Journal of Immigrant and Minority Health
https://doi.org/10.1007/s10903-022-01369-x

ORIGINAL PAPER

A comparison of resource use of insured and uninsured venezuelan migrants: evidence from the hospital setting

Sergio I. Prada[1] · Edwin Pulgarín-Rodríguez[2] · Lina Hincapié-Zapata[2] · Ana Beatriz Pizarro[1]

Accepted: 4 May 2022

Abstract

Background There is no characterization of resource use in the hospital setting for immigrants in Colombia, we aimed to describe the resource use by Venezuelan immigrants, comparing those enrolled in the national health insurance system with those with and without the ability to pay.

Methods Retrospective review in the billing data system of our Hospital from 2011 to 2020. We collected information for 6,837 hospital episodes associated with 1,022 Venezuelan patients, hospital's billing information for all services rendered was extracted.

Results The mean cost per patient event were 4,595 USD for those without the ability to pay, costing 2.37 times more than a legal resident insured. Care in the ICU, inpatient days, surgery, and OB-GYN department consume most resources provided to vulnerable migrants.

Discussion Enrolment in the national health insurance may allow better access to health services by vulnerable Venezuelan migrants and thus reduce resource use for the health system.

Keywords Immigrants · Hospitalization · Resource use · Cost analysis · Venezuelans · Health economics

Introduction

Colombia is going through the most crucial influx of migrants in its history[1] As a result of Venezuela's political and economic crisis, in just one year, Venezuelan migration in the country has increased fivefold [2]. The latest figures revealed by Migración Colombia, the Colombian agency that exercises authority on the migration status of foreigners, indicated that in January 2021, there were 1,742,927 Venezuelan migrants in the country, making up about 3.5% of the population living in the country [3]. According to Migración Colombia, at the same date, there were 759,584 in a regular status and 983,343 (54%) in an irregular status[4].

The migration of Venezuelan citizens to Colombia represents an unprecedented situation, given the density of the migrant population and the speed of the phenomenon[5]. According to the Departamento Nacional de Planeación, a state agency in charge of planning and monitoring public policies, only 3% of the migrant population has private health insurance and 5% has public health insurance through the Colombian national health insurance system called General System of Social Security in Health (SSS from now on) [6] The socio-economic conditions of the migrant and refugee population, their working conditions, and their irregular status, have been shown to become barriers to access to health services[7].

The National Constitution's right to health is granted to all citizens and residents and is protected by international norms with prevalent application in the Colombian normative order[8]. Colombia follows an organization of its health system akin to the managed competition paradigm and is unique in Latin America[9]. Its financing is based on mandatory contributions by the working population and government revenues, collected in a central fund. Citizens are free to choose health plans, which, in Colombia, are similar to health maintenance organizations (HMO)[10]. Each HMO

✉ Sergio I. PradaMPA, PhD, Subdirector
sergio.prada@fvl.org.co

Ana Beatriz PizarroRN
ana.pizarro@fvl.org.co

[1] Centro de Investigación e Innovación, Fundación Valle del Lili, Cra. 98 # 18-49., 760026 Cali, Colombia

[2] Convenios, Fundación Valle del Lili, Cali, Colombia

Published online: 20 May 2022

gets an age-sex-region adjusted per-capita premium from the central fund to cover government-defined and regulated benefits. Healthcare providers compete to be in HMO´s network. Legal foreign residents can enroll in health plans, either by paying the mandatory contribution or being classified as poor to be eligible for a subsidy to be registered. Illegal foreign residents can access care only by paying out-of-pocket or, in life-threatening situations, by getting care at the emergency department. Providers in the latter scenario must bill the regional or the national government, which must pay using public funds[8]. Unfortunately, to date, there is no characterization of resource use in the hospital setting for Venezuelan immigrants in Colombia. Our study aims to describe Venezuelan immigrants' resource use by comparing those enrolled in the national health insurance system with those with and without the ability to pay. To that end, we collected billing information for 6,837 hospital episodes associated with 1,022 Venezuelan patients in our hospital from 2011 to 2020.

