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Health-related quality of life and perceived discrimination among immigrants and natives in Spain

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Health-related quality of life, ethnicity and perceived discrimination among immigrants and natives in Spain

Objectives: The current study compares subjective mental and physical health among native Spaniards and immigrant groups, and examines the effects of ethnicity and perceived discrimination on subjective health in immigrants.

Design: Two random samples of 1250 immigrants to Spain from Colombia, Bolivia, Romania, Morocco, and Sub-Saharan Africa and 500 native Spaniards, aged between 18 and 65, were recruited for this cross-sectional study. Several hierarchical regression analyses of ethnicity and perceived discrimination on subjective mental and physical health (assessed using the health-related quality of life items, HRQLSF-12) were carried out separately for men and women.

Results: Male immigrants from Colombia and Sub-Saharan Africa showed better physical health than natives, controlling for age and socioeconomic and marital status. The immigrants—except for the Colombians—had poorer mental health than natives, especially African men and Bolivian women. Socioeconomic status had no impact on these differences. Among immigrants, perceived discrimination was the best predictor of physical and mental health (controlling for socio-demographic variables). African men, Bolivian women and women without legal status exhibited the poorest self-rated mental health.

Conclusion: Clear differences in health status among natives and immigrants were recorded. The *self-selection hypothesis* was plausible for physical health of Colombians and Sub-Saharan African men. Acculturation stress could explain poorer mental health in immigrants compared with natives. The association between ethnicity and poor self-reported mental health appears to be partially mediated by discrimination.

Keywords: quality of life; health; discrimination; ethnicity

The relationship between ethnicity, perceived discrimination, and subjective health has been widely studied (for a review see Pascoe and Smart-Richman, 2009). Specifically, for the immigrant population, certain ethnic groups show both advantages and disadvantages in health-related measures relative to other ethnic groups (González, Tarraf, Whitfield and Vega, 2010; Williams and Mohammed, 2009). Such differences have been ascribed to superior physical health of the immigrant population compared to the host society, cultural norms and habits promoting or proscribing unhealthy practices that characterize some ethnic groups, health conditions affecting certain ethnic groups, differential coping strategies, and differences in family support (Alegría *et al.*, 2008, Borrel *et al.*, 2010,). Generally, a successful migration process requires personal and material resources. The *self-selection hypothesis* states that migrants are better equipped to deal with migration processes than non-migrants. Accordingly, researchers have often found that, compared to people born in the host country, immigrants show better health: lower risk of psychiatric disorders (Alegría *et al.*, 2008), fewer chronic health conditions (Aerny *et al.*, 2010), lower all-cause mortality rate (Markides and Coreil 2008), and higher level of self-reported health (Malmusi *et al.*, 2010). This has been called the *immigrant paradox*, because immigrants have poorer socioeconomic conditions but a lower mortality rate than natives (Markides and Coreil, 1986). This “healthy immigrant effect” has been reported for Europe in general (Mladovsky 2007) and for the particular case of Spain (Hernández-Quevedo and Jiménez-Rubio, 2009, Malmusi *et al.*, 2010).

Research has also found differences among immigrant groups in prevalence rates of specific diseases or disorders and self-reported health. Iranian and Turkish immigrants had a higher risk of poor health than Swedes (Wiking *et al.*, 2004). In the USA, Mexican immigrants show low risk of mood, anxiety and substance-use disorders,

whereas Cuban immigrants show low risk only for substance-use disorders (Alegría *et al.*, 2008). Moroccans and Turks report poor health status in the Netherlands (Reijneveld, 1998). African, Latin-American and East European immigrants reported more anxiety and depression than natives in Spain (Garcia-Gomez and Oliva, 2009). On the other hand, immigrant status is related to poor employment conditions (occupational hazards, unstable jobs), and both underemployment and unemployment differentially affect immigrant groups (Ahonen *et al.*, 2009, *et al.* Agudelo-Suárez *et al.*, 2009). These are traditional sources of stress, detrimental to well-being and social adaptation (Jibeen and Khalid, 2009, Williams and Mohammed, 2009). Some studies in the Spanish context revealed that differences in health between the immigrant and native-born populations depend on country of birth (García-Gómez and Oliva, 2009) and length of residence in Spain (García-Gómez and Oliva, 2009, Malmusi *et al.*, 2010). Immigrants with shorter length of residence from poor countries reported relatively better health (Malmusi *et al.*, 2010), while level of health reported by immigrants tends to decrease over time (Hernández-Quevedo and Jiménez-Rubio, 2009), and self-perceived health and mental health were poorer in women with five or more years of residence (Aerny *et al.*, 2010).

Perceived discrimination is also a relevant variable in explaining psychological distress and health-related quality of life. Immigrants are the targets of discriminatory practices in virtually all European countries (EU-MIDI 2011), and face discrimination for a variety of reasons. Immigrants from lower socioeconomic-status countries, refugees and asylum-seekers are especially viewed as taking advantage of a country's resources but not contributing to them (Louis *et al.*, 2007). Cultural differences between immigrants and the host society are also a source of conflict (Ward, Bochner, and Furnham, 2001). Judgements regarding economic and symbolic threats may lead to

discriminatory practices by the host society and adaptation difficulties for the immigrant population (Zárate *et al.*, 2004).

The empirical evidence shows an inverse association between discrimination and a wide range of health outcomes (Borrell *et al.*, 2010, Paradies, 2006, Williams and Mohammed, 2009). The discrimination-poor health link is explained in terms of stress-related responses (Pascoe and Smart-Richman, 2009). Being discriminated against provokes feelings of being a member of a minority group unwanted by the host society (Schwartz *et al.*, 2010). In immigrant-focused studies, self-reported discrimination has been associated with: poor mental health status (Borrell *et al.*, 2010, Gee *et al.*, 2006, Pantzer *et al.*, 2006, Llácer *et al.*, 2009) and poorer physical health status, especially for Black immigrants compared to Latino immigrants (Ryan *et al.*, 2006).

