

Prevalence and factors associated with frequent seeking of pharmaceutical consultations among pharmacy users in Peru

Prevalencia y factores asociados a la búsqueda frecuente de consultas farmacéuticas en usuarios de farmacias en Perú

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ABSTRACT

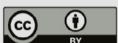
Objectives: The objective of this study was to estimate the prevalence of frequent (i.e., almost always or always) seeking of pharmaceutical consultations and to identify its associated factors among pharmacy users in Peru. **Methods:** The study employed an analytical cross-sectional design, drawing on secondary data from the 2016 National User Satisfaction Survey (ENSUSALUD), which included pharmacy users across Peru. Both crude and adjusted ordinal logistic regression models were applied to identify factors associated with frequent (i.e., almost always or always) seeking of pharmaceutical consultations. Odds ratios (ORs) and their corresponding 95% confidence intervals (95% CI) were estimated. **Results:** Data from 3,795 users who visited pharmacies in Peru during 2016 were included. A total of 22.5% (95% CI: 21.0–24.1) reported that they almost always or always sought pharmaceutical consultation in the past year, whereas 43.0% did so occasionally and 34.5% never or almost never used this service. Factors associated with frequent pharmaceutical consultation seeking included being aged 45 years or older, having a low educational level, residing in the highlands or jungle regions, having a favorable perception of self-medication, and frequently purchasing medications without a prescription. **Conclusion:** In Peru, approximately one-fourth of pharmacy users frequently seek pharmaceutical consultation. The findings of this study may inform pharmaceutical care practices among pharmacists in Peru.

Keywords: Pharmaceutical Services; Epidemiologic Studies; Cross-Sectional Studies; Pharmacy Research; Secondary Data Analysis; Community Pharmacy Services (source: MeSH NLM).

RESUMEN

Objetivos: El objetivo de este estudio fue estimar la prevalencia de la búsqueda frecuente (casi siempre o siempre) de consultas farmacéuticas e identificar los factores asociados a este comportamiento entre los usuarios de farmacias en Perú. **Materiales y métodos:** El estudio empleó un diseño transversal analítico, basado en datos secundarios de la Encuesta Nacional de Satisfacción de Usuarios en Salud 2016 (ENSUSALUD), que incluyó a usuarios de farmacias en todo el Perú. Se aplicaron modelos de regresión logística ordinal crudos y ajustados para identificar los factores asociados a la búsqueda frecuente (casi siempre o siempre) de consultas farmacéuticas. Se estimaron odds ratio (OR) y sus correspondientes intervalos de confianza al 95% (IC 95%). **Resultados:** Se incluyeron datos de 3 795 usuarios que acudieron a farmacias en el Perú durante el año 2016. Un total de 22,5% (IC 95%: 21,0–24,1) reportó que casi siempre o siempre buscaba consulta farmacéutica en el último año, mientras que el 43,0% lo hacía ocasionalmente y el 34,5% nunca o casi nunca utilizaba este servicio. Los factores asociados con la búsqueda frecuente de consultas farmacéuticas incluyeron tener 45 años o más, presentar un bajo nivel educativo, residir en la sierra o la selva, tener una percepción favorable hacia la automedicación y comprar frecuentemente medicamentos sin receta médica. **Conclusiones:** En el Perú, aproximadamente una cuarta parte de los usuarios de farmacias busca consultas farmacéuticas con frecuencia. Los hallazgos de este estudio pueden orientar las prácticas de atención farmacéutica entre los farmacéuticos en el país.

Palabras clave: Servicios Farmacéuticos; Estudios Epidemiológicos; Estudios Transversales; Investigación en Farmacia; Análisis de Datos Secundarios; Servicios Comunitarios de Farmacia (fuente: DeCS Bireme).



