

Assessment of health literacy among migrant populations in Southern Spain: A cross-sectional study

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Abstract

Aim: The aim of this study was to measure of health literacy in the migrant population and establish a type of immigrant profile with a higher risk of presenting low levels of health literacy.

Design: A cross-sectional descriptive study.

Methods: Health literacy was measured in a total of 278 immigrants using HLS-EU-Q16. An inferential descriptive and multiple regression analysis was carried out.

Results: 65.1% having inadequate and problematic health literacy. Significant correlations were found between health literacy and length of stay in Spain ($r = .398$), age ($r = .178p$) and perceived social status ($r = .151$). Participants with shorter length of stay ($\beta = .405$), without health sciences education ($\beta = .205$) and low education level ($\beta = .182$) had limited health literacy.

KEYWORDS

assessment, health literacy, migrants

1 | INTRODUCTION

In Spain, almost 13.01% of the Spanish population are immigrants. The latest reports published by the National Institute of Statistics (2021) indicate that most of the 5,235,375 foreigners come from Morocco, Romania and South America. In the last year, 2,124 immigrants arrived in small boats (National Institute of Statistics, 2021). These data suggest that, despite the current health crisis due to SARS-CoV-2, there is still a steady flow of immigration into Spain.

In the south of Spain, in Andalusia, is located a strategic point of entry of immigrants to Europe from the African continent named Campo de Gibraltar County. It is located on the Mediterranean coast, just 14.4 km from the African coast, separated by the Strait of Gibraltar, where the arrival of small boats is frequent. The growing

clandestine immigration that crosses the Strait of Gibraltar from Morocco constitutes a serious problem for the European Union. Most of the immigrants of Campo of Gibraltar County come from the most deprived regions of Morocco, sub-Saharan Africa, Algeria and Senegal, mainly. Very few have the condition of refugees, although this has currently been some increased due to the situation in Ukraine.

The immigrant profile that usually arrives in this region is young, with primary studies or with no studies, and without economic resources, they flee from poverty being mostly in an irregular situation. This poverty is not only related to economic circumstances, but also to political, social, food and health deficiencies. In recent years, the arrival of women is increasing and alternative means of entry are established such as under trucks and buses and inside containers.

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Although it is known that the healthiest people migrate, the precarious circumstances of the journey and the context mean that they need health care. Studies carried out in Spain indicate that the problems that this population has about health care are fundamentally associated with the problems they encounter in managing and navigating the healthcare system (Accem, 2020; Bas-Sarmiento, Fernández-Gutiérrez, Albar-Marín, et al., 2015; Bas-Sarmiento, Fernández-Gutiérrez, Poza-Méndez, et al., 2015). Upon arrival, immigrants have less knowledge of the healthcare system and, therefore, limited access to preventive healthcare services and information, negatively affecting their health over time (Ingleby, 2012; Lecerof et al., 2017; Llop-Gironés et al., 2014). Research shows that the most prevalent healthcare needs in newly arrived migrants are at the primary care level and are most needed in the first months after arriving in the host country (Wetzke et al., 2018). These needs often refer to mild respiratory issues, musculoskeletal and digestive problems, pregnancy checks and reproductive care, and mental health problem (Dopfer et al., 2018; Kirmayer et al., 2011; Mengesha et al., 2018; Moran et al., 2019).

Navigating the healthcare system, communicating and understanding, evaluating and applying the information they receive is critical to maintaining health, and preventing and treating diseases. In these circumstances, health literacy (HL) plays a relevant role, defined as “the motivations, knowledge and competencies needed to access, understand, evaluate and apply health information in making decisions about health care, disease prevention and health promotion to maintain and improve their quality of life” (Sørensen et al., 2012, 2013).

The model underpinning this definition (Sørensen et al., 2013) combines three dimensions of health (being sick/health care; being at risk/disease prevention and being healthy/health promotion) with the four ways of managing information: finding it, understanding it, evaluating it and applying it to one's own life to make informed health decisions. This combination results in a matrix with 12 sub-dimensions, pillars of the model, which underpins the 16-item European Health Literacy Survey Questionnaire (HLS-EU-Q16; Pelikan & Sørensen, 2014).

