

Cost, Quality, and Access of Healthcare in Piura, Peru

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ABSTRACT

The aim of the study is to investigate the patient perceptions on the cost, quality, and access of health care services in Piura, Peru. Although one of the largest cities in Peru, Piura has one of the lowest densities of health care workers in the country which greatly impacts the population's ability to receive medical treatment. Lack of financial resources and health literacy, among other health disparities exist. Modeled after *CAHPS® Health Plan Adult Commercial Survey 5.0* and the *Patient Satisfaction Survey*, a forty-four question English and Spanish survey was created with questions to study healthcare variables. As a correlational study with convenience sampling, the survey was administered to both patients and medical providers in eight city health centers. Over a period of twelve days, 107 surveys were collected. After eliminating subjects who did not meet the study criteria, 92 patients and 13 medical providers were included in the study. Findings from medical providers are not reported because of the small sample size. The results of this study suggests that 32% of subjects do not have health insurance, 24% of subjects rated their healthcare received as average, 18% of participants rated their healthcare as the best possible on a scale of zero to ten, and 29% of subjects had to wait an average of seven days for access to healthcare services when care is urgent. The results of this analysis can be used to better understand the Peruvian healthcare system and educate the Piura community and the Parish Santísimo Sacramento as they continue to improve and expand their health care services.

KEYWORDS

Cost; Quality; Access; Healthcare; Piura; Peru; Satisfaction; Parroquia Santísimo Sacramento; EsSalud; SIS; MINSA

INTRODUCTION

Peru is divided into 25 regions with a total population of 31 million citizens.¹⁻² With 34% of the population concentrated in Lima, the remaining 66% of the population reside in other urban and rural areas; three-fourths of the non-Lima residents live in rural areas.² Nearly 50% of those who live in rural villages live in poverty.² With large socioeconomic and social differences existing between rich and poor groups, the healthcare system of Peru has many social and cultural gaps in its infrastructure which affect access to and quality of health services for its citizens.¹⁻⁶

Peru has a decentralized healthcare system administered by five entities: Ministry of Health (MINSA), EsSalud, Armed Forces, National Police, and the private sector. The Peruvian healthcare system is characterized by fragmentation.^{1,4,7} This is evidenced by having a means tested (MINSA), employment-based (EsSalud), military/civil servant system (Armed Forces and National Police), and private sector systems.¹⁻⁷ However, there are a number of individuals who do not qualify for SIS, nor do they receive health insurance through an employer and cannot afford private insurance. These individuals represent the gap in the Peruvian health care system and are therefore labeled "No Insurance".⁸⁻⁹ Similar to many healthcare systems (such as the United States), this fragmentation can lead to inefficiency, ineffectiveness, inequality, commoditization, commercialization, de-professionalization, depersonalization, despair, and discord. As a result, patient's needs may be unmet or mistreated.¹⁰ With high economic disparities, the fragmented health system in Peru is heavily based on one's ability to pay for services.⁸⁻¹⁰

Including both public and private sectors, each system operates independently and attends to its respective populations, with its own rules and network of medical providers.^{3,6,11}

MINSA and SIS

The Ministry of Health (MINSA) is the maximum health authority and governing body of the national health system. Directing and managing the country's national health policy, it provides public health preventative and curative services to the greatest part of the population. MINSA provides health insurance; Seguro Integral de Salud (SIS), to about 60% of Peru's residents.²⁻³ Similar to Medicaid in the United States, SIS protects the country's vulnerable population, those without health insurance, and individuals in moderate and extreme poverty. Most beneficiaries receive subsidized

insurance, do not have to pay for care in MINSA establishments, and obtain medications through MINSA pharmacies free of charge.²⁻³ As of 2011, about 60% of citizens are insured through SIS, and about 60% of beneficiaries live in rural zones.^{2-3,6}

The MINSA infrastructure functions on a three level system with Level I health posts (puestos de salud) providing the most basic care. While these rural clinics emphasize preventative health measures, Level II health centers (centros de salud) see cases that are more complicated. Level III institutions, hospitals, treat the most complex cases.^{3,6} In 2009, there were 3.1 health establishments per 10,000 people in Peru (0.2 hospitals, 0.8 centros de salud, and 2.1 puestos de salud per 10,000 people).³ **Table 1** displays the number of health establishments by region in Peru according to 2009 data.³

Department	Total		Hospitals		Health Centers		Health Posts		Population	
	Number	%	Number	%	Number	%	Number	%	Number	%
Amazonas	491	5.5	8	1.7	65	2.8	418	6.8	411,043	1.4
Áncash	456	5.1	22	4.7	87	3.7	347	5.6	1,109,849	3.8
Apurímac	334	3.7	9	1.9	54	2.3	271	4.4	444,202	1.5
Arequipa	331	3.7	18	3.8	121	5.2	192	3.1	1,205,317	4.1
Ayacucho	379	4.2	10	2.1	66	2.8	303	4.9	642,972	2.2
Cajamarca	818	9.1	16	3.4	152	6.5	650	10.5	1,493,159	5.1
Cusco	336	3.8	18	3.8	70	3.0	248	4.0	1,265,827	4.3
Huancavelica	346	3.9	2	0.4	63	2.7	281	4.6	471,720	1.6
Huánuco	272	3.0	5	1.1	59	2.5	208	3.4	819,578	2.8
Ica	183	2.0	13	2.8	73	3.1	97	1.6	739,087	2.5
Junín	514	5.7	18	3.8	91	3.9	405	6.6	1,292,330	4.4
La Libertad	337	3.8	37	7.9	103	4.4	197	3.2	1,725,075	5.9
Lambayeque	223	2.5	22	4.7	64	2.8	137	2.2	1,196,655	4.1
Lima	1,195	13.3	158	33.7	574	24.7	462	7.5	8,981,440	30.8
Loreto	375	4.2	11	2.3	60	2.6	304	4.9	970,918	3.3
Madre de Dios	119	1.3	3	0.6	18	0.8	98	1.6	117,981	0.4
Moquegua	69	0.8	5	1.1	30	1.3	34	0.6	169,365	0.6
Pasco	275	3.1	9	1.9	40	1.7	226	3.7	290,483	1.0
Piura	458	5.1	25	5.3	113	4.9	320	5.2	1,754,791	6.0
Prov. Const. del Callao	147	1.6	12	2.6	131	5.6	4	0.1	926,788	3.2
Puno	484	5.4	19	4.1	107	4.6	358	5.8	1,340,684	4.6
San Martín	440	4.9	19	4.1	88	3.8	333	5.4	771,021	2.6
Tacna	95	1.1	3	0.6	35	1.5	57	0.9	315,534	1.1
Tumbes	63	0.7	3	0.6	31	1.3	29	0.5	218,017	0.7
Ucayali	216	2.4	4	0.9	26	1.1	186	3.0	458,177	1.6
Total	8,957	100.0	469	100.0	2,321	100.0	6,165	100.0	29,132,013	100.0