Methods

A retrospective review in the billing data system of our Hospital from 2011 to 2020 was performed. To identify Venezuelan patients who received care, the field "country of nationality" filled out at admission was used. Depending on the payer of the final bill, we classified people-events into three groups. First, people are insured by the National Social Security System when the payer is a health plan because it has a special stay permit. Second, people with the ability to pay but not enrolled in health plan regimen, when the bill was paid in full by private insurance or out-of-pocket. Third, when the bill was issued to the municipal government or eventually covered in full by the hospital´s social support program, people were without the ability to pay.

To measure health resource use (HRU), we extracted all services rendered from the hospital's billing information. Both quantities and unitary prices were available. These events were billed to multiple payers at different cost-to-charge ratios in different years. These two facts result in price variation over time and payer. To standardize prices, we used a national reference price list for 2015. HRU items were grouped by department and by type of service. For international comparisons, we use an exchange rate of 3000 COP per USD and present results in USD. All data was captured and analyzed using MS Excel. We also performed a comprehensive and sensitive literature search in three electronic databases; the search strategy was conducted without any language or date restriction, MeSH terms and topic heading titles were used, we did not find any published study regarding our topic that met our inclusion criteria.

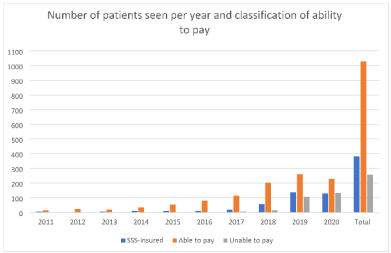

Fig. 1 Number of patients seen by year and classification, the number of patients increased by a factor of 28 in 10 years.

Table 1 Resource use for Venezuelan patients 2011–2020 (in 2015 constant USD)

	SSS-Insured	Able to pay	Unable to pay	Incremental Factor
All	$1,939	$849	$4,595	2.37
By gender				
Female	$2,345	$2,935	$3,081	1.31
Male	$1,507	$717	$8,635	5.73
By age group				
0–1	$15,025	$720	$8,337	0.55
2–5	$1,117	$1,611	$5,181	4.64
6–10	$1,139	$317	$3,857	3.39
11–15	$2,703	$301	$2,779	1.03
16–25	$1,373	$579	$3,064	2.23
26–35	$890	$460	$3,845	4.32
36–45	$1,049	$725	$6,736	6.42
46–55	$2,031	$1,945	$11,516	5.67
56–65	$8,516	$739	$6,908	0.81
66–75	$3,889	$199	$10,162	2.61
> 75	$2,349	$2,030	$4,358	1.86

Exchange rate $3,000 COP/1 USD

Incremental factor is the ratio between the unable to pay population divided by the SSS-insured

Results

Out of the 1022 individual patients analyzed, 522 had the ability to pay (51%), 258 were SSS patients (25.2%), and 242 did not have the ability to pay (24%).

We found a trend in the number of patients that increased by a factor of 28 in 10 years: Beginning with 17 patients in 2011, 44 patients in 2014, 134 patients in 2017, and reaching 490 in 2020. In the first four years, only patients with the ability to pay or SSS arrived. In the following three years (2015–2017), the number of patients without the ability to pay was limited to less than four individuals. Then between 2018 and 2020, the majority (251) of economically disadvantaged patients were treated Fig. 1.

Table 1 gives resource use by the ability to pay, gender, and age. The age distribution of patients ranged from 0 to 75 + year-olds, with the most significant number of patients in the 26–35 age range (245 patients, 24%), followed by the 16–25 group (215 patients, 21%). In total, females represented 56% of the sample; however, in the subgroup of patients without the ability to pay, females were predominant in 73%.

In constant dollars of 2015, the mean cost per patient event for each group: was 1,939 USD for those insured by SSS, 849 USD for those privately insured or paying out-of-pocket, and 4,595 USD for those without the ability to pay. The last column in Fig. 1 shows the incremental factor (IF) between those unable to pay and SSS-insured; in total, a poor, irregular Venezuelan cost 2.37 times more than a legal resident insured by the national SSS. By gender, the difference is more striking; an unable to pay male costs 5.73 times more than an SSS insured. The difference in males is 1.31 more between uninsured and insured.

