et al. 2015).

An improvement in interactive HL was documented only in the studies by Sheppard et al. (2008) and Van Servellen et al. (2003, 2005), by means of communication training to prepare for clinical interviews.

The incorporation of skills to navigate the healthcare system as a basic and fundamental strategy to improve the interactive health literacy of users was employed by Sheppard et al. (2008), Soto-Mas et al. (2015a,b) and Yung-Mei et al. (2015) but was little assessed. The Yung-Mei et al. study analysed the *verbatim*s and identified an improvement in the access and use of health services after the intervention.

Finally, the critical dimension of HL was analysed infrequently and indirectly, involving assessments of changes in behaviour for certain lifestyles and in the decision-making process (Buckley et al. 2015; Sheppard et al. 2008; Stockwell et al. 2010; Yung-Mei et al. 2015).

Table 1 Studies included

Study, topic and setting	Design, participants	Intervention (I)	Professionals	Themes					
				Functional HL	Interactive HL	Critical HL	Care Area	Prevention Area	Health Promotion Area
Programme to enhance health literacy and treatment adherence in low-income HIV-infected Latino men and women Therapeutic adherence in HIV. HIV community-based clinic (Los Angeles)	Quasi-experimental repeated measures design with a control group N = 85 (IG = 41; CG = 40; lost = 4)	Intervention Programme: Es por la Vida Instructional modules: (1) basic information on HIV/AIDS, (2) adherence management, (3) quality of life maintenance and stress control, (4) risk reduction in the transmission of HIV and management of substance use, (5) communication skills with health providers Intervention Programme: Es por la Vida Instructional modules: (1) basic information on HIV/AIDS; (2) management of adherence; (3) maintenance of quality of life and stress control; (4) risk reduction in the transmission of HIV and management of the use of substances; (5) communication skills	Design: Clinical Psychologist; Adherence Researcher Provider Focus Group: Health Educators; Nurse supervisors; Social Workers; Director of Psychosocial Services; Program and Clinical Trial Coordinator Instructors: Nurse practitioner Assessment: Nurse practitioner	X	X			X	
Effects of a treatment adherence enhancement programme on health literacy, patient-provider relationships, and adherence to HAART among low-income HIV-positive Spanish-speaking Latinos. Therapeutic adherence in HIV HIV community-based clinic (Los Angeles)	Randomized controlled trial. N = 81 (IG = 41; CG = 40)		Design: Clinical Psychologist, Adherence Researcher Provider Focus Group: Health Educators; Nurse supervisors; Social Workers; Director of Psychosocial Services; Program and Clinical Trial Coordinator Instructors: Nurse practitioner Assessment: Nurse practitioner	X	X			X	
Latina a Latina <sup>SM</sup> [Latina to Latina]; Developing a breast cancer decision support intervention Decision-making in breast cancer. Patients' homes	Mixed design in 2 phases: Phase 1. Qualitative design (focus groups). Phase 2. Pilot study N (Phase 1) = 37 N (Phase 2) = 18	Intervention Programme: Latina a Latina <sup>SM</sup> One in-person session at patient's home and phone follow-up. Topics: (1) basic breast cancer treatment information, (2) the importance of making informed decisions, (3) navigation of the health system, (4) preparation for clinical interviews	Design: researcher team (non-specified), breast cancer advocates Instructors: Patient Navigators	X	X	X		X	X