Table 1. Listing of health institutions (Hospitals, Health Centers, and Health Posts) in Peru by region.³

EsSalud

EsSalud offers health services to the employee population and their families and provides health insurance, Seguro Social de Salud, to about 30% of the population.³ Workers and their successors are insured within the EsSalud network of hospitals and health centers and receive health coverage and benefits of prevention, promotion, recovery, and rehabilitation. Offering three types of insurance, seguro regular, seguro independiente, and seguro potestativo, beneficiaries represent active workers, pensioners, independent workers, and students.^{2-3,12} According to the 2012 data, there are about 9.2 million EsSalud users.¹¹⁻¹²

Armed Forces, National Police, Private Sector

The Armed Forces (las Sanidades de las Fuerzas Armadas, FFAA), National Police (Sanidad de la Policia Nacional de Perú, PNP), and private sector administer care to about 10% of Peru’s residents. The Armed Forces and the National Police provide coverage to about 1.3 million individuals; both departments exclusively serve patients in their own health

facilities. Institutions within the private sector include private insurers, hospitals (clínicas), private clinics (consultorios medico), and civil society organizations, such as the American Red Cross.³

Approximately 73.6% of people aged 0 to 17 years, 57.9% of people aged 18 to 64 years, and 68.3% of older adults (aged 64+ years) have health insurance in Peru.³ Despite 72.9% of the Peruvian population being covered by some type of health insurance, there remains about 10.8 million residents who do not have insurance.²⁻³ Although Peru passed a Universal Health Insurance Law in 2009, there are economic barriers that prevent universal coverage and still divide the Peruvian healthcare system.^{2-3,7-9} While Peru claims to offer coverage for all people, there are individuals who still have “No Health Plan/Insurance.” There is segmentation in the Peru health insurance plans based on the socio-economic status of the applicant.⁸⁻⁹ Individuals who are not considered or recognized as poor have a very difficult time applying for insurance through SIS.⁸ However, if one is a self-employed, non-dependent worker then one cannot have access to EsSalud.^{3,8} If an individual has a limited income, then they may not be able to purchase private health insurance.⁸

Since Peru only spends 5.5% of its GDP on health care services, about 97% of health services funding is directly from the patients.^{2-3,11,12} Approximately 40% of the Peruvian population reported to have purchased medicine from the pharmacy, 43% of individuals paid for services from private providers, and 42% of residents financed the whole medical bill.³ Thus, those with health insurance are more likely to seek medical attention than those without health insurance.²⁻³ Beneficiaries of SIS are more likely to use services at puestos de salud and centros de salud, and beneficiaries of other health insurances are more likely to seek care at hospitals and private clinics.^{6,14}

If one cannot afford to pay for services, an individual may not seek medical treatment.⁶ In fact, about 12.9% of Peruvians reported that they did not receive medical attention because they did not have money; 43.1% of people in moderate or extreme poverty claimed that money was a barrier.³ In addition to lack of money and medical education, there are many other disparities which contribute to one’s health outcomes and decision of soliciting medical treatment.^{2-3,14} For example, many avoid medical appointments since the average wait time is 103 minutes.² **Table 2** exhibits a variety of reasons of why Peruvians choose to not seek medical attention.

Health Insurance	Lack of Money (%)	Far Away, Lack of Confidence in Medical Professionals, Delay (%)	Use Home Remedies or Self-Medication (%)	It was not necessary (%)	Other Reason to Not Seek Care (%)
No Insurance	51.0	32.7	35.9	41.3	30.9
EsSalud	6.6	19.2	19.6	21.7	27.9
SIS	41.3	45.6	39.8	31.2	34.9
Other	1.1	2.5	4.8	5.8	6.4
Total	100.0	100.0	100.0	100.0	100.0

Table 2. Percentage of Peruvians, according to insurance type and reason, who do not use medical services.³

Contributing greatly to the health disparities in Peru is the extreme deficiency of medical resources in the communities. Many areas lack specialists and technology, and patients must travel to other regions in order to receive treatment.¹⁻³ In a country of 31 million citizens, there is only one pediatric hospital, which is in Lima.^{1-2,6} There are 15 hospital beds, 11.9 doctors, 12.7 nurses, 2.6 obstetricians, and 1.9 dentists per 10,000 people in Peru.²⁻³ Additionally, the government restricts physician and nurse working hours to 48 hours per week, which further reduces the availability of health care workers.^{2-3,6} If individuals have the means to pay for a private office visit, then they have better quality and access to health care resources.^{2-3,6} However, individuals who do not have the ability to pay may wait days to years to schedule appointments or procedures because of the low density of health care workers.⁶

Despite being home to about 1.8 million Peruvians (6% of the population), Piura, Peru has one of the lowest geographic distributions of health care workers.^{3,6} Located in northern Peru and bordering Ecuador, Piura has the lowest availability of hospital beds (3.6 per 10,000 people) and has the fewest obstetricians (1.7 per 1,000 people) in the whole country.^{1,3} While 78.4% of the region’s population has access to sanitation, only 8.1% have access to safe water, and 42% of residents live in moderate or extreme poverty.³ The principal causes of death in Piura are circulatory system diseases and transmissible diseases. Additionally, Piura has the lowest per capita healthcare expenditure in the country.²⁻³

In Piura, like many other regions in Peru, one’s social position, education level, and economic income are important determinants of health outcomes.³ In fact according to a Peruvian healthcare analysis, an econometric binomial probability model shows that the higher the level of education, the higher probability that the individual has health insurance.⁹ A Piurano’s respective health insurance plan affects the quality of care and where one can receive treatment. One’s health literacy impacts whether he or she pursues medical treatment.⁶ While improving home infrastructure, increasing water access, and promoting health education are simple measures to enhance health outcomes in Piura, access to health services is significantly linked to the ability of the individuals to pay for them.³ The inadequate resources, poor coordination between health institutions, and low health literacy contribute to the inequalities and barriers that Piura’s citizens face.^{3,6} This correlational research project will address the cost, quality, and access of healthcare to better understand patient perceptions about healthcare in Piura, Peru.

