

# Immigrant health workers in Chile: is there a Latin American “brain drain”?

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## ABSTRACT

*Most research on the phenomenon of “brain drain” (one-way flow of highly skilled/educated individuals) has focused on movement between the least developed and most highly developed countries. Therefore, the significance of patterns of migration to middle-income countries such as those in Latin America is less clear. The aim of this study was to outline key features of international health worker “brain drain” to Chile to promote discussion and further research on this phenomenon as it pertains to the Latin American region. The study compared immigrant health workers living in Chile to both Chilean-born health workers and other immigrants living in Chile using a qualitative nationwide dataset (the results of Chile’s 2009 National Socioeconomic Characterization Survey). Demographic, socioeconomic, and health-related variables were included in the analyses, which were weighted by population to obtain nationally representative estimates.*

*In 2009, immigrant health workers represented 2.2% of all health personnel and 2.6% of all resident immigrants in the country. While most immigrant health workers had a university-level education, about 25% had only a high school-level education or less.*

*There was no statistically significant difference between the distribution of immigrant health workers’ household income and that of Chilean-born health workers. A significantly higher proportion of the immigrant group reported no entitlement to health care provision. While the results of this study do not indicate a significant international health worker “brain drain” to Chile, they do suggest distinctive patterns of migration within the Latin American region. Future studies in Chile could confirm the validity of these results, using a larger sample of immigrant health workers.*

## Key words

Health personnel; migration; Latin America; Chile.

The phenomenon known as “brain drain” has been defined as the international recruitment and migration of high skilled workers, especially health workers, from less advantaged countries to more advantaged ones (1, 2). An increas-

ing number of medical doctors, nurses, and other health workers have been moving across national borders to pursue new opportunities and better career prospects (3). In 2006, in the United Kingdom, about one in three physicians in the National Health Service were from another country (3), and there were more nurses from Malawi working in Manchester alone than there were in Malawi (4).

Worldwide, the rate of “brain drain” has risen in recent decades (5). Research

suggests a large number of less developed countries are affected by this phenomenon, including the Philippines and countries from sub-Saharan Africa (3). A loss of skilled human resources has also been reported in Latin America as workers travel abroad seeking a better life (3). Research by Özden (6) found that the extent of migration of workers with at least a college degree is extremely high for many countries in the region. This is especially true for some of the smaller

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and less developed countries that fail to establish adequate labor market opportunities for educated workers. As a consequence, college-educated workers are over-represented among the migrants from these countries compared to their overall share in the native population.

The loss of skilled health care staff in less developed countries is likely to have an extremely negative impact on those countries' health care system (3, 7). International debate has developed over whether the recruitment of health workers from developing countries by developed countries is ethically justifiable. In 2011, the World Health Organization (WHO) drafted the WHO Global Code of Practice on the International Recruitment of Health Personnel (8), a “ground-breaking instrument that marks the first time that WHO Member States have used the constitutional authority of the Organization to develop a non-binding code in 30 years” (8). This code—which establishes and promotes voluntary principles and practices for the ethical international recruitment of health personnel and the strengthening of health systems, and has been adopted by all 193 WHO member states—has created an urgent need to improve the available data on the “brain drain” of health personnel. As most research on “brain drain” has focused on the movement of skilled workers between the least and most highly developed countries, there is a particular need for data on patterns of health worker migration to middle-income countries such as those in Latin America.

In past decades, migrant destination countries have favored policies seeking to attract highly skilled workers from abroad. With the recent global economic crisis, however, these policies—and the dynamics of brain drain—may have changed. Cerna (9) recently explored this issue in five regions: Asia, Australasia, Europe, the Middle East, and North America. Her findings showed that with the onset of the crisis and increasing pressure to “protect” native-born workers from rising unemployment, many governments have introduced restrictions on highly skilled migration. The effect of the financial crisis has not been explored in relation to immigration to Chile, however, despite a relative increase in the immigration rate to this country in recent years (10).

According to the literature, Latin American intra-regional migration has increased significantly over the past three decades (11, 12). While both the educational background and employment prospects of international immigrants in this region vary according to the conditions and circumstances under which workers migrate, they tend to depend on the demand of the labor markets (13, 14). These variables shape the dynamics of the “brain drain” phenomenon in the Latin American region, including the migration of skilled health workers.