1.1 | Background

Being an immigrant is considered an important social determinant of health associated with access to healthcare, health outcomes, self-rated health status and HL (Castañeda et al., 2015; Levin-Zamir et al., 2017).

The Council of the European Union, as early as 2003, called for promoting and improving the health of immigrants through health policies that ensure equitable access to health information and care (Council of the European Union, 2003). The World Health Organization (WHO) has also been active in creating guidelines and recommendations about protecting the right to health of migrants and refugees; this is reflected in the Migrant and Refugee Health Promotion Plan for 2019–2023 (WHO, 2018). The evaluation of HL

in this population can be an essential tool that helps to identify indicators to adapt health policies, implement effective interventions and generally improve the well-being of this population in host countries.

Many studies show limited levels of HL in the general population (Almaleh et al., 2017; Duong et al., 2017; Levin-Zamir et al., 2016; McDonald & Shenkman, 2018; Sørensen et al., 2015). The results obtained in Europe by the HLS-EU Consortium were not very encouraging. 12.4% of the total sample had inadequate and more than one third (35.2%) problematic HL, which translates into one in two people in Europe having limited HL (Sørensen et al., 2015). Sørensen et al. (2015) identified specific subgroups where the proportion of people with limited HL considerably exceeds the average observed for the overall sample. This finding suggested the existence of a social gradient for HL, which was confirmed in bivariate correlations and multivariate regression analyses. Financial deprivation was the strongest predictor of low HL, followed by social status, education, age and gender. These results in the general population may lead us to suspect that the results of HL in vulnerable populations, such as the immigrant population, may be even worse. In fact, studies show how low HL appears to be more prevalent in particularly vulnerable groups, such as immigrants and refugees (Mantwill & Schulz, 2017; Morris et al., 2022; Wångdahl et al., 2015; Wångdahl et al., 2018), contributing to health disparities in these populations (Rikard et al., 2016).

Research suggests that cultural differences, together with low HL, may influence adherence (Shaw et al., 2009). Several investigations have shown that having poor literacy or limited numeracy skills is an independent risk factor for poorer health due to medication errors and more poor understanding of disease and treatments (Cabellos-Garcia et al., 2018; Mattered et al., 2021; McDonald & Shenkman, 2018). The importance of HL for self-care in chronic diseases has also been evidenced (Cabellos-Garcia et al., 2018; De Melo Ghisi et al., 2018; Dunn & Connard, 2018; Figueroa-Saavedra et al., 2020). A study conducted among a group of refugees in Sweden shows that the lower the HL, the more they refrain from seeking medical care, which may impact the health status of this population (Wångdahl et al., 2018).

Finally, it should be noted that several studies show how low levels of HL increase healthcare expenditure in the general population (Bailey et al., 2015; McDonald & Shenkman, 2018). In addition, there is evidence linking lower HL levels to higher use of hospital emergency services, higher hospitalization rates and increased length of hospital stay, which may increase the cost of health resources (McDonald & Shenkman, 2018). Health literacy is a key factor to consider in patient care as it affects one's ability to make decisions and support health self-management. However, little is known about the levels and correlates of HL in immigrant populations (Gerges et al., 2018).

Given the importance of HL for migrants' health status and to target effective health education interventions, it is necessary to evaluate the deficiencies or potentialities of their capacities, obtaining indicators that allow the generation of actions, based on

scientific data, in a way that is adapted to the abilities and needs of the target population. All of this will ultimately improve the health outcomes of this population.

Therefore, the aims proposed were (a) to establish the levels of HL in immigrant populations living in Southern Spain, (b) to identify sociodemographic characteristics associated with poorer HL and to establish the most problematic domains, (c) to set a profile type of immigrant with a higher risk of presenting low levels of HL and to see whether the social gradient for HL described by Sørensen et al. (2015) in the European population is confirmed for immigrant population.