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INTRODUCTION

In Peru, the health system is characterized by fragmentation and segmentation, which limit the delivery of comprehensive and high-quality health services [1]. Shortages of essential medicines in public hospital pharmacies frequently compel patients to purchase them from private establishments [2,3]. Moreover, the high prevalence of purchasing prescription drugs without medical authorization remains a persistent issue nationwide [4]. Data from the National Institute of Statistics and Informatics (INEI) indicate that, in 2023, 21.4% of Peruvians sought health care at pharmacies after experiencing illness [5]. These findings suggest that a significant portion of the population turns to pharmacies not only for medication but also for pharmaceutical consultations.

“Pharmaceutical consultation” is defined as the “professional act in which the pharmacist is consulted by the patient or another health agent to address any matter related to the pharmacist’s health-related knowledge” [6]. This service has a broad scope, as it not only provides guidance on the medications the patient is taking or might take (including over-the-counter drugs), but also on other issues related to the patient’s own health or that of family members, and, when appropriate, refers the patient to a physician. Terms such as “pharmaceutical advice” or “pharmaceutical counseling” have also been used to describe this service; however, these terms are ambiguous and nonspecific [6].

Evidence on this topic is limited, particularly in developing countries such as Peru, where the health system has deficiencies and a substantial proportion of the population obtains medications without a medical prescription [4]. A review of the literature published between 2017 and 2021 identified 108 studies on pharmaceutical practices in Latin America, primarily concentrated in Brazil (74%) and Colombia (13%), while other countries in the region show limited scientific output in this field [7]. In Peru, only two studies based on interventions in community pharmacies were identified; however, neither specifically analyzed the dynamics of pharmaceutical consultations nor their role within primary health care systems [8,9].

Although previous reports have documented the proportion of individuals who seek care at pharmacies after experiencing illness [5], little is known about how frequently individuals seek pharmaceutical consultation and which factors influence this behavior at the population level. Despite recent transformations in healthcare delivery, particularly after the COVID-19 pandemic, nationally representative evidence on pharmaceutical consultation in Peru remains scarce. Understanding the determinants of this practice in the pre-pandemic period

provides an important baseline for evaluating subsequent changes in pharmacy-based healthcare utilization. The findings of this research may inform strategies aimed at strengthening the role of community pharmacists within primary healthcare, improving regulation of pharmaceutical services, and designing interventions to promote appropriate medication use and referral to medical care when necessary. Consequently, this study aimed to estimate the prevalence of frequent (i.e., almost always or always) seeking of pharmaceutical consultations during the previous year and to identify the factors associated with this behavior among pharmacy users in Peru.

METHODS

Study design

This study analyzed secondary data from the 2016 National User Satisfaction Survey (ENSUSALUD) using a cross-sectional design. The study population included individuals who visited pharmacies in Peru during 2016.

Context

The 2016 ENSUSALUD was conducted by the National Superintendency of Health (SUSALUD), in collaboration with the National Institute of Statistics and Informatics (INEI) of Peru. For the present study, we used “Questionnaire No. 4, aimed at pharmacy and drugstore users,” which sought to “obtain information on the perceptions and satisfaction of users who purchase medications in pharmacies or drugstores in Peru.” This instrument was administered to 3,858 pharmacy users at establishments located within a two-block radius of 182 health facilities distributed across the country [10].

This survey used two sampling units. The primary sampling unit consisted of health facilities belonging to the Ministry of Health (MINSA), the Social Health Insurance (EsSalud), the health services of the Armed Forces and National Police, as well as private health facilities. These were selected through systematic random sampling. The secondary sampling unit consisted of pharmacy users in the vicinity of these health facilities, who were selected randomly [10].

The estimation of the sample size was derived from data obtained in the 2015 ENSUSALUD, considering a prevalence of 54.8% for not purchasing medications with a medical prescription, a 95% confidence level, and a margin of error between 0.3 and 0.8 percentage points. The sampling design was complex, as it was probabilistic, two-stage, stratified, and independent, with national-level inference [10].

Participant selection

For the present analysis, pharmacy users aged 18 years or older were included, and those with incomplete data for the variables of interest were excluded.