While significant research has been conducted on the overall “brain drain” in Latin America (6, 15–19), little evidence has been generated on skilled health workers (20), despite the growing and complex health needs of the Latin American population. Moreover, to the best of the current authors' knowledge, no prior study has focused specifically on international health worker “brain drain” to Chile. Chile has attracted increasing numbers of immigrants, and in 2006 more than 70% of them came from other Latin American countries—mostly Argentina, Bolivia, Ecuador, and Peru (10, 21). The socioeconomic characteristics of immigrants in Chile have changed in recent decades, with a relative decrease of highly educated people, a phenomenon that has been accompanied by a relative increase in the migration of Chilean-born people for study purposes, particularly at the university and postgraduate level (10). Although immigrants in Chile may be less educated than in the past, they continue to contribute to the economic development of the country. While a proportion of them make a direct contribution to health care services, the actual rates are difficult to estimate. Therefore, the volume of international health worker “brain drain” to Chile remains unknown. In addition, the characteristics of immigrant health workers in Chile have not been researched, so it is not clear whether they represent a relatively privileged or vulnerable group within the Chilean population.

The aim of this study was to outline key features of the “brain drain” of international health workers to Chile to promote discussion and further research on overall “brain drain” in Latin America. This article describes the volume of international health workers migrating

to Chile (“brain drain”) and their socio-demographic and health characteristics.

## MATERIALS AND METHODS

To assess the volume and characteristics of immigrant health workers resident in Chile, this study compared that group to both Chilean-born health workers and other immigrants living in Chile. The only quantitative, nationwide dataset available in Chile for this purpose was the 2009 National Socioeconomic Characterization Survey (*Encuesta de Caracterización Socio-Económica Nacional*, CASEN). The CASEN survey is a large, anonymous, nationally representative household survey conducted every three years in Chile that aims to describe the socioeconomic and general health conditions of the Chilean population (22). Since 2006, the CASEN survey has covered migration status as well as other, more long-standing socioeconomic and health status variables. A detailed methodological explanation of this survey can be found elsewhere (23).

The 2009 CASEN dataset was downloaded by the authors following the approval of a request made through the survey's official Web site ([www.mideplan.cl](http://www.mideplan.cl)) in March 2011. For this study, health workers were defined using CASEN data collected in response to the question: “In what labor sector do you work?” Those who chose “Medicine, dentistry, and other health services” (out of 169 different categories) were included in the study analysis. It should be noted that a wide range of health workers, with variable levels of skills and education, fall into this category. Migrant status was defined based on the response to the question “Where did your mother live when you were born?” If survey participants chose the response “In a different country from Chile,” they were categorized as “international immigrants” and compared to the other categories combined (“In a different county in Chile” and “In the same county in Chile”). To allow for broad exploration of the characteristics and living conditions of immigrant health workers in Chile, a wide range of variables were analyzed, including demographic (age, sex, urban/rural area of residence, region of country, self-reported ethnicity [any of the nine legally recognized aboriginal ethnic tribes in Chile], marital

status, and country of origin); socioeconomic (education, household income [by quintile], type of occupation, employment status, and contractual status); and health-related (entitlement to health care provision, overall [self-perceived] health status, presence of disability, and mean number of health care contacts in past three months). It should be noted that the health care system in Chile is complex, comprising both public and private systems that have minimal interaction and collaboration. The public health care system covers about 70% of the population (mostly the sick and the elderly) while the private system, which includes about 150 different insurance plans, covers about 30% (24).

Descriptive and comparative analysis was conducted using STATA 10.0 (Stata Corporation, College Station, TX, USA). Due to the complex sampling strategy used in the survey, the results were weighted by population to ensure nationally representative estimates. Crude proportions and means were estimated, and chi-square tests were used to estimate differences between groups, based on 95% confidence intervals (CIs).