2 | METHOD

2.1 | Design and sampling

A cross-sectional descriptive study. Due to the lack of a specific census of the reference population, a representative sample size for random probability sampling cannot be obtained beforehand. Therefore, the sample consisted of 278 immigrants who resident in Campo de Gibraltar (Cadiz) through a non-probabilistic convenience sample.

The inclusion criteria for the sample were as follows: economic migrant status, resident in Spain, over 16 years of age.

Most of the sample was recruited through key informants and associations working with the immigrant population: Andalucía Acoge, Red Cross, White Cross, ESMAR, Prolibertas Foundation, Cepaim and AMBAE.

2.2 | Variables and instruments

2.2.1 | Sociodemographic variables

The sociodemographic variables collected were sex, age, nationality, length of residence in Spain, marital status, number of children, level of education, health sciences education, employment status, monthly income, difficulty in paying bills and medication, and problems in accessing the health system.

2.2.2 | Health literacy

The instrument used to measure participants' HL was the HLS-EU-Q16 (Pelikan & Sørensen, 2014). This instrument, which stems from the European Health Literacy Survey Project, consists in its original version of 47 items, subsequently obtaining a reduced version with 16 items, which was used in the present study. The HLS-EU-Q16 contains 16 items addressing self-reported difficulties in accessing, understanding, appraising and applying information to tasks related to making decisions in health care, disease prevention and health promotion. Each item was rated on a four-point Likert

scale (very difficult, difficult, easy and very easy) and a "don't know/no answer." Following the authors' instructions, when scoring the HLS-EU-Q16, the categories "very difficult" and "difficult" are scored as 0, and the categories "easy" and "very easy" are scored as 1. Scale values are calculated as summed scores only for respondents who answered at least 14 items. Thus, scoring varies between 0 and 16, establishing three levels of HL: inadequate (0–8), problematic (9–12) and sufficient (13–16) (Pelikan et al., 2014, 2019).

In different European countries, correlations with the extended version of the form (HLS-EU-Q47) were very high ($r = .82$ for the total sample) and varied between .73 and .88. In addition, the correlation of sub-indices related to health care (7 items), disease prevention (5 items) and health promotion (4 items; HC-HL, DP-HL and HP-HL, respectively) were also adequate across countries (Pelikan & Sørensen, 2014). The authors themselves have recognized it as a valuable tool for vulnerable populations (Pelikan et al., 2014). The French and Arabic version used has been adapted and validated in an immigrant population (Bas-Sarmiento et al., 2020).

2.3 | Data collection

The survey was carried out individually and in small groups at the headquarters of the associations mentioned above. They were available in different languages in paper format. In some cases, the survey was read by cultural mediators or key informants to participants who could not read; it only occurred in five cases.

2.4 | Statistical analysis

The statistical treatment of the data was carried out with the SPSS statistical package, version 22.0. A descriptive analysis was carried out to determine the sample distribution for each of the variables studied: sociodemographic variables, health variables and HLS-EU-Q16 results.

Quantitative variables are expressed in terms of summary (means, modes and medians) and dispersion (standard deviations and ranges), and categorical variables in frequency and percentages. The Student's *t*-test and the one-way analysis of variance (ANOVA) compared the mean difference between two groups or more, respectively. In the case of linear relationships, Pearson's correlation coefficient was calculated.

A multivariate linear regression model was used with the total sample to measure the effects of selected social-cultural determinants on health literacy.

Statistical significance was determined for a value of $p < .05$.

2.5 | Ethical considerations

This work was conducted in accordance with the Declaration of Helsinki. The aim of the study and the anonymity of participants, as

well as the voluntary character of participation, were all explained before the participants started answering the questionnaire and their informed consent was obtained. The participants were also informed that the data obtained would be used for research purposes only.

3 | RESULTS

3.1 | Sociodemographic profile

The sample was 278 migrant participants: 183 of Moroccan origin, 56 of Sub-Saharan origin and 39 from other Arabic–French-speaking African countries. 53.2% were female, and 46.8% were male. The mean age of the sample was 33.20 years ($SD = 11.540$), half were married (50%), 79.4% were living with someone, a high percentage had children (78.5%) and had completed secondary school (64.4%). 92.4% had not received any health sciences education and had not worked as a health professional.

