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**“ANÁLISIS DE LAS DESIGUALDADES SOCIOECONÓMICAS EN LA
UTILIZACIÓN DEL SERVICIO DE CONSULTA EXTERNA EN EL
PERÚ, 2019”**

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MAESTRO EN EPIDEMIOLOGÍA CLÍNICA Y BIOESTADÍSTICA

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Para optar por el Grado de **Maestro en Epidemiología Clínica y Bioestadística**

Con la asesoría de: **Maestro Akram Abdul Hernández Vásquez**

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Yo: Renato Díaz Ruiz, egresado de la Maestría en Epidemiología clínica y Bioestadística de la Carrera Profesional de Medicina Humana de la Universidad Científica del Sur, en conjunto con el asesor, Dr. Akram Abdul Hernández Vásquez, declaramos que este informe final de tesis/trabajo de investigación titulado: "Análisis de las desigualdades socioeconómicas en la utilización del servicio de consulta externa en el Perú, 2019", sustentado para obtener el grado de Maestro, es original.

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INFORME DE REVISIÓN DE ORIGINALIDAD

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RESUMEN

Fondo. Las desigualdades socioeconómicas de las personas influyen en el acceso a la oferta o servicios de salud y constituyen un desafío para los sistemas sanitarios, sobre todo, en los países de bajos y medianos ingresos. En el Perú, se ha estimado un aumento en la utilización de los servicios médicos, sin embargo, el estudio de las desigualdades en la utilización de los servicios médicos es limitado. Por ello, el objetivo del presente estudio fue analizar y descomponer las desigualdades socioeconómicas en la utilización del servicio de consulta externa en el Perú.

Métodos. Se realizó un estudio de tipo analítico de corte transversal utilizando datos secundarios de la Encuesta Nacional de Hogares sobre Condiciones de Vida y Pobreza 2019. La variable desenlace fue el uso de una consulta externa atendida por un médico en las últimas 4 semanas en personas que presentaron algún síntoma o malestar, una enfermedad, alguna recaída de enfermedad crónica y/o accidente. Se utilizaron curvas de concentración e índices de concentración de Erreygers para determinar las desigualdades socioeconómicas, y un modelo de regresión lineal generalizado para el análisis de descomposición de las desigualdades.

Resultados. Se incluyó a un total de 52 715 personas en el estudio. La frecuencia de consulta externa fue del 25,4 % (intervalo de confianza al 95 %: 24,8 % - 26,1 %). En el análisis de desigualdad, se encontró que el uso de las consultas externas se concentró en las personas más ricas. Los principales factores contribuyentes fueron tener otro tipo de seguro de salud (EsSalud, un seguro privado de salud, una entidad prestadora de salud, FF. AA. y policiales), residir en un área urbana, pertenecer al quintil de riqueza rico y más rico, tener una enfermedad crónica y residir en la sierra del Perú.

Conclusiones. Sobre la base a nuestros hallazgos, las instituciones gubernamentales que buscan alcanzar un acceso a los servicios de salud equitativo deben considerar a los principales factores contribuyentes de esta desigualdad en la formulación de estrategias, para aminorar el impacto negativo del control inadecuado de las enfermedades en la población.

Palabras claves. Disparidades Socioeconómicas en Salud, Atención Médica, Servicios de Salud, Perú.

ABSTRACT

Background. Socioeconomic inequalities in the population influence access to health services and constitute a challenge for health systems, especially in low- and middle-income countries. In Peru, an increase in the use of medical services has been estimated; however, the study of inequalities in the use of medical services is limited. Therefore, the objective of this research was to analyze and decompose socioeconomic inequalities in the use of medical consultation services in Peru.

Methods. A cross-sectional analytical study was conducted using data from the National Household Survey 2019. The outcome variable was the use of a consultation attended by a physician in the last 4 weeks in persons who presented symptoms or discomfort, illness, relapse of chronic disease and/or accident. Concentration curves and Erreygers concentration indices were used to determine socioeconomic inequalities, and a generalized linear regression model was used for the decomposition analysis of inequalities.

Results. A total of 52,715 persons were included in the study. The frequency of medical consultation was 25.4% (95% confidence interval: 24.8 - 26.1%). In the inequality analysis, it was found that the use of medical consultations was concentrated among the wealthiest individuals. The main contributing factors were having another type of health insurance (social health insurance [EsSalud], private health insurance, health provider, the Armed Forces, and the Police), residing in an urban area, belonging to the richest wealth quintile, having a chronic disease, and residing in the highlands of Peru.

Conclusions. Based on our findings, government institutions seeking to achieve equitable access to health services should consider the main factors contributing to this inequality in the formulation of strategies to lessen the negative impact of inadequate disease control in the population.

Keywords. Socioeconomic disparities in Health, Ambulatory care, Health services, Peru.

Socioeconomic inequalities in the use of medical consultation services in Peru, 2019

INTRODUCTION

Inequality in access to health care is the difference, variation or disparity that exists between individuals or population groups in accessing health services [1,2]. In Peru, despite the fact that health is a universal right and is considered by the Political Constitution within the social and economic rights [3], there is inequality in access to health care [4]. In 2009, the Framework Law on Universal Health Insurance was approved, which contemplates the principle of equity, whereby the State provides greater health care coverage to the most vulnerable and those with the least economic resources [5]. Thus, Peru is progressively seeking to ensure that everyone has health insurance that allows them to access and finance preventive, promotional, recuperative and rehabilitation services if required [5].

The use of health services by individuals, such as medical consultation, is one of the most common ways to assess health inequalities [4,6]. Some studies that have used Andersen's theoretical model [7,8] to analyze such inequalities have reported an association between predisposing characteristics (e.g., sex, age, marital status), enabling resources (e.g., health coverage, employment, income), and health care use [9]. For example, in Iran and China, people with higher socioeconomic status have been reported to have used outpatient medical services more frequently [10,11], whereas in Sweden, higher rates of utilization of general practitioner and specialist physician consultations by people with higher socioeconomic status have been reported [6]. A relevant determinant of this inequality is the coverage of complementary health insurance, which would explain the inequality up to 74.05% in rural areas and 147.63% in urban areas [10]. Income is another determinant that contributes up to 124.6% to inequality in the use of outpatient services [11].

Similarly, evidence from studies conducted in Latin America and the Caribbean (LAC) reports that people with greater economic resources have higher use of health services [12–15]. In LAC, where health systems are fragmented and segmented [16], private health insurance is an important factor in explaining inequality in favor of people with higher socioeconomic status [12–15]. In Peru, a similar

pattern was reported in which people with higher socioeconomic status have higher utilization of medical consultations associated with illnesses or accidents, with household spending and health insurance being the factors that contribute most to inequality [4]. In 2015, the Pan American Health Organization (PAHO) reported that 32.7 % of people in the highest quartile of per capita expenditure used medical consultations in the last month prior to the survey, while the percentage is 24.6 % for people in the lowest quartile [17].

In Peru, the National Household Survey on Living Conditions and Poverty (ENAHO – acronym in Spanish) is one of the main surveys that allows studies on the social determinants of health [18]. According to PAHO, the ENAHO reported an increase in the use of medical consultations of 10.7 percentage points between 2010 and 2015 [17]. Despite this, there is little information on socioeconomic inequalities in the utilization of the medical consultation service. This study aims to analyze and decompose socioeconomic inequalities in medical consultation service utilization in Peru using the ENAHO 2019. The decomposition identifies the factors that contribute most to inequality. The results can help decision makers to design measures aimed at universal access to health services.

METHODS

Study setting

Peru is home to 33 million people, of which almost 30% live in Lima, the capital city. The rest of the population lives in coastal region, highlands and jungle [19,20]. The Peruvian health system is fragmented and segmented into four sectors. First, Seguro Integral de Salud (SIS) aims to provide coverage to people living in poverty. The SIS is financed by public taxes and covers almost 65% of the total population [21]. Next, the Social Health Insurance (EsSalud) provides health and pension coverage to workers [21]. EsSalud is financed through payroll deductions and depends on the Ministry of Labor. In addition, the Ministry of Defense finances insurance for members of the Armed Forces and the Police [21]. Finally, there are several private insurers covering almost 10% of the population, with some overlap of coverage with EsSalud [21]. Hospital centers and health centers are

concentrated in urban areas; there are also differences in the accessibility and availability of health services according to regions in Peru. Therefore, timely access to health care is limited for those living in rural settings [22,23].

In addition, the World Health Organization (WHO) has developed the Human resources density ratio in health, which was 44.5 physicians, nurses and midwives per 10,000 inhabitants to provide essential health services to the population [24]. However, the density of human resources in Peru according to the year 2021 is 16.79 physicians; 20.30 nurses and 6.36 obstetricians per 10,000 inhabitants. Furthermore, the highest density of physicians per 10,000 inhabitants in Peru is found in the Coast (Callao, Moquegua and Lima) and the Highlands and Jungle contain the departments with the lowest density of physicians per 10,000 inhabitants [25].

Study design and data source

This study used secondary data from the ENAHO 2019, prepared by the National Institute of Statistics and Informatics (INEI – acronym in Spanish). The ENAHO is an annual survey representative of the Peruvian population that collects information on housing and household characteristics, as well as characteristics of household members on education, health, employment and economic income, household expenditures, among others [26]. Data were used from the housing and household characteristics module (base enaho01-2019-100), the household member characteristics module (base enaho01-2019-200), the education module (base enaho01a-2019-300), the health module (base enaho01a-2019-400), and the summary module (base sumaria-2019-2019). Documents related to the ENAHO 2019 design, instruments, procedures, and manuals are published on the INEI website <https://proyectos.inei.gob.pe/microdatos/>.

Study population and sample

The ENAHO 2019 used a probabilistic, area-based, stratified, multistage and independent sample in each study department. Data collection was conducted through a survey of all usual residents of the

household with direct method by previously trained enumerators. The informant could be the head of household, spouse, percipients, persons 18 years of age or older [27]. The sample size of the ENAHO 2019 was 36,994 dwellings (23,346 dwellings in urban areas and 13,648 in rural areas) and the data are freely available on the INEI website.

This study considered a final subsample of 52,715 persons who reported illness by answering affirmatively to any of the following questions of the ENAHO 2019 health module: "In the last 4 weeks, did you present any (a): symptom or discomfort (cough, headache, fever, nausea); (b) illness (flu, colitis, etc.); (c) relapse of chronic illness; (d) accident?". Household members aged 18 years or older were included and those with incomplete data on the variables of interest or who reported having special basic education were excluded. Details of the selection of persons for the subsample are presented in Figure 1.

Variables

Outcome variable

The dependent variable is the use of medical consultation in the last 4 weeks in persons who presented any symptom or discomfort, illness, relapse of chronic disease and/or accident. The dependent variable was dichotomized as 1 in case of use of medical consultation and 0 otherwise.

Independent variable

The independent variable is the household's monthly per capita expenditure, measured in soles. Monthly per capita expenditure is a proxy variable for ordering households according to their level of wealth. Since household expenditures are more stable compared to household income, the structure of expenditures and consumption expenditures can reflect household economic wealth [28]. In addition, INEI and other national institutions jointly estimated poverty levels using household expenditures [29]. Monthly per capita expenditure was constructed by dividing the total annual household expenditure by twelve months and the total number of household members.

For the descriptive analysis, expenditure was expressed as quintiles (I: poorest, II: poorer, III: middle, IV: richer, V: richest). For the analysis of concentration indexes and concentration curves, expenditure was expressed as a continuous variable through monthly per capita expenditure. For the decomposition analysis, expenditure was expressed as monthly per capita expenditure and as quintiles.

Covariates

Covariates were selected based on previous studies [4,6,10–15] and based on Andersen's theoretical model [7,8]. The theoretical model indicates that the use of health services is a function of three main factors: predisposing factors, enabling factors, and need factors. Predisposing factors are composed of sociodemographic characteristics, social structure characteristics, and health beliefs of individuals. Enabling factors correspond to people's means and capacity to use health services at both the individual and community levels. The need factors correspond to variables that predispose to the use of health services due to the individual's health problems.

The predisposing characteristics considered in the analysis were age according to the classification of the Target Groups for the Comprehensive Care Programs of the Peruvian Ministry of Health (18 to 29 years / 30 to 59 years / 60 years and older) [30]; sex (male/female); language or mother tongue learned in childhood (non-native/native); educational level (up to primary / secondary / higher). The enabling resources selected in the study are geographic region (coast / highlands / jungle); area of residence (rural / urban) and health insurance (no insurance / Seguro Integral de Salud / others). Others category was made up of EsSalud, private health insurance, health provider entity, Armed Forces and the Police. The need factors included in the analysis are suffering from a chronic disease or discomfort such as arthritis, hypertension, asthma, rheumatism, diabetes, tuberculosis, human immunodeficiency virus (HIV), cholesterol, etc. (yes/no); presence of any permanent limitation or difficulty (yes/no) that prevents or hinders you from carrying out your daily activities normally, such as limitation to move or walk, to use arms or legs; limitation to see, even when wearing glasses; limitation to speak or communicate, even when using sign language or other; limitation in hearing, even when

using hearing aids; limitation in understanding or learning (concentrating and remembering); and limitation in relating to others, by their thoughts, feelings, emotions or behaviors, according to the questions of the Washington Group on Disability Statistics [31].

Statistical analysis

Through Stata® v17.0 software (Stata Corporation, College Station, Texas, USA) the statistical processing and analysis was performed, specifying the sampling characteristics of the ENAHO 2019 including the sampling design and the expansion factor. A $p < 0.05$ was considered statistically significant in all tests. After downloading the 2019 "ENAHO Metodología ACTUALIZADA" bases (<https://proyectos.inei.gob.pe/microdatos/>) that included our study variables, we generated a new database that joined the downloaded databases to perform data management and statistical analysis. Nominal variables were described using absolute frequencies, relative frequencies and their 95% confidence interval (CI).

Inequalities in the use of the medical consultation service were analyzed using the concentration curves (CC) and Erreygers concentration indexes (ECI) described by Wagstaff *et al.* [32]. The CCs describe the relationship between the cumulative percentage of people studied according to the wealth index and the cumulative percentage of medical consultation service use in relation to the diagonal line of equality. Inequality is expressed according to the concavity of the curve and reflects greater inequality the further the CC is from the equality line. If it is below or above the equality line, there is greater use of medical consultation by people with a higher or lower wealth index, respectively. The ECI is a coefficient whose values range between -1 and 1, with zero being the absence of inequality between groups, the positive value concentrates the distribution in the richest and a negative value in the poorest [33].

The decomposition analysis was performed using Van Doorslaer's methodology [34] by means of a generalized linear regression model, based on a linear approximation of the partial effects of each factor evaluated on the sample means. This measure estimates the elasticity, concentration index, contribution and percentage contribution for each independent variable to be included in the analysis.

To decompose the inequalities, the elasticity, the concentration index, the absolute and relative contribution of the concentration index to inequality were estimated for each independent variable. Elasticity denotes the change in the outcome of interest associated with a one-unit change in the independent variable [34]. A positive and negative sign on the elasticity indicates an increasing or decreasing change in the outcome of interest in association with a positive change in the independent variable [34]. The concentration index represents the concentration ratio of the independent variables with reference to the wealth index. A positive/negative value means that the variable of interest is more prevalent among richer/poorer individuals [34]. Finally, the absolute and relative contribution represent the absolute and relative contribution of each independent variable, included in the model, to the overall socioeconomic inequality in the variable of interest. A positive/negative contribution or percentage contribution in a variable result in an increase/decrease in observed socioeconomic inequality [34].

Ethical considerations

The Ethics and Research Committee of the Universidad Científica del Sur approved the project of the present study (registration code 680-2021-POS50). However, the study used a secondary database that is freely available on the INEI's microdata web page (<https://proyectos.inei.gob.pe/microdatos/>). In the databases, respondents are coded so as not to be identified.

RESULTS

A total of 52,715 persons who reported a health problem during the last four weeks were included in the study. Table 1 describes the demographic and socioeconomic characteristics of the study population. More than half of the population (51.9%) was between 30 and 59 years of age, and the majority of the population was female (56.3%). Approximately a quarter of the population (23.6%) spoke a local or native language (e.g., Quechua or Aymara), while a third of the population had attained primary education (34.3%) and 36.1% had attained secondary education. Almost six out of ten people have at least one chronic disease (59.7%), while the vast majority of the population reported no physical limitations (92.3%). The majority of the population resides in urban areas (77.5%)

and approximately a quarter of the population has no health coverage (24.7%).

Table 2 reports the frequency of medical consultation among study participants who reported a health problem during the previous four weeks. Overall, the frequency of medical consultation was 25.4% (95% CI: 24.8 % - 26.1 %). The frequency of medical consultation was different according to age, sex and language ($p < 0.001$). Women reported attending more medical consultations compared to men (27.9% vs. 22.2% respectively, $p < 0.001$). More medical consultations were reported in non-native speakers than in native speakers (26.6% vs. 21.6%; respectively, $p < 0.001$). In individuals with higher education, those living on the coast, those living in the urban area and the wealthier, a higher frequency of medical consultation was evidenced ($p < 0.001$).

The CCs are shown in Figure 2. According to the curves, a pro-rich trend was identified for all population subgroups and in general, for all participants. In panel B, the CCs report that inequality for medical consultation among individuals aged 60 years and older is higher compared to younger individuals. In addition, native speakers and those with primary education, those living in the highlands, and those living in rural areas reported greater inequalities compared to non-native speakers, those with higher educational attainment, those living in areas other than the highlands, and those living in urban settings (see panel D, panel E, panel H, and panel I, respectively).

