

Socioeconomic disparities in access to healthcare among Venezuelan immigrants in Peru: an analysis of ENPOVE 2022

Disparidades socioeconómicas en el acceso a la atención médica entre inmigrantes venezolanos en Perú: un análisis de la ENPOVE 2022

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ABSTRACT

Objectives: To assess socioeconomic inequalities in health service utilization among Venezuelan adult migrants residing in Peru. **Methods:** Cross-sectional analytical study of the 2022 Survey of the Venezuelan Population Residing in Peru (ENPOVE 2022). We included migrants aged 18 years or older who reported a health problem in the four weeks prior to the survey and considered it necessary to seek healthcare. The dependent variable was health service utilization (yes/no). The independent variable was the wealth index, estimated using principal component analysis. Socioeconomic inequality was assessed using the Erreygers Concentration Index (ECI) and the adjusted Slope Index of Inequality (aSII) and Relative Index of Inequality (aRII). Linear and Poisson regression models were fitted adjusting for sociodemographic covariates. All analyses were performed in Stata v19.0, accounting for sampling weights and the complex survey design. **Results:** Among the 1,569 participants included in the analysis, health service utilization favored higher socioeconomic groups (aSII = 0.309; 95% CI: 0.128–0.490; aRII = 2.11; 95% CI: 1.37–3.24; ECI = 0.132; 95% CI: 0.059–0.205). These inequalities were also observed among uninsured migrants and among those with regular immigration status. **Conclusions:** Among Venezuelan adult migrants in Peru with recent health problems and a perceived need for care, health service utilization favored those in higher socioeconomic positions. These findings support prioritizing socioeconomically disadvantaged migrants in Peru's healthcare access initiatives and incorporating socioeconomic inequality indicators into the monitoring of service utilization.

Keywords: Health Inequities; Health Services Research; Social Determinants of Health; Transients and Migrants (source: MeSH NLM).

RESUMEN

Objetivos: Evaluar las desigualdades socioeconómicas en la utilización de servicios de salud entre migrantes venezolanos adultos residentes en Perú. **Materiales y métodos:** Estudio analítico de corte transversal basado en la Encuesta Dirigida a la Población Venezolana que Reside en el Perú de 2022 (ENPOVE 2022). Se incluyeron migrantes de 18 años o más que reportaron un problema de salud durante las cuatro semanas previas a la encuesta y consideraron necesario buscar atención de salud. La variable dependiente fue la utilización de servicios de salud (sí/no). La variable independiente fue el índice de riqueza, estimado mediante análisis de componentes principales. La desigualdad socioeconómica se evaluó mediante el índice de concentración de Erreygers (ECI), el índice de desigualdad de la pendiente ajustado (SIIa) y el índice relativo de desigualdad ajustado (RIIa). Se ajustaron modelos de regresión lineal y de Poisson por covariables sociodemográficas. Todos los análisis se realizaron en Stata v19.0, considerando las ponderaciones muestrales y el diseño complejo de la encuesta. **Resultados:** Entre los 1 569 participantes incluidos en el análisis, la utilización de servicios de salud favoreció a los grupos de mayor nivel socioeconómico (SIIa = 0,309; IC 95%: 0,128–0,490; RIIa = 2,11; IC 95%: 1,37–3,24; ECI = 0,132; IC 95%: 0,059–0,205). Estas desigualdades también se observaron entre los migrantes sin seguro de salud y entre aquellos con estatus migratorio regular. **Conclusiones:** Entre los migrantes venezolanos adultos en Perú con problemas de salud recientes y necesidad percibida de atención, la utilización de servicios de salud favoreció a aquellos en posiciones socioeconómicas más altas. Estos hallazgos respaldan la priorización de los migrantes socioeconómicamente desfavorecidos en las iniciativas destinadas a mejorar el acceso a la atención de salud en Perú, así como la incorporación de indicadores de desigualdad socioeconómica en el monitoreo de la utilización de los servicios de salud.

Palabras clave: Inequidades en Salud; Investigación sobre Servicios de Salud; Determinantes Sociales de la Salud; Migrantes (fuente: DeCS Bireme).

INTRODUCTION

Venezuelan migration to Peru has increased sharply in the 21st century, reaching almost 1.7 million people by November 2025^[1]. This has positioned Peru as the second-largest recipient country of Venezuelan migrants in the region, after Colombia^[1,2]. This large-scale displacement has been accompanied by new health challenges, exposing migrants to risk factors such as violence, precarious employment, food insecurity, and inadequate living conditions^[3-5]. The migration process, including the phases of departure, transit, and settlement, is associated with specific health risks. During transit, limited access to basic services may lead to dehydration, hypothermia, and mental health problems. In the settlement phase, social and legal marginalization, particularly among migrants with irregular immigration status, may restrict access to healthcare, which in turn can lead to self-medication and worsen psychosocial conditions such as acculturative stress, depression, and psychosomatic symptoms^[6].