Table 2 gives per-capita resource use by the hospital department. The top five hospital departments were Vascular intervention, the Intensive Care Unit (ICU), Hospitalization, Surgery, and OB-GYN. In all of them but vascular intervention, Venezuelan migrants without the ability to pay were most costly than SSS-insured, by factors ranging from 1.41 in the ICU to 1.89 in OB-GYN. Although not as high in per capita mean cost, the other two departments represent the highest IF, images with 3.72 and Emergency room with 3.02. We have also included three services bone marrow transplant, chemotherapy and home care that were only available for the SSS-insured or able to pay.

In Table 3. we discriminate the SSS-insured and unable to pay patients' resource use by department and age group (0–18, 18–65 and >65), on the first age group, we find the unable to pay number being in some departments 4 or even 5 times more patients that the SSS-insured, the OB/GYN is an exclusive department for women and was only used by unable to pay patients in this group, outpatient consultation was a very visited service by unable to pay population, mainly, as a strategy to follow those after life threatening events, in the >65 group, even that there are less patients, those unable to pay tend to expend more in departments like ICU, ER and hospitalization, overall, images had the highest IF.

Discussion

There is well-established literature in studying the cost to health systems of undocumented migrant refugees and the well-being and health of migrants and minorities in different countries of the world. For instance, a study published in 2020 assessed the high burden of diabetes disease for

Table 2 Resource Use by Hospital Department

By department									
Vascular Intervention	8	$5,227	8	$667	13	$1,964	29	$ 2,507	0.38
ICU	21	$1,880	13	$1,644	109	$2,660	143	$2,453	1.41
Hospitalization	34	$1,648	28	$2,008	74	$2,845	136	$2,373	1.73
Surgery	60	$864	45	$1,756	105	$1,534	210	$1,390	1.78
OB-Gyn	33	$486	13	$376	119	$917	165	$788	1.89
Laboratory	103	$681	287	$216	210	$479	600	$388	0.70
Images	93	$174	179	$228	123	$645	395	$345	3.72
Blood bank	32	$324	22	$71	141	$318	195	$291	0.98
Emergency room	118	$122	125	$110	124	$367	367	$201	3.02
Outpatient Consultation	153	$178	416	$201	69	$207	638	$196	1.16
Bone Marrow Trasplant	1	$55,294	0	$0	$0	$0	1	$55,294	0.00
Home care	0	$0	2	$13,966	0	0	2	$13,966	0
outpatient pharmacy sales	4	$6,496	1	$56	0	$0	5	$6,552	0
Chemotherapy	11	$3,783	2	$187	0	0	13	$3,969	0
Others	90	$377	202	$229.19	109	$286.01	401	$892.15	0.76

Others include: endoscopy, non-invasive cardiology, radiotherapy, dialysis, psychosomatic unit, nuclear medicine, physical rehabilitation, pulmonary rehabilitation, cardiac rehabilitation, sleep studies, telemedicine, medical check-ups, PET and kangaroo care

Table 3 Resource use by hospital department and age group

General		Vascular Intervention	ICU	Hospitalization	Surgery	OB-Gyn	Laboratory	Images	Blood bank	Emergency room	Outpatient Consultation	Others
0–18												
SSS insured	N	2	4	6	5	0	13	12	3	9	39	20
	$	$5,166	$2,142	$4,249	$1,568	$0	$2,542	$294	$1,240	$289	$119	$185
Unable to pay	N	1	23	23	28	19	48	37	31	37	20	33
	$	$480	$2,120	$3,934	$1,582	$644	$610	$733	$123	$191	$573	$93
Factor		0.09	0.99	0.93	1.01	0.00	0.24	2.49	0.10	0.66	4.83	0.5
18–65												
SSS insured	N	6	16	27	54	33	86	79	28	108	107	62
	$	$5,247	$1,824	$1,113	$714	$486	$400	$145	$219	$107	$201	$111
Unable to pay	N	8	77	45	74	100	150	74	106	77	43	60
	$	$1,991	$2,439	$2,470	$1,313	$969	$418	$635	$349	$432	$53	$61.6
Factor		0.4	1.3	2.2	1.8	2.0	1.0	4.4	1.6	4.1	0.3	0.6
65+												
SSS insured	N	0	1	1	1	0	4	2	1	1	7	8
	$	$0	$1,743	$471	$5,415	$0	$683	$578	$502	$244	$154	$374.35
Unable to pay	N	4	9	6	3	0	12	2	4	10	6	16
	$	$2,282	$5,927	$1,476	$6,557.56	$0	$720	$440	$1,005	$522	$92	$405
Factor		0	3.40	3.14	1.21	0.00	1.05	0.76	2.00	2.14	0.60	1.1