In some studies, the association between discrimination and poor health is weaker for recent immigrants, suggesting that the longer immigrants live in the host country, the more they experience discrimination (Gee *et al.*, 2006). In Spain, the perception of discrimination related to health care use was highest among the immigrant women with five or more years of residence in Spain (Aerny *et al.*, 2010). However, it is important to take into account that most of the empirical evidence just detailed refers to the perception of *personal* discrimination. In contrast, the effect of group discrimination on health and subjective well-being is not so clear. For example, some researchers have reported that perceived group discrimination enhances well-being (Bourguignon, Seron, Yzerbyt, and Herman, 2006), reinforcing ethnic identification and collective self-esteem. In the current study we postulate the negative role of personal discrimination for health.

Furthermore, the bulk of research on discrimination and health has focused on racial discrimination (with a special emphasis on African-American minorities),

whereas discrimination with regard to immigrant status has been less frequently studied. This investigation considers discrimination based on immigrant status and nationality in the context of economic migration movements towards more industrialized and economically stable countries. In culturally plural societies, migrants become members of established ethno-cultural groups. Technically foreign-born, first-generation settlers should be described as migrants, whereas second- or later-generation descendants of these settlers are more appropriately referred to as members of ethno-cultural groups (Ward *et al.*, 2001). Nevertheless, nationality of origin remains a salient feature of immigrants' social and personal identity. In this sense, nationality and ethnicity can be used as equivalent terms.

This research focuses on ethnicity and perceived discrimination as key variables accounting for differences in self-reported physical and mental health in the immigrant and native populations in the Basque Country region of Spain. By focusing on foreign-born immigrants, we study a population rarely covered in the previous literature, as such studies are especially scarce in the Spanish immigration context. Finally, to the best of our knowledge, no one has used the Medical Outcomes Study Short Form (SF-12 or SF-36) to assess health status in immigrants. Other studies, such as the Spanish National Health Survey (ENSE, 2006 edition), have included the GHQ (Goldberg Scale) as a measure of mental health (Llacer *et al.*, 2009, Malmusi *et al.*, 2010).

In the current study, physical and mental health are measured with the Medical Outcomes Study Short Form (SF-12, Ware *et al.*, 1996), rather than with other commonly-used measures of overall self-reported health (Aerny *et al.* 2010, Hernández-Quevedo and Jiménez-Rubio, 2010, Wiking *et al.*, 2004), mental disorders (González *et al.*, 2010), and prevalence of physical conditions (García-Gómez and Oliva, 2009).

Ethnicity of immigrant groups in the study

There are important differences among immigrants groups in Spain depending on the country of origin. Immigrants account for 12% of the population in Spain, and 6.4% in the Basque country (The Basque Observatory of Immigration, 2009). Some of the major immigrant groups to Spain were represented in the study sample. There are important differences related to language and culture among these groups. Concerning language, only Colombians and Bolivians share the Spanish language with natives, though they do not share Euskera, the native language of the Basque Country region. Culturally, the groups most distant from natives are Moroccans and Sub-Saharan Africans, because most of them practice the Muslim religion, have clearly differentiated gender roles, and are less likely to have ties with Spaniards (The Basque Observatory of Immigration, 2009, de Miguel and Tranmer, 2010). Social perception of immigrant groups is more negative for Moroccans, Romanians and Sub-Saharan Africans than for Colombians and Bolivians (Cea and Valles, 2009). Likewise, discrimination for ethnic reasons is more frequently perceived among Moroccans and Sub-Saharan Africans (EU-MIDI, 2011).

We expect mental health differences between immigrants and natives, but less marked differences in physical health. Natives will show better mental health than immigrants, in accordance with stress-related outcomes associated with the migration process (H1). We also expect differences among ethnic groups, with Latino immigrants presenting better mental health than Africans (H2). The advantages of Latino immigrants to the USA in health-related measures have been consistently documented in the literature (Gee *et al.*, 2006, Ryan *et al.*, 2006). Accordingly, we expect to find this advantage in the Spanish context, since Latino immigrants (in contrast to African or Romanian immigrants) also share the Spanish language, which benefits the social integration process in the host country. Mental health will vary depending on the social conditions of immigrant groups, giving Colombian immigrants an advantage over other

migrants, because their social conditions are similar to those of Spaniards (Aierdi *et al.*, 2008, Basabe *et al.*, 2009).

Perceived discrimination by immigrants will also negatively affect mental and physical health, though the effects on the former will be more marked (William and Mohammed, 2009) (H3).

Method

Participants and procedure

Samples

The current cross-sectional study is based on questionnaire data collected between December 2009 and February 2010 in the Basque Country autonomous region of Spain, with a total sample $N = 1750$ (55% men; mean age $M = 33.6$, $SD = 9.7$ years). The immigrant sample, obtained through a probability sampling procedure by ethnicity, with stratification by age and sex, consisted of 1250 foreign-born immigrants (*Confidence Interval* = 95%, $\sigma = 1.96$; Error = ± 2.77) who had lived for at least six months in Spain, having been born in Bolivia, Colombia, Morocco, Romania or Sub-Saharan African countries (mostly Senegal, Nigeria, Equatorial Guinea and Cameroon). There were 250 participants in each sub-sample. For Bolivians, Colombians, Moroccans and Romanians, Error = ± 6.19 , and for Sub-Saharan Africans Error = ± 6.04 . Selection of countries of origin was based on the statistical records concerning the prevalence of immigrants according to their country of origin, and covers the largest migrant groups in the Basque Country, representing 46% of all the immigrants—between 8 and 10% per country (The Basque Observatory of Immigration, 2009). The sample was drawn from public records¹ and was selected taking into account the distribution of immigrants in

the provinces, districts of the 3 cities and 15 localities with at least 6% of immigrants; finally the sample was consistent with the real representation of each locality or district, sex, and age group within the Basque Country.