## RESULTS

### Profile of resident immigrant health workers in Chile in 2009

From the 246 924 total participants who responded to the CASEN survey in 2009 (weighted population size = 16 971 378), 2 225 reported being health workers (weighted sample size = 258 060) and 1 829 were international immigrants (weighted sample size = 209 772). Out of all health workers, 49 were international immigrants (weighted sample size = 5 554) and 2 176 reported being Chilean-born (weighted sample size = 249 301) (Table 1). Therefore, in 2009, immigrant health workers represented 2.2% of all health personnel in Chile and 2.6% of all resident immigrants in the country. Just under half of all immigrant health workers came from Canada (48.06%) and 45.24% originated from Latin America (Table 1). Among Latin American immigrants, Bolivia, Ecuador, and Mexico were the most common countries of origin reported for health workers, whereas among the total immigrant population in Chile, the most frequent cited ones were Argentina, Bolivia, and Peru (Table 1).

A comparison of different occupational groups indicated that immigrants in Chile were more over-represented versus the native-born population in certain occupations. For example, as shown in Table 2, there are significantly higher proportions of immigrants with contracts for managerial positions and in domestic service versus the Chilean-born population.

Compared to their Chilean-born counterparts, immigrant health workers living in Chile in 2009 were more likely to be younger, female, and married, with an ethnic background, and living in an urban area. However, no statistically significant differences were found between the two groups for these variables. There was a significantly higher proportion of immigrant health workers versus Chilean-born health workers in both the Santiago metropolitan area (87.50% versus 57.63%,  $P < 0.05$ ) and the central area of the country, with a very weak presence in the rest of Chile (Table 1).

As shown in Table 2, there were no significant differences in the educational level of immigrant health workers versus Chilean-born health workers, and almost half of both groups had a university-level education (45.86% and 49.87%, respectively). However, a significant minority of immigrant health workers were low skilled and poorly educated, with about 25% having only high school-level or less education.

A significantly lower proportion of health workers (both immigrant and Chilean-born) were in the poorest household income quintile compared to non-health workers in each of the populations under study ( $P < 0.05$ ) (Table 2). There were no statistically significant differences in the distribution of immigrant health workers' household income versus that of Chilean-born health workers. Similar results were found when estimating the absolute mean household income per capita by quintile (shown in Table 2, in Chilean pesos) among immigrant health workers versus Chilean-born health workers. All immigrant health workers were employed at the time of the study, and a higher but a non-statistically significant proportion of them reported having a contract for a managerial position, working in the private sector, or being self-employed versus the Chilean-born health workers.

Immigrant health workers reported their overall self-perceived health status as “good/very good” at a slightly higher rate than their Chilean-born counterparts, but this difference was not statistically significant (Table 3). While no immigrant health workers reported having a disability, their overall mean number of “health care contacts in the past three months” was slightly higher than that of Chilean-born health workers ( $P > 0.05$ ). In addition, a significantly higher proportion of immigrant health workers reported having no entitlement to health care provision compared to the Chilean-born health workers (50.94% versus 1.72%,  $P < 0.001$ ). Among those who were entitled to health care services, a significantly lower proportion of immigrant health workers had access to the public health care system compared to their Chilean-born counterparts (0.16% versus 5.26%,  $P < 0.001$ ) (Table 3).

A comparison was also made between immigrant health workers and all immigrants living in Chile. Compared to the latter group, immigrant health workers were more likely to be of working age, and a currently active worker with a managerial contract, and to have a technical or university-level education, and a higher household income per capita. Immigrant health workers reported a significantly lower rate of public, free-of-charge health insurance in Chile versus other sectors of the international immigrant population (Table 3).

## DISCUSSION

Based on the 2009 CASEN survey results analyzed in this study, there is little evidence of an international health worker “brain drain” to Chile because 1) immigrant health workers represented a small proportion of the total populations of both health workers and immigrants residing in the country, and 2) the characteristics of the immigrant health worker population in 2009 did not meet the classic definition of the term (skilled people migrating from less to more developed countries). While the majority of immigrant health workers participating in the survey self-reported as highly educated, a significant minority did not, with slightly more than 25% reporting only a high school-level education or less. In addition, almost half came from a more developed country

**TABLE 1. Demographic characteristics of the general Chilean-born population, Chilean-born health workers, the international immigrant population overall, and immigrant health workers, according to the CASEN<sup>a</sup> survey, Chile, 2009<sup>b</sup>**