METHODS AND PROCEDURES

The aim of the study was to investigate patient perceptions on the cost, quality, and access of healthcare of patients who receive health care services in Piura, Peru.^A A forty-four question survey, in both English and Spanish, modelled after the CAHPS® Health Plan Adult Commercial Survey 5.0 and the Patient Satisfaction Survey from the Physician Practice Resource Center was developed. In addition to directly addressing cost, quality, and access to healthcare, the questions covered overall patient satisfaction with provider and office staff, the conditions of the clinic, and the frequency of visiting the doctor, hospital, or specialist. The sections include About You, Your Health Care in the Last 12 Months, Getting Health Care from Specialists, Access to Care, Your Health Plan / Cost, and Quality of Care. Requesting a waiver of written consent, a recruitment statement for the project participants, describing the risks and benefits associated with voluntary participation, was developed. The documents were translated to Spanish and verified by two qualified translators.

The survey was administered during Summer 2018 at la Parroquia Santísimo Sacramento in Piura, Peru. The study locations included la Oficina de Enfermería (nurse’s office), Oficina Pro-Vida (pro-life office), Clínica Santa Lucia (health clinic), Hospicio Los Ángeles (hospice center), Beata Margarita de Castello (physical and language therapy center), Vida Nueva en Cristo (rehabilitation center), Centro de San Miguel (psychological counseling center), and Casa María (women’s shelter). There was no IRB exception for the interviews collected at the women’s shelter.

The subject population included patients and health care providers. The following definition was used to identify health care providers as potential participants: “a health care provider is any individual, institution, or agency that provides health care services to health care consumers.”¹⁵ A health care provider could include but not be limited to physicians, medical aids, nurses, and physician assistants. **Table 3** provides a view of the number of patients and medical providers surveyed in each study location. It is important to note that a homogenous population was surveyed. All patients surveyed had free clinic access, and all services were free of charge. Thus, even if they might have had a health plan, patients did not have to use health insurance. Participants could be male or female of Mestizo, Amerindian, European, Asian Peruvian, or Afro-Peruvian descent and living in poverty.

Inclusion Criteria:

Male or female patient (≥ 18 to 90 years) who is seeking or receiving treatment in the study locations. Male or female health care provider (≥ 18 to 90 years) who is employed at the study locations.

Exclusion Criteria:

Male or female patient who is younger than 18 years or older than 90 years. Male or female health care provider who is younger than 18 years or older than 90 years.

Location	Number of Patient Participants	Number of Provider Participants
La Oficina de Enfermería	42	4
Oficina Pro-Vida	15	2
Clínica Santa Lucia	12	0
Hospicio Los Ángeles, Vida Nueva en Cristo, Centro de San Miguel, Casa María	15	5
Beata Margarita de Castello	10	2
Total	94	13

Table 3. The distribution of participants surveyed in each clinic location.

^A This project received approval by the Institutional Review Board at Saint Louis University (Protocol #29373).

Adapting a cohort study design, a convenience sample was used and subjects were not randomized. Patients were recruited the day of their office visit. Each patient that entered the clinic was asked if he or she would like to voluntarily participate in the project and answer the survey. Providers were recruited the day the survey was administered. Each health care provider, according to **Reference 15**, who worked in the clinic was asked if he or she would like to voluntarily participate in the project and answer the survey. **Table 4** shows the dates that the surveys were administered and the total number of surveys collected each week.

Date of Data Collection	Number of Surveys Collected
7/1/18 – 7/7/18	16
7/8/18 – 7/14/18	44
7/22/18 – 7/28/18	32
7/29/18 – 8/4/18	15
Total	107

Table 4. Dates of survey collections in the health clinics and the number of surveys administered according to the respective week.

Each participant completed a consent process.^B To minimize potential risk, the survey was administered in a private area with only the researcher and the participant in the room. No identifying information was collected. The participant could choose to write the responses or to have the survey orally read and have answers recorded. The subject could skip any question that he or she chose not to answer.

Measures were taken to minimize risk to potentially vulnerable subjects, as there was a non-English speaking and employee population.^C

Each survey and recruitment statement were coded (Participant 1, Participant 2, etc.) to ensure confidentiality. The surveys and recruitment statements were locked in a private room, and all of the results are confidential. Data was entered to an Excel spreadsheet on a computer with a password known only to the research team. Only the research team had access to the surveys.

Data was collected from patients (N=94) and medical providers (N=13); 107 subjects were recruited. Two study subjects were eliminated due to incomplete and missing information, so the final study subjects included 105 participants (N=92 patients and N=13 medical providers). Due to the small sample size of medical providers, specific information is not reported. Statistical analysis was completed.^D

^B Each participant read a recruitment statement that described the risks and benefits associated with voluntary participation in the survey. In the presence of a witness, verbal consent was obtained and documented for each participant in an Excel spreadsheet; participation in the study assumed consent.

^C The researcher, who is fluent in Spanish, was prepared to manage communications in Spanish with participants during all phases of study participation. Additionally, the materials (survey and recruitment statement) were translated to subject's native language (Spanish) by the researcher and verified by a qualified translator. There were measures taken to minimize risks to employees or potentially vulnerable subjects (healthcare providers). Employees were informed that their decision to participate in the study would not affect performance evaluations, career advancement, or other employment-related decisions made by peers or supervisors. Lastly, the survey was administered in a private room to respect employee privacy and confidentiality.

^D Using SPSS Statistical Software and Excel, descriptive, parametric, and non-parametric statistical analysis was completed. Cross-tabulation and frequency techniques were utilized to compare and associate certain variables to obtain means, p-value, and Pearson R values. A one-sample t-test was completed and 95% Confidence Intervals were determined.