Notably, 38.8% of the sample reported being unemployed, and only 27.7% were working. Furthermore, according to the household income level, 29.9% earned less than €800 per month (47.5% refused to answer), 41.4% had had problems paying their bills at the end of the month, and 48.4% said they could not afford the medicines they needed for their health. Finally, the majority (75.5%) were able to go to the doctor without any problem (Table 1).

3.2 | Health literacy (descriptive and inferential analysis)

The mean score obtained from the total number of participants (278) from the HLS-EU-Q16 was 9.92 ($SD = 4.53$), which corresponds to a problematic HL. The three HL levels and their corresponding percentages are shown in Table 2. Figure 1 represents the HL levels by country/region of origin.

The lowest HL scores for both males ($\bar{X} = 6.10$; $SD = 4.80$) and females ($\bar{X} = 8.12$; $SD = 3.68$) were found for participants from Sub-Saharan Africa (see Table 3).

The data show statistically significant differences between the mean HLS-EU-Q16 scores according to gender ($t = 1.965$; $p = .050$); the origin of the participants ($F = 27.65$; $p < .001$); having health education ($t = -5.566$, $p < .001$); having problems paying for medication ($t = -3.989$, $p < .001$); and problems seeing a doctor ($t = -5.423$, $p < .001$).

Thus, women show higher mean HL scores than men ($\bar{X} = 10.42$; $SD = 4.03$ vs. $\bar{X} = 9.35$; $SD = 4.99$), participants with health sciences education have the best HL levels ($\bar{X} = 13.10$; $SD = 2.50$ vs. $\bar{X} = 9.66$; $SD = 4.56$), and participants from Sub-Saharan Africa ($\bar{X} = 6.68$; $SD = 4.57$) and with problems paying for medication have worse HL levels ($\bar{X} = 8.19$; $SD = 4.66$ vs. $\bar{X} = 10.74$; $SD = 3.98$). Similarly, those who had difficulty going to the doctor had the worst levels of HL ($\bar{X} = 7.35$; $SD = 4.15$ vs. $\bar{X} = 10.99$; $SD = 3.88$).

TABLE 1 Sociodemographic characteristics of the participants

Sex	n	%
Male	130	46.8
Female	148	53.2
Age		
Under 35 years	169	68.8
From 36–50 years	88	31.7
From 51–65 years	15	5.4
Older than 65 years	4	1.5
Lost values	2	.7
Country/region of origin (grouped)		
Moroccan	183	65.8
Sub-Saharan	56	20.1
Others	39	14.0
Duration of stay in Spain		
Less than a year	39	14.0
From 1–3 years	52	18.7
More than 3 years	168	60.4
Lost values	19	6.9
Education level		
Uneducated	18	6.5
Primary	25	9.0
Secondary	179	64.4
University studies	26	9.4
Does not know/does not answer	30	10.8
Status of Employment		
Working	77	27.7
Unemployed/inactive	108	38.8
	29	10.4
Retired/permanent disability	7	2.5
Housewife	35	12.6
Does not know/does not answer	22	7.9
Difficulties to pay for bills at the end of a month		
Yes	115	41.4
No	40	14.4
Does not know/does not answer	123	44.2
Household's net income per month		
Less than EUR 800	83	29.9
Between EUR 800–1,350	52	18.7
Between EUR 1,350–2,400	11	4.0
More than EUR 2,400	-	-
No response	132	47.5

By contrast, no statistically significant differences are observed between the mean scores of the HL questionnaire according to the participants' employment status ($F = 1.685$; $p = .138$) and educational level ($F = 2.105$; $p = .100$).