Demographic characteristic	General Chilean-born population (95% CI) <sup>c</sup>	Chilean-born health workers (95% CI)	General immigrant population (95% CI)	Immigrant health workers (95% CI)
Absolute population	243 740	2 176	1 829	49
Weighted population	16 620 075	249 301	209 772	5 554
Age (%)				
Male	48.16 (47.86–48.46)	29.82 (26.17–33.74)	48.44 (44.26–52.64)	18.92 (4.22–55.31)
Female	51.84 (51.54–52.14)	70.18 (66.26–73.83)	51.56 (47.36–55.74)	81.08 (44.69–95.78)
Mean age	34.22 (34.03–34.41)	40.72 (39.74–41.69)	33.95 (31.62–36.28)	32.34 (23.01–41.65)
Age group (years) (%)				
< 16	23.90 (23.58–24.22)	— <sup>d</sup>	14.60 (10.46–20.02)	—
16–65	65.42 (65.10–65.75)	97.54 (96.32–98.36)	76.43 (71.46–80.78)	97.84 (80.76–99.80)
> 65	10.68 (10.43–10.93)	2.46 (1.64–3.68)	8.96 (6.63–12.01)	2.16 (0.20–19.24)
Area of residence (%)				
Urban	86.32 (85.95–86.68)	95.19 (93.36–96.53)	93.17 (89.92–95.43)	98.16 (91.62–99.62)
Rural	13.68 (13.32–14.05)	4.81 (3.47–6.64)	6.83 (4.47–10.08)	1.84 (0.38–8.38)
Region of country (%)				
Northern area				
Arica and Parinacota (XV)	1.06 (0.93–1.21)	0.71 (0.42–1.19)	2.91 (2.04–4.26)	—
Tarapacá (I)	1.79 (1.58–2.01)	0.71 (0.38–1.33)	5.16 (3.49–7.57)	2.11 (0.25–15.72)
Antofagasta (II)	3.37 (3.07–3.69)	3.69 (2.66–5.10)	4.30 (2.58–7.08)	—
Atacama (III)	1.66 (1.46–1.90)	0.77 (0.49–1.21)	0.96 (0.37–2.48)	—
Coquimbo (IV)	4.23 (3.99–4.49)	2.05 (1.15–3.62)	1.41 (0.55–3.58)	—
Central area				
Valparaíso (V)	10.32 (9.91–10.75)	9.76 (7.54–12.54)	6.83 (4.73–9.80)	3.55 (0.37–26.89)
Santiago metropolitan area (RM/XIII)	39.76 (38.98–40.54)	57.63 (53.46–61.70)	66.84 (60.52–72.61)	87.50 (61.58–96.83)
O'Higgins (VI)	5.24 (5.01–5.49)	3.09 (2.17–4.38)	0.96 (0.56–1.65)	1.69 (0.20–12.61)
Maule (VII)	5.99 (5.72–6.27)	3.27 (2.46–4.34)	1.48 (0.60–3.62)	—
Biobío (VIII)	12.11 (11.73–12.51)	9.19 (7.78–10.83)	1.64 (1.07–2.52)	2.48 (0.33–16.49)
Southern area				
Araucanía (IX)	5.71 (5.44–5.99)	2.34 (1.64–3.33)	4.09 (2.32–6.90)	—
Los Lagos (X)	4.93 (4.67–5.20)	3.09 (2.27–4.20)	1.90 (1.27–2.85)	1.71 (0.31–8.81)
Aisén (XI)	0.62 (0.56–0.68)	0.77 (0.50–1.16)	0.37 (0.21–0.66)	—
Magallanes and Antártica Chilena (XII)	0.95 (0.80–1.12)	1.24 (0.62–2.44)	0.53 (0.28–1.01)	—
Los Ríos (XIV)	2.26 (2.09–2.45)	1.70 (1.06–2.69)	0.56 (0.30–1.02)	0.95 (0.09–9.36)
Marital status (%)				
Single	50.35 (50.05–50.65)	33.34 (29.98–36.88)	40.25 (34.99–45.74)	16.19 (2.40–60.23)
Married	40.65 (4.43–4.73)	53.46 (49.39–57.48)	53.99 (48.66–59.24)	81.98 (39.16–96.98)
Divorced	4.58 (4.43–4.57)	11.25 (9.12–13.80)	2.96 (2.06–4.24)	1.84 (0.24–12.54)
Widow	4.42 (4.27–4.57)	1.95 (1.30–2.92)	2.80 (1.72–4.51)	—
Has ethnic background (%)	6.86 (6.59–7.14)	3.49 (2.49–4.88)	7.10 (5.04–9.91)	10.80 (1.65–46.69)
Country of origin <sup>e</sup> (%)				
Peru	—	—	29.68 (22.1–38.59)	3.35 (0.37–24.43)
Argentina	—	—	23.12 (17.62–29.73)	3.96 (0.74–18.55)
Bolivia	—	—	7.65 (4.83–11.92)	7.74 (0.80–46.60)
Ecuador	—	—	3.81 (1.86–7.65)	18.42 (3.14–61.15)
Colombia	—	—	6.71 (3.48–12.56)	3.42 (0.65–16.00)
Canada	—	—	1.96 (0.53–6.97)	48.06 (9.05–89.59)
Mexico	—	—	1.91 (0.71–5.03)	8.35 (0.81–50.29)