Similar healthcare access challenges have been documented in other migrant and refugee populations. In the United States, 41% of non-citizen immigrants aged 18–64 were uninsured in 2020–2021, compared with 10% of US-born citizens^[7]. In a 2014 survey of Syrian refugees living outside camps in Jordan, 13.9% of households reported not seeking care the last time an adult needed it; among these households, 64.5% cited inability to afford medical services as the main reason^[8]. In Peru, data from the 2022 Survey of the Venezuelan Population Residing in Peru (ENPOVE) showed that 24.4% of surveyed Venezuelan migrants reported having experienced health problems in the previous four weeks^[4]. Among those reporting health problems, 27.2% did not seek healthcare; the main reasons were perceiving the problem as neither serious nor necessary (37.3%), lack of money (31.7%), and lack of health insurance (19.3%)^[4]. In addition, 13.6% of survey participants reported a chronic disease or chronic health condition, with asthma (32.4%) and hypertension (26.2%) being the most frequent^[4]. Among those with chronic conditions, 68.1% reported receiving no treatment, 10.2% received treatment less often than they considered necessary, and 21.6% received treatment as often as they considered necessary. ENPOVE 2022 also showed that 73.0% of Venezuelan migrants lacked health insurance; 20.0% had Seguro Integral de Salud (SIS), the most frequently reported insurance scheme, and 5.4% had EsSalud^[4]. This high proportion of uninsured migrants, together with reported financial barriers, highlights the relevance of examining socioeconomic inequalities in health service utilization and exploring these inequalities according to insurance coverage.

Despite an improvement in health insurance coverage between 2018 (8.5%) and 2022 (27.0%), significant socioeconomic and structural barriers persist^[4]. Peru's

segmented health system includes Ministry of Health and regional government services, employment-based social health insurance (EsSalud), the health services of the Armed Forces and National Police, and private providers^[9]. SIS is predominantly tax-funded^[9]. Standard enrollment for foreign residents generally required a foreigner identity card and the absence of other health insurance, although exceptions permitted temporary enrollment for specific groups, including pregnant women and children under five^[10,11]. In 2022, SIS beneficiaries were entitled to covered services free of charge at public health facilities, including first-level care, medicines, and hospital treatment^[12]. Uninsured migrants could face out-of-pocket costs for routine care^[13]. Emergency treatment could not be conditioned on advance payment, but the legislation provided for subsequent assessment of reimbursement and exemptions; emergency care was therefore not universally free. In ENPOVE 2022, 3.5% of those reporting reasons for not attending a health facility cited delays in receiving attention^[4]. Regional evidence similarly indicates that migrants in irregular situations face greater barriers to healthcare access, which may result in unmet medical needs and delayed management of chronic conditions^[14-16].

Despite the growing body of evidence on the health conditions of Venezuelan migrants, an important gap remains in the literature regarding studies that explicitly quantify the magnitude of socioeconomic inequalities in health service utilization among Venezuelan migrants in Peru. In particular, few studies have applied summary measures of inequality, such as the Slope Index of Inequality (SII) and the Relative Index of Inequality (RII), to assess socioeconomic disparities in the use of health services. The SII estimates the absolute magnitude of inequality across the entire socioeconomic gradient, whereas the RII quantifies relative inequality according to socioeconomic position. These measures are especially useful in population-based studies because they take into account the full socioeconomic distribution of the population, allowing for a more comprehensive assessment of health inequalities^[17-19].

In this context, the present study aimed to assess socioeconomic inequalities in health service utilization among Venezuelan adult migrants residing in Peru using ENPOVE 2022 data. Because access to health care is a multidimensional process that involves the ability to perceive health needs, seek care, reach services, obtain care, and have healthcare needs fulfilled, health service utilization was interpreted in this study as a pragmatic proxy for effective access to health care, rather than as a comprehensive measure of access^[20]. This interpretation should be made with caution, as utilization does not fully capture other dimensions of access, including the appropriateness, acceptability, quality, or actual fulfillment of healthcare needs^[20]. The study also explored

socioeconomic inequalities in health service utilization according to health insurance coverage and immigration status. These variables were measured at the individual level and may reflect, in part, broader institutional and structural conditions affecting healthcare access. These analyses may provide relevant evidence to inform policies aimed at improving the integration of Venezuelan migrants into the Peruvian health system and contribute to the broader academic and policy debate on migrant inclusion in Latin American health systems.

METHODS

Study design

This was an observational, cross-sectional and analytical study based on secondary data from the Survey on the Venezuelan Population Residing in Peru (ENPOVE 2022), developed by the National Institute of Statistics and Informatics (INEI) ^[21]. ENPOVE was designed to describe the demographic and socioeconomic characteristics, vulnerabilities, and protection needs of Venezuelan refugees and migrants in Peru, informing decisions on humanitarian assistance, integration, and protection. Fieldwork was conducted during February and March 2022 ^[4,21]. The survey covered Venezuelan residents of all ages living in private and collective dwellings in eight urban study areas: Metropolitan Lima and Callao, Arequipa, Chiclayo, Chimbote, Ica, Piura, Trujillo, and Tumbes. It was designed to provide representative estimates for the study areas combined, Metropolitan Lima and Callao, and the remaining study cities as a group ^[4,21]. Information was collected on housing and household characteristics, household residents, immigration status, health, education, employment and income, discrimination, and gender and victimization.

Study population

Study participants were of both sexes, and included refugees, asylum seekers, migrants and people in need of protection, who resided in urban areas, in both private and collective housing ^[21]. The ENPOVE 2022 survey included a total of 3,680 households with Venezuelan residents, of which 2,000 were located in Lima Metropolitan and Callao (400 households in each inter-district zone: North Lima, East Lima, Central Lima, South Lima, and Callao) and 1,680 in other cities of the country (Trujillo, Chimbote, Tumbes, Chiclayo, Arequipa, Piura, and Ica), reaching 12,242 Venezuelan people between the ages of 1 and 98 ^[21].