migrants in Italy and found a cumulative required expenditure of €42.8 million per year, with excess costs due to complications, reaching €17,500 per patient/year [11]. A 2017 study valued the economic burden of disease for leprosy in the Guangdong province in China, where the median yearly total expense after diagnosis amounted to 15% for migrants [12]. Disease-specific studies have shown catastrophic costs of tuberculosis and the care of this condition for migrants in Thailand [13] and in China [14], where direct medical cost comprised approximately 70% of total expenses for migrants compared to resident patients. Studies with a social focus look at the risk of obesity and cardiovascular disease in African immigrants living in Europe[15]. In contrast, others evaluated the health and well-being of migrant men in Bangladesh [16]. A study in Greece highlighted that those near or under the poverty line had to pay a more significant fraction of their low income to cover medicine and healthcare [17]. Other paper studies barriers to access to the health system[18] and further the health profile, needs, and outcomes of migrants Mexicans at the border with the United States [19].

The literature also has looked at migration and investments in children's health in Cambodia [20] and measures aimed at protecting the health of migrants [21]. Lastly, other topics of interest that can be found are socioeconomic and health challenges in migrants due to the COVID-19 pandemic in India [22], the use of health services among irregular migrants in a region of northeastern Spain [23], the mental health of immigrants in Switzerland [24].

Paper that has looked at Venezuelan migrants is scarce. Recently a study described factors associated with the non-use of health services among Venezuelan migrants in Peru[25]. To our knowledge, this is the first paper to report on resources used in the hospital setting by migrants by type of insurance.

The ultimate goal of a health system is to achieve universal health coverage to improve health and health equity[26]. The use of health services should not be determined or limited under any circumstances by gender, ethnic-racial belonging, religion, sexual orientation, age, ability to pay, or immigration status[26]. Therefore, in in-migration contexts and within the humanitarian response, the local and regional health system must put the needs and circumstances of both the migrant and refugee population and the host community at the center of health care[27], health services should not be interrupted and, in turn, have to be adapted to the needs and circumstances of the migrant and refugee population, especially those most socially disadvantaged or in the most vulnerable situations[28].

Due to this high migratory influx and even since its inception in past years, the Colombian Government has decided to take different measures to counteract the crisis, among

these, the enactment of the Temporary Statute of Protection for Venezuelan Migrants, Decree 216 of May 2021, to guarantee the rights of populations that deserve special protection through differential actions[29]. In regards to health, the Statute ensures that individuals and their relatives can have access to the SSS, to be able to receive proper care.

Our unique data shows that Venezuelan immigrants without the ability to pay cost 2.37 more than those SSS-insured. The use of resources by migrant men without the ability to pay is 5.7 times more than the SSS-insured, care for men is highly concentrated on trauma and life-threatening events derived from violence and dangerous situations in which these people are faced for their living conditions. By age group, children between 2 and 5 years old use 4.6 more resources, apparently due to neglected childhood diseases and other unmet needs, and the group of 46 to 55 years where trauma and care for decompensation of chronic diseases are intertwined. In the obstetrics and gynecology department that only affects women, there is an 89% increase in the use of resources in addition to facing riskier childbirths with possible complications.

If people had full insurance, they could have controls from primary care and promptly detect any possible alteration, treat them on time, and avoid the disease's progression. It would prevent having costs 1.72 higher in hospitalizations, 1.77 more in surgery, and 1.44 more in intensive care units. At least in the context of a high complexity general hospital, our calculations suggest that universal SSS insurance for Venezuelan migrants may return in savings in health care.

Conclusions

Resource use for uninsured migrants in the hospital setting is 2.37 times higher than those insured, due mainly to care in the ICU, inpatient days, surgery, and services in the OB-GYN department. Automatic enrolment in the national health insurance may allow better access to health services by migrants and refugees and thus reduce costs to the health system.

Authors' contributions All the authors conceived and designed the analysis, contributed data or analysis tools, performed the analysis, and wrote the paper.