The distribution of HLS-EU-Q16 scores shows a statistically significant linear correlation with participants' age ($r = .178$; $p = .003$);

TABLE 2 Result of levels HL in HLS-EU-Q16. HLS-EU-Q16 scores, health care (HC-HL), prevention (DP-HL) and promotion (HP-HL) and sex

	N	\bar{X} (95% CI)	SD	MEN		WOMEN		T student (p)
				\bar{X} (95% CI)	SD	\bar{X} (95% CI)	SD	
HLS-EU-Q16	278	9.92 (9.39–10.46)	4.53	9.35 (8.49–10.22)	4.90	10.42 (9.76–11.08)	4.03	1.939 (.054)
Health Care HC-HL	278	4.25 (3.97–4.53)	2.35	4.07 (3.63–4.51)	2.55	4.41 (4.06–4.76)	2.15	1.201 (.231)
Prevention DP-HL	278	2.72 (2.52–2.93)	1.71	2.52 (2.19–2.84)	1.85	2.91 (2.65–3.16)	1.56	1.884 (.061)
Promotion HP-HL	278	2.95 (2.80–3.09)	1.24	2.77 (2.54–3.00)	1.33	3.10 (2.91–3.29)	1.14	2.212 (.028)
	N	%		N	%	N	%	
Inadequate HL	101	36.3		56	43.1	45	30.4	
Problematic HL	80	28.8		29	22.3	51	34.5	
Sufficient HL	97	34.9		45	34.6	52	35.1	

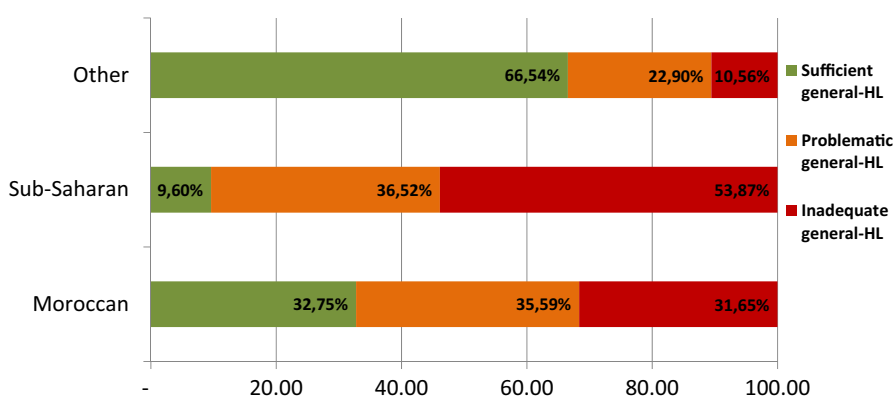


FIGURE 1 Levels of general health literacy index by country/region of origin

length of stay in Spain ($r = .398$; $p < .001$); and perceived socioeconomic level in society ($r = .151$; $p = .031$).

When analysing the specific HL indices around the domains of care and health care (HC-HL, with a maximum score of 7), disease prevention (DP-HL, with a full score of 5) and health promotion (HP-HL, with a full score of 4), the index related to disease prevention (DP-HL) was the one that shows the lowest scores ($\bar{X} = 2.72$; $SD = 1.71$), as can be seen in Table 2. When these scores were analysed by sex, it was observed that, in all cases, the mean scores of women were higher than those of men, these differences being statistically significant for the health promotion index ($t = 2.212$; $p = .028$).

When analysing the sub-indices according to the origin of the participants, we saw that the Sub-Saharan African group obtained the lowest scores in the different domains of care, prevention and health promotion (Table 3).

3.3 | Social gradient for health literacy

Based on this theoretical background and the correlations found between sociodemographic variables and HL, previously an intro regression analysis was performed to identify which predictor variables (length of stay in Spain, age, perceived social status, sex, health sciences education, marital status, employment status and education level) are incorporated into a stepwise regression model. The

following variables were identified as predictors of an adequate level of HL: length of stay in the Spain, gender, health sciences education and education level. These variables were incorporated into a second multiple regression model following the stepwise method. Table 4 shows the multivariate linear regression to analyse the association between HL (dependent variable) and the stepwise method's independent variables. Factors included in model 3 predicts the 21.2% HL.

The results obtained from the stepwise regression analysis show that as variables are incorporated into the model, it has a greater predictive ability.