Eligibility criteria

We included Venezuelan immigrants aged 18 years or older who reported experiencing symptoms, discomfort, illnesses, relapses of chronic diseases, accidents, or self-perceived health problems, such as depression, fear, anger, anxiety, or stress, in the previous four weeks. The analysis focused on adults because healthcare utilization among children and adolescents involves distinct care-seeking processes, including greater dependence on parents or caregivers.

Individuals under 18 years of age, those who did not seek healthcare because they considered their health problem neither serious nor requiring attention, and cases with incomplete information on key variables were excluded. After applying these criteria, the analytical database did not present missing data for the included variables. The final analytical sample comprised 1,569 participants.

Data source

The microdata was obtained through the INEI's online survey consultation and download system, from the official microdata platform, by accessing ENPOVE 2022 and downloading the modules corresponding to household characteristics, migration and health in CSV format ^[22].

Sampling and data collection

The sample for ENPOVE 2022 was selected using baseline information and cartographic material from the Cartographic Update and the Housing and Settlement Register of the National Labor Market Survey (ENAMEL). Additional information for constructing the sampling frame was provided by the National Superintendency of Migration (for regular migrants) and the Special Commission for Refugees (for asylum seekers and refugees) ^[21]. Address records of Venezuelan individuals from the Integrated Migration System database were also used, specifically from the pre-registration form for immigration regularization maintained by the National Superintendency of Migration of the Ministry of the Interior. Cities were selected based on two criteria: having a high concentration of households with Venezuelan residents and having been included in the first Survey of the Venezuelan Population residing in Peru conducted in 2018 (with the exception of Cusco, which was excluded due to its low proportion of Venezuelan residents) ^[21].

Eight major cities with a high concentration of Venezuelan migrants were identified, accounting for 82.9% of all households with Venezuelan residents in the country. Within the selected regions, these cities represented 94.9% of households with Venezuelan residents. Prior to selection, a sampling frame of segments was created in each city based on the directory of households with Venezuelan residents obtained from the registry. Each segment consisted of five geographically contiguous households with Venezuelan residents, and cartographic information was used to avoid highly dispersed segments. The sampling method was probabilistic, stratified, and independently applied in each city, with a 95% confidence level [21].

Data were collected through direct interviews conducted by trained fieldworkers using digital questionnaires on tablets. Information was transferred electronically, and fieldwork was supported by in-person and remote supervision and an online monitoring system to oversee data collection [21].

Study variables

The dependent variable was health service utilization, defined as a dichotomous variable (yes/no). It was constructed from questions 405 and 406 of the ENPOVE 2022 questionnaire. First, individuals who reported experiencing symptoms, discomfort, illnesses, relapses of chronic diseases, accidents, or self-perceived health problems, such as depression, fear, anger, anxiety, or stress, in the previous four weeks were identified (question 405). Among eligible participants, health service utilization was assessed using question 406: "Where did you go to seek care for this illness, symptom or discomfort and/or accident?" Responses were coded "yes" if participants selected at least one of the following options: a Ministry of Health (MINSA) health centre (option 1), an EsSalud care centre (option 2), a private practice (option 3), or a private clinic (option 4). Because multiple responses were permitted, selecting any of these options was sufficient for classification as a service user, even if pharmacy visits or self-medication were also reported. Participants who did not select any of options 1–4 were coded "no". This category included those reporting pharmacy visits, self-medication, or other sources of care without selecting any of the four qualifying options, as well as those reporting that they did not seek care. This variable was used as an operational proxy for access to care.

The main independent variable was the Wealth Index, a continuous numeric measure ranging from 0 to 1, where 0 represents the lowest level of wealth and 1 the highest. It was derived using principal component analysis (PCA) from ENPOVE 2022 data on household living conditions and material assets, following procedures previously

applied in studies based on this survey [23]. The adequacy of the PCA was evaluated using the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity, and the first component was retained as a proxy for household socioeconomic position after confirming that it explained a sufficient proportion of the total variance. Variables included ownership of durable goods (e.g., television, refrigerator, stove, and computer), access to basic services (electricity, water, sewage, internet, and cooking fuel), predominant housing materials, and the total number of rooms. Based on this component, individuals were ranked from lowest to highest socioeconomic position and assigned a cumulative relative score between 0 and 1, representing their location along the full socioeconomic gradient. For descriptive analyses, this score was categorized into three levels (low, medium, and high). However, for the inequality analyses described below, the Wealth Index was retained as a continuous variable.

The covariates included sociodemographic and household characteristics. Age was analyzed as a categorical variable grouped as 18–29 years, 30–39 years, 40–49 years, and 50 years or older. Sex was included as a dichotomous variable (female, male). Educational level was considered a categorical variable (higher education, secondary education, up to primary education). Employment status was categorized as "worked last week" or "did not work last week". The Wealth Index was categorized for descriptive analyses as low, medium, and high. Household size was analyzed as a categorical variable (1 person, 2–5 people, 6 or more people). Housing tenure was classified as rented or not rented. Household composition variables included the presence of children under 5 years of age (no, yes) and the presence of older adults aged 60 years or over (no, yes). Physical or psychological limitation was included as a dichotomous variable (no, yes). City of residence was grouped as Lima and Callao or other cities. Health insurance status was classified as uninsured or insured, and immigration status was categorized as regular or irregular. Both were individual-level variables used to define subgroups for the inequality analyses.