Funding statement No external funding was received for this study.

Code availability Not applicable.

Declarations

Consent to participate Not applicable

Consent for publication Not applicable

Prada SI Conceptualization, formal analysis writing-original draft, writing-review, and editing, supervision.

Pulgarin-Rodriguez E Methodology, validation, resources, software, writing-original draft.

Hincapie-Zapata L Methodology, validation, resources, software, writing-original draft.

Pizarro AB Data curation, methodology, writing-original draft, writing-review and editing, formal analysis, validation.

References

1. Fernández-Nino JA, Bojorquez-Chapela I. Migration of Venezuelans to Colombia. Vol. 392. Lancet (London: England; 2018. pp. 1013–4.
2. Universidad Externado de Colombia. La salud de los migrantes venezolanos en Colombia: un reto inminente [Internet]. ZERO IMPRESA. 2020. Available from: https://zero.uexternado.edu.co/la-salud-de-los-migrantes-venezolanos-en-colombia-un-reto-inminente/.
3. El Tiempo. En enero llegaron más de 13.000 migrantes venezolanos al país [Internet]. Periódico El Tiempo. 2021. Available from: https://www.eltiempo.com/politica/gobierno/este-ano-2021-han-llegado-mas-de-13-000-migrantes-venezolanos-al-pais-570736.
4. Migración, Colombia. MÁS DE UN MILLÓN 742 MIL VENEZOLANOS SE ENCONTRARÍAN EN COLOMBIA PARA EL 31 DE ENERO DE 2021 Y PODRÍAN ACOGERSE AL ESTATUTO TEMPORAL DE PROTECCIÓN. [Internet]. 2021. Available from: https://www.migracioncolombia.gov.co/noticias/mas-de-un-millon-742-mil-venezolanos-se-encontrarian-en-colombia-para-el-31-de-enero-de-2021-y-podrian-acogerse-al-estatuto-temporal-de-proteccion.
5. Fernández-Niño JA, Vásquez-Rodríguez AB, Flórez-García VA, Rojas-Botero ML, Luna-Orozco K, Navarro-Lechuga E, et al. [Lifestyles and health status of migrants in a settlement of Barranquilla, Colombia, 2018]. Rev Salud Publica (Bogota). 2018;20(4):530–8.
6. Departamento Nacional de Planeación. Estrategia para la atención de la migración desde Venezuela. Doc CONPES 3950. 2018;Bogotá D. C.
7. Diana del Pilar Colorado Acevedo. Según legislación, la salud para migrantes venezolanos y colombianos debe ser igual [Internet]. UN Periódico Digital. 2019. Available from: https://unperiodico.unal.edu.co/pages/detail/segun-legislacion-la-salud-para-migrantes-venezolanos-y-colombianos-debe-ser-igual/.
8. Ministerio de Salud y Protección Social Social. Aseguramiento al sistema general de salud [Internet]. 2021. Available from: https://www.minsalud.gov.co/proteccionsocial/Regimensubsidiado/Paginas/aseguramiento-al-sistema-general-salud.aspx.
9. Prada SI, Pérez AM, Valderrama–Chaparro J, Molina–Echeverry MI, Orozco JL, Takeuchi Y. Direct cost of Parkinson's disease in a health system with high judicialization: evidence from Colombia. Expert Rev Pharmacoeconomics Outcomes Res. 2020;20(6):587–93.
10. Prada SI, Soto VE, Andia TS, Vaca CP, Morales ÁA, Márquez SR, et al. Higher pharmaceutical public expenditure after direct price control: Improved access or induced demand? The Colombian case. Cost Eff Resour Alloc. 2018;16(1):1–8.
11. Ferrara P. Assessing the Economic Burden of Disease in Migrants: The Diabetes Case in Northern Italy. Vol. 17, International journal of environmental research and public health. 2020.