Table 1 Continued

Studies, topic and setting	Design, participants	Intervention (I)	Professionals				Themes		
			Functional HL	Interactive HL	Critical HL	Care Area	Prevention Area	Health Promotion Area	
Improving care of upper respiratory infections among Latino early head start parents Upper Respiratory Infections. Columbia University EHS (Latino Early Head Start), New York City	Mixed design. N = 15 sets of Latino immigrant parents	Community intervention based on three educational modules: (1) Supportive care for Upper Respiratory Infections (URI)/antibiotic resistance, (2) Over-the-counter (OTC) medication management and home remedies, (3) Preparations for a medical visit and understanding prescribed medications	X	X	X	X	X	X	
Applicability of a video intervention to increase informed decision-making for prostate-specific antigen testing	Quasi-experimental design with pre- and post-test measurements of only one group. N = 49	Intervention Programme: The PSA Test for Prostate Cancer: Is it Right for me? (1) Pretest individual interviews. (2) A video on prostate cancer (shown to groups of 6 to 12 men). (3) Post-test individual interviews	X					X	
Screening tests for prostate Cancer. 2 Churches and 1 Community Center (Florida)									
Health empowerment among immigrant women in transnational marriages in Taiwan	Mixed design. Participatory action research (PAR) N = 68 immigrant women from Vietnam, Indonesia, the Philippines, Thailand and Cambodia who were married to a Taiwanese man	Intervention Programme: Health Empowerment Project (HEP) 8 Workshops: Reproductive health; disease prevention; healthcare system utilization; cultural competence; mental health and a special issue	X	X	X	X	X	X	
Health empowerment. Reproductive and sexual health. Local church (Pingtung County, Taiwan)									

<p>The Health Literacy and ESL study: a community-based intervention for Spanish-speaking adults</p> <p>Functional HL</p> <p>El Paso Community College</p>	<p>Randomized controlled trial.</p> <p>Hypothesis 1. Scores for HL GI &gt; GC.</p> <p>Hypothesis 2. Levels of HL. GI &gt; GC.</p> <p>N = 181 Latinos.</p> <p>GI: 77</p> <p>GC: 78</p>	<p>Intervention Programme: The Health Literacy &amp; ESL Study</p> <p>Training programme through English as a Second Language learning that incorporated HL contents (reading and writing of health documents, arithmetic, clinical practice, preventative practice and navigation of the health system)</p>	<p>Design and evaluation: multidisciplinary team (health educators, communication professionals and teachers)</p> <p>Instructor: English Second Language (ESL) Teacher</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>
<p>Vida Sana: A lifestyle intervention for uninsured, predominantly Spanish-speaking immigrants improves metabolic Syndrome Indicators</p> <p>Metabolic Syndrome</p> <p>Clinica Esperanza/Hope Clinic (CEHC)</p>	<p>Quasi-experimental design of pretest and post-test measures.</p> <p>N = 192. 126 (65.6%) completed the programme (defined as having participated in at least six of the eight sessions)</p>	<p>Intervention Programme: Vida Sana/Healthy Life Program</p> <p>5 Educational sessions: Topics: Nutrition; Diabetes Mellitus 2; Cardiovascular Disease; Prevention and management of chronic disease.</p> <p>2 Social sessions. Dancing and Health Literacy bingo</p> <p>Final session. Evaluation</p>	<p>Design: doctor</p> <p>Instructor: Navigators (peer educators)</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>
<p>A multisite community-based health literacy intervention for Spanish speakers</p> <p>Santa Barbara/Martineztown, Albuquerque (New Mexico)</p>	<p>Quasi-experimental design of pretest and post-test measures.</p> <p>N = 49 Latino immigrants. Distributed in three different areas:</p> <p>Area 1. School (n = 19);</p> <p>Area 2. Hotel (n = 16);</p> <p>Area 3. Church (n = 14); church</p>	<p>Intervention Programme: The Health Literacy &amp; ESL Study</p> <p>Training programme through English as a Second Language learning that incorporated HL contents (reading and writing of health documents, arithmetic, clinical practice, preventative practice and navigation of the health system)</p>	<p>Recruitment: Health Extension Rural Offices (HEROs) Agent</p> <p>Instructor: ESL Teacher</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p> <p>X</p>

With the exception of the study by Ross et al. (2010), all interventions were targeted to the health assistance and care field. Disease prevention was also broadly represented, highlighting strategies for making decisions about screening in particular (Buckley et al. 2015; Ross et al. 2010; Soto-Mas et al. 2015a,b; Stockwell et al. 2010; Yung-Mei et al. 2015). Finally, the health promotion domain was minimally shown (Buckley et al. 2015).

Changes in clinical variables were little assessed in the HL programmes. The viral load of patients who were HIV positive (Van Servellen et al. 2003, 2005) and clinical indicators of metabolic syndrome in the study by Buckley et al. (2015) provided positive post-test results, but they were not statistically significant.