Statistical analysis

Descriptive analyses were conducted using weighted absolute and relative frequencies for all included variables. In addition, the distribution of healthcare utilization according to the sociodemographic, and household characteristics of the sample was examined. To estimate socioeconomic inequalities in healthcare utilization, the Slope Index of Inequality (SII) and the Relative Index of Inequality (RII) were calculated, using the continuous socioeconomic ranking derived from the Wealth Index as the main independent variable. The SII was estimated

using linear regression models, with healthcare utilization as the dependent variable. This approach was selected to estimate socioeconomic inequality directly on the absolute prevalence scale [18]. The regression coefficient represents the absolute difference in the prevalence of healthcare utilization between the highest and lowest ends of the socioeconomic gradient and can be expressed in percentage points by multiplying the coefficient by 100. The RII was estimated using Poisson regression models with a log link function, yielding prevalence ratios interpreted as relative inequality measures. This approach is established for binary outcomes when robust standard errors are used and is less prone to convergence problems than log-binomial regression [24]. This estimator reflects the relative ratio of healthcare utilization between individuals located at the upper and lower extremes of the socioeconomic gradient [25-28].

Both the SII and RII were adjusted for potential confounding variables, including age group, sex, educational level, employment status, city of residence, household size, housing rental status, presence of older adults or children under 5 years of age in the household, and physical or psychological limitations. The adjustment variables for

the SII and RII regression models were selected using a directed acyclic graph (DAG) developed for this study and considering the availability of relevant variables in ENPOVE 2022. The DAG represented assumptions about the relationships among the wealth index, health service utilization, and other individual and household characteristics, and was used to identify potential confounding pathways (Figure 1).

In addition, the Erreygers Concentration Index (ECI) was calculated as a measure of the socioeconomic concentration of healthcare utilization across the wealth distribution, ranging from -1 to +1. Positive values indicate a greater concentration of healthcare utilization among individuals with higher socioeconomic position, whereas negative values indicate concentration among those with lower socioeconomic position [29]. All analyses were performed in Stata version 19.0, taking into account sampling weights and the complex survey design. Regression models were fitted using Stata's survey procedures, with robust standard errors accounting for sampling weights, clustering, and stratification. Subgroup regression analyses used the *subpop()* option.