Respondents participated in a fully structured, face-to-face interview. In the first phase, the participants were recruited by random routes in their households, where one route was randomly selected in a random section of each of the census districts. Only one interview was carried out per door. Given the difficulties for sampling of special populations (known as rare events), once a particular random route stopped giving a marginal gain in the probability of success by moving away from the areas with the highest density of the study population, the route was rearranged by assigning a new starting point in the district. Only exceptionally were quotas completed by a snowball sampling technique, and always respecting pre-established quotas.

The data were collected by a team of trained interviewers². The interviewers were provided with detailed fieldwork instructions based on the results of the pilot study and equipped with a set of show-cards displaying the corresponding fixed categories to be used when asking each question. Interviews were conducted in Spanish, given that the vast majority of the other immigrant groups in Spain are able to speak and understand it. However, many of the interviewers were bilingual (Spanish- and English- or French-speaking), and they all were backed up with an English and French version of the questionnaire.

Native residents ($n = 500$) in the Autonomous Region of the Basque Country were selected following a stratified multistage probability sampling by provinces, with proportional allocation, and then by random routes and age and sex quotas ($CI = 95\%$, $\sigma = 1.96$; Error = ± 4.38), in the same sample places (localities and sections) as the immigrants. The native sample was paired by sex and age according to the immigrant

population distribution. The interviews were conducted face-to-face in respondents' households. Each interviewee was informed that their participation was voluntary and responses confidential. The interviewee signed documents giving informed consent and agreeing to being subjected to a random telephone verification procedure after the interviews (15% of the participants were contacted).

Measures

Health scales. Health-related quality of life was assessed using the Medical Outcomes Study Short Form (SF-12, Ware *et al.*, 1996), adapted to Spanish (Alonso *et al.*, 1998). Responses to the 12 items are used to calculate the physical (PCS-12) and mental component (MCS-12) summary scores by applying a scoring algorithm (Ware *et al.*, 1996). Scoring for the PCS-12 and MSC-12 was normalized to a range between 0 (the poorest health status) and 100 (the best health status), with 50 representing average health status for a Spanish population-based sample (Alonso *et al.*, 1998, Gandek *et al.*, 1998, Vilagut *et al.*, 2005, Vilagut *et al.*, 2008).

Socio-demographic variables. Age, income level (four categories: <600€, 601-1,800€, 1,801-3,000€, >3,000€), educational level (with 5 levels: from 1, primary or lower levels, to 5, University studies), type of occupation (16 occupational categories), marital status (married/cohabiting vs. single), legal status (documented vs. undocumented)³, and length of residence in Spain (in years) were the socio-demographic variables included in the survey. Five categories of an index of socio-economic status (SES) were computed matching the five levels of education and 16 categories of occupation. For example, individuals with incomplete primary education and who were non-qualified workers, unemployed, or retired were classified as with the lowest social status(1), whereas individuals with a university degree and who were professionals or managers were

classified as with the highest social status (5), according to status categorization performed in the survey studies in Spain (The Basque Observatory of Immigration, 2007).

Perceived discrimination. The scale consisted of five items assessing the frequency of being treated negatively due to ethnic background or immigrant status. Respondents were asked about the frequency of the following: 1) “Spanish people made you notice that you are an economic threat to them (taking away jobs, taking advantage of medical care benefits)”; 2) “you have felt discriminated against (noticing looks, hearing negative expressions or attitudes) due to your physical appearance”; 3) “you have suffered aggressions, insults and threats”; 4) “you have been the victim of hostile actions that Spaniards would never commit against other Spaniards”; 5) and “you have been ignored”. Items were rated on a 5-point Likert scale ranging from 1, *never*, to 5, *almost always*. An index of perceived discrimination was computed averaging the five items ($\alpha = .88$). This instrument is very similar to other measures of discrimination in relevant literature (Williams and Mohammed, 2009), and was used in previous studies with immigrant populations in the Basque Country (Zlobina *et al.*, 2006, $N = 642$, Aierdi *et al.*, 2008, Basabe *et al.*, 2009, $N = 3000$), showing satisfactory internal consistency coefficients ($\alpha = .87$ to $.88$). The predictive validity of the scale was also checked. Perceived discrimination was the most powerful predictor of immigrants’ psychological and sociocultural adjustment, affecting acculturation attitudes and host and national identity, and reinforcing the separation strategy as well as stress and negative affect (Basabe *et al.*, 2009, Zlobina *et al.*, 2006). Immigrants were categorized as showing low, medium, and high perceived discrimination based on percentiles (P₃₃, P₆₆, and P₉₉) for descriptive statistics.

Data Analysis

A description of the sociodemographic and immigration characteristics by country was conducted, and differences in PCS-12 and MCS-12 mean scores were described (by t-test, ANOVA analysis and post-hoc test).

Hierarchical regression analyses were carried out following two strategies. Immigrant groups were dummy coded, taking as reference group (0) natives or Colombians. First, in order to identify differences between native and immigrant groups in each criterion variable— PCS-12 and MCS-12—, the native group was set as reference group. In all analyses, immigrant group (dummy variable), socio-demographic variables (age, SES and marital status) and immigrant characteristics (length of residence, legal status, perceived discrimination) were used to predict individuals' physical and mental health.