The concentration indexes are shown in Table 3. Overall, the positive value of ECI (0.199) indicates an inequality in favor of the wealthy in the use of medical consultation. A positive value was also reported in all subgroup analyses. When we reported the ECI by population subgroups, we found no differences in inequality in the use of medical consultation by sex ($p = 0.323$) or language ($p = 0.064$). We found differences in inequality in the use of medical consultation according to age ($p < 0.001$), educational level ($p < 0.001$), chronic disease ($p < 0.001$), physical limitations ($p < 0.001$), region of residence ($p < 0.001$), area of residence ($p < 0.001$), and health insurance coverage ($p = 0.007$).

Table 4 shows the decomposition of the ECI according to the covariates included in the study. For the elasticity findings, the value for the female sex was 0.09, which means that a change between male and female increases, by 9%, the probability of widening inequality in the use of medical

consultations. In addition, a change from having none to having a chronic disease increases the probability of widening inequality by 23%. On the other hand, a change in the region of residence from coast to highlands reduced the probability of widening inequality by 6%. For the concentration indices, we find that the use of medical consultations for people aged 60 years or older, people with higher education, people with a chronic disease, people living in urban areas and people with other health insurance was concentrated among the richest. In contrast, the use of medical consultations for those who speak their mother tongue and SIS affiliates was concentrated among the poorest. Finally, the main factor of inequalities in the use of medical consultations are having other health insurance, belonging to the richest wealth quintile, having a chronic disease, living in urban environments and residing in the highlands of Peru. Conversely, the main factor in reducing inequality was SIS coverage.

DISCUSSION

This study estimated inequalities in the utilization of medical consultations in Peru and identified the factors that explain inequalities in utilization. It found that, in 2019 in Peru, 25.4 % of people used medical consultations during the last 4 weeks, although their utilization was concentrated among the wealthiest individuals. When decomposing these inequalities, it was found that the greatest contributors were having another type of health insurance (EsSalud, private health insurance, health provider entity, Armed Forces. and police), residing in an urban area, belonging to the richest wealth quintile, having a chronic disease and residing in the highlands of Peru.

The prevalence of health services utilization reported in this study (25%) is lower than that reported in studies conducted in Italy (28%) [35], Brazil (95.3 %) [36], Jamaica (62.9%), Mexico (64.7%), Panama (58.1%) [37], Paraguay (66.5 %) [38] and Argentina (40.6%) [39]. These differences between the figures of the countries and our finding could be attributed to the time horizon for measuring the utilization of medical consultations, since most studies are based on the utilization of medical consultations in the last 12 weeks. In addition, a study conducted in Peru reported a higher proportion of utilization of outpatient medical consultation in 2011 (34.8%) than reported in our study, however, this figure was obtained from people who had health insurance (SIS, EsSalud, Armed Forces or private), while people who did not have health insurance only had a medical consultation in 19.1%,

which could expose that the possession of health insurance would be a determining factor in the use of health services [40]. Additionally, our finding agreed with that reported in the study conducted by Ypanaqué-Luyo, where women, people affiliated with health insurance, people at the extremes of life, residents of the coast and with chronic diseases had a higher use of a medical consultation [40]. On the other hand, we should note that, in low- and middle-income countries, people are exposed to barriers that could limit the use of health services and not allow adequate health coverage [41]. These factors are related to lack of education, cultural barriers (social stigma, lack of decision-making power, language or traditional medicine preference), poor perception of health services, and low income, which would worsen health status and disease burden in individuals, especially for diseases that require continuous health care [41]. Existing strategies should be strengthened to improve health systems and ensure the universal health coverage required to reduce inequalities in people's health and the economic impact on countries.

According to the analysis of inequalities, the utilization of a medical consultation was concentrated among the wealthiest individuals. These results are similar to those reported in studies conducted in Chile [14], Uruguay [13], Kenya [42], Italy [35], China [11] and Paraguay [38], where the use of health services was concentrated among people with greater economic resources. The findings are aligned with the hypothesis that wealth has a directly proportional relationship with access to timely and quality health services for individuals, resulting in better long-term health outcomes [43,44]. On the other hand, the poorest people present barriers that prevent access to adequate health care, due to difficulty in meeting health expenses and distrust in services [45]. This problem has been reported in Peru, where people with lower economic resources had 28 percentage points more problems of access to health services than people with greater resources [46]. This gap has been addressed by the health system through Emergency Decree 017-2019 that seeks to expand health coverage by narrowing the gap for people who do not have health insurance [47]; however, our data will not reflect the impact of this measure on the use of health services due to its early incorporation.

In relation to the decomposition analyses, the major contributors to this inequality were having another type of health insurance (EsSalud, private health insurance, health provider, Armed Forces and the Police), residing in an urban area, belonging to the richest wealth quintile, having a chronic disease,

and residing in the highlands of Peru. According to previous studies, having health insurance would increase the probability of seeking outpatient medical care and reduce out-of-pocket spending on health, which would allow adequate access to medical consultation [48]. In addition, people residing in rural areas have a lower probability of having medical care due to long distances between the health facility and the place of residence and low economic income due to their type of occupation (mainly agriculture and livestock) [49]. Likewise, the use of health services in people with chronic diseases is based on the need for long-term and complex management to control their diseases, and on the number of diseases they suffer from, being that people with multimorbidity have a higher use of health services [50]. Finally, it highlights a finding contrary to what has been reported in the literature, where people residing in the highlands contribute to this pro-rich inequality. This finding could reflect an improvement in the healthcare system in this region, which is observed with the steady increase in the number of physicians per 1000 inhabitants between 2009 and 2016 [51].

The findings of this study would have an impact on existing public policies in the Peruvian territory. Although the utilization of medical consultations increased between 2015 and 2019, this increase does not reflect improvements in inequalities in utilization. Under the Universal Health Insurance Framework established in 2009, our results provide an overview of the inequality gap that exists between the poor and the rich in order to redouble efforts to insure populations living in poverty and extreme poverty. Furthermore, this inequality gap will allow government institutions to base their strategies on the main contributors to this socioeconomic inequality in order to achieve greater health coverage and reduce the health and economic impact of diseases on the population. Finally, the Peruvian health system should carry out routine preventive-promotional programs and increase the capacity of health facilities in rural areas to decrease the burden of disease and morbidity and mortality in these underserved populations.

The present study used a survey with nationwide representativeness, which allows us to extrapolate our findings to the entire Peruvian territory. However, it has some limitations. First, the questions asked to the respondents are based on specific events of the past, which could lead to a memory bias. Second, other variables that could be useful for understanding these inequalities were not included due to their unavailability in the database. These variables are related to self-perception of health

status, cultural perception of health systems, waiting time to care or community-level variables (such as distance to a health facility). While beliefs and conceptions of health are undoubtedly influential, they often involve deeply ingrained cultural and subjective elements that are challenging to capture accurately through surveys or data collection. Moreover, these factors can be highly context-specific and vary significantly among different population groups, making it difficult to generalize findings. Secondly, including such qualitative and subjective elements would introduce a level of complexity that might complicate the statistical analysis and interpretation of results, potentially obscuring the core factors that we aimed to investigate. Lastly, our theoretical model that underpin our analysis is based on individual determinants that influences the access and use of healthcare services [52]. The model has no power to assess community-level variables. Analyzing those variables requires different research objectives and another theoretical model that supports our analyses. In the Peruvian context, future research endeavors should delve into these nuances to gain a more comprehensive understanding of healthcare utilization inequalities. Finally, although we have analyzed recent data (2019), the changes produced by the COVID-19 pandemic could generate a change in our findings because this health crisis generated a restructuring of health care in Peru, especially in populations with a continuous requirement for outpatient care, so it would be necessary to conduct studies that evaluate the change in the time of health care during this health crisis.

CONCLUSIONS

It was found that 25 out of every 100 Peruvians who had a disease accessed a medical consultation during the four weeks prior to ENAHO 2019. In addition, medical consultation was concentrated in people with greater economic resources, where the main contributors were related to socioeconomic and geographic determinants. Despite the fact that, government institutions have sought to increase health coverage in the Peruvian population, there is still a socioeconomic gap between the poor and the rich. Therefore, the search for more equitable access to health services must consider the main contributors to this inequality in order to lessen the negative impact of inadequate disease control in the population.

ABBREVIATIONS

LAC: Latin America and the Caribbean

PAHO: Pan American Health Organization

ENAHO: National Household Survey on Living Conditions and Poverty

SIS: Seguro Integral de Salud

EsSalud: Peruvian Social Security

INEI: National Institute of Statistics and Informatics

HIV: Human Immunodeficiency Virus

CC: Concentration curves

ECI: Erreygers concentration index

CI: Confidence interval

DECLARATIONS:

ETHICAL APPROVAL AND CONSENT TO PARTICIPATE

Not applicable.

CONSENT FOR PUBLICATION

Not applicable.

DATA AVAILABILITY

The data supporting the findings of this study are publicly available on the website of the National Institute of Statistics and Informatics (INEI) (<https://proyectos.inei.gob.pe/microdatos/>). The databases can be obtained by accessing the "Survey Query" tab, selecting the "ENAHO Metodología

ACTUALIZADA" option under "Survey". Then, in "(Choose a Survey)" select "Living Conditions and Poverty - ENAHO", for the year 2019, annual period.

CONFLICT OF INTERESTS

The authors declare that they have no conflicts of interest.

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AUTHOR CONTRIBUTIONS

R.D-R. and A.H-V. proposed the research idea, designed the study, collected, processed, analyzed the data, and prepared figures. R.D-R., A.H-V., R.V-F., and C.R-R. participated in the validation and interpretation of the data, wrote the manuscript. All authors approved the final versión of manuscript.

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Table 1. Characteristics of the participants included in the study (n=52,715)

Characteristics	n	% (95% CI)
Age group (in years)		
18-29	10,402	21.4 (20.8-21.9)
30-59	27,490	51.9 (51.3-52.5)
60 or older	14,823	26.7 (26.1-27.3)
Sex		
Male	23,182	43.7 (43.2-44.2)
Female	29,533	56.3 (55.8-56.8)
Mother tongue		
Non-native	38,703	76.4 (75.4-77.4)
Native	14,012	23.6 (22.6-24.6)
Educational level		
Up to primary	21,051	34.3 (33.6-35.0)
Secondary	17,482	36.1 (35.3-36.8)
Higher	14,182	29.7 (28.9-30.5)
Chronic disease or discomfort		
No	21,381	40.3 (39.6-41.0)
Yes	31,334	59.7 (59.0-60.4)
Presence of any permanent limitation or difficulty		
No	48,347	92.3 (91.9-92.7)
Yes	4368	7.7 (7.3-8.1)
Geographic region		
Coast	21,988	54.3 (52.7-55.8)
Highlands	20,853	34.8 (33.3-36.4)
Jungle	9874	10.9 (10.1-11.8)
Area of residence		
Rural	19,680	22.5 (21.8-23.2)
Urban	33,035	77.5 (76.8-78.2)
Health insurance		
No	11,820	24.7 (24.0-25.4)
Seguro Integral de Salud	27,040	46.1 (45.2-47.0)
Others*	13,855	29.2 (28.4-30.0)
Wealth quintile		
I (Poorest)	13,682	20.4 (19.7-21.2)
II	11,309	20.6 (19.8-21.4)
III	10,534	21.5 (20.7-22.4)
IV	9629	20.6 (19.8-21.4)
V (Richest)	7561	16.8 (16.0-17.7)

CI: confidence Interval.

*Others category was made up of EsSalud, private health insurance, health provider entity, Armed Forces and the Police.

Estimates include the expansion factor and sample design characteristics of the ENAHO 2019.

Table 2. Frequency of use of medical consultation in Peru, ENAHO 2019

Characteristics	Use of medical consultation		p value*
	No (n = 39,933)	Yes (n = 12,782)	
	% (95% CI)	% (95% CI)	
Overall	74.6 (73.9–75.2)	25.4 (24.8–26.1)	
Age group (in years)			
18-29	81.6 (80.5-82.7)	18.4 (17.3-19.5)	<0.001
30-59	76.3 (75.5-77.0)	23.7 (23.0-24.5)	
60 or older	65.7 (64.5-66.9)	34.3 (33.1-35.5)	
Sex			
Male	77.8 (77.0-78.6)	22.2 (21.4-23.0)	<0.001
Female	72.1 (71.3-72.9)	27.9 (27.1-28.7)	
Mother tongue			
Non-native	73.4 (72.7-74.1)	26.6 (25.9-27.3)	<0.001
Native	78.4 (77.2-79.6)	21.6 (20.4-22.8)	
Educational level			
Up to primary	76.1 (75.1-77.0)	23.9 (23.0-24.9)	<0.001
Secondary	75.9 (74.9-77.0)	24.1 (23.0-25.1)	
Higher	71.2 (70.1-72.3)	28.8 (27.7-29.9)	
Chronic disease or discomfort			
No	83.7 (82.9-84.5)	16.3 (15.5-17.1)	<0.001
Yes	68.4 (67.6-69.2)	31.6 (30.8-32.4)	
Presence of any permanent limitation or difficulty			
No	75.3 (74.7-75.9)	24.7 (24.1-25.3)	<0.001
Yes	65.8 (63.6-68.0)	34.2 (32.0-36.4)	
Geographic region			
Coast	69.2 (68.2-70.2)	30.8 (29.8-31.8)	<0.001
Highlands	81.2 (80.3-82.1)	18.8 (17.9-19.7)	
Jungle	80.1 (78.9-81.2)	19.9 (18.8-21.1)	
Area of residence			
Rural	85.0 (84.2-85.7)	15.0 (14.3-15.8)	<0.001
Urban	71.6 (70.8-72.3)	28.4 (27.7-29.2)	
Health insurance			
No	85.8 (84.8-86.7)	14.2 (13.3-15.2)	<0.001
Seguro Integral de Salud	77.2 (76.4-78.0)	22.8 (22.0-23.6)	
Others**	61.0 (59.8-62.2)	39.0 (37.8-40.2)	
Wealth quintile			
I (Poorest)	87.1 (86.2-88.0)	12.9 (12.0-13.8)	<0.001
II	78.9 (77.7-80.0)	21.1 (20.0-22.3)	
III	74.0 (72.8-75.2)	26.0 (24.8-27.2)	
IV	70.0 (68.6-71.3)	30.0 (28.7-31.4)	
V (Richest)	60.5 (58.8-62.1)	39.5 (37.9-41.2)	

CI: confidence Interval.

*P value calculated using the chi-square test with Rao-Scott correction.

**Others category was made up of EsSalud, private health insurance, health provider entity, Armed Forces and the Police.

Estimates include the expansion factor and sample design characteristics of the ENAHO 2019.

Table 3. Concentration index for the use of medical consultation in Peru, ENAHO 2019.

Characteristics	Concentration index	standard error	p value
Overall	0.19937786	0.00641731	<0.001
Age group (in years)			
18-29	0.10229971	0.01200811	<0.001
30-59	0.18457323	0.00830868	
60 or older	0.30017989	0.01241237	
Sex			
Male	0.19279535	0.00878072	0.323
Female	0.2046995	0.00825363	
Mother tongue			
Non-native	0.1869384	0.00753137	0.064
Native	0.21440483	0.012779	
Educational level			
Up to primary	0.24694375	0.00967085	<0.001
Secondary	0.18295935	0.01082359	
Higher	0.17058395	0.01242945	
Chronic disease or discomfort			
No	0.12307242	0.00835029	<0.001
Yes	0.21884463	0.00865588	
Presence of any permanent limitation or difficulty			
No	0.19277562	0.00652823	<0.001
Yes	0.31467097	0.02252226	
Geographic region			
Coast	0.14996957	0.01006312	<0.001
Highlands	0.17383264	0.00834938	
Jungle	0.13146833	0.01440896	
Area of residence			
Rural	0.12322651	0.00764309	<0.001
Urban	0.16016063	0.00802702	
Health insurance			
No	0.1426812	0.01037717	0.007
Seguro Integral de Salud	0.17825844	0.00896788	
Others*	0.12509796	0.0133331	

*Others category was made up of EsSalud, private health insurance, health provider entity, Armed Forces and the Police.

Estimates include the expansion factor and sample design characteristics of the ENAHO 2019.

Table 4. Decomposition of the concentration index for the use of medical consultation in Peru, ENAHO 2019

Characteristics	Elasticity	Concentration index	Absolute	%
Age group (in years)				
18-29	Reference	Reference	Reference	
30-59	0.0512	-0.0533	-0.0027	-1.4
60 or older	0.0859	0.0166	0.0014	0.7
Sex				
Male	Reference	Reference	Reference	
Female	0.0922	-0.0012	-0.0001	-0.1
Mother tongue				
Non-native	Reference	Reference	Reference	
Native	0.0046	-0.2769	-0.0013	-0.6
Educational level				
Up to primary	Reference	Reference	Reference	
Secondary	0.0024	-0.0049	0.0000	0.0
Higher	-0.0004	0.423	-0.0002	-0.1
Chronic disease or discomfort				
No	Reference	Reference	Reference	
Yes	0.2394	0.1275	0.0305	15.3
Presence of any permanent limitation or difficulty				
No	Reference	Reference	Reference	
Yes	0.0099	-0.0279	-0.0003	-0.1
Geographic region				
Coast	Reference	Reference	Reference	
Highlands	-0.0686	-0.395	0.0271	13.6
Jungle	-0.0184	-0.0878	0.0016	0.8
Area of residence				
Rural	Reference	Reference	Reference	
Urban	0.1559	0.4842	0.0755	37.9
Health insurance				
No	Reference	Reference	Reference	
Seguro Integral de Salud	0.2472	-0.5296	-0.1309	-65.7
Others*	0.2087	0.4489	0.0937	47.0
Wealth quintile				
I (Poorest)	Reference	Reference	Reference	
II	0.0625	-0.3175	-0.0199	-10.0
III	0.0881	0.0309	0.0027	1.4
IV	0.1069	0.3772	0.0403	20.2
V (Richest)	0.1172	0.5598	0.0656	32.9
Subtotal				91.8
Residual	0.0162815			

*Others category was made up of EsSalud, private health insurance, health provider entity, Armed Forces and the Police.