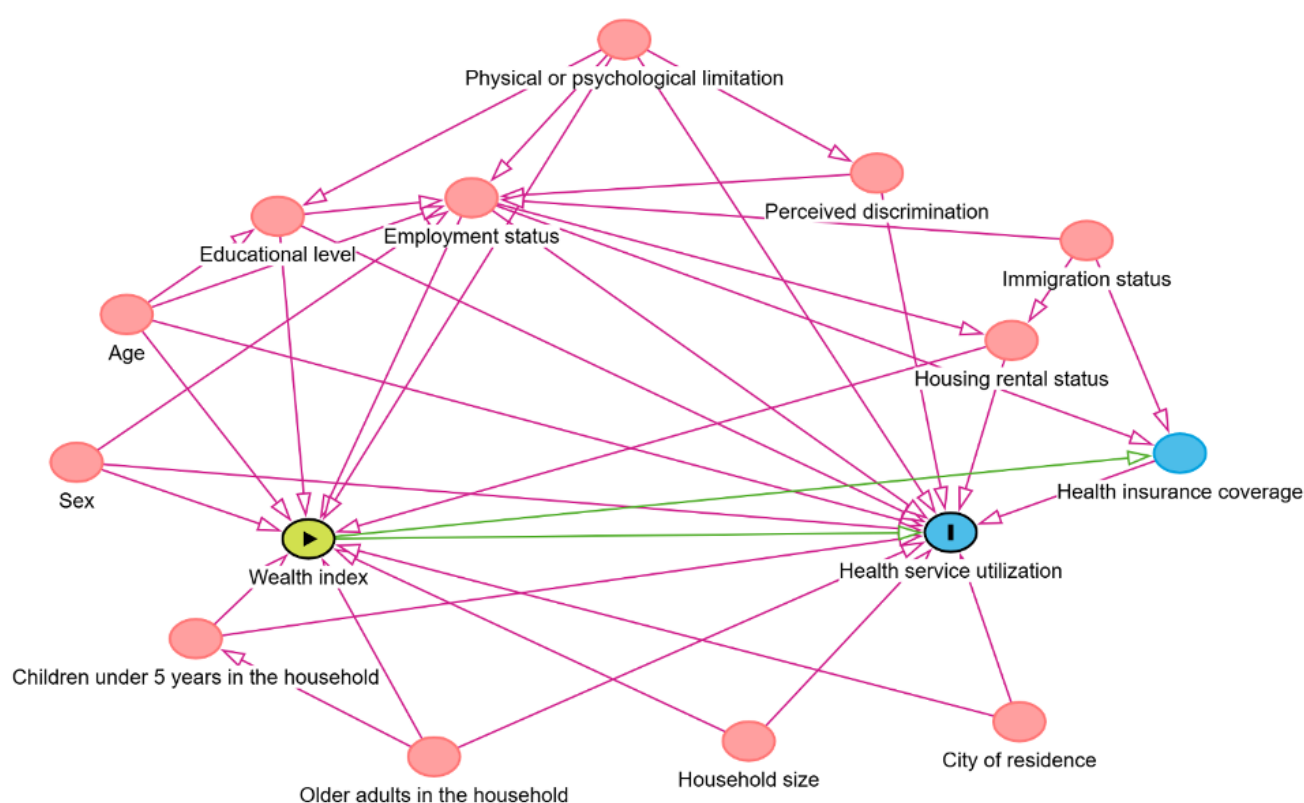


Figure 1. Directed acyclic graph used to guide covariate selection for the adjusted analyses of socioeconomic inequalities in health service utilization among Venezuelan adult migrants in Peru.

Table 1. Sociodemographic, socioeconomic and household characteristics of Venezuelan adult migrants who reported a health problem in the previous four weeks and considered it necessary to seek care, ENPOVE 2022 (n = 1,569)

Characteristics	n	Frequency (%) *
Sex		
Female	984	62.4
Male	585	37.6
Age group		
18–29 years	592	36.2
30–39 years	486	33
40–49 years	262	16.4
50 years or older	229	14.3
Wealth Index		
Low	528	30.6
Medium	545	34.4
High	496	34.9
Educational level		
Higher education	707	48.1
Secondary education	628	41.2
Up to primary education	234	10.7
Employment status		
Did not work last week	485	29.6
Worked last week	1,084	70.4
Household size		
1 person	178	12.2
2–5 people	1,173	74.7
6 or more people	218	13.1
Housing (rented)		
Not rented	99	5.9
Rented	1,470	94.1
Household with children under 5 years old		
No	1,011	67.1
Yes	558	32.9
Household with older adults (aged 60 years or over)		
No	1,362	87.8
Yes	207	12.2
Physical or psychological limitation		
No	1,514	96.3
Yes	55	3.7
City of residence		
Lima and Callao	748	79.1
Other cities	821	20.9
Immigration status		
Regular	947	67.6
Irregular	622	32.4
Health insurance		
Uninsured	1,259	76.9
Insured	310	23.1

*The estimates took into account the weights and design specifications of the ENPOVE 2022 sampling.
ENPOVE: Survey Directed at the Venezuelan Population Residing in the Country

Ethical aspects

This study used secondary, anonymous, and publicly available data, collected with informed consent as part of ENPOVE 2022. Given the anonymized and freely accessible secondary nature of the data, the study was exempt from review by the research ethics committee.

RESULTS

The sample analyzed comprised 1,569 Venezuelan adult migrants. The participant-selection process, including the numbers assessed and reasons for exclusion at each stage, is presented in Figure 2.

Most were women (62.4%), aged between 18 and 39 years old (69.2%), and residents of Lima and Callao (79.1%). Overall, 67.6% had regular immigration status and 76.9% were uninsured (Table 1).

Health service utilization increased across wealth categories, from 35.2% in the lowest category to 42.4% in the middle and 47.2% in the highest. Utilization was also higher among insured than uninsured participants (63.9% versus 35.3%) and among those with regular rather than irregular immigration status (46.2% versus 32.9%) (Table 2).

Among Venezuelan adult migrants residing in Peru who reported a health problem and considered it necessary to seek care, socioeconomic inequalities in health service utilization favored those in higher socioeconomic positions. The adjusted SII (aSII) showed an absolute difference of 30.9 percentage points in health services utilization between those at the lowest and highest ends of the socioeconomic gradient (aSII = 0.309; 95% CI: 0.128 to 0.490). Similarly, the adjusted RII (aRII) indicated that the estimated prevalence of utilization at the highest socioeconomic position was 2.11 times that at the lowest position (aRII = 2.11; 95% CI: 1.37 to 3.24). The positive

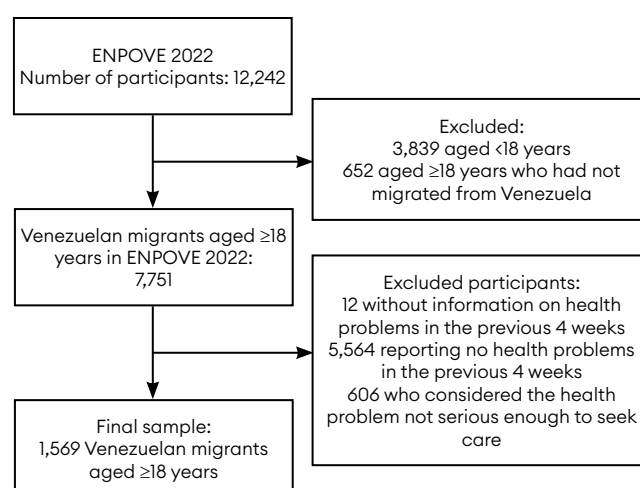


Figure 2. Flowchart of participant selection for the analytical sample, ENPOVE 2022.