Variables

The main variable of interest was the frequency of seeking pharmaceutical consultations, assessed through the question: "In the past 12 months, did you visit a pharmacy or drugstore to seek advice for any discomfort, ailment, or symptom?" Responses were provided on a five-point Likert-type scale: never, almost never, occasionally, almost always, and always. Examination of the distribution showed that some adjacent categories had relatively small frequencies and represented conceptually similar levels of consultation behavior. For ease of analysis and interpretation, the categories "never" and "almost never" were combined, as were "almost always" and "always," resulting in three categories for the final analysis.

Potential associated factors included sociodemographic variables including sex (male or female), age group (18–29, 30–44, 45–64, and 65 years or older), educational level (no formal education, primary, secondary, and higher), and region of residence (coast, highlands, jungle, and metropolitan Lima).

Additional potential factors related to pharmaceutical consultation seeking included: health care institution (Ministry of Health, EsSalud, Armed Forces and National Police health services, and private clinics); primary language ("What language do you use to communicate at home?": Spanish or Quechua/other); health insurance (no or yes); opinion on self-medication ("What is your opinion about using medications without a prescription?"). The response options are: "It is not recommended to use medications without medical advice" (unfavorable opinion) and "I consider it acceptable in mild cases or when used responsibly" (favorable opinion); permanent use of medication ("Do you or the family member for whom you purchased the medication take it permanently [daily or every other day for more than four weeks]?": no or yes); perceived health status ("In general, how do you perceive your health status?": excellent, very good, good, fair, or poor); and purchase of medications without a prescription ("In the past 12 months, did you visit a pharmacy or drugstore to purchase medications without a prescription?": no or yes).

Statistical Analysis

Data were analyzed using Stata SE (Standard Edition), version 18.0 for Windows. In the descriptive analysis, categorical variables were summarized as absolute

frequencies, percentages, and 95% confidence intervals (95% CI). In the bivariate analysis, differences by levels of pharmaceutical consultation seeking were examined through the chi-square test adjusted with the F statistic, considering the complex sampling design.

In the multivariable analysis, associated factors were explored through crude and adjusted ordinal logistic regression models, and odds ratios (ORs) along with their corresponding 95% CI were estimated. A statistical approach appropriate for the exploratory purpose of the study was applied for variable selection^[11]. Variables with a p-value <0.20 in the crude model were included in the adjusted model^[12], and statistical significance was defined as $p < 0.05$. The proportional odds assumption was evaluated using the test of parallel lines (Wolfe-Gould). The results indicated that this assumption was not violated ($p > 0.05$), supporting the use of an ordinal logistic regression model. Therefore, the associations were appropriately estimated using ordered logistic regression.

Potential interaction terms between age and region, and between educational level and region, were evaluated in the adjusted model.

Potential multicollinearity among variables in the adjusted model was assessed by manually calculating the variance inflation factor (VIF); multicollinearity was considered present when the VIF exceeded 5^[13].

Ethical Aspects

The project was registered with the Directorate General of Research, Development, and Innovation (DGIDI) of the Universidad Científica del Sur under code No. 046-2023-PRO99. Because the 2016 ENSUSALUD data are open-access and publicly available on the SUSALUD website, institutional ethics committee review was not considered necessary.

RESULTS

A total of 3,858 pharmacy users in Peru were included; 62 individuals under 18 years of age and one individual who did not report their educational level were excluded, resulting in 3,795 participants in the final analysis.

In the descriptive analysis, 56.3% of the users were women, 39.4% were between 30 and 44 years, 50.0% had higher education as their highest educational level, and 33.7% were from the jungle region. A total of 46.4% received care at a Ministry of Health (MINSA) health facility, 98.6% reported Spanish as their primary language, and 67.0% had health insurance. In addition, 42.5% held a favorable opinion of self-medication, 16.5% reported permanent use of at least one medication, 40.8% perceived their health

status as good, and 91.9% admitted to having purchased medications without a prescription in the past year. Finally, 22.5% of participants reported having frequently (i.e., almost always or always) sought pharmaceutical consultations at a pharmacy during the previous year (Table 1).