Estimates include the expansion factor and sample design characteristics of the ENAHO 2019.

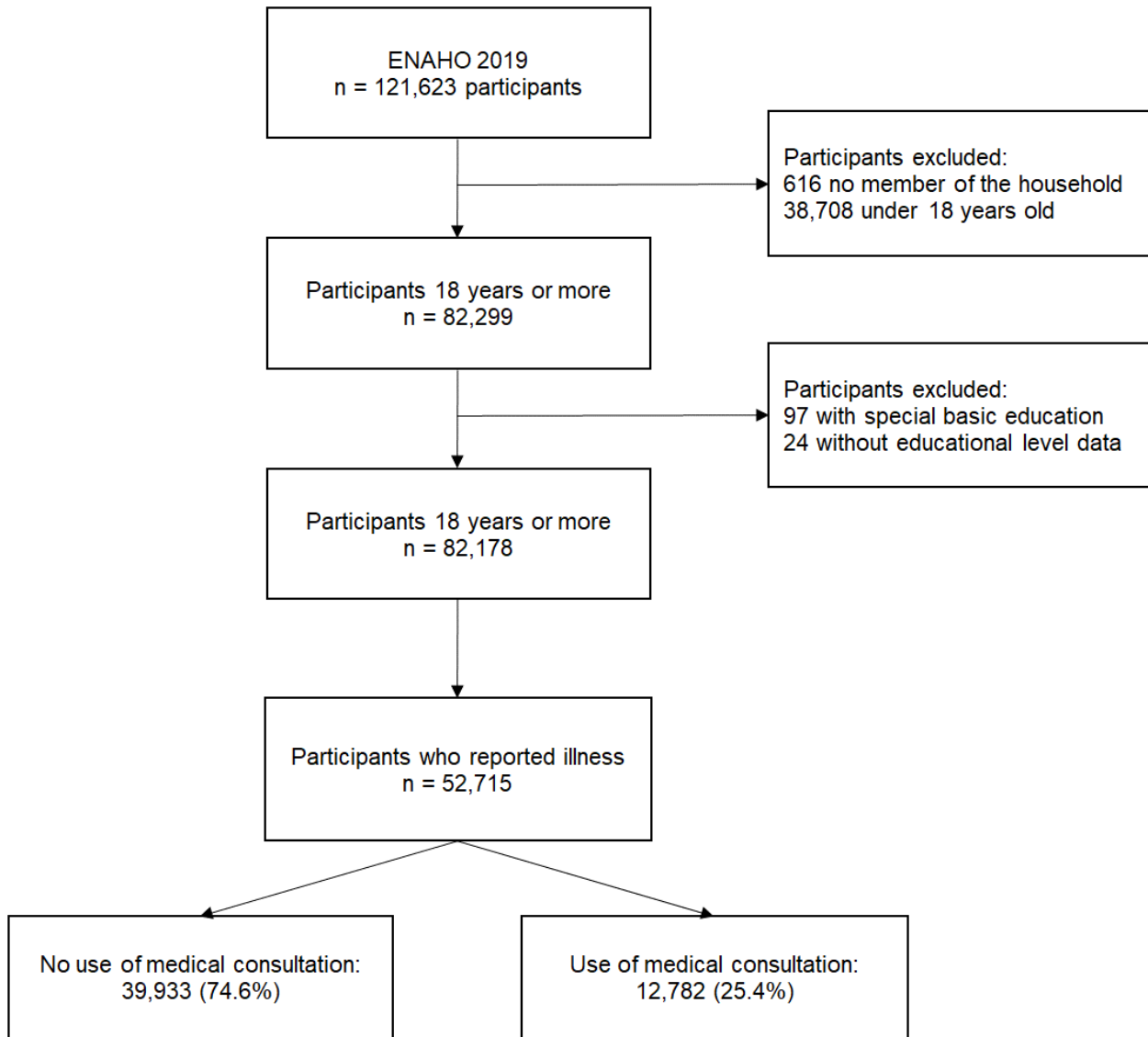


Figure 1. Flowchart of the selection of adults included in the study

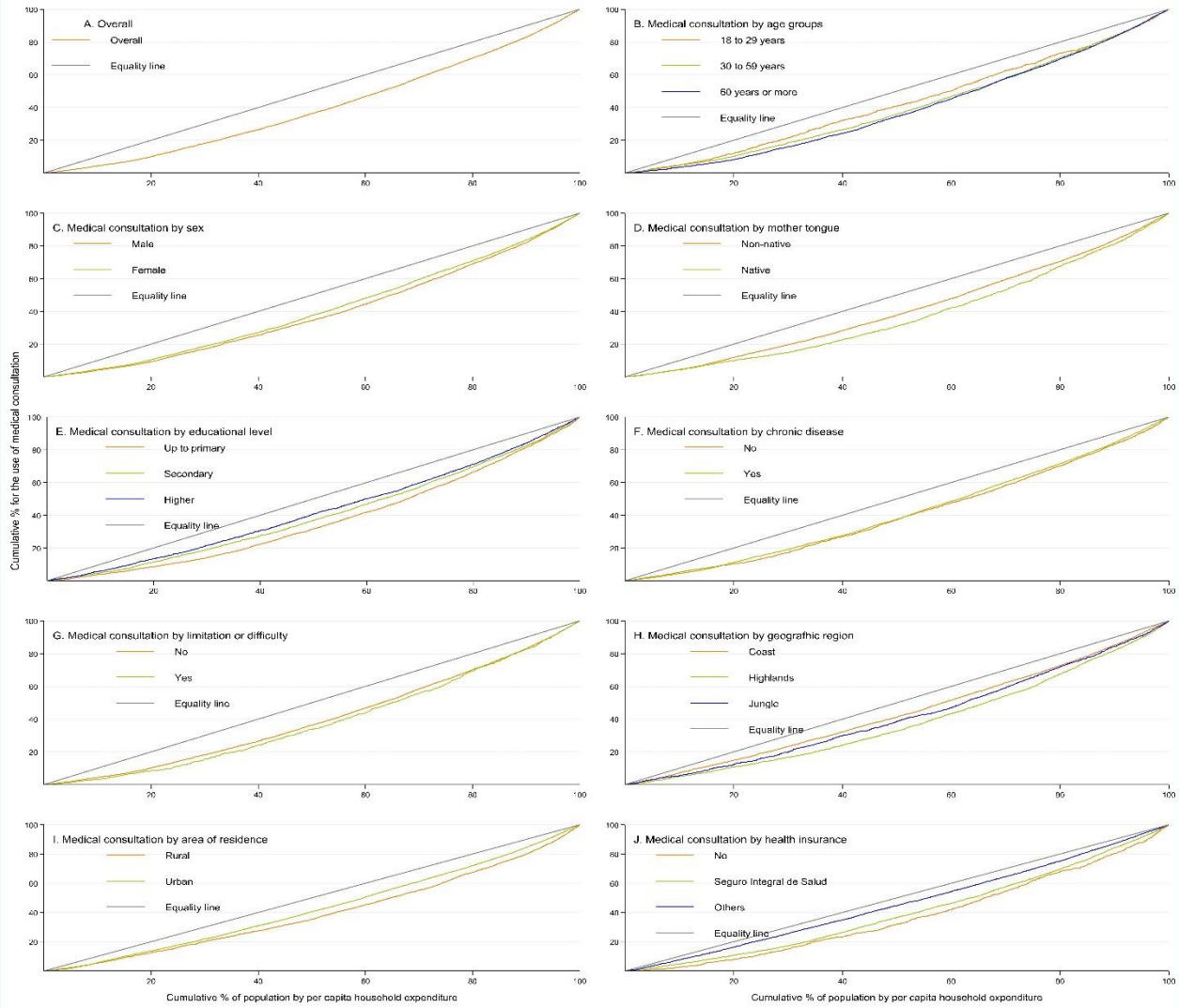


Figure 2. Concentration curves for the use of medical consultation in Peru, ENAHO 2019.

* Others category was made up of EsSalud, private health insurance, health provider entity, Armed Forces and the Police

Socioeconomic inequalities in the use of medical consultation services in Peru, 2019

INTRODUCTION

Inequality in access to health care is the difference, variation or disparity that exists between individuals or population groups in accessing health services [1,2]. In Peru, despite the fact that health is a universal right and is considered by the Political Constitution within the social and economic rights [3], there is inequality in access to health care [4]. In 2009, the Framework Law on Universal Health Insurance was approved, which contemplates the principle of equity, whereby the State provides greater health care coverage to the most vulnerable and those with the least economic resources [5]. Thus, Peru is progressively seeking to ensure that everyone has health insurance that allows them to access and finance preventive, promotional, recuperative and rehabilitation services if required [5].

The use of health services by individuals, such as medical consultation, is one of the most common ways to assess health inequalities. [4,6]. Some studies that have used Andersen's theoretical model [7,8] to analyze such inequalities have reported an association between predisposing characteristics (e.g., sex, age, marital status), enabling resources (e.g., health coverage, employment, income), and health care use [9]. For example, in Iran and China, people with higher socioeconomic status have been reported to have used outpatient medical services more frequently [10,11], whereas in Sweden, higher rates of utilization of general practitioner and specialist physician consultations by people with higher socioeconomic status have been reported [6]. A relevant determinant of this inequality is the coverage of complementary health insurance, which would explain the inequality up to 74.05% in rural areas and 147.63% in urban areas [10]. Income is another determinant that contributes up to 124.6% to inequality in the use of outpatient services [11].

Similarly, evidence from studies conducted in Latin America and the Caribbean (LAC) reports that people with greater economic resources have higher use of health services [12–15]. In LAC, where health systems are fragmented and segmented [16], private health insurance is an important factor in explaining inequality in favor of people with higher socioeconomic status [12–15]. In Peru, a similar

pattern was reported in which people with higher socioeconomic status have higher utilization of medical consultations associated with illnesses or accidents, with household spending and health insurance being the factors that contribute most to inequality [4]. In 2015, the Pan American Health Organization (PAHO) reported that 32.7 % of people in the highest quartile of per capita expenditure used medical consultations in the last month prior to the survey, while the percentage is 24.6 % for people in the lowest quartile [17].

In Peru, the National Household Survey on Living Conditions and Poverty (ENAHO – acronym in Spanish) is one of the main surveys that allows studies on the social determinants of health [18]. According to PAHO, the ENAHO reported an increase in the use of medical consultations of 10.7 percentage points between 2010 and 2015 [17]. Despite this, there is little information on socioeconomic inequalities in the utilization of the medical consultation service. This study aims to analyze and decompose socioeconomic inequalities in medical consultation service utilization in Peru using the ENAHO 2019. The decomposition identifies the factors that contribute most to inequality. The results can help decision makers to design measures aimed at universal access to health services.

METHODS

Study setting

Peru is home to 33 million people, of which almost 30% live in Lima, the capital city. The rest of the population lives in coastal region, highlands and jungle [19,20]. The Peruvian health system is fragmented and segmented into four sectors. First, the comprehensive health insurance (SIS – acronym in Spanish) aims to provide coverage to people living in poverty. The SIS is financed by public taxes and covers almost 65% of the total population [21]. Next, the Social Health Insurance (EsSalud) provides health and pension coverage to workers [21]. EsSalud is financed through payroll deductions and depends on the Ministry of Labor. In addition, the Ministry of Defense finances insurance for members of the Armed Forces and the Police [21]. Finally, there are several private insurers covering almost 10% of the population, with some overlap of coverage with EsSalud [21].

Hospital centers and health centers are concentrated in urban areas; there are also differences in the accessibility and availability of health services according to regions in Peru. Therefore, timely access to health care is limited for those living in rural settings [22,23].

Study design and data source

This study used secondary data from the ENAHO 2019, prepared by the National Institute of Statistics and Informatics (INEI – acronym in Spanish). The ENAHO is an annual survey representative of the Peruvian population that collects information on housing and household characteristics, as well as characteristics of household members on education, health, employment and economic income, household expenditures, among others [24]. Data were used from the housing and household characteristics module (base enaho01-2019-100), the household member characteristics module (base enaho01-2019-200), the education module (base enaho01a-2019-300), the health module (base enaho01a-2019-400), and the summary module (base sumaria-2019-2019). Documents related to the ENAHO 2019 design, instruments, procedures, and manuals are published on the INEI website <https://proyectos.inei.gob.pe/microdatos/>.

Study population and sample

The ENAHO 2019 used a probabilistic, area-based, stratified, multistage and independent sample in each study department. Data collection was conducted through a survey of all usual residents of the household with direct method by previously trained enumerators. The informant could be the head of household, spouse, percipients, persons 18 years of age or older [25]. The sample size of the ENAHO 2019 was 36,994 dwellings (23,346 dwellings in urban areas and 13,648 in rural areas) and the data are freely available on the INEI website.

This study considered a final subsample of 52,715 persons who reported illness by answering affirmatively to any of the following questions of the ENAHO 2019 health module: "In the last 4 weeks, did you present any (a): symptom or discomfort (cough, headache, fever, nausea); illness (flu, colitis, etc.); relapse of chronic illness; accident?". Household members aged 18 years or older were included

and those with incomplete data on the variables of interest or who reported having special basic education were excluded. Details of the selection of persons for the subsample are presented in Figure 1.

Variables

Outcome variable

The dependent variable is the use of medical consultation in the last 4 weeks in persons who presented any symptom or discomfort, illness, relapse of chronic disease and/or accident. The dependent variable was dichotomized as 1 in case of use of medical consultation and 0 otherwise.

Independent variable

The independent variable is the household's monthly per capita expenditure, measured in soles. Monthly per capita expenditure is a proxy variable for ordering households according to their level of wealth. Since household expenditures are more stable compared to household income, the structure of expenditures and consumption expenditures can reflect household economic wealth [26]. In addition, INEI and other national institutions jointly estimated poverty levels using household expenditures [27]. Monthly per capita expenditure was constructed by dividing the total annual household expenditure by twelve months and the total number of household members.

For the descriptive analysis, expenditure was expressed as quintiles. For the analysis of concentration indexes and concentration curves, expenditure was expressed as a continuous variable through monthly per capita expenditure. For the decomposition analysis, expenditure was expressed as monthly per capita expenditure and as quintiles.

Covariates

Covariates were selected based on previous studies [4,6,10–15] and based on Andersen's theoretical model [7,8]. The theoretical model indicates that the use of health services is a function of three main factors: predisposing factors, enabling factors, and need factors. Predisposing factors are composed

of sociodemographic characteristics, social structure characteristics, and health beliefs of individuals. Enabling factors correspond to people's means and capacity to use health services at both the individual and community levels. The need factors correspond to variables that predispose to the use of health services due to the individual's health problems.

The predisposing characteristics considered in the analysis were age according to the classification of the Target Groups for the Comprehensive Care Programs of the Peruvian Ministry of Health (18 to 29 years / 30 to 59 years / 60 years and older) [28]; sex (male/female); language or mother tongue learned in childhood (non-native/native); educational level (up to primary / secondary / higher). The enabling resources selected in the study are geographic region (coast / highlands / jungle); area of residence (rural / urban) and health insurance (no insurance / comprehensive health insurance / others). Others category was made up of EsSalud, private health insurance, health provider entity, Armed Forces. and police. The need factors included in the analysis are suffering from a chronic disease or discomfort such as arthritis, hypertension, asthma, rheumatism, diabetes, tuberculosis, human immunodeficiency virus (HIV), cholesterol, etc. (yes/no); presence of any permanent limitation or difficulty (yes/no) that prevents or hinders you from carrying out your daily activities normally, such as limitation to move or walk, to use arms or legs; limitation to see, even when wearing glasses; limitation to speak or communicate, even when using sign language or other; limitation in hearing, even when using hearing aids; limitation in understanding or learning (concentrating and remembering); limitation in relating to others, by their thoughts, feelings, emotions or behaviors, according to the questions of the Washington Group on Disability Statistics [29].

Statistical analysis

Through Stata® v17.0 software (Stata Corporation, College Station, Texas, USA) the statistical processing and analysis was performed, specifying the sampling characteristics of the ENAHO 2019 including the sampling design and the expansion factor. A $p < 0.05$ was considered statistically significant in all tests. After downloading the 2019 "ENAHO Methodology UPDATED" bases (<https://proyectos.inei.gob.pe/microdatos/>) that included our study variables we generated a new

database that joined the downloaded databases to perform data management and statistical analysis. Nominal variables were described using absolute frequencies, relative frequencies and their 95% confidence interval (CI).

Inequalities in the use of the medical consultation service were analyzed using the concentration curves (CC) and Erreygers concentration indexes (ECI) described by Wagstaff *et al.* [30]. The CCs describe the relationship between the cumulative percentage of people studied according to the wealth index and the cumulative percentage of medical consultation service use in relation to the diagonal line of equality. Inequality is expressed according to the concavity of the curve and reflects greater inequality the further the CC is from the equality line. If it is below or above the equality line, there is greater use of medical consultation by people with a higher or lower wealth index, respectively. The ECI is a coefficient whose values range between -1 and 1, with zero being the absence of inequality between groups, the positive value concentrates the distribution in the richest and a negative value in the poorest [31].