Table 2. Prevalence of health service use according to sociodemographic, socioeconomic and household characteristics among Venezuelan adult migrants who reported a health problem in the previous four weeks and considered it necessary to seek care, ENPOVE 2022 (n = 1,569)

Characteristics	Health Services Utilization			
	No (n = 942)		Yes (n = 627)	
	n	% (95% CI) *	n	% (95% CI) *
Sex				
Female	579	56.7 (52.4 - 60.9)	405	43.3 (39.1 - 47.6)
Male	363	60.5 (54.9 - 65.8)	222	39.5 (34.2 - 45.1)
Age group				
18–29 years	372	61.9 (56.4 - 67.1)	220	38.1 (32.9 - 43.6)
30–39 years	297	58.2 (51.9 - 64.3)	189	41.8 (35.7 - 48.1)
40–49 years	148	56.4 (48.5 - 63.9)	114	43.6 (36.1 - 51.5)
50 years or older	125	50.3 (41.4 - 59.1)	104	49.7 (40.9 - 58.6)
Wealth Index				
Low	343	64.8 (58.9 - 70.3)	185	35.2 (29.7 - 41.2)
Medium	330	57.6 (51.7 - 63.3)	215	42.4 (36.7 - 48.3)
High	269	52.8 (47.0 - 58.6)	227	47.2 (41.5 - 53.0)
Educational level				
Higher education	395	54.1 (49.4 - 58.9)	312	45.9 (41.2 - 50.7)
Secondary education	395	61.3 (55.8 - 66.5)	233	38.8 (33.6 - 44.2)
Up to primary education	152	64.1 (55.1 - 72.2)	82	35.9 (27.9 - 44.9)
Employment status				
Did not work last week	263	53.4 (47.3 - 59.5)	222	46.6 (40.5 - 52.7)
Worked last week	679	60.1 (55.9 - 64.1)	405	39.9 (35.9 - 44.1)
Household size				
1 person	99	54.5 (45.4 - 63.4)	79	45.5 (36.6 - 54.6)
2–5 people	714	58.5 (54.3 - 62.5)	459	41.5 (37.5 - 45.7)
6 or more people	129	59.4 (49.4 - 68.8)	89	40.6 (31.2 - 50.7)
Housing (rented)				
Not rented	48	46.9 (34.1 - 60.1)	51	53.1 (39.9 - 65.9)
Rented	894	58.8 (55.1 - 62.4)	576	41.2 (37.6 - 44.9)
Household with children under 5 years old				
No	584	54.6 (50.3 - 58.8)	427	45.4 (41.2 - 49.7)
Yes	358	65.3 (59.3 - 70.9)	200	34.7 (29.1 - 40.7)
Household with older adults (aged 60 years or over)				
No	835	58.7 (54.9 - 62.5)	527	41.3 (37.6 - 45.1)
Yes	107	53.8 (44.6 - 62.9)	100	46.2 (37.1 - 55.4)
Physical or psychological limitation				
No	910	58.2 (54.6 - 61.7)	604	41.8 (38.3 - 45.4)
Yes	32	56.1 (39.9 - 71.1)	23	43.9 (28.9 - 60.1)
City of residence				
Lima and Callao	440	58.0 (53.7 - 62.2)	308	42.0 (37.8 - 46.3)
Other cities	502	58.6 (54.0 - 63.0)	319	41.4 (37.0 - 46.0)
Immigration status				
Regular	518	53.8 (49.6 - 58.0)	429	46.2 (42.0 - 50.4)
Irregular	424	67.2 (61.0 - 72.7)	198	32.9 (27.3 - 39.0)
Health insurance				
Uninsured	828	64.7 (60.7 - 68.6)	431	35.3 (31.5 - 39.3)
Insured	114	36.1 (30.0 - 42.6)	196	63.9 (57.4 - 70.0)

*The estimates took into account the weights and design specifications of the ENPOVE 2022 sampling.
 ENPOVE: Survey Directed at the Venezuelan Population Residing in the Country

Erreygers Concentration Index was consistent with a pro-rich distribution of health service utilization (ECI = 0.132; SE: 0.037; $p < 0.001$) (Table 3).

When stratified by immigration status, the estimates among migrants with regular status indicated pro-rich inequalities, with an aSII of 0.312 (95% CI: 0.088 to 0.536) and an aRII of 1.96 (95% CI: 1.21 to 3.18). In this subgroup, the ECI was 0.088 (SE: 0.045; $p = 0.048$). Among migrants with irregular immigration status, the point estimates were also in the pro-rich direction, but the confidence intervals were wide and included the null values, with an aSII of (0.204; 95% CI: -0.102 to 0.509) and an aRII of 1.87 (95% CI: 0.71 to 4.94). The ECI was 0.126 (SE: 0.065; $p = 0.054$) (Table 3). Stratified analyses according to health insurance status indicated pro-rich inequalities among uninsured migrants. In this group, the aSII was 0.254 (95% CI: 0.058 to 0.451) and the aRII was 2.07 (95% CI: 1.18 to 3.61), with an ECI of 0.107 (SE: 0.040; $p = 0.008$). Among insured migrants, estimates were imprecise, with an aSII of 0.148 (95% CI: -0.233 to 0.528), an aRII of 1.26 (95% CI: 0.69 to 2.30), and an ECI of 0.041 (SE: 0.067; $p = 0.543$) (Table 3).