<sup>a</sup> National Socioeconomic Characterization Survey (*Encuesta de caracterización Socio-Económica Nacional*), Ministerio de Desarrollo Social, Chile (2009).

<sup>b</sup> Weighted by population to obtain nationally representative estimates.

<sup>c</sup> CI: confidence interval.

<sup>d</sup> NA: not applicable.

<sup>e</sup> Selection of countries reporting the most data for overall immigrant and health worker immigrant populations.

(Canada), while the majority of the remainder came from other Latin American countries, only some of which are significantly less advantaged than Chile. This latter characteristic was an interesting and unexpected feature that illustrates the complexity of migration to Chile, which includes individuals from high-income, stable countries as well as those from lower-income countries with socioeconomic issues or political

conflict, such as Bolivia, Ecuador, and Mexico.

While the results of the analysis did not support international health worker “brain drain” to Chile, they did suggest that immigrant health workers are a distinctive subset of both the health worker and international immigrant populations in Chile, with some significant differences in their socio-demographic and health profile. For example, immigrant

health workers were more likely than other international immigrant groups to be highly educated (with a technical or university-level education) and less likely to fall into the poorest household income quintiles (although the latter difference was not statistically significant). In addition, most immigrant health personnel were not entitled to any health care service provision, as opposed to Chilean-born health workers. Finally,

**TABLE 2. Socioeconomic characteristics of the general Chilean-born population, Chilean-born health workers, the international immigrant population overall, and immigrant health workers, according to the CASEN<sup>a</sup> survey, Chile, 2009<sup>b</sup>**