RESULTS

Although 105 study subjects were surveyed, the data analysis only includes results from the patients (N=92) due to the small sample size of medical providers (N=13). However, **Table 5** and **Table 6** exhibit patient and provider demographics, respectively.

Patient Demographics	N = 92	%
Gender		
Female	67	73
Male	25	27
Age		
18 – 34	28	30
35 – 44	31	34
45 – 54	11	12
55 and Over	22	24
Education Status		
8 th Grade or Less	13	14
Some High School	34	37
High School Graduate	19	21
Some College	16	17
4-Year College or Greater	10	11

Table 5. Demographic information collected from patients.

There were more female participants in this study. The descriptive data shown in **Table 5** indicates that 73% of study participants were female. This was not surprising given that the surveys were collected during the day, while most of the men were at work.⁶ As per **Table 5**, 72% of study participants had an education level equivalent to a high school graduate or less.

Provider Demographics	N = 13	%
Gender		
Female	8	62
Male	5	38
Age		
25-34	9	69
35 – 44	3	23
45 – 54	1	8
Education Status		
Some College	2	15
4-Year College	3	23
More Than 4-Year College	8	62

Table 6. Demographic information collected from medical providers.

According to **Table 6**, there were only 13 healthcare providers surveyed (eight females and five males). Only two individuals (15%) had an education status of “Some College” and 11 providers (85%) reported that they had an education status of “4-Year College or Greater.” This shows the difference in education status of the providers and the patients visiting the health clinics.

Table 7 shows that the majority of providers are in one of the youngest age categories and more educated than the older providers. Except for two providers who did not provide a response, all providers had health insurance.

Provider Age (in Years) and Education	Some College	4-Year College	More Than 4-Year College	Total (N=13)
25-34	1	1	7	9
35-44	1	1	1	3
45-54	0	1	0	1
Total	2	1	8	13

Table 7. Medical provider age and education.

Cost

As shown in **Figure 1**, 46 study participants had SIS, 22 individuals had EsSalud, one person had Fondo Seguro Policial (National Police insurance), and two community members had Private Insurance; 34 individuals indicated that they did not have any health plan.

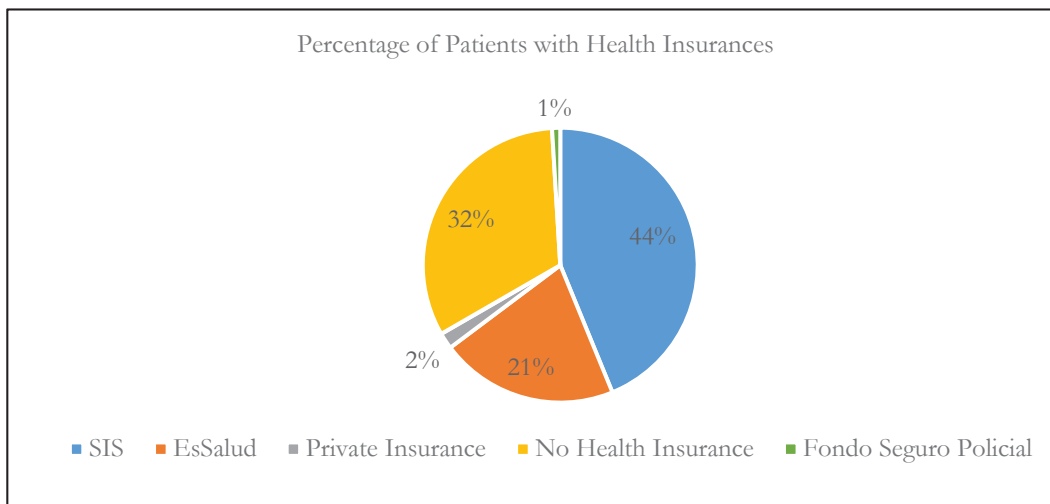


Figure 1. Percentage of patients according to individual health insurances.

Figure 2 displays patients’ responses when asked how they would rate their health insurance on a scale of zero to ten, with zero being the worst health plan possible and ten being the best health plan possible. Interestingly, about 27% of participants rated their health insurance plan as a five on the scale; 19 participants rated SIS as a five on the scale. Beneficiaries of SIS tended to rate their health plan lower on the scale, while beneficiaries of EsSalud more frequently rated their insurance plan higher on the scale.

In **Figure 2**, note that “No Health Plan” scores were rated 5, 8, 9, and 10. One would expect these participants to give a zero rating. Certain participants indicated that they had “No Health Plan,” but then they also rated a health plan. They answered both questions even though they should not have. In addition, individuals may have become confused about how to answer because “No Health Insurance” may have been correlated as utilizing the free clinic access and parish services; thus, subjects rated their responses based on clinic treatment rather than experiences at public or private health institutions.

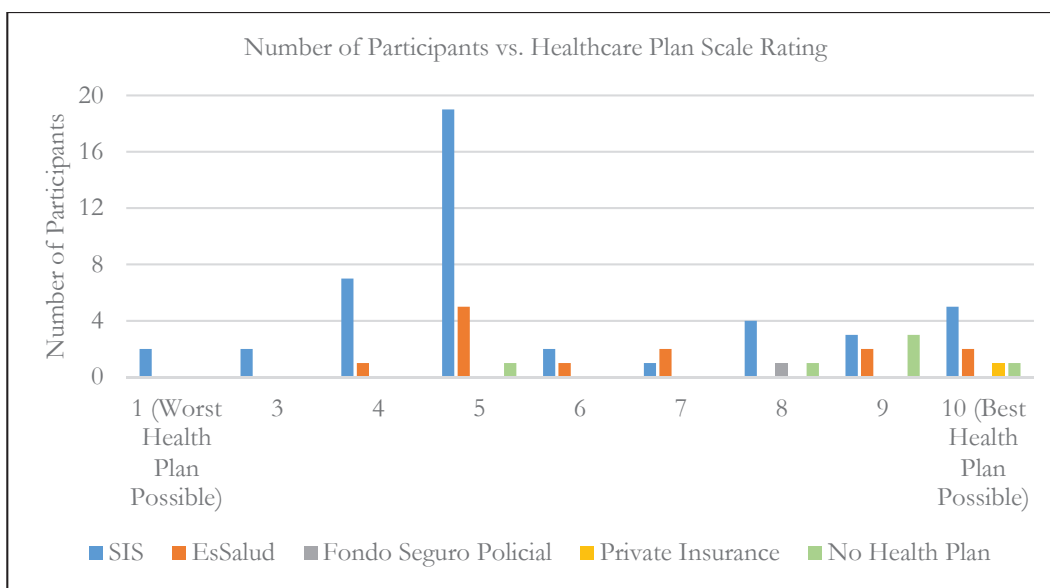


Figure 2. Study participants’ ratings of their respective health insurance plan on a scale of zero to ten.