DISCUSSION

This study provides evidence of socioeconomic inequalities in health services utilization among Venezuelan migrants residing in Peru. By using health services utilization as an operational proxy for effective access to healthcare, the analysis captures the actual use of services in the context of a recent health problem and a perceived need for care, rather than the mere existence or availability of healthcare services. Overall, the findings indicate a clear pro-rich pattern, with greater utilization

among migrants in more advantaged socioeconomic positions. Pro-rich socioeconomic inequalities were also observed among uninsured migrants and among those with regular immigration status. This pattern underscores the importance of considering socioeconomic position alongside insurance coverage and immigration status when assessing healthcare utilization.

The present findings are consistent with evidence from Peru and other Latin American settings showing that socioeconomic position, health insurance coverage, and immigration status shape healthcare access and utilization among migrant populations [14,16]. In Peru, irregular immigration status has been associated with lower use of health services among Venezuelan migrants [16]. Regional analyses likewise suggest that documentation status and eligibility for health insurance are important sources of disparities in migrants' access to care across Latin America [14]. In Colombia, the high proportion of uninsured Venezuelan migrants and the better access observed among those with health insurance suggest that insurance coverage can reduce, although not completely remove, socioeconomic inequalities in healthcare access [30]. More broadly, evidence from Ecuador and Argentina suggests that socioeconomic inequalities in healthcare access and utilization are reinforced in fragmented or decentralized health systems [31,32]. In the Peruvian case, this issue may be particularly relevant, as the health system remains fragmented and segmented, which could further exacerbate inequalities in access and utilization among migrant populations [9].

Several mechanisms may explain why a more advantaged socioeconomic position is associated with greater health services utilization among migrants. Greater economic resources may facilitate the payment of direct and indirect

Table 3. Absolute and relative socioeconomic inequality indices (SII, RII and ECI) in the use of health services, according to immigration status and health insurance coverage, among Venezuelan migrants who reported a health problem in the previous four weeks, ENPOVE 2022 (n = 1,569)

Population	SII (95% CI)	aSII (95% CI)	RII (95% CI)	aRII (95% CI)	ECI (SE)
Total	0.334 (0.159 to 0.508)	0.309 (0.128 to 0.490)	2.23 (1.46 to 3.42)	2.11 (1.37 to 3.24)	0.132 (0.037)
Immigration status					
Regular	0.270 (0.052 to 0.487)	0.312 (0.088 to 0.536)	1.81 (1.11 to 2.94)	1.96 (1.21 to 3.18)	0.088 (0.045)
Irregular	0.267 (-0.039 to 0.572)	0.204 (-0.102 to 0.509)	2.21 (0.90 to 5.45)	1.87 (0.71 to 4.94)	0.126 (0.065)
Health insurance					
Uninsured	0.260 (0.072 to 0.448)	0.254 (0.058 to 0.451)	2.10 (1.22 to 3.61)	2.07 (1.18 to 3.61)	0.107 (0.040)
Insured	0.112 (-0.223 to 0.447)	0.148 (-0.233 to 0.528)	1.19 (0.70 to 2.02)	1.26 (0.69 to 2.30)	0.041 (0.067)

The aSII and aRII wealth index estimates were adjusted for age, sex, education level, housing rental status, household size, employment status, city of residence, physical or psychological limitations, presence of older adults and children under 5 years old at home. All estimates include weights and specifications of ENPOVE 2022. The estimates in bold indicate $p < 0.05$.

SII: Slope Index of Inequality; RII: Relative Index of Inequality; ECI: Erreygers Concentration Index; 95% CI: 95% confidence interval. SE: standard error.

costs of care, whereas higher socioeconomic position may also be linked to greater health literacy, access to information, and awareness of health rights, entitlements, and available services, thereby improving migrants' ability to navigate the health system ^[33,34]. By contrast, migrants in lower socioeconomic positions are more likely to experience precarious employment and adverse living and working conditions, which may increase health needs while simultaneously limiting their ability to seek timely care ^[34]. In addition, lack of health insurance may increase financial barriers to care, particularly when people must rely on services that require direct payment at the point of use ^[34,35]. These barriers may be further reinforced by psychosocial factors, including fear of detention or deportation, discrimination, and mistrust of institutions, all of which can discourage seeking healthcare ^[34,36].

An important finding of this study was that socioeconomic inequalities in health services utilization remained evident among migrants with regular immigration status. Although regularization might be expected to reduce economic disparities in access, the persistence of these inequalities suggests that legal status alone is not sufficient to ensure equitable use of healthcare services. In Peru, this interpretation is consistent with evidence showing that the institutional response to immigration has not always translated into effective access to health and social protection for Venezuelan migrants, partly because bureaucratic requirements, delays in documentation processes, and out-of-pocket costs continue to limit access even among those with more stable legal status ^[13,16]. Similarly, evidence from Chile suggests that migrants with temporary residence permits may still face bureaucratic barriers and lack of information when trying to access health services ^[37]. By contrast, among migrants with irregular immigration status, barriers may be so widespread and severe that they restrict healthcare use across the socioeconomic spectrum. In this context, fear, administrative exclusion, and reliance on emergency care may contribute to a generalized pattern of restricted utilization rather than a clearly differentiated socioeconomic gradient ^[16,38].