Other variables assessed included acculturation (Sheppard et al. 2008; Van Servellen et al. 2003, 2005) and general satisfaction with the programme (Ross et al. 2010; Sheppard et al. 2008; Van Servellen et al. 2003). In the former, statistically significant changes were not obtained as a result of the intervention. In general, instructional modules were very well received and were acceptable to the participants.

#### The role played by nursing

Table 1 show that the professionals responsible for developing and implementing the interventions were nurses, health educators, paediatricians, patient navigators and teachers. Nursing did not appear in all studies, but in those in which it was specifically mentioned (Stockwell et al. 2010; Van Servellen et al. 2003, 2005; Yung-Mei et al. 2015), nurses played a relevant role in the study design, intervention and/or evaluation.

#### Quality appraisal results

A summary of the quality appraisal results is shown in Appendix S3. Based on the criteria proposed by Moher et al. (2010), the studies conducted by de Ross et al. (2010) and Van Servellen et al. (2003, 2005) were classified as quality level A (good), and the others were considered level B (moderate). The main deficiencies were related to a lack of masking of the intervention condition, the sample size, the selection and monitoring of participants and, in the mixed design studies, limitations in the description and analysis of the qualitative phases.

#### Discussion

Although improving the level of HL in migrant populations is a fundamental strategy to empowering these populations and providing them with the necessary competencies to become active participants in their health (Jones et al. 2011), the results of this systematic review (only nine studies that complied with the inclusion criteria) revealed a lack of

specific interventions for this population. This finding is consistent with those of other studies that show that intervention programmes for minority populations with low rates of literacy are scarce and little known (Tu et al. 2008).

The main findings of the studies reviewed show positive changes in levels of knowledge and in functional HL. However, the interventions were less effective at changing attitudes and behaviours, such as therapeutic adherence, decision-making and adoption of healthy lifestyles. These findings are consistent with those of other literature reviews (Edmunds 2005), in which initiatives directed at specific groups with low HL have yielded mixed results. A possible explanation of these results is that the interventions in the studies reviewed have focused primarily on the functional dimension of HL and ignored the other dimensions of the concept. Similarly, numerical skills were taken into account only in the studies by Soto-Mas et al. (2015a,b), and their omission may be deemed a limitation of the other studies reviewed. This same problem was highlighted by the US Agency for Healthcare Research and Quality, which found that the strength of evidence for the relationship between numeracy and health outcomes was insufficient or low, given the small number of studies (Berkman et al. 2011).

The results indicate that most of the studies incorporated immigrants' opinions, needs and/or input in the design and/or development of educational programmes. The importance of immigrants' participation in the development of interventions and creation of culturally competent educational materials has been highlighted by other authors (Ishikawa & Yano 2008; Nilsen et al. 2006).

Considering the low level of HL in the immigrant population and its importance for adequate access to health resources, health promotion and healthy behaviours, the results of the interventions are highly important. The findings showed a positive impact on participant empowerment, and this improvement facilitated access to the healthcare system, care and prevention strategies and health promotion – which the literature warns is lacking in this population (Bas-Sarmiento et al. 2015a) – and allowed the participants to make informed decisions about their health.

In addition to the individual level, HL interventions should also take into account organizational and community levels. At the organizational level, cultural adaptation of health services has shown a positive effect on the health of immigrant populations, indicating the necessity of organizational policies that include training in cultural competence for professionals. It is generally assumed that healthcare personnel are sufficiently prepared to support patients in their efforts to increase their level of health knowledge; however, the evidence does

not support this belief (Groene et al. 2014). Moreover, at the community level, it is necessary to promote health equity in all policies related to social determinants of health (García-Ramírez et al. 2011).

Regarding the role of nurses in HL programmes, this review revealed that they had a low presence despite their responsibility as health educators. This finding is consistent with the identification of the limited role of nursing in HL interventions reported by the US Agency for Healthcare Research and Quality (Berkman et al. 2011). The lack of familiarity of nurses with the concept of HL and the difficulties in assessing and/or identifying patients with low HL could explain these results. As a consequence, it is necessary to increase nurses' awareness of the importance of HL as a basic health objective, especially in more disadvantaged groups. Likewise, we must encourage the conceptual integration of HL into care planning and into the development of tools that enable us to organize and implement HL attainment programmes with outcome indicators that facilitate their application. The fact that health promotion initiatives and health education have always been activities that are independent yet inherent to nursing care cannot be ignored (Mason 2001).