Participants were questioned whether they were satisfied with their health insurance provider. While 32% of patients did not have a health insurance provider, per **Figure 1**, about 32% of patients indicated that they were happy with their health plan, and 33% stated that they were not content with their health insurance, as shown in **Figure 3**.

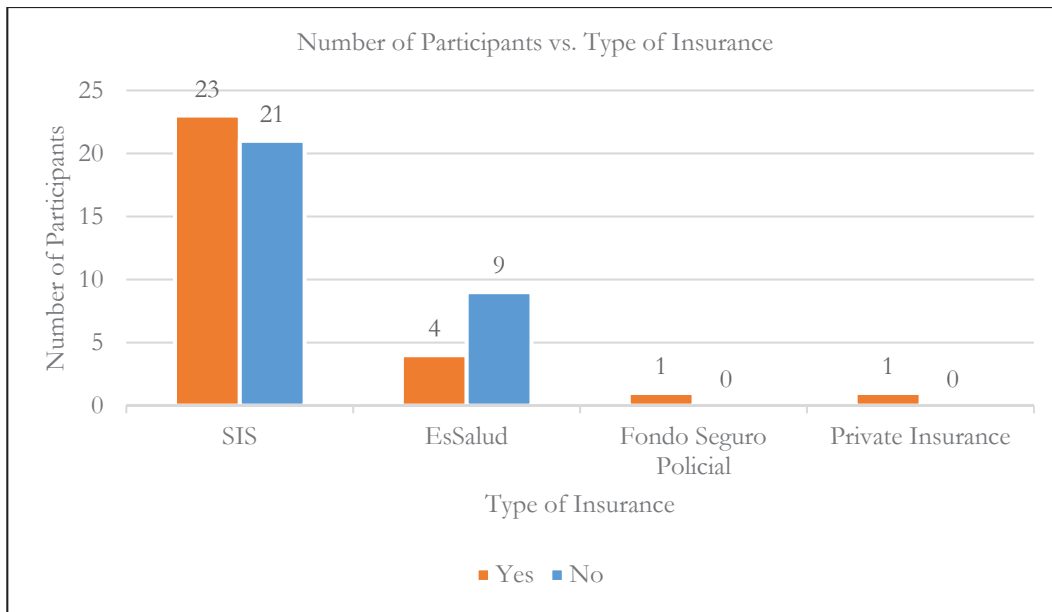


Figure 3. Patient responses when asked if they were satisfied with their health insurance provider.

Quality

Figure 4 demonstrates the diverse patient responses when they were asked to rate the healthcare that they have received in the last 12 months, with zero being the worst healthcare possible and ten being the best healthcare possible. While 24% indicated an average rating of healthcare received (a score of five), 19% stated that they have received the best healthcare possible in the past twelve months (a score of ten). Responses may be varied because individuals seek health treatment at different health institutions.

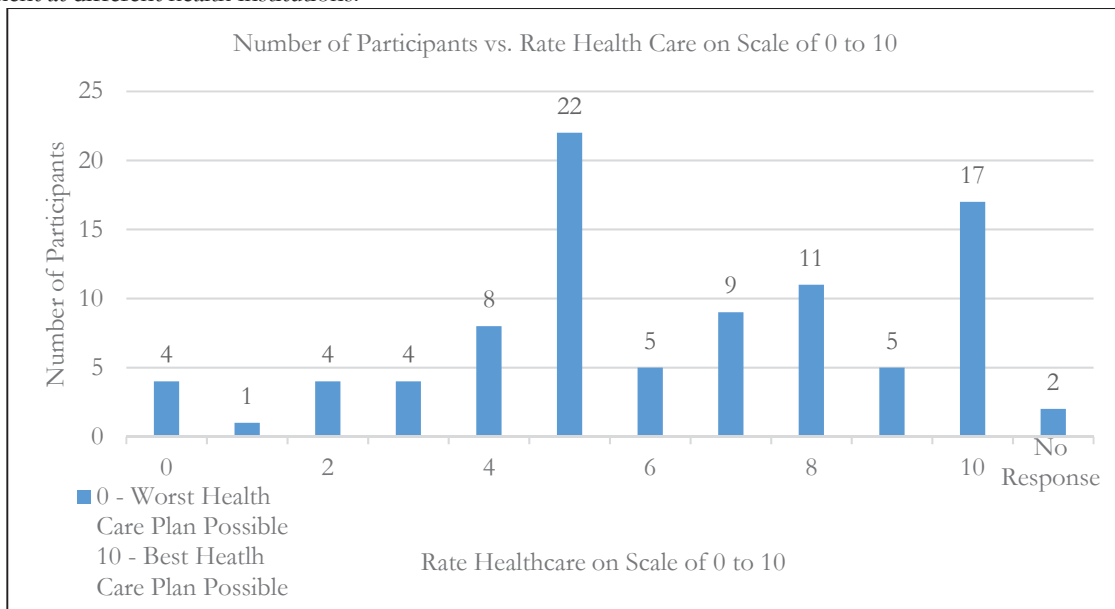


Figure 4. Participant's ranking, on a scale of one to ten, of all healthcare received in the last 12 months.

All patients were surveyed using eleven questions about their perceptions of the quality of care received. Answers may be surprising for a variety of reasons such as never receiving any other quality of medical attention and knowing no differently, lack of medical education, financial barriers, or location of medical services. Answers are fascinating because 77% of subjects reported their quality of care to be a five or better, and 19% of responders perceive their care as “Excellent.” This is interesting because these responses represent an area where care would be thought to have poor satisfaction overall.