The decomposition analysis was performed using Van Doorslaer's methodology [32] by means of a generalized linear regression model, based on a linear approximation of the partial effects of each factor evaluated on the sample means. This measure estimates the elasticity, concentration index, contribution and percentage contribution for each independent variable to be included in the analysis.

To decompose the inequalities, the elasticity, the concentration index, the absolute and relative contribution of the concentration index to inequality were estimated for each independent variable. Elasticity denotes the change in the outcome of interest associated with a one-unit change in the independent variable [32]. A positive and negative sign on the elasticity indicates an increasing or decreasing change in the outcome of interest in association with a positive change in the independent variable [32]. The concentration index represents the concentration ratio of the independent variables with reference to the wealth index. A positive/negative value means that the variable of interest is more prevalent among richer/poorer individuals [32]. Finally, the absolute and relative contribution represent the absolute and relative contribution of each independent variable, included in the model,

to the overall socioeconomic inequality in the variable of interest. A positive/negative contribution or percentage contribution in a variable result in an increase/decrease in observed socioeconomic inequality [32].

Ethical considerations

The Ethics and Research Committee of the Universidad Científica del Sur approved the project of the present study (registration code 680-2021-POS50). However, the study used a secondary database that is freely available on the INEI's microdata web page (<https://proyectos.inei.gob.pe/microdatos/>). In the databases, respondents are coded so as not to be identified.

RESULTS

A total of 52,715 persons who reported a health problem during the last four weeks were included in the study. Table 1 describes the demographic and socioeconomic characteristics of the study population. More than half of the population (51.9%) was between 30 and 59 years of age, and the majority of the population was female (56.3%). Approximately a quarter of the population (23.6%) spoke a local or native language (e.g., Quechua or Aymara), while a third of the population had attained primary education (34.3%) and 36.1% had attained secondary education. Almost six out of ten people have at least one chronic disease (59.7%), while the vast majority of the population reported no physical limitations (92.3%). The majority of the population resides in urban areas (77.5%) and approximately a quarter of the population has no health coverage (24.7%).

Table 2 reports the frequency of medical consultation among study participants who reported a health problem during the previous four weeks. Overall, the frequency of medical consultation was 25.4% (95% CI: 24.8 % - 26.1 %). The frequency of medical consultation was different according to age ($p < 0.001$), sex and language. Women reported attending more medical consultations compared to men (27.9% vs. 22.2% respectively, $p < 0.001$). More medical consultations were reported in non-native speakers than in native speakers (26.6% vs. 21.6%; respectively, $p < 0.001$). In individuals with higher education, those living on the coast, those living in the urban area and the wealthier, a higher

frequency of medical consultation was evidenced.

The CCs are shown in Figure 2. According to the curves, a pro-rich trend was identified for all population subgroups and in general, for all participants. In panel B, the CCs report that inequality for medical consultation among individuals aged 60 years and older is higher compared to younger individuals. In addition, native speakers and those with primary education, those living in the highlands, and those living in rural areas reported greater inequalities compared to non-native speakers, those with higher educational attainment, those living in areas other than the highlands, and those living in urban settings (see panel D, panel E, panel H, and panel I, respectively).

The concentration indexes are shown in Table 3. Overall, the positive value of ECI (0.199) indicates an inequality in favor of the wealthy in the use of medical consultation. A positive value was also reported in all subgroup analyses. When we reported the ECI by population subgroups, we found no differences in inequality in the use of medical consultation by sex ($p = 0.323$) or language ($p = 0.064$). We found differences in inequality in the use of medical consultation according to age ($p < 0.001$), educational level ($p < 0.001$), chronic disease ($p < 0.001$), physical limitations ($p < 0.001$), region of residence ($p < 0.001$), area of residence ($p < 0.001$), and health insurance coverage ($p = 0.007$).

Table 4 shows the decomposition of the ECI according to the covariates included in the study. For the elasticity findings, the value for the female sex was 0.09, which means that a change between male and female increases, by 9%, the probability of widening inequality in the use of medical consultations. In addition, a change from having none to having a chronic disease increases the probability of widening inequality by 23%. On the other hand, a change in the region of residence from coast to highlands reduced the probability of widening inequality by 6%. For the concentration indices, we find that the use of medical consultations for people aged 60 years or older, people with higher education, people with a chronic disease, people living in urban areas and people with other health insurance was concentrated among the richest. In contrast, the use of medical consultations for those who speak their mother tongue and SIS affiliates was concentrated among the poorest. Finally, the main factor of inequalities in the use of medical consultations is having other health insurance, having

a chronic disease or living in urban environments. Conversely, the main factor in reducing inequality was SIS coverage.

DISCUSSION

This study estimated inequalities in the utilization of medical consultations in Peru and identified the factors that explain inequalities in utilization. It found that, in 2019 in Peru, 25.4 % of people used medical consultations during the last 4 weeks, although their utilization was concentrated among the wealthiest individuals. When decomposing these inequalities, it was found that the greatest contributors were having another type of health insurance (EsSalud, private health insurance, health provider entity, Armed Forces. and police), residing in an urban area, belonging to the richest and richest wealth quintile, having a chronic disease and residing in the highlands of Peru.

The prevalence of health services utilization reported in this study (25%) is lower than that reported in studies conducted in Italy (28%) [33], Brazil (95.3 %) [34], Jamaica (62.9%), Mexico (64.7%), Panama (58.1%) [35], Paraguay (66.5 %) [36] and Argentina (40.6%) [37]. These differences between the figures of the countries and our finding could be attributed to the time horizon for measuring the utilization of medical consultations, since most studies are based on the utilization of medical consultations in the last 12 weeks. In addition, a study conducted in Peru reported a higher proportion of utilization of outpatient medical consultation in 2011 (34.8%) than reported in our study, however, this figure was obtained from people who had health insurance (SIS, EsSalud, Armed Forces or private), while people who did not have health insurance only had a medical consultation in 19.1%, which could expose that the possession of health insurance would be a determining factor in the use of health services [38]. Additionally, our finding agreed with that reported in the study conducted by Ypanaqué-Luyo, where women, people affiliated with health insurance, people at the extremes of life, residents of the coast and with chronic diseases had a higher use of a medical consultation [38]. On the other hand, we should note that, in low- and middle-income countries, people are exposed to barriers that could limit the use of health services and not allow adequate health coverage [39]. These factors are related to lack of education, cultural barriers (social stigma, lack of decision-making power, language or traditional medicine preference), poor perception of health services, and low income,

which would worsen health status and disease burden in individuals, especially for diseases that require continuous health care [39]. Existing strategies should be strengthened to improve health systems and ensure the universal health coverage required to reduce inequalities in people's health and the economic impact on countries.

According to the analysis of inequalities, the utilization of a medical consultation was concentrated among the wealthiest individuals. These results are similar to those reported in studies conducted in Chile [14], Uruguay [13], Kenya [40], Italy [33], China [11] and Paraguay [36], where the use of health services was concentrated among people with greater economic resources. The findings are aligned with the hypothesis that wealth has a directly proportional relationship with access to timely and quality health services for individuals, resulting in better long-term health outcomes [41,42]. On the other hand, the poorest people present barriers that prevent access to adequate health care, due to difficulty in meeting health expenses and distrust in services [43]. This problem has been reported in Peru, where people with lower economic resources had 28 percentage points more problems of access to health services than people with greater resources [44]. This gap has been addressed by the health system through Emergency Decree 017-2019 that seeks to expand health coverage by narrowing the gap for people who do not have health insurance [45]; however, our data will not reflect the impact of this measure on the use of health services due to its early incorporation.

In relation to the decomposition analyses, the major contributors to this inequality were having another type of health insurance (EsSalud, private health insurance, health provider, Armed Forces and police), residing in an urban area, belonging to the richest and richest wealth quintile, having a chronic disease, and residing in the highlands of Peru. According to previous studies, having health insurance would increase the probability of seeking outpatient medical care and reduce out-of-pocket spending on health, which would allow adequate access to medical consultation [46]. In addition, people residing in rural areas have a lower probability of having medical care due to long distances between the health facility and the place of residence and low economic income due to their type of occupation (mainly agriculture and livestock) [47]. Likewise, the use of health services in people with chronic diseases is based on the need for long-term and complex management to control their diseases, and on the number of diseases they suffer from, being that people with multimorbidity have a higher use of health

services [48]. Finally, it highlights a finding contrary to what has been reported in the literature, where people residing in the highlands contribute to this pro-rich inequality. This finding could reflect an improvement in the healthcare system in this region, which is observed with the steady increase in the number of physicians per 1000 inhabitants between 2009 and 2016 [49].

The findings of this study would have an impact on existing public policies in the Peruvian territory. Although the utilization of medical consultations increased between 2015 and 2019, this increase does not reflect improvements in inequalities in utilization. Under the Universal Health Insurance Framework established in 2009, our results provide an overview of the inequality gap that exists between the poor and the rich in order to redouble efforts to insure populations living in poverty and extreme poverty. Furthermore, this inequality gap will allow government institutions to base their strategies on the main contributors to this socioeconomic inequality in order to achieve greater health coverage and reduce the health and economic impact of diseases on the population. Finally, the Peruvian health system should carry out routine preventive-promotional programs and increase the capacity of health facilities in rural areas to decrease the burden of disease and morbidity and mortality in these underserved populations.

The present study used a survey with nationwide representativeness, which allows us to extrapolate our findings to the entire Peruvian territory. However, it has some limitations. First, the questions asked to the respondents are based on specific events of the past, which could lead to a memory bias. Second, other variables that could be useful for understanding these inequalities were not included due to their unavailability in the database. These variables are related to self-perception of health status, cultural perception of health systems, waiting time to care or community-level variables (such as distance to a health facility). Finally, although we have analyzed recent data (2019), the changes produced by the COVID-19 pandemic could generate a change in our findings because this health crisis generated a restructuring of health care in Peru, especially in populations with a continuous requirement for outpatient care, so it would be necessary to conduct studies that evaluate the change in the time of health care during this health crisis.

CONCLUSIONS

It was found that 25 out of every 100 Peruvians who had a disease accessed a medical consultation

in 2019. In addition, medical consultation was concentrated in people with greater economic resources, where the main contributors were related to socioeconomic and geographic determinants. Despite the fact that, government institutions have sought to increase health coverage in the Peruvian population, there is still a socioeconomic gap between the poor and the rich. Therefore, the search for more equitable access to health services must consider the main contributors to this inequality in order to lessen the negative impact of inadequate disease control in the population.

LIST OF ABBREVIATIONS

LAC: Latin America and the Caribbean

PAHO: Pan American Health Organization

ENAHO: National Household Survey on Living Conditions and Poverty

SIS: Seguro Integral de Salud

EsSalud: Peruvian Social Security

INEI: National Institute of Statistics and Informatics

HIV: Human Immunodeficiency Virus

CC: Concentration curves

ECI: Erreygers concentration index

CI: Confidence interval

STATEMENTS:**ETHICAL APPROVAL AND CONSENT TO PARTICIPATE**

Not applicable

CONSENT FOR PUBLICATION

Not applicable

AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of this study are publicly available on the website of the National

Institute of Statistics and Informatics (INEI) (<https://proyectos.inei.gob.pe/microdatos/>). The databases can be obtained by accessing the "Survey Query" tab, selecting the "ENAHO Methodology UPDATED" option under "Survey". Then, in "(Choose a Survey)" select "Living Conditions and Poverty - ENAHO", for the year 2019, annual period.

CONFLICT OF INTERESTS

The authors declare that they have no conflicts of interest.

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AUTHOR CONTRIBUTIONS

R.D-R. and A.H-V. proposed the research idea, designed the study, collected, processed, analyzed the data, and prepared figures. R.D-R., A.H-V., R.V-F., and C.R-R. participated in the validation and interpretation of the data, wrote the manuscript, and approved the final version. All authors reviewed the manuscript.

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Submission ID: 2fdb67d9-f5e6-4a29-82e2-5875adced280

Manuscript title: "Socioeconomic inequalities in the use of medical consultation services in Peru, 2019"

Dear Editor,

Many thanks for sharing with us the comments made by the reviewers. We consider that the comments will increase the quality and clarity of the manuscript. Please, find below the point-by-point reply for each comment.

Reviewer 1

1. It is proposed to analyze inequality under a theoretical model, Andersen, which proposes predisposing factors, facilitating factors and necessity factors. However, the factors addressed in the analysis are insufficient with respect to those supported by the model. In particular, predisposers, including those related to information, beliefs, and conceptions of health, a worldview for some indigenous peoples, are excluded from the covariates contained in the analysis. Among the enabling factors, it is doubtful whether physical disability, mother tongue and educational level account for the ability to use. Although the discussion addresses the existence of other factors that the study did not consider, probably due to a lack of data in this regard, it would be convenient to clearly state that the use of health services is highly influenced by the perception of their quality, which was never analyzed at any time. The authors should include a few paragraphs to explain why relevant contents of the inequity assessment are not addressed, from the predisposing factors of potential patients to the aspects of the health system that are not analyzed.

Response. We appreciate the comment. In the context of our study, we acknowledge that the omission of beliefs and conceptions of health as relevant predisposing factors to analyze inequality in the use of medical consultations in Peru limits the power of our analyses to explain inequality. However, our research scope primarily focused on measurable and quantifiable variables to ensure a rigorous analysis. While beliefs and conceptions of health are undoubtedly influential, they often involve deeply ingrained cultural and subjective elements that are challenging to capture accurately through surveys or data collection. Moreover, these factors can be highly context-specific and vary significantly among different population groups, making it difficult to generalize findings. Secondly, including such qualitative and subjective elements would introduce a level of complexity that might complicate the statistical analysis and interpretation of results, potentially obscuring the core factors that we aimed to investigate.

On the other hand, the inclusion of physical disability, mother tongue, and educational level as factors accounting for the ability to use healthcare services in our study is grounded in several compelling reasons. Firstly, physical disability significantly impacts an individual's mobility and their communication abilities. This directly affects their ability to access healthcare facilities and communicate effectively with healthcare providers, making it a critical consideration in understanding healthcare utilization disparities. Secondly, mother tongue plays a pivotal role in effective communication within healthcare settings. Patients who do not speak the dominant language of a region may face language barriers, which can hinder their comprehension of medical advice and the healthcare system's navigation. In Peru, the inclusion of mother tongue as a variable that

may affect the healthcare service utilization is relevant since there exists an important percentage of the population that speak a language different from Spanish (see for example this recent news: <https://www.defensoria.gob.pe/mas-de-4-millones-de-ciudadanos-y-ciudadanas-indigenas-tienen-derecho-a-ser-atendidos-en-sus-propias-lenguas/>).

Lastly, educational level is often correlated with health literacy, understanding healthcare instructions, and the ability to make informed decisions about one's health. Individuals with higher educational attainment may have better access to health information and may be more empowered to seek appropriate care.

These factors, while not exhaustive, are recognized as practical determinants of healthcare access and utilization and are essential to address in our study to gain a comprehensive understanding of healthcare inequality. The factors are described in Andersen's theoretical model.

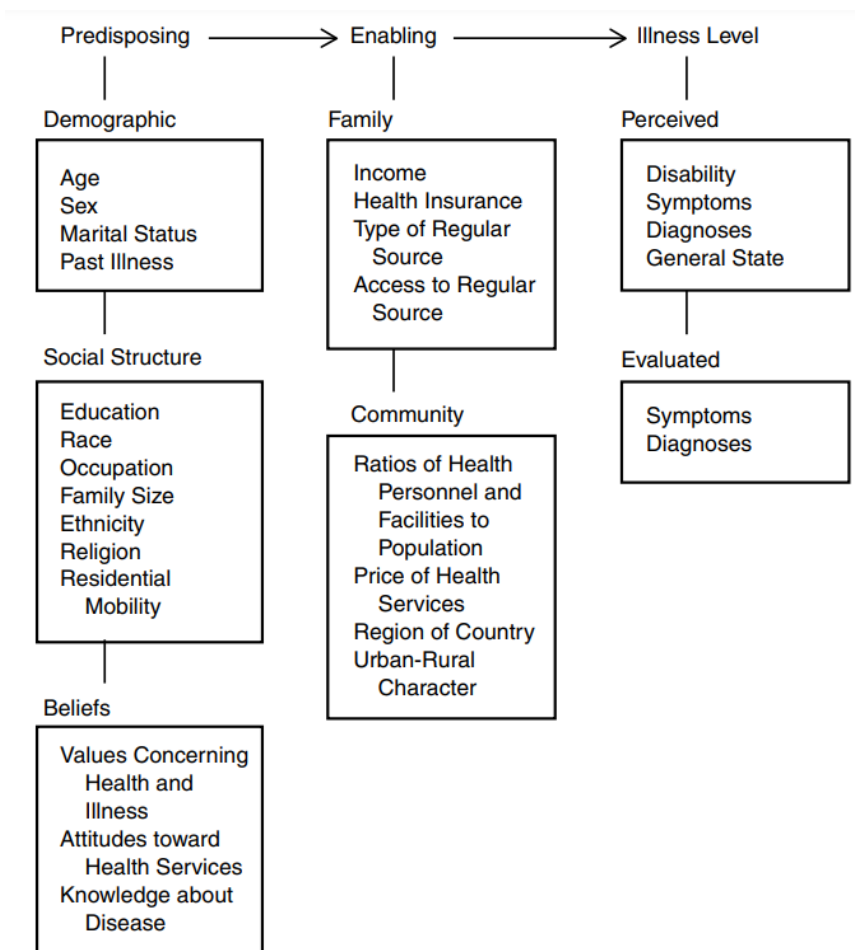


Figure 1. Individual determinants of health service utilization.
Source. Andersen R, Newman JF. Societal and Individual Determinants of Medical Care Utilization in the United States. *Milbank Q.* 2005;83(4):10.1111/j.1468-0009.2005.00428.x. doi:10.1111/j.1468-0009.2005.00428.x

All in all, we consider your comment really insightful. We added a paragraph to explain why relevant contents of the inequity assessment are not addressed, from the predisposing factors of potential patients to the aspects of the health system that are not analyzed.