In step 1, all immigrant groups were included as predictors. In steps 2, 3, and 4, age, SES, and marital status (as variables available for both natives and immigrants) were added sequentially to control for. Second, with the aim of identifying differences between immigrant groups in each criterion variable— PCS-12 and MCS-12—, Colombians were set as reference group. Colombians were selected on the basis of their being the most successful immigrant group in social status, net household income, language, and education. In step 1, all immigrant groups were included as predictors. In steps 2, 3, 4, 5, 6, and 7, perceived discrimination, age, SES, length of residence, legal status, and marital status were added sequentially. Separate analyses were run for women and men, as commonly reported in the literature.

Results

Socio-demographic and immigration characteristics

Table 1 presents socio-demographic and immigration characteristics among natives and immigrant groups. Sub-Saharan African and Moroccan immigrants were slightly younger than the rest of the immigrant groups (mean age between 31.8 and 32.8 years). Net household income for most immigrant groups ranged from 600 to 1,800€. Exceptions were Sub-Saharan African and Moroccan men, who did not reach 600€ monthly (46.1% and 38.8%, respectively). Compared to native populations, immigrant groups had lower formal educational level. The majority of immigrants showed low social status, ranging from 61.2% for Colombian men to 87% for Sub-Saharan African. For almost every immigrant group, more than half reported living with their partner. However, the percentages of married or cohabiting were lower for Sub-Saharan Africans and Moroccan men. The majority of interviewed immigrants had their legal status regularized or documented (that is, 72% of the immigrants have a residence permit, Spanish nationality or European citizenship, and this is more frequent for Colombians and Romanians and less frequent for Africans). Length of residence in Spain differed according to sex and immigrant group, except for Romanians. Colombian, Bolivian, and Sub-Saharan African women remained longer in Spain than Colombian, Bolivian, and Sub-Saharan African men. In contrast, Moroccan women had arrived more recently than Moroccan men. Finally, the mean perceived discrimination was low for all immigrant groups (see Table 1 for details).

Summarizing, Sub-Saharan African and Moroccan immigrants presented a more negative social situation in terms of income, education, social status, percentage of married/cohabiting and legal status. Comparatively, Colombian immigrants showed a more favourable social situation in terms of social status, net household income, language, and level of education.

Differences in Mean PCS-12 and MCS-12 Scores

In this study, MCS-12 scores ranged from 14.32 to 65.41 for natives ($M = 50.8, SD = 6.4$), and from 11.50 to 66.7 for immigrants ($M = 47.9, SD = 8.9, p < .001$). PCS-12 score ranged from 11.9 to 66.9 for natives ($M = 53.5, SD = 6.8$), and from 15.7 to 67.8 for immigrants ($M = 53.8, SD = 7.3, ns$). Two ANOVA analyses were run to test differences between countries on PCS-12 and MCS-12. Physical health of natives did not differ from immigrants' physical health, with all post-hocs *ns*. Natives presented better mental health than immigrant groups, except for Colombians (*ns*).

Differences in Mean PCS-12 and MCS-12 Scores by Sex

Overall, men scored higher in PCS12 ($M = 54.4, SD = 6.6$) than women ($M = 52.9, SD = 7.7, p < .001$). However, using *t* test, the differences were significant only for Romanian immigrants, indicating that Romanian men showed better physical health ($M = 54.9, SD = 6.5$) than Romanian women ($M = 51.6, SD = 9.2, p < .01$). In MCS12, men scored higher ($M = 49.2, SD = 8.2$) than women ($M = 48.1, SD = 8.6, p < .001$). Nevertheless, the differences were significant only for Bolivians, (for men $M=48.5, SD = 8.9$, and for Bolivian women $M = 45.5, SD = 9.4, p<.02$).

Table 1 about here

Hierarchical Regression Analysis for PCS-12 and MCS-12 scores: Natives as a Reference Group

Men

The upper parts of Tables 2a and 2b present the regression analysis for PCS-12 and MCS-12 scores, respectively, in men. When only immigrant groups are included, Sub-

Saharan African men showed better physical health than natives. When controlling for age, SES and marital status, Colombian and Sub-Saharan African men showed better physical health compared to natives. Older and higher-status individuals reported poorer and better physical health, respectively, than natives.

Tables 2a and 2b about here

For the MCS-12, when only immigrant groups are included, Bolivian, Romanian, Moroccan and Sub-Saharan African men showed poorer mental health than natives. On including age, SES and marital status, the results remained practically the same, except that Romanians no longer showed significantly poorer mental health than natives. Older and single individuals reported poorer mental health than natives.

Women

The lower parts of Tables 2a and 2b present the regression analyses for PCS-12 and MCS-12 scores, respectively, in women. No differences were found between native and immigrant groups in physical health after controlling for socio-demographic variables. Similarly as for men, older women reported poorer physical health. In mental health, Bolivian, Romanian, and Sub-Saharan African women reported lower indices than natives. Colombian and Moroccan women did not differ from natives, and no effects were found for age, SES or marital status.

Hierarchical Regression Analysis for PCS-12 and MCS-12 scores: Colombians as a reference group

Tables 3a and 3b show the regression analyses for PCS-12 and MCS-12 scores in immigrant men and women

Tables 3a and 3b about here

Men

No differences were found between Colombians and the remaining immigrant groups in physical health (there are differences for Bolivians and Moroccan men at $p < .10$). Men perceiving high discrimination, older and lower social status men reported poorer physical health. Moroccan and Sub-Saharan African men reported poorer mental health than Colombians, even when controlling for perceived discrimination and socio-demographic variables. Older men and men perceiving high discrimination reported poorer mental health.