As explained in the *Cost* section, participants were asked if they were happy with their health insurance provider. Among the 33% of patients that were not satisfied with their health plan, they were asked to describe their reason why they were not content. **Table 8** shows the patient responses.

Limitation of Physicians and Specialists	30%
There is No Medicine	24%
Wait Time	30%
Poor Quality of Medical Attention	38%
Negative Perception of Physician	15%

Table 8. Percentages of patient explanations as to why they were not satisfied with their health insurance provider.

Access

Health disparities such as basic medical education, ability to pay, coverage of health insurance, and transportation to appointments are just a few ways that access to healthcare may be limited. Access to healthcare is closely linked to one’s ability to pay for medical treatment.^{3,6,8-10} If an individual cannot pay for services at a private office, one must wait to receive attention from the health establishments according to the respective insurance provider.^{3,6} Peruvians wait days to years to complete medical testing, operations, or appointments.⁶ It is notable that 29% of patients report to waiting more than seven days to receive medical attention when care is “urgent.” Additionally, 15% of individuals indicated that they wait more than 30 days for a routine appointment. **Figures 5 and 6** demonstrate the number of days citizens in Piura must wait for medical care when it is urgent or for a routine appointment.

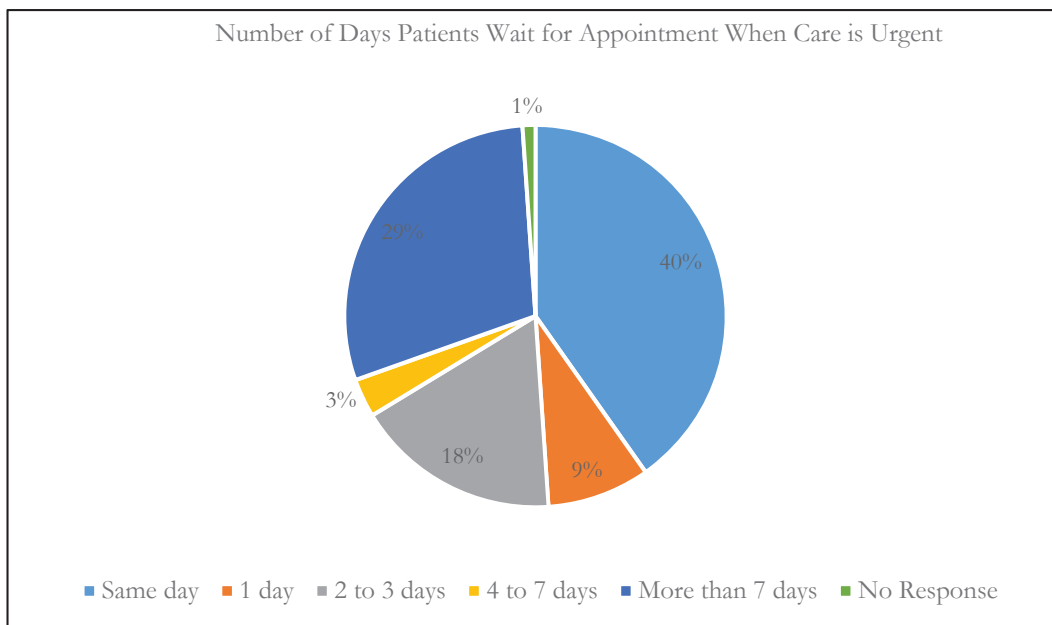


Figure 5. Number of days patients wait to receive urgent care.

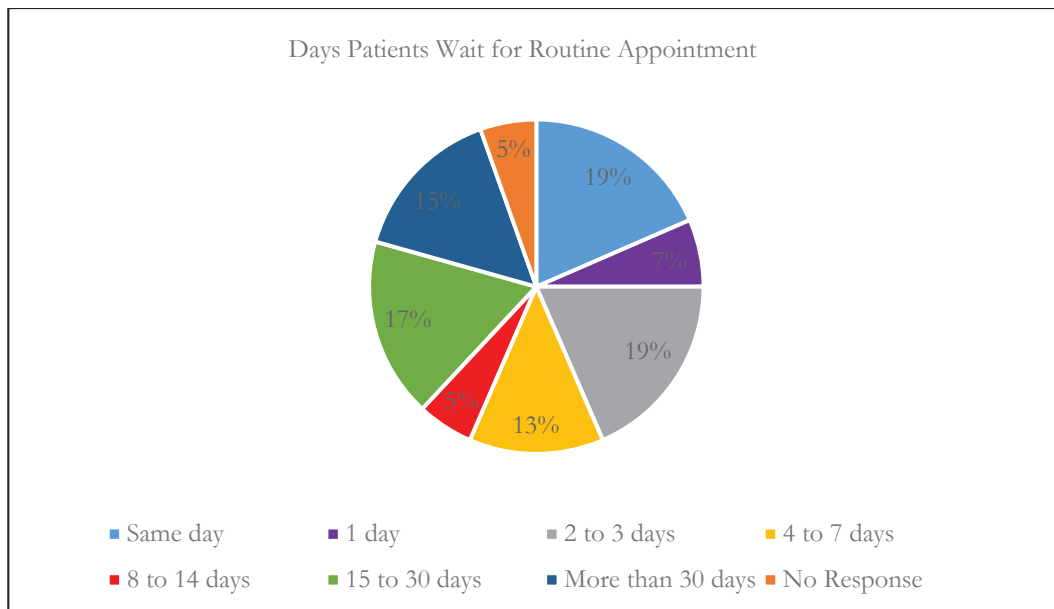


Figure 6. Number of days patients wait for routine appointment.

Figures 5 and 6, participants rated their overall health as “Good,” “Fair,” or “Poor.” Ninety-three percent of patients rated their health as “Good,” “Fair” or “Poor” while six participants rated their overall health as “Very good.” Zero subjects suggested their overall health as “Excellent”.

DISCUSSION

The primary purpose of this project was to examine patient’s perceptions of healthcare in Piura, Peru and to understand the relationship between cost, quality, and access to healthcare.