During the bivariate analysis, several factors showed significant associations with frequent seeking of pharmaceutical consultations, including age, educational level, region of residence, type of health care institution, primary language, health insurance, opinion on self-medication, permanent use of medication, perceived health status, and purchase of medicines without a prescription ($p < 0.05$) (Table 2).

In the crude model, age group, region of residence, health care institution, health insurance, opinion on self-medication, permanent use of medication, and purchase of medications without a prescription had p -values < 0.20 and were therefore included in the adjusted model.

In the model adjusted for age group, educational level, region of residence, health care institution, primary language, health insurance, opinion on self-medication, permanent use of medication, and purchase of medications without a prescription, users aged 45–64 years and those aged 65 years or older showed lower odds of reporting more frequent seeking of pharmaceutical consultations (OR=0.72; 95% CI: 0.58–0.89 and OR=0.45; 95% CI: 0.32–0.63, respectively) compared with users aged 18–29 years (Table 3). Users with lower educational levels showed higher odds of reporting more frequent seeking of pharmaceutical consultations, with the highest odds observed among those with no formal education (OR=2.40; 95% CI: 1.27–4.55) compared with users with higher education. Likewise, users from the highlands and jungle regions showed higher odds of reporting more frequent seeking of pharmaceutical consultations (OR=1.79; 95% CI: 1.45–2.20 and OR=1.71; 95% CI: 1.44–2.05, respectively) compared with users from the coastal region (Table 3). Similarly, users with a favorable opinion of self-medication and those who purchased medications without a prescription showed higher odds of reporting more frequent seeking of pharmaceutical consultations (OR=1.43; 95% CI: 1.23–1.67 and OR=4.74; 95% CI: 3.26–6.87, respectively) compared with users with an unfavorable opinion of self-medication and those who did not purchase medications without a prescription (Table 3).

No statistically significant interaction was observed between age and region ($p=0.456$). Although the interaction between educational level and region was statistically significant ($p < 0.001$), the model showed instability due to sparse data in some interaction categories; therefore, interaction terms were not retained in the final model.

Table 1. Characteristics of pharmacy users in Peru (n = 3,795)

Characteristics	n (%)*	95% CI
Sex		
Male	1,664 (43.7)	41.8–45.6
Female	2,131 (56.3)	54.4–58.2
Age group		
18–29	1,005 (26.3)	24.7–28.0
30–44	1,585 (39.4)	37.6–41.3
45–64	957 (26.6)	24.9–28.4
65 +	248 (7.7)	6.7–8.8
Educational level		
No formal education	48 (1.3)	0.8–1.6
Primary	441 (11.0)	9.9–12.3
Secondary	1,458 (37.7)	35.9–39.6
Higher	1,848 (50.0)	48.2–52.0
Region of residence		
Coast	1,120 (22.5)	21.1–24.0
Highlands	767 (14.5)	13.4–15.7
Jungle	1,401 (33.7)	32.0–35.4
Metropolitan Lima	507 (29.3)	27.4–31.4
Health care institution		
MINSA	1,824 (46.4)	44.5–48.3
EsSalud	1,522 (36.6)	34.8–38.4
FFAA and PNP	192 (7.5)	6.4–8.6
Private clinics	257 (9.5)	8.4–10.9
Primary language		
Spanish	3,719 (98.6)	98.2–98.9
Quechua/other	76 (1.4)	1.1–1.9
Health insurance		
Yes	2,616 (67.0)	65.1–68.8
No	1,179 (33.0)	31.3–34.9
Opinion on self-medication		
Unfavorable	2,115 (57.5)	55.6–59.4
Favorable	1,680 (42.5)	40.6–44.4
Permanent use of medication		
No	3,236 (83.5)	82.1–84.9
Yes	559 (16.5)	15.1–18.0
Perceived health status		
Excellent	77 (2.0)	1.6–2.8
Very good	163 (4.2)	3.5–5.0
Good	1,541 (40.8)	38.9–42.7
Fair	1,875 (49.4)	47.5–51.3
Poor	139 (3.6)	3.0–4.4
Purchase of medications without a prescription		
No	258 (8.1)	7.1–9.3
Yes	3,537 (91.9)	90.7–92.4
Frequency of seeking pharmaceutical consultations		
Never and almost never	1,156 (34.5)	32.6–36.4
Occasionally	1,643 (43.0)	41.1–44.9
Almost always and always	996 (22.5)	21.0–24.1

MINSA: Ministry of Health, EsSalud: Social Health Insurance, FFAA and PNP: Armed Forces and National Police

* Weighted percentage according to the ENSUSALUD sampling design.