Women

Compared to Colombian women, Bolivian and Romanian women showed poorer physical health, even when perceived discrimination, SES, years of residence, legal status and marital status were accounted for. Older women and women perceiving high discrimination reported poorer physical health. Bolivian women presented poorer mental health than Colombian women, and for the remaining groups no differences were found in mental health after controlling for perceived discrimination, age, SES, years of residence, legal status, and marital status. Women perceiving higher discrimination and those with shorter residence in Spain reported poorer mental health. Nevertheless, the effect of time of residence on health in men and women is low.

In sum, immigrant women groups did not differ in mental health when socio-demographic variables were controlled for, except in the case of Bolivians. That is, the pattern of results for women is reversed: while immigrant men differed in mental health status, immigrant women differed in physical health status. Perceived discrimination was the principal predictor of the PCS and MCS components.

Discussion

Our objective was to study the relation between ethnicity, perceived discrimination, and physical and mental health in the Basque Country (Spain). Studies of immigrants' subjective mental and physical health in this context have been scarce.

First, as expected, natives showed better mental health than some immigrant groups: Bolivians, Romanians, Sub-Saharan Africans, and Moroccans, whereas Colombians showed mental health indices similar to those of natives. One explanation may be that Colombians have usually lived longer in the host country than other immigrant groups, which would lead them to hold a privileged social position (Aierdi *et al.*, 2008, Basabe *et al.*, 2009). Accordingly, Colombians may benefit from the highest social status among immigrants. Existing literature suggests that it is important to disaggregate health data by country of origin (Mladovsky, 2007). This study indeed found differences according to country of origin, especially between Latinos or Africans.

Second, the findings suggest that immigrants and natives did not present differences in physical health. However, particularly among men, Sub-Saharan Africans and Colombians reported better physical health than natives, controlling for age, SES, and marital status. This relatively better health in immigrants partially supports the self-selection hypothesis for migration for men. This finding is partly concordant with

previous research in the Spanish context that has shown how foreign immigrants from poor countries had the poorest socio-economic situation but relatively better health (especially men with shorter length of residence) (Malmusi *et al.*, 2010). However, this result found among men (their scores in physical health are equal to or higher than those of natives) applies to the immigrant group with the highest social status (Colombians) and that with the lowest status (Sub-Saharan Africans).

Third, as far as the hypothesized differences according to ethnicity in both physical and mental health are concerned, the expected and encountered advantage of Latino immigrants over Africans or Eastern Europeans might be a result of cultural proximity of these immigrant groups to local culture. Similarity between host and heritage culture is related to degree of integration (Ward *et al.*, 2001). Linguistically, Spanish is the common language. *et al.* These factors make the successful integration of Latino immigrants in Spain more likely. The results regarding Colombian immigrants corroborate this view. Colombians showed the highest social status among all the immigrants, and presented health indices similar to those of natives, and better than those of the other immigrants. In contrast, other Latino groups, such as the Bolivians, arrived in the host country later, had more difficulties obtaining legal status (half being undocumented), and consistently reported poorer mental health than natives and Colombian immigrants. In accordance with previous studies, the differences between the immigrant and native-born populations depend on country of birth, length of residence in Spain, and socioeconomic status (García-Gómez and Oliva, 2009, Llácer *et al.*, 2009, Pantzer *et al.*, 2006).

Finally, as hypothesized, discrimination perceived by immigrants undermined both their mental and physical health, though the effects on the former were more marked. In this study, perceived discrimination was associated with poorer physical and

mental health in both men and women, before and after adjustment for age, social status (education and occupation) and ethnic group. The influence of discrimination on health was slightly stronger in men than in women. This pattern is different from those found in other studies that showed a stronger relationship between discrimination and health for women than for men (Borrell *et al.*, 2006, Borrell *et al.*, 2010). This apparent contradiction with previous research could be explained by differences in sample composition and target group. In the European context, ‘visible’ minorities (Muslims and Romanians) experience more discrimination than other minorities, and prejudice is more intense for African and Moroccan men (EU-MIDI 2011), probably because the male stereotypes ascribed to this group are perceived as more threatening than those ascribed to women.

The relationship between perceived discrimination, social status and perceived health in the present study was also found to be complex. The findings of this study suggest that SES predicts higher physical and (to a lesser extent) mental health among immigrant men but not women, in line with the results of another Spanish study (Borrell, *et al.* 2010). These gender differences could perhaps be attributed to fact that downward mobility associated with immigration is usually more stressful for men than for women. Previous evidence of the relationship between perceived discrimination and SES has also been mixed, some studies reporting a positive association and others the opposite. As Williams and Mohammed (2009, p.38) explain: ‘discrimination could be more severe for low SES groups because it may be harsher, more easily legitimized and invisible, or it could be more impactful for high SES groups because it could be perceived as a threat to their status.’ In the US context, the CARDIA study showed that, among Black people, self-reported discrimination was more common in those with higher educational attainment (Borrell *et al.*, 2006). In this regard, migrants that are

linguistically and culturally similar to the members of the host society may actually feel more socially disadvantaged.

Furthermore, the findings concerning perceived discrimination should be carefully interpreted, as they only refer to a personal perception of being discriminated, which was shown to undermine well-being. It should be noted that group discrimination, especially in groups with a strong ethnic identification and higher social status such as Colombians, may be a protective factor (Bourguignon *et al.*, 2006). Finally, further research on acculturation and health could help to improve our understanding of the relationship between perceived discrimination and health, as highlighted by Williams and Mohammed (2009), through identifying the mechanisms that link discrimination to health and through attempts to measure perceived discrimination comprehensively and characterize the multiple domains of discrimination.