Likewise, the multicollinearity indicators VIF lower than 10 and the tolerance values greater than 0.20 indicate no high correlations between the model factors. Finally, the Durbin-Watson indicator (1.833) allows a generalization of the data.

Standardized coefficient from the model 3 indicated that length to stay in Spain ($\beta = .405$; $p < .001$); Health Sciences Education ($\beta = .205$; $p = .001$); and Education Level ($\beta = .182$; $p = .002$) were significantly associated with HL.

4 | DISCUSSION

It should be recalled that this study was carried out in a strategic point of entry of immigrants to Europe from the African continent.

TABLE 3 HLS-EU-Q16 scores according to country/region of origin and sex. HLS-EU-Q16 scores, health care (HC-HL), prevention (DP-HL) and promotion (HP-HL) and country/region of origin

Country/region of origin	HLS-EU-Q16											
						Health Care, HC-HL		Prevention, DP-HL		Promotion, HP-HL		N
	Mean (CI 95%)	SD	Mean	SD	N	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	
Moroccan	10.28 (9.67–10.90)	4.19	♂10.57 ♀10.05	4.35 4.06	83 100	4.40	2.23	2.77	1.62	3.11	1.10	183
Sub-Saharan	6.68 (5.45–7.90)	4.57	♂6.10 ♀8.12	4.80 3.68	40 16	2.77	2.38	1.87	1.78	2.04	1.51	56
Others	12.87 (11.84–13.90)	3.18	♂13.57 ♀12.72	3.86 3.06	7 32	5.67	1.66	3.72	1.43	3.44	0.72	39

Understanding and addressing health status and its determinants is key to integrating this population and to European public health in an increasingly globalized world.

Health literacy has been recognized as an essential social determinant of public health (Johnson et al., 2011; US Department of Health and Human Services, 2010). Therefore, knowing the level of HL in the immigrant population is essential to improving their health outcomes. The present study is a pioneer in assessing HL in the immigrant population residing in Spain, providing relevant data on the profile type most at risk of presenting low levels of HL.

The results showed that the participants' HL level corresponded to problematic HL, in line with data previously analysed in the international context in general population (Almaleh et al., 2017; Duong et al., 2017; Levin-Zamir et al., 2016; McDonald & Shenkman, 2018; Prince et al., 2018). Although limited HL is not a minor problem in Europe (HLS-EU Consortium, 2012a), several studies show that HL levels are even more worrying in immigrant populations (Mantwill & Schulz, 2017; Morris et al., 2022) in accordance with results obtained in the present work. When comparing the HL levels obtained in the immigrant population with the native population (Sørensen et al., 2015), it is observed that immigrants present lower HL levels. 41.7% of the native population has adequate HL levels, and only 34.9% of the immigrant population has a sufficient HL level. 65.1% of the sample showed limited HL (the sum of problematic and inadequate HL scores), obtaining worse results than the native population (58.3%).

Specifically, in Sweden (Wångdahl et al., 2015, 2018), the HL of refugees was analysed with figures of almost 80% limited HL. In Oslo (Norway), they measured the HL of Somali women and found that 71% had low HL levels (Gele et al., 2016). In Spain, 70.41% of immigrants of different nationalities presented limited HL (Fernández-Gutiérrez et al., 2019). Similar results were obtained in other international contexts (Gele et al., 2016; Levin-Zamir et al., 2016; Ng & Omariba, 2013). The considerable proportions of immigrants with problematic HL obtained in the present study imply that the HL deficit is a challenge for public health in Spain. Arguably, it is difficult to access, understand, evaluate and apply health information in a new country where one is not fluent in the language and unfamiliar with

the system and has no social support network. However, take into account that more than half of the sample had been residing in Spain for more than 3 years.