Table 2. Differences by frequency of seeking pharmaceutical consultations among pharmacy users in Peru (n = 3,795)

Characteristics	Frequency of seeking pharmaceutical consultations			p-value
	Never and almost never	Occasionally	Almost always and always	
	n (%)	n (%)	n (%)	
Sex				0.160
Male	521 (35.7)	690 (40.9)	453 (23.4)	
Female	635 (33.6)	953 (44.6)	543 (21.8)	
Age group				<0.001
18-29	252 (29.0)	467 (46.4)	286 (24.6)	
30-44	446 (30.5)	709 (44.9)	430 (24.6)	
45-64	339 (41.1)	384 (39.1)	234 (19.8)	
65 +	119 (50.7)	83 (35.3)	46 (14.0)	
Educational level				0.001
No formal education	16 (26.9)	14 (37.2)	18 (35.9)	
Primary	117 (29.1)	176 (42.7)	148 (28.2)	
Secondary	418 (32.0)	619 (43.1)	421 (24.9)	
Higher	605 (37.7)	834 (43.2)	409 (19.1)	
Region of residence				<0.001
Coast	389 (39.9)	510 (44.1)	221 (15.0)	
Highlands	188 (24.0)	330 (46.8)	249 (29.2)	
Jungle	346 (25.4)	618 (46.4)	437 (28.2)	
Metropolitan Lima	233 (46.0)	185 (36.5)	89 (17.5)	
Health care institution				<0.001
MINSA	529 (31.5)	766 (43.7)	529 (24.8)	
EsSalud	452 (33.5)	691 (44.1)	379 (22.4)	
FFAA y PNP	73 (43.7)	80 (37.8)	39 (18.5)	
Private clinics	102 (45.7)	106 (39.5)	49 (14.8)	
Primary language				0.001
Spanish	1133 (34.6)	1627 (43.2)	959 (22.2)	
Quechua/other	23 (26.0)	16 (28.4)	37 (45.6)	
Health insurance				0.002
Yes	838 (36.7)	1101 (41.4)	677 (21.9)	
No	318 (29.9)	542 (46.4)	319 (23.7)	
Opinion on self-medication				<0.001
Unfavorable	790 (41.1)	858 (40.1)	467 (18.8)	
Favorable	366 (25.6)	785 (47.0)	529 (27.4)	
Permanent use of medication				<0.001
No	942 (32.7)	1430 (44.6)	864 (22.7)	
Yes	214 (43.7)	213 (35.0)	132 (21.3)	
Perceived health status				0.009
Excellent	26 (33.2)	27 (36.0)	24 (30.8)	
Very good	48 (35.7)	72 (41.5)	43 (22.8)	
Good	511 (37.2)	678 (43.7)	352 (19.1)	
Fair	541 (33.0)	808 (43.0)	526 (24.0)	
Poor	30 (24.2)	58 (41.2)	51 (34.6)	
Purchase of medications without a prescription				<0.001
No	188 (74.7)	44 (16.4)	26 (8.9)	
Yes	968 (30.9)	1599 (45.4)	970 (23.7)	

MINSA: Ministry of Health, EsSalud: Social Health Insurance, FFAA and PNP: Armed Forces and National Police

Table 3. Factors associated with frequent seeking of pharmaceutical consultations among pharmacy users in Peru (n = 3,795)