Socioeconomic characteristic	General Chilean-born population (95% CI) <sup>c</sup>	Chilean-born health workers (95% CI)	General immigrant population (95% CI)	Immigrant health workers (95% CI)
<b>Education</b>				
None	7.62 (7.43–7.81)	0.31 (0.10–0.93)	3.12 (1.85–5.43)	0.16 (0.04–0.69)
Primary school	33.89 (33.51–34.82)	4.53 (3.48–5.87)	20.05 (14.52–27.03)	4.35 (3.16–5.97)
High school	31.37 (30.96–31.78)	21.93 (19.05–25.11)	30.69 (25.64–36.25)	22.57 (18.93–26.58)
Technical level	11.84 (11.57–12.11)	23.36 (20.61–26.36)	10.34 (8.03–13.23)	27.06 (23.16–31.35)
University level	15.28 (14.84–15.73)	49.87 (45.50–54.24)	35.79 (29.09–43.09)	45.86 (40.07–51.76)
<b>Household income</b>				
Quintile 1 (poorest)	15.13 (14.67–15.60)	2.81 (1.97–4.00)	15.53 (15.07–16.01)	3.92 (2.49–6.13)
Quintile 2	16.61 (16.13–17.09)	6.33 (5.06–7.89)	17.99 (17.44–18.55)	6.17 (4.64–8.16)
Quintile 3	18.37 (17.85–18.90)	11.88 (9.98–14.08)	19.70 (19.09–20.32)	13.72 (11.15–16.76)
Quintile 4	20.58 (20.03–21.14)	21.80 (19.05–24.84)	21.42 (20.76–22.10)	24.67 (20.87–28.90)
Quintile 5 (wealthiest)	29.31 (28.56–30.07)	57.17 (53.02–61.22)	25.36 (24.57–26.16)	51.52 (45.79–57.29)
<b>Absolute mean household income per capita<sup>d</sup></b>				
Quintile 1 (poorest)	148 909 (147 216–150 603)	164 813 (138 646–190 980)	148 871 (146 969–150 772)	159 159 (120 029–199 161)
Quintile 2	289 783 (288 674–290 289)	302 059 (295 327–308 791)	289 746 (288 500–290 993)	306 622 (297 277–315 567)
Quintile 3	435 216 (433 726–436 707)	453 584 (447 284–459 883)	435 018 (433 403–436 633)	450 495 (441 783–459 207)
Quintile 4	622 333 (659 376–665 291)	677 536 (667 720–687 352)	661 028 (657 691–664 365)	681 915 (669 799–694 032)
Quintile 5 (wealthiest)	1 909 827 (1 823 217–1 997 336)	2 259 136 (1 987 725–2 530 546)	1 726 358 (1 654 783–1 797 934)	2 046 706 (1 672 902–2 420 509)
Currently active worker	44.87 (44.49–45.25)	94.49 (91.94–96.27)	58.08 (52.39–63.56)	100 (–) <sup>e</sup>
<b>Type of occupation</b>				
Managerial position	3.02 (2.75–3.31)	1.65 (0.96–2.84)	7.72 (3.95–14.57)	3.38 (0.32–27.54)
Employee, private system	60.78 (60.14–61.42)	9.54 (7.26–12.43)	54.13 (47.36–60.75)	14.73 (2.80–50.84)
Employee, public system	11.07 (10.06–11.55)	42.90 (38.38–47.54)	8.28 (4.91–13.44)	24.34 (5.07–65.98)
Self-employed	20.34 (19.83–20.87)	45.92 (41.61–50.26)	17.97 (12.91–24.45)	57.54 (16.07–90.56)
Employee, domestic service	4.79 (4.55–5.04)	—	11.90 (7.83–17.69)	—
Has a contract	23.16 (22.85–23.48)	76.86 (73.29–80.09)	30.58 (25.51–36.18)	81.89 (44.98–96.15)

<sup>a</sup> National Socioeconomic Characterization Survey (*Encuesta de caracterización Socio-Económica Nacional*), Ministerio de Desarrollo Social, Chile (2009).

<sup>b</sup> Weighted by population to obtain nationally representative estimates.

<sup>c</sup> CI: confidence interval.

<sup>d</sup> In Chilean pesos (based on 2006 exchange rate of 530 CLP = 1 USD).

<sup>e</sup> NA: not applicable.

**TABLE 3. Health-related characteristics of the general Chilean-born population, Chilean-born health workers, the international immigrant population overall, and immigrant health workers, according to the CASEN<sup>a</sup> survey, Chile, 2009<sup>b</sup>**

Health-related characteristic	General Chilean-born population (95% CI) <sup>c</sup>	Chilean-born health workers (95% CI)	General immigrant population (95% CI)	Immigrant health workers (95% CI)
<b>Entitlement to health care provision</b>				
None	3.49 (3.26–3.73)	1.72 (1.05–2.79)	14.66 (9.76–21.42)	50.94 (10.95–89.76)
Public, free-of-charge	32.66 (32.12–33.20)	5.26 (4.18–6.60)	20.68 (16.86–25.10)	0.16 (0.05–1.70)
Public, with co-payment	48.90 (48.28–49.52)	56.81 (52.07–61.43)	40.84 (33.75–48.33)	18.76 (4.17–55.05)
Private	13.19 (12.59–13.80)	34.25 (29.36–39.50)	21.95 (16.40–28.74)	30.14 (6.48–72.87)
Other/not stated	1.77 (1.64–1.91)	1.96 (1.26–2.97)	1.88 (1.12–3.15)	— <sup>d</sup>
<b>Overall health status (self-perceived)</b>				
Very poor/poor	7.29 (7.06–7.52)	3.54 (2.55–4.88)	3.22 (2.14–4.80)	1.54 (0.14–14.64)
Regular	19.55 (19.18–19.93)	11.79 (9.80–14.12)	14.29 (10.41–19.31)	8.97 (1.04–48.10)
Good/very good	73.16 (72.72–73.59)	84.67 (82.09–86.93)	82.49 (77.35–86.66)	89.50 (52.24–95.28)
Has a disability	7.55 (7.35–7.76)	2.51 (1.72–3.65)	3.41 (2.21–5.22)	— <sup>d</sup>
Mean number of health care contacts in past 3 months	1.90 (1.85–1.94)	1.87 (1.61–2.13)	1.83 (1.30–2.35)	1.92 (1.58–2.25)

<sup>a</sup> National Socioeconomic Characterization Survey (*Encuesta de caracterización Socio-Económica Nacional*), Ministerio de Desarrollo Social, Chile (2009).