Changes. The following paragraph was added: ‘While beliefs and conceptions of health are undoubtedly influential, they often involve deeply ingrained cultural and subjective elements that are challenging to capture accurately through surveys or data collection. Moreover, these factors can be highly context-specific and vary significantly among different population groups, making it difficult to generalize findings. Secondly, including such qualitative and subjective elements would introduce a level of complexity that might complicate the statistical analysis and interpretation of results, potentially obscuring the core factors that we aimed to investigate. Lastly, our theoretical model that underpin our analysis is based on individual determinants that influences the access and use of healthcare services. The model has no power to assess community-level variables. Analyzing those variables requires different research objectives and another theoretical model that supports our analyses. In the Peruvian context, future research endeavors should delve into these nuances to gain a more comprehensive understanding of healthcare utilization inequalities.’

2. The limitations of the survey with respect to some types of data are pointed out, which should be an acceptance by the authors of the possibility of providing more complete information for decision-making. The results allow us to point out the difference between access and use, which can clearly be observed, but not necessarily caused by inequality, for which the analysis lacks what is related to beliefs in health and social structure, especially in indigenous peoples.

Response. This is a crystal clear observation to identify the differences between access to healthcare services and use of healthcare services. In summary, access to healthcare services deals with the availability and opportunity to access the healthcare system, while utilization focuses on the actions individuals take to actually seek and receive healthcare services. Despite our analyses do not capture some relevant variables that can explain differences in access and use of healthcare services (for example beliefs and conception of health), we included variables that may explain differences in the access to healthcare services (for example geographic region, socioeconomic status, area of residence and health insurance coverage that account for social structure (see Figure 1 above)) and in the use of healthcare services (mostly focused in the individual health’s needs). In our previous reply, we addressed this limitation.

Changes. None.

3. Including Erreyger's concentration curves and concentration indices in the analysis did not provide anything really relevant to support the formulation of public policies in that country. Otherwise, the results are practically what is known in Latin America, without offering further analysis on the fragmentation of the system as a cause of inequity and access and quality of care as a determinant of health, recently recognized (Health People 2030).

Response. Thank you for your comment. We agreed that our data limitations hinder us from analyzing the inequality through the lens of the fragmentation of the health system in Peru. However, our theoretical model that underpin our analysis is based on individual determinants that influences the access and use of healthcare services. The model has no power to assess institutional factors such as the level of fragmentation of the healthcare system, and has no power to assess the quality of care as a determinant of health. Analyzing those factors

requires different research objectives and another theoretical model that supports our analyses. The next step for our findings is to analyze those institutional factors and the fragmentation of the health system as a key driver for inequalities in access and use of healthcare services.

In addition, we consider that our findings provide relevant evidence for the policy decision makers. Concentration indices play a pivotal role in informing and supporting the formulation of effective public policies aimed at addressing healthcare disparities and promoting equitable access to services. These indices offer a quantitative and precise assessment of the distribution of health-related outcomes or access to healthcare services across different segments of the population, often categorized by socioeconomic status. By systematically measuring the extent to which service utilization is concentrated among particular groups, concentration indices provide policymakers with a clear and evidence-based understanding of where inequities exist.

This critical insight enables policymakers to prioritize interventions and allocate resources efficiently. Concentration indices not only reveal disparities but also help identify the root causes, enabling the formulation of targeted, data-driven policies to rectify the underlying inequalities. For example, if a concentration index demonstrates that healthcare service is concentrated among high-income individuals, policymakers can design subsidy programs, enhance healthcare access in underserved areas, or develop educational initiatives to reduce these disparities. The use of concentration indices fosters transparency, accountability, and evidence-based decision-making in healthcare policy development, ultimately leading to more equitable and accessible healthcare systems that benefit all members of society.

Changes. None.

Reviewer 2

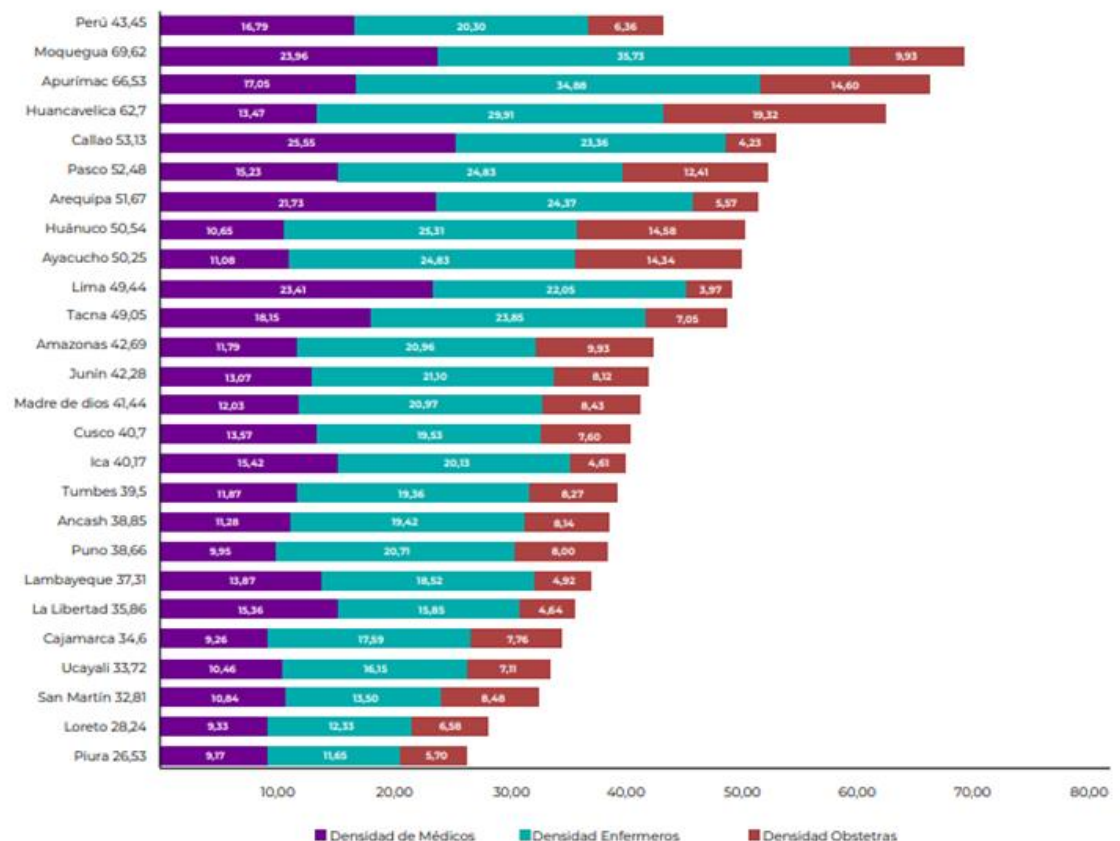
1. El diseño del estudio es correcto y al basarse en la ENAHO 2019 gana en representatividad y solidez de los métodos de muestreo. Los métodos de análisis de desigualdades son adecuados y la presentación de resultados y discusión son claras e ilustrativas, al igual que las tablas y gráficos presentados. La discusión recoge correctamente las limitaciones del estudio. Si bien en la discusión se hace referencia a la disponibilidad y distancia de los servicios de salud como un factor determinante en el acceso, podría ilustrarse el peso de dicho factor en Perú presentando los índices de personal de salud por cada 1,000 habitantes en las distintas áreas geográficas de estudio. Esta información podría insertarse en la introducción del artículo o los métodos, apartado Study setting.

Response: Thank you for your comment. The World Health Organization (WHO) has designed the human resources density ratio in health (HRHR), which for the year 2015 is 44.5 physicians, nurses and midwives per 10,000 inhabitants to provide essential health services to the population [1]. However, the density of human resources in Peru according to the year 2021 is 16.79 physicians; 20.30 nurses and 6.36 obstetricians per 10000 inhabitants [2]. In addition, the highest density of physicians per 10000 inhabitants in Peru is found in the Coast (Callao, Moquegua and Lima) and the Highlands and Jungle contain the departments with the lowest density of physicians per 10000 inhabitants [2]. The description of the

data found is included in the section "Setting of the study" and Figure 1 from which the data were obtained is included below..

Gráfico N° 01

PERÚ: DENSIDAD DE RECURSOS HUMANOS EN EL SECTOR SALUD, SEGÚN DEPARTAMENTO, 2021
(Por cada 10 mil habitantes)



Fuente:
Base de Datos Nacional de Recursos Humanos del MINSA y Gob. Regionales 2021.
Información remitida por ESSALUD 2021.
Información remitida por la Sanidad de la PNP 2021.
Información remitida por la Sanidad de la Marina de Guerra del Perú 2021.
Información remitida por la Sanidad del Ejército del Perú 2021.
Información remitida por la Fuerza Aérea del Perú 2021.

Información remitida por SISOL 2021.
Información remitida por el Instituto Nacional Penitenciario 2021.
Información remitida por el Ministerio Público 2021.
Información remitida por el Ministerio de Educación 2021.
Información remitida por el Sector Privado 2021.
Elaboración: Observatorio de Recursos Humanos en Salud - DIGEP - MINSA.

References:

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2. Información de Recursos Humanos en el sector Salud. Ministerior de Salud. 2022. [Internet]. [cited 2023 Nov 4]. Available from: <https://bvs.minsa.gob.pe/local/MINSA/5783.pdf>

Changes: The following paragraph was added: "In addition, the World Health Organization (WHO) has designed the human resources density ratio in health (HRHR), which for the year 2015 was 44.5 physicians, nurses and midwives per 10000 inhabitants to provide essential health services to the population [1]. However, the density of human resources in Peru according to the year 2021 is

16.79 physicians, 20.30 nurses and 6.36 obstetricians per 10000 inhabitants [2]. Furthermore, the highest density of physicians per 10,000 inhabitants in Peru is found in the Coast (Callao, Moquegua and Lima) and the Highlands and Jungle contain the departments with the lowest density of physicians per 10,000 inhabitants [2].

2. En las conclusiones, la frase “It was found that 25 out of every 100 Peruvians who had a disease accessed a medical consultation in 2019” debe modificarse pues la ENAHO 2019 hace referencia a las consultas realizadas en las 4 semanas previas a la entrevista, no a todo el 2019.

Response: Thank you for your comment. The requested changes have been made.

Changes: Now, in the conclusion, it reads: “*It was found that 25 out of every 100 Peruvians who had a disease accessed a medical consultation during the four weeks prior to ENAHO 2019.*”

Análisis de las desigualdades socioeconómicas en la utilización del servicio de consulta externa en el Perú, 2019

RESUMEN

Fondo. Las desigualdades socioeconómicas de las personas influyen en el acceso a la oferta o servicios de salud y constituyen un desafío para los sistemas sanitarios, sobre todo, en los países de bajos y medianos ingresos. En el Perú, se ha estimado un aumento en la utilización de los servicios médicos, sin embargo, el estudio de las desigualdades en la utilización de los servicios médicos es limitado. Por ello, el objetivo del presente estudio fue analizar y descomponer las desigualdades socioeconómicas en la utilización del servicio de consulta externa en el Perú.

Métodos. Se realizó un estudio de tipo analítico de corte transversal utilizando datos secundarios de la Encuesta Nacional de Hogares sobre Condiciones de Vida y Pobreza 2019. La variable desenlace fue el uso de una consulta externa atendida por un médico en las últimas 4 semanas en personas que presentaron algún síntoma o malestar, una enfermedad, alguna recaída de enfermedad crónica y/o accidente. Se utilizaron curvas de concentración e índices de concentración de Erreygers para determinar las desigualdades socioeconómicas, y un modelo de regresión lineal generalizado para el análisis de descomposición de las desigualdades.

Resultados. Se incluyó a un total de 52 715 personas en el estudio. La frecuencia de consulta externa fue del 25,4 % (intervalo de confianza al 95 %: 24,8 % - 26,1 %). En el análisis de desigualdad, se encontró que el uso de las consultas externas se concentró en las personas más ricas. Los principales factores contribuyentes fueron tener otro tipo de seguro de salud (EsSalud, un seguro privado de salud, una entidad prestadora de salud, FF. AA. y policiales), residir en un área urbana, pertenecer al quintil de riqueza rico y más rico, tener una enfermedad crónica y residir en la sierra del Perú.

Conclusiones. Sobre la base a nuestros hallazgos, las instituciones gubernamentales que buscan alcanzar un acceso a los servicios de salud equitativo deben considerar a los principales factores contribuyentes de esta desigualdad en la formulación de estrategias, para aminorar el impacto negativo del control inadecuado de las enfermedades en la población.

Palabras claves. Disparidades Socioeconómicas en Salud, Atención Médica, Servicios de Salud, Perú.

INTRODUCCIÓN

La desigualdad en el acceso a la atención sanitaria es la diferencia, variación o disparidad que existe entre las personas o grupos poblacionales para acceder a los servicios de salud [1,2]. En el Perú, a pesar de que la salud es un derecho universal y es considerada por la Constitución Política dentro de los derechos sociales y económicos [3], existe desigualdad en el acceso de la atención sanitaria [4]. En 2009 se aprobó la “Ley Marco de Aseguramiento Universal en Salud” que contempla el principio de equidad, con lo cual el Estado realiza una mayor cobertura de la atención sanitaria en las personas más vulnerables y con menos recursos económicos [5]. Así, el Perú busca de manera progresiva que toda persona cuente con un seguro de salud efectivo que le permita acceder y financiar los servicios preventivos, promocionales, recuperativos y de rehabilitación en caso de requerirse [5].

La utilización de los servicios de salud por las personas, tal como la consulta externa, es una de las formas más comunes para evaluar las desigualdades en salud [4,6]. El modelo de Andersen describe que la utilización de los servicios de salud resulta de la interacción de tres dimensiones [7,8]. Estas dimensiones representadas por características predisponentes, recursos habilitadores y el uso de atención médica o de necesidad resultan en la utilización de los servicios de salud como si fuera un cuarto componente; considerándose el modelo un valioso aporte para el estudio de qué patrón de uso siguen los servicios de salud en los diferentes contextos [9].

Algunos estudios que han utilizado el modelo teórico de Andersen [7,8] para analizar dichas desigualdades han reportado una asociación entre las características predisponentes (por ejemplo, sexo, edad, estado civil), los recursos habilitadores (por ejemplo, cobertura de salud, empleo, ingresos) y el uso de atención médica o de necesidad [9]. Por ejemplo, en Irán y China se ha reportado que las personas con mayor nivel socioeconómico han utilizado servicios médicos ambulatorios con mayor frecuencia [10,11], mientras que en Suecia se han reportado mayores tasas de utilización de consultas con el médico general y médico especialista por las personas con mayor nivel socioeconómico [6]. Un determinante relevante de esta desigualdad es la cobertura de un seguro de salud complementario, que explicaría la desigualdad hasta en un 74,05 % en el área rural y 147,63 % en la urbana [10]. El ingreso es otro determinante que contribuye a la desigualdad hasta en un 124,6 % para la utilización de los servicios ambulatorios [11].

De manera similar, evidencia de estudios realizados en América Latina y el Caribe (LAC) reportan que la población con mayores recursos económicos tiene mayor utilización de los servicios de salud [12–15]. En LAC, donde los sistemas de salud son fragmentados y segmentados [16], el seguro de salud privado es un factor importante para explicar la desigualdad a favor de las personas de mayor nivel socioeconómico [12–15]. En el Perú se reportó un patrón similar en el cual las personas con mayor nivel socioeconómico tienen mayor utilización de consultas médicas asociadas a enfermedades o accidentes, siendo el gasto del hogar y el seguro de salud los factores que más contribuyen a la desigualdad [4]. En 2017 la Organización Panamericana de la Salud (OPS) reportó que del 2005 al 2015 el acceso a la atención en salud que se consideró necesario aumentó 11,5 puntos porcentuales, habiendo diferencias a favor de las personas que se ubican en los extremos de la vida, personas con mayor nivel educativo y personas más ricas [17]. Además, la utilización de la consulta médica se ha establecido alrededor del 30% a partir del 2010 con mayores tasas el 2015 en mujeres (32,1%), adultos mayores (42,1%), personas con educación superior universitaria (42,1%) y personas en el cuartil más alto de gasto per cápita (32,7%); mientras que el porcentaje es de 24,6 % para las personas del cuartil más bajo [17].

En el Perú, la Encuesta Nacional de Hogares sobre Condiciones de Vida y Pobreza (ENAHO) es una de las principales encuestas que permite realizar estudios sobre los determinantes sociales de la salud [18]. Según la OPS, la ENAHO reportó un aumento en la utilización de consultas médicas de 10,7 puntos porcentuales entre 2010 y 2015 [17]. Pese a ello, existe poca información sobre las desigualdades socioeconómicas en la utilización del servicio de consulta externa. Esta investigación tiene como objetivo analizar y descomponer las desigualdades socioeconómicas en la utilización del servicio de consulta externa en el Perú utilizando la ENAHO 2019. La descomposición identifica los factores que más contribuyen a la desigualdad. Los resultados pueden ayudar a los tomadores de decisiones a diseñar medidas orientadas al acceso universal de los servicios de salud.