Gender was also an important factor predicting differences in health. One explanation of gender differences could be different perceptions of health and illness among men and women. There is evidence that some immigrant groups are healthy when they arrive in the host country but that, during the process of acculturation, their health deteriorates to the level of their native-born counterparts (Alegría, *et al.*, 2008, Hernández-Quevedo and Jiménez-Rubio, 2009, Markides and Coreil, 1986). This pattern may vary by gender, as suggested by some studies in which the association between low level of acculturation and health was stronger in men than in women (Gorman *et al.*, 2010). These authors suggest that recently-arrived immigrant men lack knowledge about their own poor health, given their low access to and low use of medical care, but over time, the probability that they will go to health care services increases, and undiagnosed problems are brought to their attention. According to this

hypothesis, reported health would therefore depend on perceptions and cognitive representations of health. On the other hand, immigrants' worse mental health compared to natives can be attributed to stress-related outcomes associated with the migration process, which would affect both men and women (Agudelo-Suárez *et al.*, 2009, Borrell *et al.*, 2010, Llacer *et al.*, 2009). We also expected and found differences among ethnic groups. In relation to mental health, African and Bolivian men showed poorer mental health than natives. For women, Bolivian and Romanian women reported lower indices than natives.

Finally, the results showed that marital status had a protective effect among men but not among women (the relation was not statistically significant). Among men, those who were married reported better mental health than those who were single on controlling for country, age, and SES. Living together provides social support, and the role of social support in protecting health is central, promoting healthier lifestyles (smoking, drinking and diet, exercise) (Gorman *et al.*, 2010, Ghazinour *et al.*, 2004, Daher *et al.*, 2011). According to the buffer hypothesis, social support and social ties reduce stress (protecting individuals from the negative experiences of immigration and acculturation in the host society) and protect emotional and mental health (Pascoe and Smart-Richman, 2009, Williams and Mohammed, 2009). The percentages of married or cohabiting people varied considerably between ethnic groups. For instance, men scored higher in mental health than women except in the case of Moroccan immigrants, for whom the opposite pattern was found. The fact that many of the Moroccan men were single could be related to their lower levels of social support, which in turn could be negatively affecting their health status.

Limitations and strengths

This is one of the few studies carried out at the beginning of the financial crisis in Spain which compares subjective health, both mental and physical, among natives and different immigrant groups (Latino, African, and Romanian immigrants). The results of this research indicate differential effects of ethnicity and perceived discrimination on subjective health in immigrants, adjusted for the effects of socio-economic status and demographic variables such as legal status. The particular strength of the current research is its large quasi-random sample obtained through a probability sampling procedure by ethnicity with stratification by age and sex, representative of the major immigrant groups in the Spanish and Basque context. This sample is strongly representative of the main ethnic groups within the immigrant population in the Basque Country, including both documented and undocumented individuals. Importantly, this study measured health-related quality of life through the SF12 scale, considered one of the most important measures employed in European health surveys. In addition, the present research permitted a comparison of health status between natives (Spanish-born) and immigrants, through a sample paired by sex and age according to the demographic distribution of the immigrant population. Finally, we feel that another important contribution of this study is the detailed examination of the effects of ethnicity, gender, and other socio-demographic variables on perceived health.

Future research should address the limitations of this investigation. The first limitation is the cross-sectional nature of the data. Longitudinal studies are therefore desirable. In this research project, based on a survey questionnaire design with a large sample, it was not possible to contact the participants afterwards. Also, in studies with immigrant samples, it is difficult to estimate the sample error because of the high residential mobility and the difficulties associated with the irregular and undocumented status of

recently-arrived migrants. Nevertheless, this study is based on a broad sample, using nominal official registers (“Padrón Municipal de Habitantes”). Finally, in relation to the validity of perceived discrimination measures, although the discrimination measure used in this study is not a tool validated in other contexts, it is a similar scale to those used previously in Spain (Llacer *et al.*, 2009) and in other contexts (Williams and Mohammed, 2009), and has shown its consistency and predictive validity in the Spanish and Basque contexts (Zlobina *et al.*, 2006).

Public Health Implications

To summarize, the diversity of ethnic groups, cultural backgrounds and social difficulties associated with adaptation to the host society means that migrants’ health is affected in various ways. Therefore, in future studies more attention is required to situate discrimination within the context of health and healthcare services, and increase the focus on specific migrant groups, especially the most vulnerable ones, such as African men and immigrant women.

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Notes

1. According to official statistics, in the Basque Country autonomous region, 91% of the foreign-born population were registered, and they had access to public health services, with a between-country variation: from 97% for Colombians to 86% for Sub-Saharan Africans. Twenty-three per cent were undocumented or living in Spain without a residence permit (The Basque Observatory of Immigration, 2009, www.ikuspegi.org).

2. The fieldwork was carried out by a specialist company that meets Spain's legal requirements on data protection.
3. Immigrants with a residence permit, Spanish nationality or European citizenship were categorized as being documented. In other cases, immigrants were categorized as undocumented.

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Table 1. Sociodemographic and immigration characteristics by country.