<sup>b</sup> Weighted by population to obtain nationally representative estimates.

<sup>c</sup> CI: confidence interval.

<sup>d</sup> NA: not applicable.

immigrant health workers were more likely to live in the central area of the country, including metropolitan Santiago, compared to the northern and

southern areas, most likely due to the centralization of the labor force and labor opportunities in Chile. This centralization feature is widely recognized

and remains a relevant issue to address at the policy level for various reasons, including the demographic, socioeconomic, and health inequities that exist

in Chile across different areas of the country.

Variation in the country of origin of immigrant health workers living in Chile adds another layer of complexity to the patterns of migration, along with the wide range of their cultural backgrounds, which is likely to result in differences in immigrants' expectations and adaptation to Chile over time. Other relevant yet unmeasured variables, such as reasons for immigration, socioeconomic and health status prior to migration, adaptation to Chile after arrival, length of stay in the country, variations in legal status and contractual status, and experiences of stigma and discrimination, could be explored in future research.

The results of this study complement evidence from the significant amount

of research that has been conducted on the “brain drain” phenomenon in Latin America in the past (6, 15–19). As shown in prior studies, migration patterns in the region are deeply connected with economic, social, and political dynamics at both the country and global level. This study is a first step toward understanding these dynamics in Chile.

## Conclusions

While this study of immigrant health workers does not identify a significant “brain drain” to Chile, it does suggest that there are distinctive patterns of international immigration in the Latin American region. Future studies in Chile could confirm the validity of these results using a larger sample of immigrant health

workers. A health worker survey, in particular, could help to disentangle many of the characteristics observed in this study. In addition, longitudinal analysis following immigrant health workers since before their arrival and throughout the migration process could contribute to a new perspective of the “brain drain” of health workers in the Latin American region.

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## RESUMEN

### Inmigración de personal sanitario hacia Chile: ¿hay una “fuga de cerebros” hacia América Latina?

La mayoría de las investigaciones sobre el fenómeno de la “fuga de cerebros” (migración unidireccional de individuos sumamente capacitados y educados) se ha centrado en la migración desde países menos desarrollados hacia países muy desarrollados. Por consiguiente, la importancia de los patrones de migración hacia países de ingresos medios, como los de América Latina, está menos clara. El objetivo de este estudio fue describir las características clave de la “fuga de cerebros” internacional de personal sanitario hacia Chile para promover el análisis e investigaciones adicionales sobre este fenómeno en lo que respecta a América Latina. En el estudio se comparó al personal sanitario inmigrante residente en Chile, con el personal sanitario nacido en Chile y otros inmigrantes residentes en Chile utilizando un conjunto de datos cualitativos de todo el país (los resultados de la Encuesta de Caracterización Socioeconómica Nacional de Chile del 2009). Se incluyeron en los análisis variables demográficas, socioeconómicas y relacionadas con la salud, que fueron ponderadas según la población para obtener cálculos representativos a nivel nacional.

En el 2009, el personal sanitario conformado por inmigrantes representó 2,2% del personal de salud y 2,6% de los inmigrantes residentes en el país. Aunque la mayoría del personal sanitario inmigrante tenía estudios universitarios, cerca de 25% tenía solamente educación secundaria o de menor nivel.

No hubo diferencia estadísticamente significativa entre la distribución del ingreso familiar del personal sanitario inmigrante y el del personal sanitario nacido en Chile. Una proporción significativamente mayor del grupo de inmigrantes informó no tener derecho a la provisión de atención de salud. Aunque los resultados de este estudio no indican que exista una “fuga de cerebros” internacional significativa de personal sanitario hacia Chile, señalan patrones característicos de migración dentro de América Latina. Los estudios futuros en Chile podrían confirmar la validez de estos resultados, mediante una muestra más grande de personal sanitario inmigrante.

#### Palabras clave

Personal de salud; migración; América Latina; Chile.