Characteristics	Crude model	p-value	Adjusted model	p-value
	OR (95% CI)		OR (95% CI)	
Sex				
Male	Reference			
Female	1.02 (0.88–1.18)	0.754	--	--
Age group				
18-29	Reference		Reference	
30-44	0.96 (0.81–1.14)	0.658	0.98 (0.81–1.17)	0.832
45-64	0.65 (0.53–0.79)	< 0.001	0.72 (0.58–0.89)	0.003
65 +	0.43 (0.31–0.58)	< 0.001	0.45 (0.32 –0.63)	<0.001
Educational level				
No formal education	2.01 (1.05–3.83)	0.034	2.40 (1.27–4.55)	0.007
Primary	1.55 (1.23–1.95)	< 0.001	1.77 (1.38–2.26)	<0.001
Secondary	1.33 (1.14–1.55)	< 0.001	1.41 (1.20–1.66)	<0.001
Higher	Reference		Reference	
Region of residence				
Coast	Reference		Reference	
Highlands	2.07 (1.70–2.52)	<0.001	1.79 (1.45–2.20)	<0.001
Jungle	1.96 (1.65–2.32)	<0.001	1.71 (1.44–2.05)	<0.001
Metropolitan Lima	0.86 (0.69–1.07)	0.178	1.07 (0.85–1.34)	0.562
Health care institution				
MINSA	1.85 (1.40–2.44)	<0.001	1.37 (1.03–1.81)	0.026
EsSalud	1.66 (1.26–2.20)	0.001	1.25 (0.94–1.66)	0.119
FFAA y PNP	1.14 (0.76–1.71)	0.514	1.09 (0.73–1.62)	0.663
Private clinics	Reference		Reference	
Primary language				
Spanish	Reference		Reference	
Quechua/other	2.34 (1.31–4.19)	0.004	1.58 (0.87–2.87)	0.130
Health insurance				
Yes	Reference		Reference	
No	1.25 (1.07–1.44)	0.004	1.13 (0.97–1.32)	0.119
Opinion on self-medication				
Unfavorable	Reference		Reference	
Favorable	1.84 (1.60–2.13)	<0.001	1.43 (1.23–1.67)	<0.001
Permanent use of medication				
No	Reference			
Yes	0.71 (0.57–0.88)	0.002	0.91 (0.73–1.15)	0.467
Perceived health status				
Excellent	Reference			
Very good	0.78 (0.38–1.56)	0.465	--	--
Good	0.68 (0.37–1.26)	0.224	--	--
Fair	0.85 (0.46–1.57)	0.609	--	--
Poor	1.38 (0.67–2.85)	0.380	--	--
Purchase of medications without a prescription				
No	Reference		Reference	
Yes	6.14 (4.31–8.76)	<0.001	4.73 (3.26–6.87)	<0.001

MINSA: Ministry of Health, EsSalud: Social Health Insurance, FFAA and PNP: Armed Forces and National Police

OR: Odds Ratio, CI: Confidence intervals. Ordinal logistic regression model. Higher odds indicate greater frequency of seeking pharmaceutical consultations.

All variables showed VIF values below 5 (mean VIF=1.65), indicating no evidence of problematic multicollinearity.

DISCUSSION

We found that approximately one-fourth of pharmacy users in Peru frequently (i.e., always or almost always) sought pharmaceutical consultation during 2016. Adults and older adults showed lower odds of reporting more frequent pharmaceutical consultation seeking, whereas users with a low educational level, those from the highlands and jungle regions, those with a favorable opinion of self-medication, and those who purchased medications without a prescription showed higher odds of reporting more frequent pharmaceutical consultation seeking.

Adults and older adults showed lower odds of reporting more frequent pharmaceutical consultation seeking. Similarly, a study found that adults aged 18 to 34 seek pharmaceutical consultation more frequently than those older than 55 years, which is consistent with our findings. The study also reports that older adults typically seek consultation for themselves, whereas younger individuals tend to do so on behalf of third parties^[14]. Possible explanations for this behavior may be related to self-medication practices, which are common among individuals who visit pharmacies to address “minor ailments”^[15,16]. Evidence indicates that younger individuals more commonly report self-medication practices, as they tend to be more economically active and experience a higher incidence of acute illnesses that require rapid resolution, in contrast to older adults, who are more likely to have chronic conditions that do not require the same urgency and are typically managed through specialized medical services^[17]. The plausibility of this explanation is supported by studies showing that increasing age is associated with lower self-medication practices^[18]. Future studies are needed to investigate other possible explanations, as self-medication may occur without seeking pharmaceutical consultation, and not all pharmaceutical consultations lead to self-medication practices.