MÉTODOS

Entorno del estudio

El Perú alberga 33 millones de personas, de las cuales casi el 30 % vive en Lima, la capital. El resto de la población vive en regiones costeras, andinas y en la selva amazónica [19,20]. El sistema de salud peruano está fragmentado y segmentado en cuatro sectores. En primer lugar, el Seguro Integral de Salud (SIS) pretende llevar

cobertura a las personas en situación de pobreza. El SIS se financia con impuestos públicos y cubre casi el 65 % de la población total [21]. Luego, el Seguro Social de Salud (EsSalud) brinda cobertura de salud y pensión a los trabajadores [21]. EsSalud se financia a través de descuentos de nómina y depende del Ministerio de Trabajo. Además, el Ministerio de Defensa financia el seguro para los miembros de las Fuerzas Armadas y de la Policía [21]. Por último, existen varias aseguradoras privadas que cubren casi el 10 % de la población, con cierta superposición de cobertura con EsSalud [21]. Los centros hospitalarios y los centros de salud se concentran en las zonas urbanas; existen también diferencias en la accesibilidad y disponibilidad de los servicios de salud según las regiones en el Perú. Por lo tanto, el acceso oportuno a la atención de la salud es limitado para aquellas personas que viven en entornos rurales [22,23].

Diseño del estudio y fuente de datos

Se realizó un estudio de tipo analítico de corte transversal utilizando los datos de la ENAHO 2019. La ENAHO es una encuesta anual representativa de la población peruana, llevada a cabo por el Instituto Nacional de Estadística e Informática (INEI), que obtiene información sobre las características de las viviendas y del hogar, así como características de los miembros que residen en el hogar en educación, salud, empleo e ingresos económicos, gastos del hogar, entre otros [24]. Se utilizaron datos del módulo de características de la vivienda y del hogar (base enaho01-2019-100), del módulo de características de los miembros del hogar (base enaho01-2019-200), del módulo de educación (base enaho01a-2019-300), del módulo de salud (base enaho01a-2019-400) y del módulo sumaria (base sumaria-2019). Los documentos relacionados con el diseño de la ENAHO 2019, instrumentos, procedimientos y manuales se encuentran publicados en el sitio web del INEI <https://proyectos.inei.gob.pe/microdatos/>.

Población y muestra del estudio

La ENAHO 2019 utilizó una muestra de tipo probabilístico, por áreas, estratificado, multietápico e independiente en cada departamento de estudio. La recolección de los datos se realizó a través de una encuesta a todos los residentes habituales del hogar con método directo por encuestadores previamente capacitados. El informante podía ser el jefe del hogar, el cónyuge, perceptores, personas de 18 años o más [25]. El tamaño de la muestra de la ENAHO 2019 fue de 36 994 viviendas (23 346 viviendas del área urbana y 13 648 del área rural) y los datos son de libre acceso en la página web del INEI.

Este estudio consideró una submuestra final de 52 715 personas que reportaron

enfermedad al responder de manera afirmativa a cualquiera de las siguientes preguntas de la ENAHO 2019 del módulo de salud: “En las últimas 4 semanas, ¿presentó usted algún (a): síntoma o malestar (tos, dolor de cabeza, fiebre, náuseas); enfermedad (gripe, colitis, etc.); recaída de enfermedad crónica; accidente?”. Se incluyó a los miembros del hogar con edad igual o mayor de 18 años y se excluyó a aquellas personas con datos incompletos en las variables de interés o que reportaron tener educación básica especial. Los detalles de la selección de personas para la submuestra se presentan en la Figura 1.

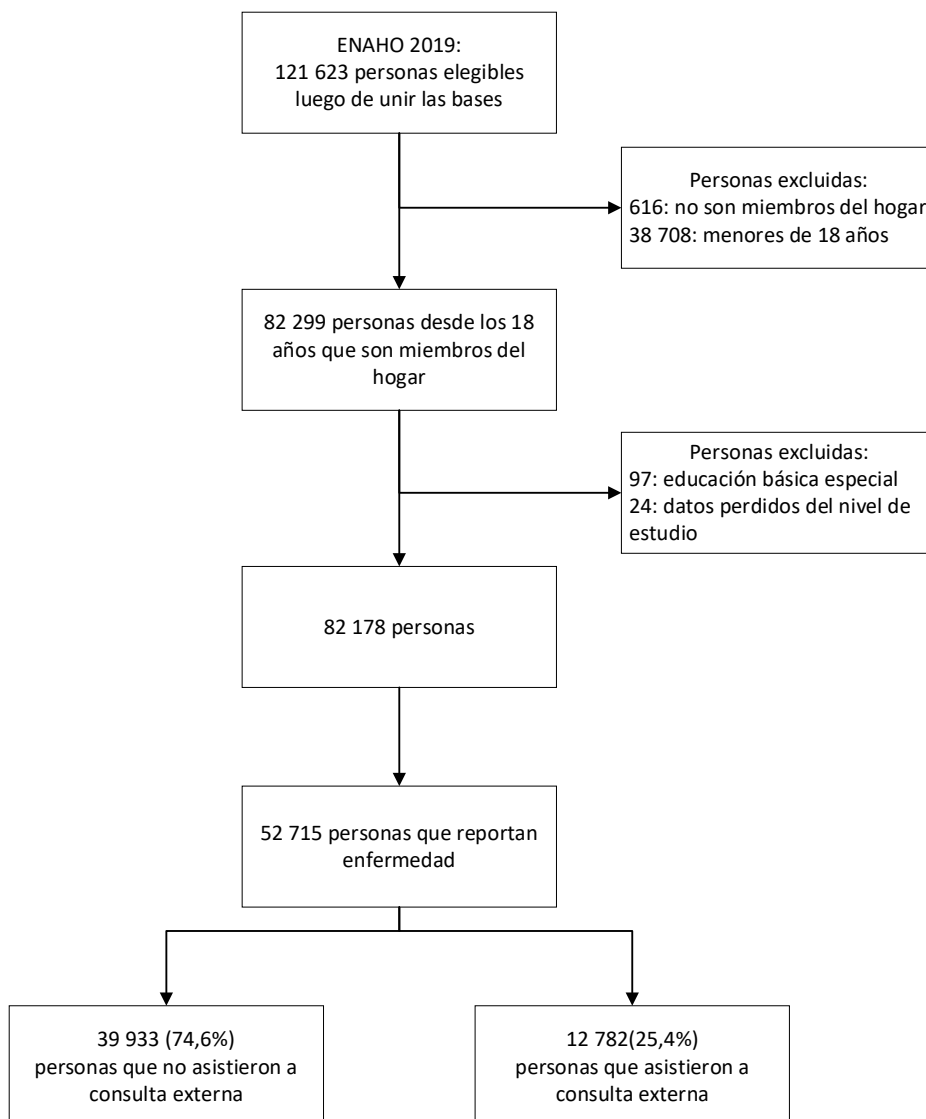


Figura 1. Diagrama de flujo sobre la selección de adultos incluidos en el presente

estudio

Variables de estudio

Variable dependiente [25]

La variable dependiente se construyó a partir de las personas que reportaron enfermedad las últimas 4 semanas según la ENAHO y que respondieron a las siguientes preguntas: “En las últimas 4 semanas, ¿presentó usted algún (a): síntoma o malestar (tos, dolor de cabeza, fiebre, náuseas); enfermedad (gripe, colitis, etc.); recaída de enfermedad crónica; accidente?” [18]. Codificamos como enfermos aquellas que respondieron que sí a la presencia de síntoma o malestar (p4021), enfermedad (p4022), recaída por una enfermedad crónica (p4023) o accidente (p4024) y como no enfermos a quienes respondieron que no a lo anterior (p4025). Posterior a ello, creamos la variable dependiente generando la variable de atención médica y considerando a aquellas personas que reportaron enfermedad y que, además, fueron atendidos por médico (p4041). Se dicotomizó como 1 en caso de utilización de consulta médica y 0 en caso contrario.

Variable independiente

La variable independiente es el gasto per cápita mensual del hogar, medido en soles. El gasto per cápita mensual es una variable proxy para ordenar los hogares según su nivel de riqueza. Dado que los gastos de los hogares son más estables en comparación con los ingresos de los hogares, la estructura de los gastos y los gastos de consumo pueden reflejar el bienestar económico de los hogares [26]. Además, el INEI y otras instituciones nacionales estimaron conjuntamente los niveles de pobreza utilizando los gastos de los hogares [27]. El gasto per cápita mensual se construyó dividiendo el gasto anual total del hogar entre doce meses y el número total de miembros del hogar.

Para el análisis descriptivo, el gasto se expresó como quintiles. Para el análisis de los índices de concentración y curvas de concentración, el gasto se expresó como variable continua a través del gasto per cápita mensual. Para el análisis de descomposición, el gasto se expresó como gasto per cápita mensual y como quintiles.

Covariables

Las covariables se seleccionaron con base a estudios previos [4,6,10–15] y con base al modelo teórico de Andersen [7,8]. El modelo teórico indica que el uso de los servicios

de salud es una función de tres factores principales: factores predisponentes, factores habilitadores y factores de necesidad. Los factores predisponentes están compuestos por características sociodemográficas, características de la estructura social y creencias sobre la salud de las personas. Los factores habilitadores corresponden a los medios y la capacidad de la población para utilizar los servicios de salud tanto a nivel individual como comunitario. Los factores de necesidad corresponden a variables que predisponen al uso de los servicios de salud debido a los problemas de salud del individuo.

Las características predisponentes consideradas en el análisis fueron la edad, de acuerdo a la clasificación del Ministerio de Salud del Perú sobre los Grupos Objetivo para los Programas de Atención Integral (de 18 hasta 29 años / de 30 hasta 59 años / de 60 años o más) [28]; el sexo (masculino/femenino); idioma o lengua materna aprendido en la niñez (no nativo / nativo); el nivel educativo (hasta primaria / secundaria / superior). Los recursos habilitadores seleccionados en el estudio son la región geográfica (costa/sierra/selva); el área de residencia (área rural/área urbana) y el seguro de salud (sin seguro / Seguro Integral de Salud [SIS] / otros seguros). Los factores de necesidad incluidos en el análisis son padecimiento de una enfermedad o malestar crónico como por ejemplo artritis (artritis reumatoide), hipertensión (hipertensión arterial), asma, enfermedad reumática, diabetes (diabetes mellitus), tuberculosis, infección por el virus de inmunodeficiencia humana (VIH), colesterol, etc. (sí/no) [18]; presencia de una limitación o dificultad permanente (sí/no) que le dificulte o impida desempeñarse con normalidad en sus actividades del día tales como limitación para moverse o caminar, limitación para usar los brazos o las piernas; limitación para ver, aun con anteojos; limitación para hablar o comunicarse, aun usando señales u otro lenguaje; limitación para oír, aun con el uso de audífonos; limitación para entender o aprender; limitación para relacionarse con otras personas, por sus pensamientos, sentimientos, emociones o conductas [18], según las preguntas del Grupo de Washington sobre Estadísticas de la Discapacidad [29] .

Análisis estadístico

A través del software Stata® v17.0 (Stata Corporation, College Station, Texas, EE. UU.) se hizo la obtención de datos, limpieza de datos, el procesamiento de datos y análisis estadístico de los datos, incluyendo las características del procedimiento muestral complejo de la ENAHO 2019 que incluyen el diseño muestral y el factor de expansión. Se consideró en todas las pruebas un $p < 0,05$ como estadísticamente significativo. Luego de descargar las bases de la “ENAHO Metodología ACTUALIZADA” del año 2019

(<https://proyectos.inei.gob.pe/microdatos/>) que incluían las variables de estudio se generó una base de datos que unía las bases de datos descargadas para realizar el manejo de datos y análisis. Las variables de tipo nominal fueron descritas utilizando frecuencias absolutas, frecuencias relativas y su intervalo de confianza al 95 %.

Se analizaron las desigualdades en la utilización del servicio de consulta externa mediante las curvas de concentración (CC) [30] y a través de los índices de concentración de Erreygers (ICE) descritas por Wagstaff y cols. [30]. Las CC describen la relación que existe entre el porcentaje acumulado de las personas incluidas en el estudio según el índice de bienestar (que se consigna en el eje horizontal) y el porcentaje acumulado del uso del servicio de consulta externa y su relación directa con la línea de dirección diagonal que representa un escenario de igualdad (que se consigna en el eje vertical) [30]. La desigualdad se determina de acuerdo con el nivel concavidad de la curva, reflejándose una mayor desigualdad cuanto más alejada se encuentra la CC de la línea diagonal de igualdad. Por otro lado, si la curva se localiza debajo de la línea de igualdad, existe mayor uso del servicio de consulta externa por parte de las personas que tienen un mayor índice de bienestar. Si por el contrario, la curva se encuentra arriba de la línea de equidad, existe un mayor uso de la consulta externa por parte de los individuos que presentan un menor índice de bienestar. El ICE es un coeficiente estimado con valores entre -1 (menos uno) y $+1$ (uno), donde cero corresponde a la ausencia de desigualdad entre grupos, y un valor positivo correspondería a una concentración de la distribución en los más ricos (mayor índice de bienestar) y un valor negativo en los más pobres (menor índice de bienestar) [31]. Para las CC se usó el comando “glcurve” y para el ICE se usó el comando “conindex” de Stata.

El análisis de descomposición del estudio se realizó utilizando la metodología descrita previamente por Van Doorslaer [32] aplicando un modelo de regresión lineal generalizado, basado en una aproximación lineal de los efectos parciales de cada variable evaluada en el cálculo de las medias muestrales. De esta forma se estima la elasticidad, además del índice de concentración, contribución y porcentaje de contribución para cada variable independiente que será informada como parte de los resultados [32].

Para descomponer las desigualdades, se estimaron para cada variable independiente la elasticidad, el índice de concentración, la contribución absoluta y relativa del índice de concentración a la desigualdad. La elasticidad denota el cambio en el resultado de interés asociado con un cambio de una unidad en la variable independiente [32]. Un signo positivo y negativo en la elasticidad indica un cambio creciente o decreciente en

el resultado de interés en asociación con un cambio positivo en la variable independiente [32]. El índice de concentración representa el índice de concentración de las variables independientes con referencia al índice de riqueza. Un valor positivo/negativo significa que la variable de interés es más frecuente entre las personas más ricas/pobres [32]. Por último, la contribución absoluta y relativa representan la contribución absoluta y relativa de cada variable independiente, incluida en el modelo, a la desigualdad socioeconómica general en la variable de interés. Una contribución positiva/negativa o contribución porcentual en una variable resulta en un aumento/disminución de la desigualdad socioeconómica observada [32]. Para el análisis de descomposición se usó el comando “glm family(binomial) link(logit)”.

Declaración de ética

El Comité de Ética e Investigación de la Universidad Científica del Sur aprobó el proyecto del presente estudio (código de registro 680-2021-POS50). Sin embargo, el estudio utilizó una base de datos secundaria que se encuentra de manera libre en la página web de microdatos del INEI (<https://proyectos.inei.gob.pe/microdatos/>). En las bases de datos se codifica a los encuestados para no ser identificados.

RESULTADOS

Se incluyeron en el presente estudio 52 715 personas que reportaron un problema de salud durante las últimas cuatro semanas. En la Tabla 1 se describen las características demográficas y socioeconómicas de la población de estudio. Más de la mitad de la población (51,9 %) tenía entre 30 y 59 años, y la mayoría de la población era de sexo femenino (56,3 %). Aproximadamente una cuarta parte de la población (23,6 %) habla un idioma local o nativo (por ejemplo, quechua o aimara), mientras que un tercio de la población alcanzó la educación primaria (34,3 %) y el 36,1 % logró la educación secundaria. Casi seis de cada diez personas tienen al menos una enfermedad crónica (59,7 %), mientras que la gran mayoría de la población no refirió ninguna limitación física (92,3 %). La mayoría de la población reside en áreas urbanas (77,5 %) y, aproximadamente, una cuarta parte de la población no tiene cobertura de salud (24,7 %).

La Tabla 2 reporta la frecuencia de consulta externa entre los participantes del estudio que informaron un problema de salud durante las cuatro semanas anteriores. En general, la frecuencia de consulta externa es del 25,4 % (IC 24,8 % - 26,1 %). La frecuencia de consulta externa fue diferente según la edad ($p < 0,001$), el sexo y el

idioma. Las mujeres reportaron haber asistido más a consultas externas en comparación con los hombres (27,9 % vs. 22,2% respectivamente, $p < 0,001$). Se reportó una mayor cantidad de consultas externas en hablantes no nativos que en los hablantes nativos (26,6 % vs. 21,6 % respectivamente, $p < 0,001$). En los individuos con educación superior, los que viven en la costa, los que viven en la zona urbana y los más ricos se evidenció una mayor frecuencia de consulta externa.

Las CC se muestran en la Figura 2. De acuerdo con las curvas, se identificó una tendencia prorrigo para todos los subgrupos de población y en general, para todos los participantes. En el panel B, las CC informan que la desigualdad para la consulta externa entre los individuos de 60 años o más es mayor en comparación con los individuos más jóvenes. Además, los hablantes nativos y los que tienen educación primaria, los que viven en la sierra y los que viven en el área rural reportaron mayores desigualdades en comparación con los hablantes no nativos, los que tienen un nivel educativo más alto, los que viven en zonas diferentes a la sierra y los que viven en entornos urbanos (véanse panel D, panel E, panel H y panel I, respectivamente).