Cost

There is a strong and significant relationship between the respective health insurance plan and ratings of their health plans (on a scale of zero to ten, zero = worst plan to ten = best plan) (p-value ≤ 0.01). As shown in **Figure 2**, 67% of those with SIS insurance rated their plan as a five or lower. Thus, 33% of SIS subjects rated their plan six or more. Forty-six percent of EsSalud subjects rated their plan as a five or less, and 64% of EsSalud subjects rated their health plan as six or more. SIS subjects did tend to rate their health plan lower. 100% of individuals who have Fondo Seguro Policial, insurance for individuals associated with the National Police, or private insurance indicated that they had the best plan possible. The results may be biased because of the small proportion of EsSalud participants or the significant proportion of those subjects who decided to not answer the question (28%). Additionally, there is a strong positive relationship between subjects’ satisfaction with the health coverage and insurance provider (p-value ≤ 0.01), as demonstrated in **Figure 3**. Those who do not live in poverty (not be a beneficiary of SIS) are more likely to have greater satisfaction with their health insurance plan (see **Table 9**).

Cross-Tabulated Variables	95% CI	P-value	Pearson R
Rate Health Plan vs. Name of Health Plan	(0.76, 0.89)	0.000	0.84
Satisfaction with Health Insurance Provider vs. Name of Health Plan	(0.63, 0.82)	0.000	0.74

Table 9. Statistical analysis of Cost variables.

Approximately ten subjects commented that they rated their health plan higher than it actually was because they felt blessed to be receiving some health coverage, as opposed to none. Additionally, subjects indicated a higher satisfaction with their provider because they do not know the amount of coverage or access to care that other insurance plans offer. Lack of medical education and financial resources may contribute to the subject’s perceptions of health insurance coverage.^{2-3,6,8-10, 14}

Quality

According to **Figure 4**, 47% subjects reported they received average to the worst healthcare possible (scores of zero to five) in the past twelve months. As exhibited in **Table 10**, the variables of Quality and Convenience, Accessibility, etc. are being correlated; the quality of care in Piura is significant (p -values ≤ 0.01).

Quality of Care You Received	95% CI	P-value	Pearson's R
Convenience	(-0.04, 0.36)	0.119	0.16
Accessibility	(-0.01, 0.39)	0.058	0.20
Reception Area	(0.52, 0.76)	0.000	0.65
Comfort of Exam Room	(-0.03, 0.47)	0.097	0.17
Cleanliness	(0.14, 0.50)	0.001	0.33
Telephone Promptness	(-0.01, 0.38)	0.067	0.19
Courtesy of the Staff	(0.57, 0.78)	0.000	0.69
Time Spent with Physician	(0.56, 0.78)	0.000	0.68
Communication with Physician	(0.69, 0.86)	0.000	0.79
Privacy of Exam Room and Consult Room	(0.55, 0.78)	0.000	0.68
Overall Experience	(0.53, 0.77)	0.000	0.67

Table 10. Correlation between Quality of Care and Quality variables.

As reported in **Table 8**, 38% of subjects directly report poor quality of medical attention. When only 5.5% of the country's GDP is spent on healthcare, Peru lacks certain medical technology, and there is a deficiency of specialists and medical providers.^{2-3, 14, 13} It is not uncommon to find small, unclean exam rooms in public clinics and hospitals along with missing toilet seats, chipped paint, heaps of trash, and broken floor tiles.⁶ There were 75% of individuals who reported that the promptness with which professionals answer the phones, if ever, is "Fair" or "Poor." In fact, since Peru is still a developing country, many stated that the puestos de salud, centros de salud, and clinics do not even have telephones.⁶ Again, if one can pay for care in a private clinic or has private health insurance, care will be quicker and of higher quality, and there is more likely to be greater patient satisfaction.⁶

Access

The data reported in **Table 11**, suggests a statistically significant relationship between how individuals rate their healthcare and their access to care (p -values ≤ 0.01). As reported in **Tables 2 and 8** and explained in **References 2, 3, 8, 9, and 14**, health disparities, such as health literacy and financial resources, may affect health outcomes and access to services.

Access to Care in the Last 12 Months	Mean	95% CI	T	P-value	Interpretation
Days Wait for Appointment Urgent	2.79	(2.14, 3.17)	14.78 (df=91)	0.000	2.79 = 1 to 3 Days
Days Wait for Appointment Routine	4.26	(3.77, 4.75)	17.30 (df=91)	0.000	4.26 = 4 to 7 Days
How Often Get Care During Holidays	2.26	(1.98, 2.54)	16.07 (df=91)	0.000	2.26 = Sometimes
How Often Get Care After Hours	1.93	(1.65, 2.22)	13.44 (df=91)	0.000	1.93 = Sometimes
How Often Wait Time Within 15 Minutes	1.90	(1.65, 2.16)	14.92 (df=91)	0.000	1.90 = Sometimes
How Often Get Answers to Medical Question	2.84	(2.58, 3.09)	21.90 (df=91)	0.000	2.84 = Mostly Usually
Routine Care as Soon as Needed	2.86	(2.50, 3.21)	15.77 (df=91)	0.000	2.86 = Mostly Usually
Ease of Getting Care	2.29	(2.12, 2.47)	26.42 (df=91)	0.000	2.29 = Sometimes

Table 11. Correlation between Access to Care in the Last 12 Months and Access variables.

Access to healthcare is not easy for many people according to the **Figures 5 and 6**, which exemplify the difficulties of obtaining medical appointments. Twenty-nine percent of patients who needed urgent care wait more than seven days for attention while 32% of patients indicated that they often wait 15 or more days to be seen for a routine appointment. The limited number of specialists in Piura and low number of hours that physicians work make it difficult to receive attention.^{2-3,6}

According to **Reference 6**, each health establishment operates independently with its own set of rules. In order to obtain a medical appointment at some institutions, an individual must stand in line early in the morning (such as 3:00 AM) to try to procure an appointment slot for the same day. Appointments for respective specialties are distributed (usually around 5:30 AM). If the individual does not receive a time spot, the only way to obtain an appointment with the respective health insurance provider is to try the following day. Thus, some individuals attempt for days and weeks to acquire appointments. If financially able, one could obtain attention immediately in a private clinic. However, this method is the only way to obtain medical appointments at some health establishments.⁶

Gender, Education, and Age

To view the relationship between gender, education, and age and health plans the following linear models were created and correlated in **Table 12**.