12. Xiong M, Li M, Zheng D, Wang X, Su T, Chen Y, et al. Evaluation of the economic burden of leprosy among migrant and resident patients in Guangdong Province, China. BMC Infect Dis. 2017 Dec;17(1):760.
13. Tschirhart N, Nosten F, Foster AM. Migrant tuberculosis patient needs and health system response along the Thailand-Myanmar border. Health Policy Plan. 2017 Oct;32(8):1212–9.
14. Lu L, Jiang Q, Hong J, Jin X, Gao Q, Bang H, et al. Catastrophic costs of tuberculosis care in a population with internal migrants in China. BMC Health Serv Res. 2020 Sep;20(1):832.
15. Commodore-Mensah Y, Agyemang C, Aboagye JA, Echouffo-Tcheugui JB, Beune E, Smeeth L, et al. Obesity and cardiovascular disease risk among Africans residing in Europe and Africa: the RODAM study. Obes Res Clin Pract. 2020;14(2):151–7.
16. Kuhn R, Barham T, Razzaque A, Turner P. Health and well-being of male international migrants and non-migrants in Bangladesh: A cross-sectional follow-up study. PLoS Med. 2020 Mar;17(3):e1003081.
17. Stathopoulou T, Stornes P, Mouriki A, Kostaki A, Cavounidis J, Avrami L, et al. Health inequalities among migrant and native-born populations in Greece in times of crisis: the MIGHEAL study. Eur J Public Health. 2018 Dec;28(suppl_5):5–19.
18. Loganathan T, Rui D, Ng C-W, Pocock NS. Breaking down the barriers: Understanding migrant workers' access to healthcare in Malaysia. PLoS ONE. 2019;14(7):e0218669.
19. Martinez-Donate AP, Verdecias N, Zhang X, Jesús Eduardo G-F, Asadi-Gonzalez AA, Guendelman S, et al. Health Profile and Health Care Access of Mexican Migration Flows Traversing the Northern Border of Mexico. Med Care. 2020 May;58(5):474–82.
20. Treleaven E. Migration and investments in the health of children left behind: the role of remittances in children's healthcare utilization in Cambodia. Health Policy Plan. 2019 Nov;34(9):684–93.
21. Swai JK, Mmbando AS, Ngowo HS, Odufuwa OG, Finda MF, Mponzi W, et al. Protecting migratory farmers in rural Tanzania using eave ribbons treated with the spatial mosquito repellent, transfluthrin. Malar J. 2019 Dec;18(1):414.
22. Jha SS, Lahiri A. Domestic migrant workers in India returning to their homes: emerging socioeconomic and health challenges during the COVID-19 pandemic. Rural Remote Health. 2020 Nov;20(4):6186.
23. Gimeno-Feliu LA, Pastor-Sanz M, Poblador-Plou B, Calderón-Larrañaga A, Díaz E, Prados-Torres A. Overuse or underuse? Use of healthcare services among irregular migrants in a north-eastern Spanish region. Int J Equity Health. 2021;20(1).
24. Fakhoury J, Burton-Jeangros C, Consoli L, Duvoisin A, Courvoisier D, Jackson Y. Mental health of undocumented migrants and migrants undergoing regularization in Switzerland: a cross-sectional study. BMC Psychiatry. 2021;21(1).
25. Hernández-Vásquez A, Vargas-Fernández R, Rojas-Roque C, Bendezu-Quispe G. [Factors associated with the non-utilization of healthcare services among venezuelan migrants in Peru]. Rev Peru Med Exp Salud Publica. 2019;36(4):583–91.
26. WHO/PAHO. Universal Health Coverage [Internet]. 2014. Available from: https://www3.paho.org/hq/index.php?option=com_content&view=article&id=9392:universal-health-coverage&Itemid=40690〈=es.
27. Asociación Profamilia y Oficina de los Estados Unidos de Asistencia para Desastres en el Extranjero (OFDA- USAID). Desigualdades en salud de la población migrante y refugiada venezolana en Colombia. ¿Cómo mejorar la respuesta local dentro de la emergencia humanitaria?; 2020.
28. Rivillas-García JC, Cifuentes-Avellaneda Á, Ariza-Abril JS, Sánchez-Molano M, Rivera-Montero D. Venezuelan migrants and access to contraception in Colombia: A mixed research approach towards understanding patterns of inequality. J Migr Heal. 2021;3:100027.
29. Publica F. Decreto 216 de 2021 ''Por medio del cual se adopta el Estatuto Temporal de Protección para Migrantes Venezolanos Bajo Régimen de Protección Temporal y se dictan otras disposiciones en materia migratoria". 2021.