

## ORIGINAL

## The healthy migrant effect in primary care



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## ABSTRACT

**Objective:** To compare the morbidity burden of immigrants and natives residing in Aragón, Spain, based on patient registries in primary care, which represents individuals' first contact with the health system.

**Methods:** A retrospective observational study was carried out, based on linking electronic primary care medical records to patients' health insurance cards. The study population consisted of the entire population assigned to general practices in Aragón, Spain (1,251,540 individuals, of whom 12% were immigrants). We studied the morbidity profiles of both the immigrant and native populations using the Adjusted Clinical Group System. Logistic regressions were conducted to compare the morbidity burden of immigrants and natives after adjustment for age and gender.

**Results:** Our study confirmed the "healthy immigrant effect", particularly for immigrant men. Relative to the native population, the prevalence rates of the most frequent diseases were lower among immigrants. The percentage of the population showing a moderate to very high morbidity burden was higher among natives (52%) than among Latin Americans (33%), Africans (29%), western Europeans (27%), eastern Europeans and North Americans (26%) and/or Asians (20%). Differences were smaller for immigrants who had lived in the country for 5 years or longer.

**Conclusion:** Length of stay in the host country had a decisive influence on the morbidity burden represented by immigrants, although the health status of both men and women worsened with longer stay in the host country.

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## Evidencias sobre la teoría del inmigrante sano en atención primaria

## RESUMEN

## Palabras clave:

Inmigrantes

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**Objetivo:** Comparar la carga de morbilidad de inmigrantes y nativos residentes en Aragón a partir de los datos poblacionales procedentes de atención primaria, la cual representa el primer nivel de contacto de los individuos con el sistema sanitario.

**Método:** Estudio observacional retrospectivo basado en la historia clínica electrónica de atención primaria y la base de datos de usuarios de Aragón. La población de estudio la conforman los 1.251.540 individuos asignados a alguno de los centros de salud de Aragón (12% de ellos inmigrantes). Los perfiles de morbilidad se estudiaron a través del sistema ACG. Se realizaron regresiones logísticas para comparar la población inmigrante y nativa, ajustando por edad y sexo.

**Resultados:** Se confirmó la teoría del "inmigrante sano", en especial en los hombres. La prevalencia de las enfermedades más frecuentes fue menor entre los inmigrantes. La proporción de la población con una carga de morbilidad entre moderada y muy elevada fue mayor en autóctonos (52%) que en latinoamericanos (33%), africanos (29%), europeos occidentales y norteamericanos (27%), europeos del este (26%) y/o asiáticos (20%). Las diferencias fueron menores en los inmigrantes con estancias mayores de 5 años.

**Conclusión:** La duración de la estancia en el país de acogida influye de manera decisiva en la evolución de la carga de morbilidad que presenta la población inmigrante, produciéndose un empeoramiento de la misma a medida que aumenta la estancia en el país de acogida.

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## Introduction

In 2010, an estimated 72.6 million immigrants lived in the European region.<sup>1</sup> In many European countries, one out of ten people is an immigrant. This implies a need for better understanding of the health characteristics of immigrant populations and the inclusion of such specific characteristics in health policy design.<sup>1,2</sup> Although a growing concern exists in countries with well-developed healthcare systems regarding a possible “pull effect” of patients with illnesses that would likely benefit from better-quality medical attention,<sup>1,3,4</sup> it has been shown that overall, the European immigrant population is healthier than the native population. This phenomenon has been described as the “healthy migration effect”.<sup>5,6</sup>

To date, studies that have measured the health status of immigrant populations in countries such as Canada,<sup>7</sup> United States,<sup>8</sup> Germany<sup>9</sup> or Spain<sup>10</sup> have been based on death registries and health surveys.<sup>11,12</sup> To the best of our knowledge, there are no studies that used primary sources of information such as medical records. While mortality records indicate a better overall level of health in the immigrant population compared to natives, surveys have shown contradictory results.<sup>11,12</sup>

It is acknowledged that differences exist between the health patterns of the native and immigrant population<sup>5,13</sup> and among immigrants from diverse geographical areas of origin,<sup>5,10</sup> and that immigrants' health worsens with an increased duration of stay in the host country.<sup>5,11</sup> However, few studies have investigated these and other differences in depth, due in part to the lack of internationally validated methods for measuring and classifying morbidity burden so that comparisons can be made.