Regarding health insurance coverage, pro-rich socioeconomic inequalities in health services utilization were observed among uninsured migrants. In the absence of financial protection, the ability to pay for care may become a key determinant of service utilization, thereby widening socioeconomic gaps. This interpretation is consistent with previous evidence describing financial barriers and lack of insurance as obstacles to healthcare access among migrant populations ^[34]. Among insured migrants, the absence of statistically significant findings should not be interpreted as evidence of no inequality, because the wide confidence intervals were compatible with both no inequality and substantial socioeconomic inequalities. The interpretation of these findings must

also consider possible differences between insured and uninsured migrants. A systematic review in low- and middle-income countries identified socioeconomic characteristics and health needs as factors associated with insurance enrolment ^[39], suggesting that the composition of insured populations may influence the observed patterns of healthcare utilization. Furthermore, the cross-sectional data do not establish whether insurance preceded the reported health problem or service use. These findings therefore do not establish that insurance coverage reduced socioeconomic inequalities in utilization.

In terms of public policy implications, these findings support prioritizing socioeconomically disadvantaged migrants in healthcare access initiatives and incorporating socioeconomic inequality indicators into the monitoring of service utilization. In practice, this could involve coordination between healthcare providers, migrant support services, and social protection programmes to reach socioeconomically disadvantaged migrants and facilitate referrals to available healthcare services. Such coordination is consistent with WHO guidance on multisectoral approaches to refugee and migrant health ^[40,41].

This study has several limitations. First, the cross-sectional design of the ENPOVE survey precludes causal inference and limits conclusions about temporal relationships. Second, although covariate selection was guided by a study-specific DAG, no established behavioural model of health service utilization was explicitly applied. Adjustment was also limited by the availability of relevant variables in ENPOVE 2022. Residual confounding due to unmeasured factors or misspecification of the assumed relationships cannot be excluded. Third, the subgroup analyses were exploratory, and the smaller subgroup sizes may have limited statistical power to detect inequalities. Several estimates had wide confidence intervals, indicating substantial uncertainty. Non-significant estimates should not be interpreted as evidence of an absence of inequality, and differences in statistical significance between subgroups do not establish differences in inequality. Fourth, eligibility depended on reporting a recent health problem and perceiving a need for care. If these processes vary by socioeconomic position and other determinants of service utilization, selection into the analytical sample could influence the estimated inequalities. The direction and magnitude of any resulting selection bias are unknown. Furthermore, the exclusion of individuals who did not perceive seeking care as necessary limits the generalizability of the findings to migrants with a perceived need for care.

Additionally, the health-related variables were self-reported, which may have introduced recall bias or social desirability bias. In addition, although the survey

provides quantitative data on Venezuelan migrants in the cities covered by ENPOVE 2022, it does not capture relevant qualitative dimensions, such as experiences of discrimination, cultural barriers, or perceived quality of care, which could help explain the observed inequalities in greater depth. Also, the analysis did not directly assess institutional rules or administrative processes that might explain the observed inequalities. Relatedly, the use of health service utilization as a proxy for realized access represents a conceptual limitation, as it does not allow assessment of whether the care received was appropriate, acceptable, of sufficient quality, or able to fulfil migrants' healthcare needs. Differential underreporting of health services utilization, particularly among migrants with irregular immigration status, also cannot be ruled out, as fear of institutional repercussions or distrust of public services may have led to underestimation of the true magnitude of these inequalities. Socioeconomic inequalities in healthcare utilization among children and adolescents may differ from those observed in adults and were not assessed in this study. Finally, heterogeneity according to length of stay in Peru and the presence of chronic conditions was not explored and may reveal additional patterns of inequality. Despite these limitations, this study provides robust evidence by applying validated summary measures of inequality (SII, RII, and ECI) to a large, nationally representative sample of Venezuelan migrants residing in Peru.

In conclusion, socioeconomic inequalities in health services utilization were observed among Venezuelan adult migrants with a recent health problem and a perceived need for care in the cities covered by ENPOVE 2022, with greater utilization among those in higher socioeconomic positions. Exploratory analyses also identified pro-rich inequalities among uninsured migrants and those with regular immigration status, although imprecision limits comparisons between subgroups. These findings support prioritizing socioeconomically disadvantaged migrants in initiatives to improve healthcare access and advance towards a more equitable health system for immigrant populations in Peru. Longitudinal research is needed to clarify how insurance coverage and immigration status shape these inequalities.

Supplementary material

None

Author contributions

XSL, MSM, EEA: contributed to Conceptualization, Methodology, Writing – Original Draft, and Writing – Review & Editing. GBQ, MI: contributed to Writing – Review & Editing. DAV: contributed to Conceptualization,

Methodology, Validation, Formal Analysis, Investigation, Data Curation, Writing – Review & Editing, Project Administration, and Supervision. All authors read and approved the final version of the manuscript.

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Conflicts of interest statement

The authors declare that they have no conflicts of interest related to this manuscript.

Data availability statement

The data used in this study come from the 2022 Survey of the Venezuelan Population Residing in Peru (ENPOVE 2022). ENPOVE 2022 microdata are publicly available through the microdata repository of the National Institute of Statistics and Informatics (INEI). Technical documentation and survey-related materials are also available through INEI official sources.

Generative Artificial Intelligence use statement

During the preparation of this manuscript, the authors used ChatGPT (OpenAI) for English-language editing and stylistic refinement. After using this tool, the authors carefully reviewed and edited the content as needed and take full responsibility for the content of the publication.

Prior presentation of the content

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