The results obtained in the different domains of care (following the theoretical framework of the HLS-EU project) reflect lower scores for the prevention domain, which other studies have confirmed (Bas-Sarmiento, Fernández-Gutiérrez, Albar-Marín, et al., 2015; Bas-Sarmiento, Fernández-Gutiérrez, Poza-Méndez, et al., 2015; Ingleby, 2012; Lecerof et al., 2017). These results suggest that the immigrant population participates less in prevention programmes as mentioned in previous studies (Brzoska et al., 2015; Brzoska et al., 2020; Brzoska et al., 2021). This may be one of the reasons why, although the immigrant usually arrives healthy (Gushulak et al., 2011; Nyiri & Eling, 2012), his health deteriorates over time (Dopfer et al., 2018; Lecerof et al., 2017; Moran et al., 2019; Volken & Ruesch, 2014), and the health problems tend to shift from mostly acute infectious illnesses to chronic diseases, such as cardiovascular disease and diabetes (Gushulak et al., 2011). Similarly, there is evidence linking higher use of hospital emergency services with lower levels of HL (McDonald & Shenkman, 2018; Van der Heide et al., 2015).

The variables nationality, gender, having or not having health science education, difficulty in purchasing medication and having problems going to the doctor have been shown to have statistically significant associations with the level of HL. Other studies have found associations with ethnicity (Levin-Zamir et al., 2016; Ng & Omariba, 2013; Wångdahl et al., 2018). In this study, those from Sub-Saharan Africa have the worst HL levels, although maybe this is due to the fact that they are individuals with a lower average length of stay in Spain. These individuals showed the lowest scores in all the indices analysed, highlighting the low scores in care and disease prevention. These results have also been obtained in other studies (Fernández-Gutiérrez et al., 2019). Immigrants with less time in Spain face obstacles such as the language barrier, lower knowledge of the healthcare system and, therefore, limited access to preventive healthcare services and information (Hadgkiss & Renzaho, 2014; Lecerof et al., 2017). In addition, cultural differences can also be one of the reasons. Immigrants

TABLE 4 Multivariate linear regression

Model	F	R ²	ΔR ²	B	SE	β	Confidence interval	p	1-β	f ²	
Model 1											
Length of stay in Spain	39.128 (1,228)	.146	.143	0.018	0.003	0.383	.13	.24	.000	0.999	0.170
Model 2											
Length of stay in Spain	26.514 (2,227)	.189	.182	0.019	0.003	0.388	.13	.24	.000	1.00	0.233
Health Sciences Education				3.559	1.207	0.207	1.536	5.583			
Model 3											
Length of stay in Spain	21.524 (3,226)	.222	.212	0.019	0.003	0.405	0.14	0.25	.000	1.00	0.285
Health Sciences Education				3.516	1.008	0.205	1.529	5.503			
Education level				3.130	1.013	0.182	1.134	5.126			

from sub-Saharan Africa often use medicinal herbs and they only go to the hospital when a serious health problem appears, which they have not been able to solve with the use of medicinal herbs (Bas-Sarmiento, Fernández-Gutiérrez, Albar-Marín, et al., 2015; Bas-Sarmiento, Fernández-Gutiérrez, Poza-Méndez, et al., 2015). Indeed, effective disease prevention requires HL skills for successful informed decision-making and health behaviour change. Lack of information about health issues or access to preventive services may contribute to immigrants' health status deterioration over time (Fedeli et al., 2015). For this reason, it would be interesting to generate interventions to improve the HL levels of immigrants who have just arrived in Spain. In this way, accessing to health services and preventive services would be facilitated so the deterioration of their health would be avoided.

Similarly, the literature establishes a relationship between HL and age (Levin-Zamir et al., 2016; Sørensen et al., 2015; Wångdahl et al., 2018), which is confirmed in our case. Despite the evidence (Duong et al., 2017; Emiral et al., 2018; Levin-Zamir et al., 2016; Sørensen et al., 2015; Wångdahl et al., 2018), it has not been possible to establish a statistically significant relationship between HL and education level, which is in agreement with Rouquette et al. (2018), this may be attributed to the fact that most of the people in our sample had completed secondary education.