The Adjusted Clinical Group System (ACGs) is an example of this type of tool. The ACG System is a patient classification system that measures populations' health status according to their case-mix, in order to assess and predict the use of healthcare services.<sup>14</sup>

In Spain, prior to 2012, universal healthcare coverage existed for immigrants, regardless of their legal status.<sup>1,4</sup> The country has received a constant and growing flow of immigrants primarily displaced for economic reasons and who come from many different countries in all continents, excepting Oceania. In Aragón, an autonomous region in the north of Spain, foreigners represented approximately 12% of the total population in 2010, an average similar to that in the whole of Spain.<sup>15</sup>

The objective of this study is to analyse the morbidity burden of the immigrant population in Aragón and to compare these results with those of the native population. For this purpose, an internationally validated methodology as is the ACG System was used, based on information from patients' primary care medical records. Our goal is to provide objective and reliable population-level information to enable comparisons with other European and international contexts and to support equitable decision-making regarding healthcare provision in Spain.

## Methods

### *Design, study population and variables*

This was a retrospective observational study. Data were obtained from primary care electronic medical records and patients' health insurance card database, both linked via an anonymised patient identifier. The study population comprised all individuals covered by the region's community health centres (n=1,251,540). Since 1986 and until recently, Spain, and therefore the region of Aragón, has used a tax-based health system with universal coverage for the entire population. The primary care model is based on multidisciplinary teams built around a general

practitioner, who acts as a gatekeeper to the healthcare system and more specialised care. Each team is assigned a geographically delimited population, and all types of patients and health problems are initially attended at primary care centres.

For each patient, demographic variables regarding age, sex and nationality were extracted from health insurance cards along with their active diagnoses in 2010. These were coded according to the International Classification of Primary Care (ICPC-2).<sup>16</sup> Subsequently, diagnostic information was processed by means of the ACG® System (version 10)<sup>17</sup> to obtain two different outcomes related to morbidity measurements. First, the ICPC-2 codes were grouped according to their Expanded Diagnostic Clusters (EDCs) based on the clinical, diagnostic and therapeutic similarities of the diseases. EDCs facilitate the management of diagnostic information because the many codes used to describe different forms of the same or related disease (e.g., chronic bronchitis and COPD) are all clustered into a single EDC. Second, using the age, sex and combination of all of the diagnostic episodes (ICPC-2 codes), a single ACG category out of 93 total categories was assigned to each individual. When building the ACGs, besides the patients' age and sex, different clinical dimensions of their diseases are considered such as duration (acute, recurrent or chronic), severity (minor and stable versus major and unstable), diagnostic certainty (symptomatic versus documented disease), aetiology (infection, injury or other), and specialty care involvement (e.g., medical, surgical or obstetrical). Specific disease clustering in an individual is also considered. As a result, individuals within a given ACG experience a similar morbidity burden over a 1-year period. For the sake of parsimony, ACGs with similar expected morbidity burden -and consequently resource use- are aggregated into so-called Resource Utilisation Bands by the System: RUB 0, non-users; RUB 1, healthy users; RUB 2, low morbidity; RUB 3, moderate morbidity; RUB 4, high morbidity; and RUB 5, very high morbidity. Thus, each individual is additionally assigned a RUB category.

The term immigrant was defined as any person with a non-Spanish nationality, regardless of his or her place of birth and duration of stay in Spain.<sup>18</sup> Based on nationality, six areas of origin were distinguished in the study population: Spain, Asia, Africa, Eastern Europe, Latin America, and Western Europe/North America. At the time of the study, almost the entire immigrant population had access to the primary care public network, regardless of the legal status, and was therefore included in the analysis.

To maintain confidentiality, each patient was identifiable only by a unique anonymised code. This study was approved by the Ethics Committee for Clinical Investigation of Aragón (CEICA, for its initials in Spanish).

### *Statistical analysis*

Descriptive analyses were performed. To facilitate the analysis by age, four age ranges were created: 0–14, 15–44, 45–64 and >64 years old. Sex and age-standardised prevalence rates for the most frequent EDCs in the native and immigrant populations were calculated. Direct standardisation was performed to prevent differences caused by population distribution taking the Spanish population structure on June 1, 2010 as the reference.<sup>15</sup>

The RUB distribution according to age group and area of origin and the age and sex-adjusted mean RUB scores were calculated for these same groups. These averages were compared with Student's t-test. Multivariate logistic regression models were conducted to evaluate the magnitude of the differences with regard to morbidity levels within each immigrant subgroup relative to the native population after adjusting for age and sex. To this end, a dependent binary variable was created based on the information supplied by the RUBs: moderate, high and very high morbidity vs. low morbidity, healthy users and non-users (reference category).

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