Los índices de concentración se muestran en la Tabla 3. En general, el valor positivo de ICE (0,199) indica una desigualdad a favor de los ricos en el uso de la consulta externa. También se informó un valor positivo en todos los análisis de subgrupos. Cuando reportamos el ICE según subgrupos de población, no encontramos diferencias en la desigualdad en el uso de la consulta externa según sexo ($p = 0,323$) o idioma ($p = 0,064$). Se encontraron diferencias en la desigualdad en el uso de la consulta externa según edad ($p < 0,001$), nivel educativo ($p < 0,001$), enfermedad crónica ($p < 0,001$), limitaciones físicas ($p < 0,001$), región de residencia ($p < 0,001$), área de residencia ($p < 0,001$) y cobertura de seguro de salud ($p = 0,007$).

La Tabla 4 muestra la descomposición del ECI según las covariables incluidas en el estudio. Para los hallazgos de elasticidad, el valor para el sexo femenino es de 0,09, lo que significa que un cambio entre hombre y mujer aumenta, en un 9 %, la probabilidad de ampliar la desigualdad en el uso de las consultas externas. Además, el cambio de no tener ninguna a alguna enfermedad crónica aumenta, en un 23 %, la probabilidad de ampliar la desigualdad. Por otro lado, un cambio en la región de residencia de costa a sierra reduce en un 6 % la probabilidad de ampliar la desigualdad. Para los índices de concentración, encontramos que el uso de consultas externas para personas de 60 años o más, personas con educación superior, personas con alguna enfermedad crónica, personas que viven en la zona urbana y personas con otros seguros de salud se concentra entre los más ricos. En cambio, el uso de consultas externas para aquellas personas que hablan su lengua materna y los afiliados al SIS se concentró entre los

más pobres. Por último, el principal factor de las desigualdades en el uso de las consultas externas es tener otro seguro de salud, tener alguna enfermedad crónica o vivir en entornos urbanos. Inversamente, el principal factor de la reducción de la desigualdad es la cobertura de salud del SIS.

DISCUSIÓN

Este estudio estimó las desigualdades en la utilización de consultas externas atendidas por un médico en el Perú e identificó los factores que explican las desigualdades en la utilización. Se encontró que, en 2019 en el Perú, 25,4 % de las personas utilizaron consultas externas durante las últimas 4 semanas, aunque su utilización se concentró en las personas más ricas. Al descomponer estas desigualdades, se encontró que los mayores contribuyentes fueron tener otro tipo de seguro de salud (EsSalud, un seguro privado de salud, una entidad prestadora de salud, FF. AA. y policiales), residir en un área urbana, pertenecer al quintil de riqueza rico y más rico, tener una enfermedad crónica y residir en la sierra del Perú.

La prevalencia de utilización de consulta externa reportada en este estudio (25 %) es inferior a lo reportado en estudios realizados en Italia (28 %) [33], Brasil (95,3 %) [34], Jamaica (62,9 %), México (64,7 %), Panamá (58,1 %) [35], Paraguay (66,5 %) [36] y Argentina (40,6 %) [37]. Estas diferencias entre las cifras de los países y nuestro hallazgo podrían atribuirse al horizonte temporal de medición de la utilización de consultas médicas, siendo que en los estudios citados se basan en la utilización de consultas atendidas por un médico en las últimas 12 semanas, 2 semanas, hasta 12 meses anteriores; es decir, la diferencia en la metodología utilizada para evaluar el uso de consulta médica podría explicar las diferentes tasas de uso del servicio mencionado. Además, un estudio realizado en el Perú reportó una proporción de utilización de la consulta médica ambulatoria en 2011 (34,8 %) superior a lo reportado en nuestro estudio, sin embargo, esta cifra fue obtenida de personas que tenían un seguro de salud (SIS, EsSalud, FF. AA. o privado), mientras que las personas que no tenían un seguro de salud solo tuvieron una consulta médica en un 19,1 %, lo que podría exponer que la tenencia de un seguro de salud sería un factor determinante en el uso de la consulta médica [38]. Adicionalmente, nuestro hallazgo estuvo en concordancia con lo reportado en el estudio realizado por Ypanaqué-Luyo, donde las mujeres, las personas afiliadas a un seguro de salud, personas en los extremos de la vida, residentes de la costa y con enfermedades crónicas tenían un mayor uso de una consulta médica [38]. Por otro lado, debemos señalar que,

en países de bajos y medianos ingresos, las personas están expuestas a barreras que podrían limitar el uso de los servicios de salud y no permitir una cobertura de salud adecuada [39]. Estos factores se relacionan con la falta de educación, barreras culturales (estigma social, falta de poder de decisión, idioma o preferencia de la medicina tradicional), mala percepción de los servicios de salud, y bajos ingresos, lo que empeoraría el estado de salud y la carga de enfermedad en las personas, sobre todo por enfermedades que requieren una atención de salud continua [39]. Se deben reforzar las estrategias ya existentes a fin de mejorar los sistemas de salud y garantizar la cobertura universal de salud requerida para aminorar las desigualdades en la salud de las personas y el impacto económico en los países.

De acuerdo con el análisis de desigualdades, la utilización de una consulta externa se concentró en las personas más ricas. Estos resultados son parecidos a lo reportado en estudios realizados en Chile [14], Uruguay [13], Kenia [40], Italia [33], China [11] y Paraguay [36], donde la utilización de los servicios de salud se concentraron en las personas con mayores recursos económicos. Los hallazgos están alineados con la hipótesis de que la riqueza posee una relación directamente proporcional con el acceso a los servicios de salud oportuna y de calidad de las personas, lo que arroja mejores resultados de salud a largo plazo [41,42]. Por otro lado, las personas más pobres presentan barreras que impiden un acceso a una atención médica adecuada, debido a la dificultad para afrontar gastos en salud y a la desconfianza en los servicios [43]. Esta problemática se ha reportado en el territorio peruano, donde las personas con menores recursos económicos tenían 28 puntos porcentuales más de problemas de acceso a los servicios de salud que las personas con mayores recursos [44]. Esta brecha ha sido atendida por el sistema de salud a través del Decreto de Urgencia 017-2019 que busca ampliar la cobertura de salud acortando la brecha de las personas que no poseen un seguro de salud [45]; sin embargo, nuestros datos no reflejarán el impacto de esta medida en el uso de la consulta médica debido a su pronta incorporación.

En relación con los análisis de descomposición, los mayores contribuyentes de esta desigualdad fueron tener otro tipo de seguro de salud (EsSalud, un seguro privado de salud, una entidad prestadora de salud, FF. AA. y policiales), residir en un área urbana, pertenecer al quintil de riqueza rico y más rico, tener una enfermedad crónica y residir en la sierra del Perú. Según estudios previos, tener un seguro de salud aumentaría la probabilidad de buscar atención médica ambulatoria y reduciría el gasto de bolsillo en salud, lo que permitiría un acceso

adecuado a la consulta médica [46]. Además, las personas que residen en áreas rurales tienen una menor probabilidad de tener una atención médica debido a las distancias largas entre el establecimiento de salud y el lugar de residencia y el bajo ingreso económico debido a su tipo de ocupación (principalmente, agricultura y ganadería) [47]. Asimismo, el uso de los servicios de salud en las personas que poseen enfermedades crónicas se basa en la necesidad de un manejo a largo plazo y complejo para controlar sus enfermedades, y en el número de enfermedades que padecen, siendo que las personas con multimorbilidad tienen un mayor uso de los servicios de salud [48]. Por último, resalta un hallazgo contrario a lo reportado en la literatura, donde las personas que residen en la sierra contribuyen en esta desigualdad por los recursos. Este hallazgo podría reflejar una mejora en el sistema sanitario en esta región, lo que se observa con el incremento constante del número de médicos por cada 1000 habitantes entre 2009 y 2016 [49].

Los hallazgos del presente estudio tendrían un impacto en las políticas públicas ya existentes en el territorio peruano. A pesar de que, la utilización de las consultas médicas incrementó entre 2015 y 2019, este aumento no refleja mejoras en las desigualdades en la utilización. Bajo el Marco del Aseguramiento Universal en Salud instaurado en 2009, nuestros resultados brindan un alcance de la brecha de desigualdad que existe entre pobres y ricos para redoblar esfuerzos en el aseguramiento de las poblaciones que viven en condiciones de pobreza y pobreza extrema. Además, esta brecha de desigualdad permitirá que las instituciones gubernamentales basen sus estrategias en los principales contribuyentes de esta desigualdad socioeconómica para alcanzar una mayor cobertura de salud y reducir el impacto sanitario y económico de las enfermedades en la población. Por último, el sistema sanitario peruano debe realizar programas preventivo-promocionales rutinarios y aumentar la capacidad de los establecimientos de salud en áreas rurales para disminuir la carga de enfermedad y la morbimortalidad en estas poblaciones desatendidas.

El presente estudio utilizó una encuesta con representatividad en todo el país, que permite extrapolar nuestros hallazgos a todo el territorio peruano. Sin embargo, presenta algunas limitaciones. Primero, las preguntas realizadas a los encuestados se basan en hechos específicos del pasado por lo que podría instaurarse un sesgo de memoria. Segundo, otras variables que podrían ser de utilidad para la comprensión de estas desigualdades no fueron incluidas debido a su falta de disponibilidad en la base de datos. Estas variables están relacionadas con la autopercepción del estado de salud, percepción cultural de

los sistemas sanitarios, tiempo de espera hasta la atención o variables a nivel comunitario (como distancia a un establecimiento de salud). Por último, aunque hemos analizado datos recientes (2019), los cambios producidos por la pandemia por la COVID-19 podrían generar un cambio en nuestros hallazgos debido a que esta crisis sanitaria generó una reestructuración de la atención en consulta externa atendida por un médico en el Perú, sobre todo en poblaciones con un requerimiento continuo de atención por consultorio externo, por lo que sería necesario realizar estudios que evalúen el cambio en el tiempo de la atención en salud durante esta crisis sanitaria.

CONCLUSIONES

Se encontró que 25 de cada 100 peruanos que tenían una enfermedad accedieron a una consulta externa atendida por un médico en 2019. Además, la consulta externa se concentró en personas con mayores recursos económicos, donde los principales contribuyentes estaban relacionados con determinantes socioeconómicos y geográficos. A pesar de que, las instituciones gubernamentales han buscado aumentar la cobertura en salud en la población peruana, aún existe una brecha socioeconómica entre pobres y ricos. Por lo tanto, la búsqueda del acceso a los servicios de salud más equitativa debe considerar los principales contribuyentes de esta desigualdad para aminorar el impacto negativo del control inadecuado de las enfermedades en la población.

LISTA DE ABREVIATURAS

LAC: América Latina y el Caribe

OPS: Organización Panamericana de la Salud

ENAHU: Encuesta Nacional de Hogares sobre Condiciones de Vida y Pobreza

SIS: Seguro Integral de Salud

EsSalud: Seguro Social del Perú

FF. AA.: Fuerzas Armadas

INEI: Instituto Nacional de Estadística e Informática

VIH: Virus de Inmunodeficiencia Humana.

CC: Curvas de concentración.

ICE: Índice de concentración de Erreygers.

IC: Intervalo de confianza

DECLARACIONES:

APROBACIÓN ÉTICA Y CONSENTIMIENTO PARA PARTICIPAR

No aplica.

CONSENTIMIENTO PARA PUBLICACIÓN

No aplica.

DISPONIBILIDAD DE DATOS Y MATERIALES

Los datos que respaldan los hallazgos de este estudio están disponibles públicamente en el sitio web del Instituto Nacional de Estadística e Informática (INEI) (<https://proyectos.inei.gob.pe/microdatos/>). Las bases de datos se pueden obtener ingresando a la pestaña “Consulta por encuestas”, seleccionando en “Encuesta” la opción “ENAHO Metodología ACTUALIZADA”. Luego, en “(Elija una Encuesta)” seleccione “Condiciones de Vida y Pobreza - ENAHO”, para el año 2019, período anual.

CONFLICTO DE INTERESES

Los autores declaran que no tienen conflicto de intereses.

FONDOS

Nulos.

CONTRIBUCIONES DE LOS AUTORES

RDR y AHV propusieron la idea de la investigación, diseñaron el estudio, recopilaron, procesaron y analizaron los datos. RDR, AHV, RVF y CRR participaron en la interpretación de los datos, escribieron el manuscrito y aprobaron la versión final.

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Tabla 1. Características de las personas incluidas en el estudio (n=52 715).

Características	n	% (95% IC)
Grupo de edad (en años)		
18-29	10402	21.4 (20.8-21.9)
30-59	27490	51.9 (51.3-52.5)
60 a más	14823	26.7 (26.1-27.3)
Sexo		
Masculino	23182	43.7 (43.2-44.2)
Femenino	29533	56.3 (55.8-56.8)
Lengua materna		
No-nativa	38703	76.4 (75.4-77.4)
Nativa	14012	23.6 (22.6-24.6)
Nivel educativo		
Hasta primaria	21051	34.3 (33.6-35.0)
Secundaria	17482	36.1 (35.3-36.8)
Superior	14182	29.7 (28.9-30.5)
Enfermedad o malestar crónico		
No	21381	40.3 (39.6-41.0)
Sí	31334	59.7 (59.0-60.4)
Presencia de una limitación o dificultad permanente		
No	48347	92.3 (91.9-92.7)
Sí	4368	7.7 (7.3-8.1)
Región geográfica		
Costa	21988	54.3 (52.7-55.8)
Sierra	20853	34.8 (33.3-36.4)
Selva	9874	10.9 (10.1-11.8)
Área de residencia		
Rural	19680	22.5 (21.8-23.2)
Urbana	33035	77.5 (76.8-78.2)
Seguro de salud		
No	11820	24.7 (24.0-25.4)
Seguro Integral de Salud	27040	46.1 (45.2-47.0)
Otros*	13855	29.2 (28.4-30.0)
Quintil de riqueza		
I (quintil más bajo)	13682	20.4 (19.7-21.2)
II	11309	20.6 (19.8-21.4)
III	10534	21.5 (20.7-22.4)
IV	9629	20.6 (19.8-21.4)
V (quintil más alto)	7561	16.8 (16.0-17.7)

IC: Intervalo de confianza.

* La categoría "Otros" estuvo conformada por EsSalud, un seguro privado de salud, una entidad prestadora de salud, Fuerzas Armadas y Policía.

Las estimaciones incluyen el factor de expansión y las características del diseño muestral de la ENAHO 2019.

Tabla 2. Frecuencia de uso de la consulta externa en el Perú, ENAHO 2019.

Características	Uso de consulta médica		p valor*
	No (n = 39,933)	Sí (n = 12,782)	
	% (95% IC)	% (95% IC)	
General	74.6 (73.9–75.2)	25.4 (24.8–26.1)	
Grupo de edad (en años)			
18-29	81.6 (80.5-82.7)	18.4 (17.3-19.5)	<0.001
30-59	76.3 (75.5-77.0)	23.7 (23.0-24.5)	
60 a más	65.7 (64.5-66.9)	34.3 (33.1-35.5)	
Sexo			
Masculino	77.8 (77.0-78.6)	22.2 (21.4-23.0)	<0.001
Femenino	72.1 (71.3-72.9)	27.9 (27.1-28.7)	
Lengua materna			
No-nativa	73.4 (72.7-74.1)	26.6 (25.9-27.3)	<0.001
Nativa	78.4 (77.2-79.6)	21.6 (20.4-22.8)	
Nivel educativo			
Hasta primaria	76.1 (75.1-77.0)	23.9 (23.0-24.9)	<0.001
Secundaria	75.9 (74.9-77.0)	24.1 (23.0-25.1)	
Superior	71.2 (70.1-72.3)	28.8 (27.7-29.9)	
Enfermedad o malestar crónico			
No	83.7 (82.9-84.5)	16.3 (15.5-17.1)	<0.001
Sí	68.4 (67.6-69.2)	31.6 (30.8-32.4)	
Presencia de una limitación o dificultad permanente			
No	75.3 (74.7-75.9)	24.7 (24.1-25.3)	<0.001
Sí	65.8 (63.6-68.0)	34.2 (32.0-36.4)	
Región geográfica			
Costa	69.2 (68.2-70.2)	30.8 (29.8-31.8)	<0.001
Sierra	81.2 (80.3-82.1)	18.8 (17.9-19.7)	
Selva	80.1 (78.9-81.2)	19.9 (18.8-21.1)	
Área de residencia			
Rural	85.0 (84.2-85.7)	15.0 (14.3-15.8)	<0.001
Urbana	71.6 (70.8-72.3)	28.4 (27.7-29.2)	
Seguro de salud			
No	85.8 (84.8-86.7)	14.2 (13.3-15.2)	<0.001
Seguro Integral de Salud	77.2 (76.4-78.0)	22.8 (22.0-23.6)	
Otros**	61.0 (59.8-62.2)	39.0 (37.8-40.2)	
Quintil de riqueza			
I	87.1 (86.2-88.0)	12.9 (12.0-13.8)	<0.001
II	78.9 (77.7-80.0)	21.1 (20.0-22.3)	
III	74.0 (72.8-75.2)	26.0 (24.8-27.2)	
IV	70.0 (68.6-71.3)	30.0 (28.7-31.4)	
V	60.5 (58.8-62.1)	39.5 (37.9-41.2)	

IC: Intervalo de confianza.

* Valor de p calculado mediante la prueba de chi-cuadrado con corrección de Rao-Scott.

** La categoría “Otros” estuvo conformada por EsSalud, un seguro privado de salud, una entidad prestadora de salud, Fuerzas Armadas y Policía.
Las estimaciones incluyen el factor de expansión y las características del diseño muestral de la ENAHO 2019.