Concerning gender, female scores were higher than male scores, with almost no statistically significant differences. The scientific literature provides evidence favouring higher scores in the male (Almaleh et al., 2017; Tiller et al., 2015) and female population (Emiral et al., 2018; HLS-EU Consortium, 2012b). However, no statistically significant gender impact on HL level was found in other studies (Gustafsdottir et al., 2020; Lorini et al., 2019). These inconsistent results, from the scientific literature, may be explained with the different features of the samples. Likewise, the change that immigration has undergone in recent years could be explained with the substantial increase in women who decide to change their lives. Globalization, the access to information and the evolution of the role of women could explain these differences.

Similarly, in the health promotion index (HP-HL), there were statistically significant differences between women and men favouring the former; this may be because women take responsibility for the physical and mental health of the family in the process of health and illness (Vaquiro & Stieповich, 2010). In addition, it should be noted that several studies suggest that the female gender is a predictor of health promotion behaviours (Cho & Cha, 2021; Vaidya et al., 2012).

Finally, and similar to Sørensen et al. (2015), in the present study, a multiple linear regression was performed to identify specific population subgroups at higher risk of having low levels of HL. The strongest predictor of low HL was a length of stay in Spain, followed by no education in health sciences and a low educational level. Sørensen et al. (2015) identified gender as a predictor variable; however, in the present paper, the gender difference, although statistically significant, is not large enough, which probably explains why it was not a predictor in the regression. In the same sense, monthly income could

not be considered a predictor because 47.5% of the participants did not answer the question, making obtaining this type of data a challenge. These same problems have been detected in other studies (Luna, 2015; Sociological Research Center, 2016). Data are according with the well-documented phenomenon of a social gradient for health and for literacy. This immigrant profile with a higher risk of presenting low HL will make it possible to guide and generate future actions, in a way that adapts to the capacities and needs of this population. All of this will ultimately improve the health outcomes of this population.

4.1 | Limitations and strengths

This study is not without its limitations. In addition to the limitations inherent to a cross-sectional study, the sample was chosen by non-probabilistic convenience sampling, using the leading vehicle associations dedicated to helping the most vulnerable populations, in our case, the immigrant population. Bearing in mind that HL is context-dependent, that is to say it may vary in different settings, generalizing the results should be cautious.

We must bear in mind that, although the results provide information on HL structured by the competencies of accessing, understanding, evaluating and applying the knowledge in the areas or dimensions of care/health care, disease prevention and health promotion, this survey collects the perceived difficulty in carrying out specific tasks and, therefore, does not objectively measure whether or not the person has the given competence. In this sense, a low HL may be due to a lack or deficiency in the population or a false perception by the individual of his or her competencies and skills or a health system with overly complex demands. Even so, the evidence establishes that it is a robust screening tool (Gustafsdottir et al., 2020; Nolasco et al., 2020; Pelikan et al., 2014).

Despite the limitations encountered, our study has strengths to be taken into account. Thus, it is one of the first studies to measure HL in the immigrant population residing in Spain, providing relevant data on the profile type most at risk of presenting low levels of HL. Given the difficulty of data collection in this population, a sizeable sample was drawn to overcome the shortcomings of convenience sampling. In addition, face-to-face or group interviews were conducted to ensure understanding of the questions. This facilitated the inclusion of uneducated people and realistically reflected the current situation of the reference population.

Understanding and addressing health determinants is key to integrating this population and to European public health in an increasingly globalized world.

5 | CONCLUSIONS

The majority of the sample studied has a limited (inadequate and problematic) HL level, and only a tiny part of the sample has a

sufficient level. The domain with the lowest score was disease prevention. This information is helpful as it draws attention to the need to make preventive health programmes more accessible and tailored to the needs of migrants.

The data obtained in the sample made it possible to describe the profile of the population most at risk of presenting problematic levels of HL: groups with a short period of stay in Spain, younger, with economic difficulties, without health sciences education and with a low level of education.

The availability of these data makes it possible to generate knowledge about the level of HL in the immigrant population, in this case, resident in Spain, and to be able to create interventions and policies adapted to them to improve their level of HL, consequently, their health status. The results can guide nursing interventions, being adapted to the needs of the immigrant population.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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