	Spain		Colombia		Bolivia		Romania		Sub-Saharan Africa		Morocco	
	W (222)	M (278)	W (147)	M (103)	W (156)	M (94)	W (113)	M (137)	W (66)	M (184)	W (72)	M (178)
Age												
Mean	35.1	34.5	35.7	34.8	33.1	33.6	32.8	33.1	31.8	32.8	32.1	32.1
(SD)	(10.8)	(10.1)	(11.1)	(10.5)	(8.9)	(8.9)	(10.3)	(9.2)	(8.7)	(7.9)	(10.0)	(9.0)
Income (%)												
≤600€	3.6	3.6	15.6	28.2	32.7	27.7	25.7	23.4	25.8	46.7	20.8	38.8
601-1800€	36.9	46.8	58.5	45.6	54.5	54.3	44.2	42.3	50.0	26.1	59.7	39.2
1801-3000€	24.8	20.5	12.2	9.7	3.2	2.1	5.3	5.1	1.5	1.1	1.4	1.1
≥3000€	5.9	9.4	1.4	3.9	0.6	-	-	2.2	-	1.1	-	1.7
Education (%)												
Low	20.7	25.9	25.9	25.2	31.6	38.8	63.9	61.7	39.4	48.4	54.3	50.0
Medium	38.3	42.4	49.7	63.1	51.6	41.9	30.6	33.8	45.5	36.3	34.3	35.2
High	41.0	31.7	24.4	11.7	16.8	19.4	5.4	4.6	15.2	15.4	11.4	14.8
Social Status (%)												
Low	37.4	41.7	66.7	61.2	79.5	73.3	84.1	77.4	81.8	87.0	86.8	82.0
Medium	34.7	35.3	27.9	35.0	16.7	25.5	10.6	17.5	12.1	7.6	13.2	12.4
High	25.7	20.9	3.4	1.9	0.6	-	-	1.5	1.5	1.6	-	3.4
Marital status (%)												
Single	38.3	46.8	32.7	33.0	26.5	34.0	21.2	29.2	43.9	45.0	27.8	56.2
Married/cohabiting	61.3	53.2	65.3	64.1	73.5	64.9	78.8	70.8	56.1	55.0	72.2	42.7
Legal status (%)												
Documented			92.5	82.5	57.1	48.9	75.2	75.5	77.3	52.7	84.7	67.4
Undocumented			7.5	17.5	42.9	51.1	24.8	28.5	22.7	47.3	15.3	32.6
Length of residence (%)												
≤3 years			19.0	29.1	14.7	7.4	35.4	39.4	22.7	22.3	31.9	22.5
4-5 years			17.7	15.5	45.5	67.0	29.2	28.5	12.1	27.2	22.2	18.5
6-9 years			32.7	37.9	33.3	18.1	28.3	23.4	21.2	25.5	22.2	25.8
>10 years			30.6	17.5	6.4	7.4	6.2	8.0	42.4	25.0	23.6	33.1
Discrimination												
Mean			1.57	1.60	1.54	1.63	1.76	1.74	1.70	1.75	1.52	1.74
(SD)			.79	.81	.71	.71	.92	1.0	.94	.89	.73	.96

Note. Low social status included category 1 of SES variable; Medium status included category 2 of SES variable; and High social status included

categories 4 and 5.

Table 2a. Summary of hierarchical regression analysis for variables predicting Physical Scale Component 12 (PSC-12) in men (N = 948) and women (N = 749).

Variable entered	<i>b</i> ^a				<i>R</i> ²	Model <i>F</i>	ΔR^2
	Step 1	Step 2	Step 3	Step 4			
<i>Men</i>							
B ₀	53.92***	58.05***	56.17***	56.13***	.01	1.800	
Bolivia ^b	-.02	-.03	-.01	-.01			
Colombia ^b	.05	.06	.07*	.07*			
Romania ^b	.05	.04	.07+	.07+			
Morocco ^b	<.01	-.02	.01	.01			
SS Africa ^b	.08*	.06	.10*	.10**			
Age		-.17***	-.17***	-.17***	.037	6.034	.028
SES			.09*	.09**	.043	5.998	.006
Marital status				<.01	.043	5.244	<.001
<i>Women</i>							
B ₀	53.15***	58.65***	56.98***	56.94***	.01	1.513	
Bolivia ^b	-.05	-.07+	-.04	-.04			
Colombia ^b	.03	.03	.05	.05			
Romania ^b	-.08+	-.10**	-.07	-.07			
Morocco ^b	-.01	-.02	<-.01	<-.01			
SS Africa ^b	.02	-.01	.01	.01			
Age		-.20***	-.20***	-.20***	.050	6.554	.04
SES			.06	.06	.053	5.910	.003
Marital status ^c				.01	.053	5.169	<.001

Note. SES: socioeconomic status. a. Standardized coefficients except for constant term b. Natives as reference category c. Married as reference category. Constant term (B₀) was significant at every step.

+ < .10; * < .05; ** < .01; *** < .001

Table 2b. Summary of hierarchical regression analysis for variables predicting Mental Scale Component (MSC-12) scores in men (N = 948) and women (N = 749).

Variable entered	<i>b^a</i>				<i>R</i> ²	Model <i>F</i>	ΔR^2
	Step 1	Step 2	Step 3	Step 4			
Men							
B ₀	51.09***	53.02***	51.09***	52.02***	.037	7.289***	
Bolivia ^b	-.09**	-.09**	-.08*	-.08*			
Colombia ^b	-.02	-.02	-.01	-.01			
Romania ^b	-.08*	-.08*	-.05	-.06			
Morocco ^b	-.16***	-.17***	-.14***	-.14***			
SS Africa ^b	-.19***	-.20***	-.17***	-.16***			
Age		-.06*	-.06*	-.08*	.041	6.741	.004*
SES			.07*	.07+	.045	6.346	.004*
Marital status				-.07*	.050	6.207	.005*
Women							
B ₀	50.31***	49.78***	48.94***	49.39***	.05	7.124***	
Bolivia ^b	-.22***	-.22***	-.21***	-.22***			
Colombia ^b	-.06	-.06	-.06	-.06			
Romania ^b	-.13**	-.13**	-.11*	-.12**			
Morocco ^b	-.04	-.03	-.02	-.03			
SS Africa ^b	-.13***	-.13***	-.12**	-.12**			
Age		.02	.02	.02	.05	5.971	<.01
SES			.03	.03	.05	5.172	<.01
Marital status ^c				-.06	.05	4.840	<.01