Formula = HEALTHPLAN ~ GENDER	p-value: 0.2227
Formula = HEALTHPLAN ~ EDUCATION	p-value: 0.4566
Formula = HEALTHPLAN ~ AGE	p-value: 0.4851
Formula = HEALTHPLAN ~ AGE + GENDER	p-value: 0.4119
Formula = HEALTHPLAN ~ AGE + GENDER + EDUCATION	p-value: 0.4997

Table 12. P-values of linear models crossed with certain variables.

According to **Table 12**, there is no significant association in any of these findings. Intuitively, education, age and gender should have some bearing on the ability to afford health insurance.⁹ However it should be noted that 72% of the sample had less than a high school education. The sample is also biased toward women. In the future, adding the variables “income” and “employment status” might assist in providing a better view of the data.

Based on **Table 12**, there are a variety of observations to be made. All of the clinics were “free clinics” that were either more accessible and/or more affordable. Most of the subjects were either SIS qualified (45) or had No Insurance (32). Based on the Health plan status it can be assumed that all participants are in the low to low-end of the middle-income bracket.

Furthermore, **Table 13** shows the correlation between Education and Health plan.

HEALTHPLAN	<8 TH Grade	Some High School	High School Graduate	Some College	>4-Year College	Total
SIS	8	18	10	6	3	45
EsSalud	1	3	3	5	1	13
Armed Forces / National Police	0	0	0	1	0	1
Private Insurance	0	0	0	0	1	1
No Insurance	4	13	6	4	5	32
Total	13	34	19	16	10	92

Table 13. The correlation between Education and Health plan variables.

In a test for independence between EDUCATION and HEALTHPLAN the p-value is 0.1956; thus, there is no connection between EDUCATION and HEALTHPLAN. In a test for correlation, the p-value is 0.4566; there is no significance between Education and Health plan. According to the variance, less than 1% of the variance of EDUCATION can be accounted for by HEALTHPLAN.

Typically, as education increases, so does insurance status.⁹ However, as noted in **Table 13** education does not influence the ability to afford insurance.

CONCLUSIONS

This research study provides interesting insights and an understanding of the Peruvian healthcare system. Findings help us comprehend how closely the variables cost, quality, and access to healthcare are intertwined with one's ability to pay for health services in Piura, Peru.^{3,6,8-10} The fragmented health care system is navigated based on one's ability to pay for services and can lead to poor quality of patient care.⁸⁻¹⁰ While administering the surveys to patients, disparities (such as financial resources, access to transportation, and education levels) became evident among citizens and how these may affect health outcomes or one's level of satisfaction with the services provided. For this reason, there may have been differing views and responses.

This research deviates from minimal, previous research about the Peruvian healthcare system. These cases are specific to the Piura area, where Piura has one of the largest populations but lowest density of healthcare providers.^{2-3, 6}

A limitation of this project was the study locations. There could have been selection bias because all patients interviewed at the health facilities of la Parroquia Santísimo Sacramento; all patients were receiving the parish services free of charge. Thus, it is important to note that there may be variability in the responses. Despite instructing the participants to answer the questions as if they were receiving services in other health establishments in Piura, patients could have answered the questions based on the high quality of care that the talented medical professionals provided at the parish.

This sample is highly skewed towards women (+70% of subjects) and results could be considered as potentially biased. Women represent nearly half of the population in Peru, which is not represented in the sample.³ Thus, the sample is not representative of the gender distribution in the Peruvian population. Additionally, only 28% of the sample had more than a high school education. Usually, education is categorized an explanatory variable or as a determinant to health outcomes. Normally, as education increases, so does insurances status.⁹ However, this sample proved differently as education does not influence one's ability to afford insurance, per **Table 13**.

Another limitation was the survey instrument that was used. When creating questions about Access, questions should be included that address obstacles for patients to see a physician: how far individuals live from the nearest provider, transportation costs, the ability to take time off from work, access to childcare, etc. Additionally, the survey may not have used the most current and applicable terminology that the Peruvians understood. In addition, the subjects' responses may be biased if they did not understand certain questions (premium, copay, shared payment, etc.). Thus, this survey, which was adapted from two national surveys designed to be administered in the United States, is a poor tool to measure Peruvians' responses because the healthcare system is significantly different. In future studies, this must be addressed and the survey tool needs to be revised to be more culturally sensitive, ask more specific questions, use more relevant terminology, and address these concerns.

Lastly, there was an error in a sentence overlooked by the IRB on the recruitment statement. On Number 4, there is no loss of confidentiality. Even though it states that confidentiality may be lost, there was no loss of confidentiality.

Opportunities abound to further study the targeted population. In future studies, more questions must be addressed that are specific to women's issues that influence perceptions of healthcare and access to healthcare. A future research project should focus on surveying patients at public and private health institutions in Piura where individuals do pay for health care services. While this project was completed in city and region of Piura, individuals living in other cities (but still in the Piura region) could be surveyed. Future work needs to be conducted to examine the differences between the EsSalud and MINSA health establishments in Piura. Additionally, it would be interesting to investigate the number of specialists in Piura and categorize them based on their work location. Lastly, a future project could study the relationship between a patient's income level and type of health insurance.

This project is important for the Parish community of Santísimo Sacramento because it highlights basic demographic information of the patients populating the parish health clinics. It will help the parish better allocate human and financial resources to its health clinics. Additionally, it will assist the parish in determining what future improvements or additions can be made to benefit the health of the Piura community. This project is beneficial for any aspiring or current medical professional because it provides the opportunity to compare the United States and Peruvian healthcare systems.

APPENDICES

Appendices for this manuscript can be found at <http://www.ajuronline.org/ajur-volume-16-issue-2-september-2019/>

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PRESS SUMMARY

Possessing financial resources affects cost, quality, and access of healthcare in Piura, Peru. One's health literacy and health insurance provider can influence health outcomes and patient satisfaction of health care services. Patient perceptions of cost, quality, and access of healthcare in Piura, Peru were investigated as 92 patients and 13 medical providers were surveyed with a Spanish survey in eight city health centers. Upon completion of the quantitative and qualitative data collection, statistical analysis was performed which yielded relationships among healthcare variables. The data captured will educate the Piura community and the Santísimo Sacramento Parish as they continue to improve health institutions and services.