Users with a lower educational level showed higher odds of reporting more frequent pharmaceutical consultation seeking. This finding is consistent with that reported in one of the few available studies on the subject^[14]. Evidence indicates that a higher educational level is associated with better knowledge of medication use (medication literacy)^[19,20], and even with lower medication consumption^[21]. In this context, it is plausible that a lower educational level is associated with more limited knowledge regarding medication administration, which may lead to a greater tendency to seek pharmaceutical advice. Additionally, individuals with a lower educational

level often face greater barriers to accessing formal health services; therefore, pharmacies may represent a more accessible and lower-cost first point of contact for the management of minor health problems. This may help explain the higher frequency of pharmaceutical consultation observed in this group.

Users from the highlands and jungle regions showed higher odds of reporting more frequent pharmaceutical consultation seeking compared with users from the coastal region. The concentration of health care facilities with greater problem-solving capacity in coastal cities and Lima may help explain these findings. In Peru, 70% of physicians practice in the capital^[22] (Lima and Callao). This centralization of medical care represents a serious public health problem that undermines the quality of care in health facilities in the highlands and jungle. For this reason, users in these regions may prioritize pharmaceutical consultation as a faster means of addressing health problems. Another possible explanation could relate to self-medication practices. A similar study in Peru reported higher consumption of antibiotics without a prescription in the highlands and jungle, possibly linked to less strict control and supervision of medication dispensing in these regions^[23].

Users with a favorable opinion of self-medication showed higher odds of reporting more frequent pharmaceutical consultation seeking compared with those with an unfavorable opinion. The belief that self-medication is harmless has been reported in several studies^[24,25]. This low perceived threat is one of the main reasons individuals self-medicate without supervision. Although controlled self-medication is beneficial and even recommended by the WHO, the desire for a rapid solution to a health problem based on an incorrect understanding of medication management may have serious consequences for public health.

Users who purchased medications without a prescription in the past year showed substantially higher odds of reporting more frequent pharmaceutical consultation seeking compared with users who did not report purchasing medications without a prescription. This strong association suggests that individuals who frequently visit pharmacies in Peru primarily do so to obtain medications that do not require a prescription—that is, over-the-counter medications presumably aimed at treating minor and urgent conditions. However, it is also possible that people visit pharmacies to acquire “prescription-only” medications, such as antibiotics. Substantial evidence from studies conducted in various countries has documented the dispensing of antimicrobials without a prescription^[26-29]. This situation is concerning, as Peru has reported a high prevalence of purchasing medications without a prescription, particularly in regions with fewer health care facilities

and more limited access to health services^[4]. Perceived health status was not significantly associated with the frequency of seeking pharmaceutical consultation. Although individuals with a poorer perception of their health might be expected to use health services more frequently, this pattern does not necessarily apply to pharmaceutical consultations. One possible explanation is that individuals who perceive their health as poorer are more likely to have chronic conditions managed within the formal healthcare system. In contrast, individuals who perceive their health as good may visit pharmacies to address minor ailments or to obtain medications for self-limited conditions. In addition, perceived health status reflects a general assessment of overall well-being rather than acute symptoms that would specifically motivate visits to a pharmacy.

Public health and pharmaceutical care implications

Our findings show that more frequent seeking of pharmaceutical consultation is significantly associated with the purchase of medications without a prescription. This result may reflect self-medication practices within the Peruvian population and, in turn, represent an opportunity to strengthen the advisory role of pharmacists in addressing health problems. Pharmaceutical consultation offers important advantages over medical consultation, including rapid care without the need for an appointment, high accessibility due to the wide coverage of community pharmacies, and the free nature of the service^[30]. These characteristics could help reduce medication errors^[31], the risk of adverse drug reactions^[32] and the high costs associated with unnecessary medication purchases^[33].