Tabla 3. Índice de concentración para el uso de la consulta externa en el Perú, ENAHO 2019.

Características	Índice de concentración	Error estándar	p valor
General	0.19937786	0.00641731	<0.001
Grupo de edad (en años)			
18-29	0.10229971	0.01200811	<0.001
30-59	0.18457323	0.00830868	
60 a más	0.30017989	0.01241237	
Sexo			
Masculino	0.19279535	0.00878072	0.323
Femenino	0.2046995	0.00825363	
Lengua materna			
No-nativa	0.1869384	0.00753137	0.064
Nativa	0.21440483	0.012779	
Nivel educativo			
Hasta primaria	0.24694375	0.00967085	<0.001
Secundaria	0.18295935	0.01082359	
Superior	0.17058395	0.01242945	
Enfermedad o malestar crónico			
No	0.12307242	0.00835029	<0.001
Sí	0.21884463	0.00865588	
Presencia de una limitación o dificultad permanente			
No	0.19277562	0.00652823	<0.001
Sí	0.31467097	0.02252226	
Región geográfica			
Costa	0.14996957	0.01006312	<0.001
Sierra	0.17383264	0.00834938	
Selva	0.13146833	0.01440896	
Área de residencia			
Rural	0.12322651	0.00764309	<0.001
Urbana	0.16016063	0.00802702	
Seguro de salud			
No	0.1426812	0.01037717	0.007
Seguro Integral de Salud	0.17825844	0.00896788	
Otros*	0.12509796	0.0133331	

* La categoría "Otros" estuvo conformada por EsSalud, un seguro privado de salud, una entidad prestadora de salud, Fuerzas Armadas y Policía.

Las estimaciones incluyen el factor de expansión y las características del diseño muestral de la ENAHO 2019.

Se consideró el valor de p del test Z-stat para las diferencias del Índice de concentración de variables con 2 categorías. Para variables con 3 categorías se consideró el valor de p del test F-stat.

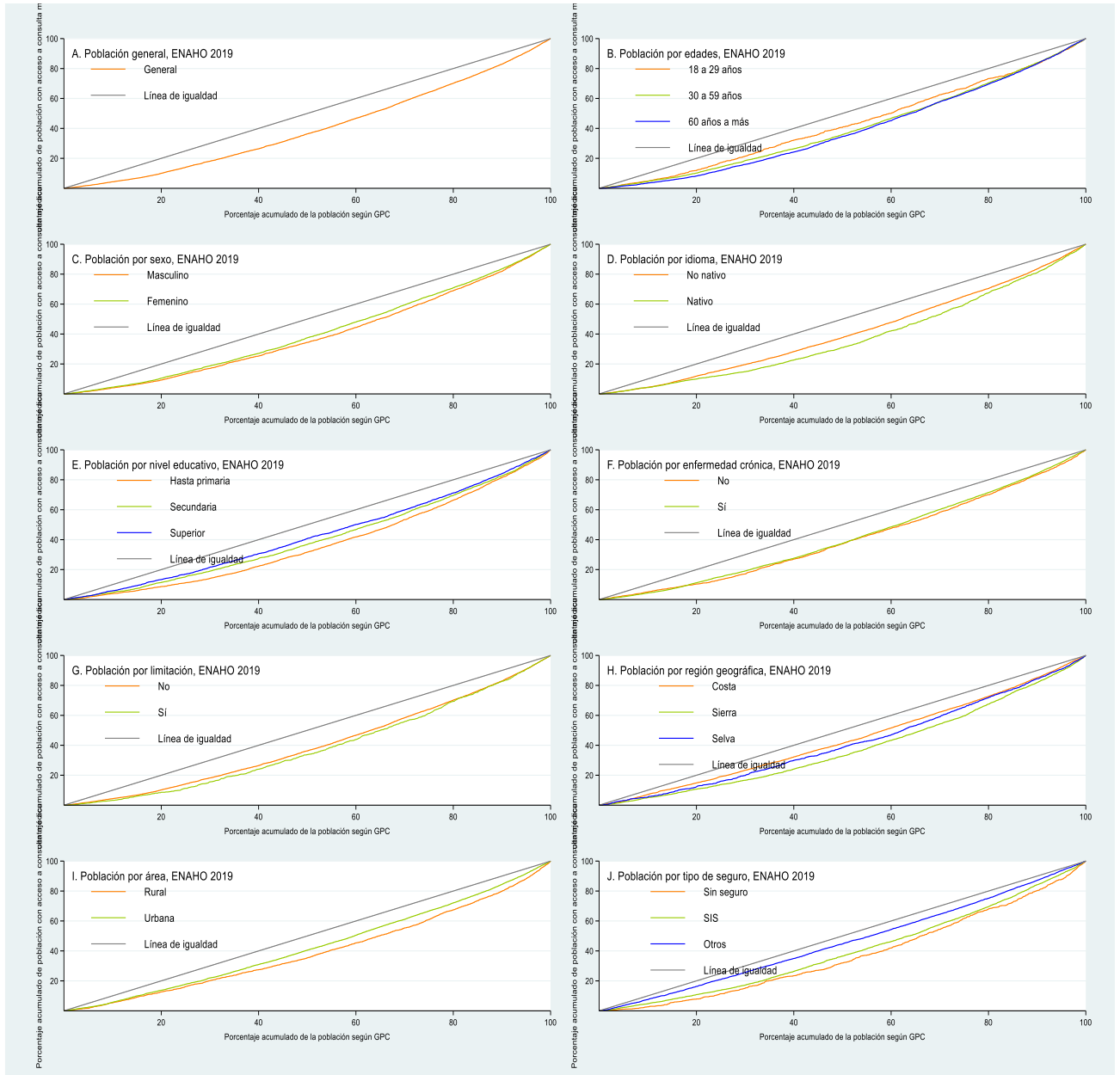
Tabla 4. Descomposición del índice de concentración para el uso de la consulta externa en el Perú, ENAHO 2019

Características	Elasticidad	Índice de concentración	Absoluto	%
Grupo de edad (en años)				
18-29	Referencia	Referencia	Referencia	
30-59	0.0512	-0.0533	-0.0027	-1.4
60 a más	0.0859	0.0166	0.0014	0.7
Sexo				
Masculino	Referencia	Referencia	Referencia	
Femenino	0.0922	-0.0012	-0.0001	-0.1
Lengua materna				
No-nativa	Referencia	Referencia	Referencia	
Nativa	0.0046	-0.2769	-0.0013	-0.6
Nivel educativo				
Hasta primaria	Referencia	Referencia	Referencia	
Secundaria	0.0024	-0.0049	0.0000	0.0
Superior	-0.0004	0.423	-0.0002	-0.1
Enfermedad o malestar crónico				
No	Referencia	Referencia	Referencia	
Sí	0.2394	0.1275	0.0305	15.3
Presencia de una limitación o dificultad permanente				
No	Referencia	Referencia	Referencia	
Sí	0.0099	-0.0279	-0.0003	-0.1
Región geográfica				
Costa	Referencia	Referencia	Referencia	
Sierra	-0.0686	-0.395	0.0271	13.6
Selva	-0.0184	-0.0878	0.0016	0.8
Área de residencia				
Rural	Referencia	Referencia	Referencia	
Urbana	0.1559	0.4842	0.0755	37.9
Seguro de salud				
No	Referencia	Referencia	Referencia	
Seguro Integral de Salud	0.2472	-0.5296	-0.1309	-65.7
Otros*	0.2087	0.4489	0.0937	47.0
Quintil de riqueza				
I	Referencia	Referencia	Referencia	
II	0.0625	-0.3175	-0.0199	-10.0
III	0.0881	0.0309	0.0027	1.4
IV	0.1069	0.3772	0.0403	20.2
V	0.1172	0.5598	0.0656	32.9
Subtotal				91.8
Residual	0.0162815			

* La categoría "Otros" estuvo conformada por EsSalud, un seguro privado de salud, una entidad prestadora de salud, Fuerzas Armadas y Policía.

Las estimaciones incluyen el factor de expansión y las características del diseño muestral de la ENAHO 2019.

Figura 2. Curvas de concentración para el uso de la consulta externa en el Perú, ENAHO 2019.



LISTA DE ABREVIATURAS

LAC: América Latina y el Caribe

OPS: Organización Panamericana de la Salud

ENAHO: Encuesta Nacional de Hogares sobre Condiciones de Vida y Pobreza

SIS: Seguro Integral de Salud

EsSalud: Seguro Social del Perú

FF. AA.: Fuerzas Armadas

INEI: Instituto Nacional de Estadística e Informática

VIH: Virus de Inmunodeficiencia Humana.

CC: Curvas de concentración.

ICE: Índice de concentración de Erreygers.

IC: Intervalo de confianza

ANEXOS:

Puede encontrar esta tesis como publicación en el siguiente enlace:

<https://doi.org/10.1186/s12939-024-02099-2>

En formato pdf:

<https://link.springer.com/content/pdf/10.1186/s12939-024-02099-2.pdf>

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International Journal for Equity
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RESEARCH

Open Access

Socioeconomic inequalities in the use of medical consultation services in Peru, 2019



Renato Díaz-Ruiz^{1*}, Rodrigo Vargas-Fernández¹, Carlos Rojas-Roque² and Akram Hernández-Vásquez^{1,3}

Abstract

Background Socioeconomic inequalities in the population influence access to health services and constitute a challenge for health systems, especially in low- and middle-income countries. In Peru, an increase in the use of medical services has been estimated; however, the study of inequalities in the use of medical services is limited. Therefore, the objective of this research was to analyze and decompose socioeconomic inequalities in the use of medical consultation services in Peru.

Methods A cross-sectional analytical study was conducted using data from the National Household Survey 2019. The outcome variable was the use of a consultation attended by a physician in the last 4 weeks in persons who presented symptom or discomfort, illness, relapse of chronic disease and/or accident. Concentration curves and Erreygers concentration indices were used to determine socioeconomic inequalities, and a generalized linear regression model was used for the decomposition analysis of inequalities.

Results A total of 52,715 persons were included in the study. The frequency of medical consultation was 25.4% (95% confidence interval: 24.8 – 26.1%). In the inequality analysis, it was found that the use of medical consultations was concentrated among the wealthiest individuals. The main contributing factors were having another type of health insurance (social health insurance [EsSalud], private health insurance, health provider, the Armed Forces, and the Police), residing in an urban area, belonging to the richest wealth quintile, having a chronic disease, and residing in the highlands of Peru.

Conclusions Based on our findings, government institutions seeking to achieve equitable access to health services should consider the main factors contributing to this inequality in the formulation of strategies to lessen the negative impact of inadequate disease control in the population.

Keywords Socioeconomic disparities in Health, Ambulatory care, Health services, Peru

Aprobación del Comité de ética

COMITÉ INSTITUCIONAL DE ÉTICA EN INVESTIGACIÓN

CONSTANCIA N° 350-CIEI-CIENTÍFICA-2021

El presidente del Comité Institucional de Ética en Investigación de la Universidad Científica del Sur (CIEI-CIENTÍFICA) da constancia que el proyecto de investigación, cuyos datos se registran a continuación, ha sido aprobado por el CIEI-CIENTÍFICA.

Código de registro: **680-2021-POS50**

Título: **Análisis de las desigualdades en la utilización de los servicios de consulta externa y hospitalización en el Perú, 2019**



Investigador(a): **Renato Díaz Ruiz**

La aprobación del proyecto de investigación implica que el documento presentado a evaluación cumple con los lineamientos de Universidad en materia de investigación y ética, los cuales se sustentan en la normativa internacional vigente. Adicionalmente, en el contexto de la pandemia de enfermedad por COVID-19, le recomendamos cumplir con las normas publicadas por el estado peruano (accesos, medidas de bioseguridad, etc.) y tener los permisos de las instituciones en las que realizará el estudio antes de ejecutarlo.

En tal sentido, esta aprobación carecerá de valor si es que el proyecto de investigación arriba indicado es modificado de cualquier forma. Toda enmienda, añadido, eliminación o eventualidad (eventos adversos, etc.) posterior a la fecha de aprobación debe ser reportado al CIEI-CIENTÍFICA.

La vigencia de la aprobación de este documento es de dieciocho (18) meses (hasta el 05 de abril del 2023), periodo en el que puede desarrollarse el proyecto. Cualquier trámite para su renovación deberá ser enviado antes del término de la vigencia de este documento, debiendo suspenderse todo desarrollo hasta que la renovación sea aprobada. La presente aprobación será ratificada en la sesión del CIEI más próxima.

Villa El Salvador, 06 de octubre de 2021

Mg. Fulton Paul Rivera Albinagorta
Presidente
Comité Institucional de Ética en Investigación

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Constancia de Renovación 680-2021-POS50

COMITÉ INSTITUCIONAL DE ÉTICA EN
INVESTIGACIÓN



Constancia

Luego de la revisión de la solicitud, el presidente del Comité Institucional de Ética en Investigación de la Universidad Científica del Sur (CIEI-CIENTÍFICA) hace constar que el CIE-CIENTÍFICA ha aprobado de forma expedita la **enmienda/modificación** del proyecto de Investigación que se detalla continuación:

Código de registro: 680-2021-POS50

Título: **Análisis de las desigualdades en la utilización de los servicios de consulta externa y hospitalización en el Perú, 2019**

Investigador(es): **Renato Díaz Ruiz**

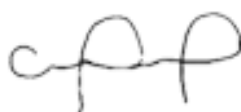
Constancia de aprobación: 350-CIEI-CIENTÍFICA-2021

La **enmienda/modificación** corresponde a los siguiente:

1. Proyecto de Investigación, versión recibida el día 19 de noviembre del 2022. Se detalla lo siguientes cambios:
 - a. Considerar el análisis sólo para el servicio de consulta externa, por la alta posibilidad de sesgo al momento de obtener las personas que han sido hospitalizadas generando un nuevo título, **"ANÁLISIS DE LAS DESIGUALDADES SOCIOECONÓMICAS EN LA UTILIZACIÓN DEL SERVICIO DE CONSULTA EXTERNA EN EL PERÚ, 2019"**

Todas las demás características de la investigación descritas en el proyecto original permanecen; por lo que cualquier otra modificación deberá informarse a este Comité, para su evaluación.

Lima, 25 de noviembre de 2022.



Mg. Cinthya Ruth Chipana Herquinio
Presidente
Comité Institucional de Ética en Investigación

Resolución directoral académica de Medicina humana



RESOLUCIÓN DIRECTORAL ACADÉMICA DE CARRERA No. 532 - DACMH-DAFCS-U. CIENTIFICA-2022

Lima, 18 de noviembre del 2022

VISTO:

El informe de revisión independiente académica y la aprobación de un Comité de Ética del proyecto de investigación titulado: "ANÁLISIS DE LAS DESIGUALDADES EN LA UTILIZACIÓN DE LOS SERVICIOS DE CONSULTA EXTERNA Y HOSPITALIZACIÓN EN EL PERÚ, 2019".

CONSIDERANDO:

Que, de acuerdo al Reglamento General de la Universidad Científica del Sur y el reglamento y Procedimientos de trabajos de Investigación para obtener el **Grado de Maestro**.

Que, de acuerdo a la normativa vigente de la Universidad Científica del Sur, en uso de las atribuciones conferidas al Director Académico de la Carrera.

SE RESUELVE:

ART. 1° Aprobar, en vías de regularización e inscribir el proyecto de tesis titulado "ANÁLISIS DE LAS DESIGUALDADES EN LA UTILIZACIÓN DE LOS SERVICIOS DE CONSULTA EXTERNA Y HOSPITALIZACIÓN EN EL PERÚ, 2019", presentado por el alumno Renato Díaz Ruíz con N° de registro: 680-2021-POS-50.

ART. 2° Nombrar al Docente Akram Abdul Hernández Vásquez, como asesor para el desarrollo de la tesis en cuestión.

Regístrese, comuníquese y archívese.


Mg. JORDI GRAU MONGE
 Director Académico (e)
 Carrera de Medicina Humana



Resolución directoral académica de Medicina humana (Renovación)



RESOLUCIÓN DIRECTORAL ACADÉMICA DE CARRERA No. 311 - DACMH-DAFCS-U. CIENTÍFICA-2023

Villa el Salvador, 17 de mayo del 2023

VISTO:

El informe de revisión independiente académica y la aprobación de un Comité de Ética del proyecto de investigación titulado: **“ANÁLISIS DE LAS DESIGUALDADES SOCIOECONÓMICAS EN LA UTILIZACIÓN DEL SERVICIO DE CONSULTA EXTERNA EN EL PERÚ, 2019”**.

CONSIDERANDO:

Que, de acuerdo al Reglamento General de la Universidad Científica del Sur y el reglamento y Procedimientos de trabajos de Investigación para obtener el **Grado de Maestro**.

Que, de acuerdo a la normativa vigente de la Universidad Científica del Sur, en uso de las atribuciones conferidas al Director Académico de la Carrera.

SE RESUELVE:

ART. 1° Aprobar, en vías de regularización e inscribir el proyecto de tesis titulado **“ANÁLISIS DE LAS DESIGUALDADES SOCIOECONÓMICAS EN LA UTILIZACIÓN DEL SERVICIO DE CONSULTA EXTERNA EN EL PERÚ, 2019”**, presentado por el alumno Renato Diaz Ruiz con N° de registro: **680-2021-POS50**.

ART. 2° Nombrar al Docente Akram Abdul Hernández Vásquez como asesor para el desarrollo de la tesis en cuestión.

Regístrese, comuníquese y archívese.




Mg. JORDI GRAU MONGE
Director Académico (e)
Carrera de Medicina Humana