Note. SES: socioeconomic status. a. Standardised coefficients except for constant term b. Dummy coded: natives as reference category

c. Dummy coded: married as reference category

+ < .10; * < .05; ** < .01; *** < .001

Table 3a. Summary of hierarchical regression analysis for variables predicting Physical Scale Component (PSC-12) scores in immigrant men (N = 676) and women (N = 533).

Variable entered	<i>b^a</i>							<i>R</i> ²	Model <i>F</i>
	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7		
<i>Men</i>									
B ₀	55.08***	56.64***	60.96***	59.29***	59.25***	59.16***	58.86***	.01	1.78
Bolivia ^b	-.08+	-.08+	-.09+	-.08+	-.08	-.08+	-.08+		
Romania ^b	-.01	<.01	-.02	<.01	<.01	<.01	<.01		
Morocco ^b	-.08	-.07	-.10+	-.08	-.08	-.08	-.08		
SS Africa ^b	.01	.02	<.01	.02	.02	.02	.02		
PD		-.13**	-.14***	-.14***	-.14***	-.14***	-.14***	.03	3.88**
Age			-.16***	-.16***	-.16***	-.16***	-.15***	.05	6.41***
SES				.07+	.08+	.08+	.08*	.06	6.04***
Length of residence					<-.01	<-.01	<-.01	.06	5.29***
Legal status ^d						<.01	<.01	.06	4.70***
Marital status ^c							.03	.06	4.30***
<i>Women</i>									
B ₀	53.75***	55.23***	60.68***	60.09***	60.06***	59.27***	59.10***	.01	1.65
Bolivia ^b	-.09+	-.09+	-.11*	-.10*	-.10*	-.11*	-.10*		
Romania ^b	-.11*	-.11*	-.13*	-.13*	-.12*	-.14*	-.14*		
Morocco ^b	-.03	-.03	-.05	-.05	-.05	-.04	-.04		
SS Africa ^b	-.01	<-.01	-.03	-.03	-.03	-.03	-.03		
PD		-.10*	-.09*	-.10*	-.10*	-.10*	-.10*	.02	2.30*
Age			-.19***	-.19***	-.19***	-.19***	-.19***	.06	5.19***
SES				.02	.02	.02	.02	.06	4.47***
Length of residence					.02	.02	.02	.06	3.92***
Legal status						.07+	.07	.06	3.80***
Marital status ^c							.04	.06	3.50***

Note. SES: socioeconomic status. PD: perceived discrimination. a. Standardized coefficients except for constant term b. Dummy coded: Colombia as reference category c. Dummy coded: married as reference category d. Dummy coded: documented as reference category

+ < .10; * < .05; ** < .01; *** < .001

Table 3b. Summary of hierarchical regression analysis for variables predicting Mental Scale Component (MSC-12) scores in immigrant men (N = 676) and women (N = 533).

Variable entered	<i>b^a</i>							<i>R</i> ²	Model <i>F</i>
	Step 1	Step 2	Step 3	Step 4	Step 5	Step 6	Step 7		
<i>Men</i>									
B ₀	50.53***	55.22***	57.51***	55.65***	56.08***	57.24***	57.78***	.02	3.17*
Bolivia ^b	-.08	-.08	-.08+	-.07	-.07	-.06	-.06		
Romania ^b	-.06	-.04	-.05	-.03	-.03	.01	<.01		
Morocco ^b	-.14**	-.13*	-.14**	-.12*	-.14**	-.13*	-.14*		
SS Africa ^b	-.17***	-.15**	-.16**	-.15**	-.16**	-.15**	-.15**		
PD		-.31***	-.31***	.31***	-.31***	-.30***	-.30***	.11	16.76***
Age			-.07+	-.07+	-.10*	-.10*	-.11**	.12	14.56***
SES				.06+	.05	.06	.05	.12	12.92***
length of residence					.07+	.07+	.07+	.12	11.74***
Legal status						-.08*	-.08*	.13	11.00***
Marital status ^c							-.05	.13	10.08***
<i>Women</i>									
B ₀	48.91***	53.04***	52.06***	51.32***	51.18***	51.48***	51.73***	.03	3.57**
Bolivia ^b	-.17**	-.17**	-.16**	-.16**	-.14**	-.14**	-.15**		
Romania ^b	-.07	-.05	-.05	-.04	-.02	-.02	-.02		
Morocco ^b	.01	.01	.02	.02	.02	.01	.01		
SS Africa ^b	-.09+	-.08+	-.08+	-.08	-.09+	-.09+	-.09+		
PD		-.23***	-.23***	-.23***	-.23***	-.23***	-.23***	.08	9.11***
Age			.03	-.03	<.01	<.01	<.01	.08	7.67***
SES				.02	.01	.01	.02	.08	6.60***
Length of residence					.10*	.10*	.09*	.09	6.31***
Legal status						-.02	-.02	.09	5.63***
Marital status ^c							-.05	.09	5.21***

Note. SES: socioeconomic status. PD: perceived discrimination. a. Standardized coefficients except for constant term b. Dummy coded: Colombia as reference category c. Dummy coded: married as reference category

+ < .10; * < .05; ** < .01; *** < .001