However, in developing countries such as Peru, there is significant concern regarding the easy access to prescription medications, such as antibiotics. This highlights the need for stronger oversight and regulation of pharmacies, as well as public awareness campaigns on the risks of “unsupervised” self-medication, given the possibility of dispensing antibiotics without a prescription. It has been demonstrated that the indiscriminate and unsupervised use of antibiotics promotes the emergence and spread of resistant bacteria, thereby reducing treatment effectiveness and increasing both mortality and health care costs^[29,34,35].

Limitations

The following limitations should be acknowledged. First, the data used in this study were collected in 2016, prior to the COVID-19 pandemic. Since then, healthcare delivery has evolved substantially, including the

expansion of digital health services, teleconsultations, online pharmaceutical platforms, and home delivery of medications. These changes may have modified how individuals seek pharmaceutical consultation. Therefore, our findings should be interpreted as reflecting pre-pandemic patterns of pharmaceutical consultation. However, these results provide an important national baseline that can help contextualize future studies evaluating how pharmaceutical consultation practices have evolved in the post-pandemic period. Second, the operational definition of pharmaceutical consultation may vary depending on the question or instrument used. We employed a Likert-type question, whereas other studies may use different instruments; therefore, comparisons should be made with caution. Third, the variable selection strategy based on p-values in the crude analysis may have introduced model selection bias, potentially affecting the accuracy of the estimates. Consequently, the magnitude of the associations may be overestimated or underestimated, and the findings should be interpreted with caution. Fourth, certain variables—such as the type of pharmaceutical establishment, the category of personnel providing care (pharmacist or pharmacy technician), and the severity of the health condition—were not included in the analysis because they were not available in ENSUSALUD. Fifth, potential recall bias (related to care received in the previous 12 months) and social desirability bias may have slightly influenced the final estimates of the study. Sixth, causality between the associated factors and the outcome cannot be inferred due to the cross-sectional study design.

Conclusions

This study showed that approximately one-fourth of pharmacy users in Peru frequently seek pharmaceutical consultation. The main factors associated with this behavior included low educational level, residence in the highlands or jungle regions, a favorable perception of self-medication, and the purchase of medications without a prescription. These findings suggest that pharmaceutical consultation serves as an accessible and rapid form of care in contexts where structural limitations of the health system exist, such as the centralization of medical services in Lima. In addition, the study identified that older adults are less likely to seek this type of consultation, which may reflect differences in perceived urgency or health care needs. The results underscore the need to strengthen the role of pharmacists as key agents in health guidance, particularly among vulnerable populations and those with limited access to formal medical services. This could be achieved through training on the rational use of medicines, as well as through the implementation of standardized protocols for pharmaceutical consultation and referral, and the strengthening of regulatory

frameworks to ensure the appropriate dispensing of medicines. In addition, community-based educational interventions should be promoted to improve medication-use practices and reduce unsafe self-medication.

Author contributions

LFYO, AMBG, ADEF, ZGHZ: Conceptualization, Formal analysis, Investigation, Resources, Writing – Original Draft, Visualization. JJA: Conceptualization, Methodology, Validation, Formal analysis, Writing – review & editing. All authors assume full responsibility for the content of the manuscript.

Conflicts of interest statement

The authors declare no conflicts of interest.

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Data availability statement

The data that support the findings of this study are openly available in SUSALUD web at https://portal.susalud.gob.pe/wp-content/uploads/archivo/base-de-datos/2016/C4_CAPITULOS%20-%20USUARIOS%20DE%20FARMACIAS%20Y%20BOTICAS.sav

Artificial Intelligence use statement

During the preparation of this work, the authors used Grammarly Pro to improve language quality and readability. After using this tool, the authors reviewed and edited the content as necessary and take full responsibility for the content of the published article.

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