The quality analysis identified the *limitations* present in HL studies. Most studies used quasi-experimental designs and convenience samples, and thus the effectiveness of the interventions should be interpreted with caution. Likewise, the variability in the measuring instruments used to assess HL and the different levels of HL in the samples studied prohibited comparisons of the results. Most of the instruments focused on the functional aspect of HL, and serious difficulties in measuring the interactive and critical levels were identified. Moreover, the psychometric properties of some of the instruments used were not provided, or cultural adaptations had been made. Additional information on HL instrument validity has previously been reported (Bas-Sarmiento et al. 2015b).

Some of the limitations of this review should be noted. The assessment of the articles was not blinded, and the review was restricted to articles from indexed scientific journals in Spanish and English, with a resulting language bias. Thus, a large proportion of the studies were performed in the United States, which limits the ability to extrapolate relevant findings to other contexts. There were very few publications related to HL and even fewer referring to migrant populations in Europe (Goossens & Sørensen 2014). This limitation may be because the term was not commonly used in Europe until 2012, when interest was raised after the first formal assessment was attempted (Sørensen et al. 2013) and the concept was incorporated into the European political agenda.

### Implications for nursing and health policy

The implications of this review for practice involve the sensitization and training of nurses regarding the health literacy of immigrant populations. This means having culturally competent professionals who are trained in developing HL interventions for these groups that extend beyond the functional level of HL. Therefore, it is necessary to include the concept of HL in nursing as a Nursing Outcomes Classification (NOC) and in its subsequent validation taxonomy; to adapt HL education strategies at the user level, taking into account the functional, interactive and critical dimensions of HL and the different domains of care, disease prevention and health promotion; and to implement sustainable interventions that incorporate short-, medium- and long-term monitoring measures.

The majority of HL training is performed on an individual level, where the responsibility for success lies solely and exclusively on the capacity of the subject. If the aim is to promote community health, then HL must be a priority of health management and policies for professionals, researchers and the community as a whole.

### Conclusions

There are several conceptual and assessment-related difficulties regarding HL due to problems inherent to migrant populations (inaccessibility of the population in unequal administrative situations and lack of representation of foreign populations). Furthermore, HL interventions targeted to immigrant populations have produced mixed results regarding their effectiveness, although they are particularly effective in the functional aspects of HL.

The findings of this review are consistent with the identification of the limited role that nursing has in HL interventions for immigrant populations.

To further research on this topic, the following is recommended: (a) The use of mixed methodology in which the perceptions and understanding of the users' health experience is taken into account and complemented with experimental studies that allow the comparison of results and the testing of hypotheses; (b) The incorporation of key elements of the functional dimension of HL (reading, writing and numerical skills, competence in the language of the country of adoption) as well as aspects of the interactive (communication skills and/or navigation of the health system) and the critical dimensions (behavioural changes and/or informed decision-making); (c) The use of causal models that explain the relationships between HL, the education system and the socio-health system and that are culturally relevant; and (d) The implementation of longitudinal studies with larger and more representative samples that employ evidence-based tools.

Finally, having evidence available from nursing interventions that consider the different levels of HL will allow us to provide more personalized and efficient care and plan optimal interventions for each patient. It is essential to foment and strengthen HL research in the nursing field, as nurses are fundamental agents in the promotion of health and health education.

### Author contributions

Study design: MFG, PBS, MJAM

Data collection: MFG, PBS, OPC

Study supervision: MFG, PBS

Manuscript writing: MFG, PBS, MJAM, OPC, JMRS

Critical revisions for important intellectual content: MFG,

PBS, MJAM, OPC, JMRS

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## Supporting Information

Additional Supporting Information may be found in the online version of this article:

**Appendix S1** Inclusion/Exclusion Criteria

**Appendix S2** Tools assessment and summary results for health literacy dimensions and secondary outcomes

**Appendix S3** Quality assessment of randomized controlled trials, quasi-experimental studies and mixed studies