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Satisfaction with community pharmacies in Brazil during the Covid-19 pandemic

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Abstract

Objective: To assess user satisfaction and use frequency of community pharmacies during Covid-19 pandemic, highlighting their strategic role in promoting public health. **Methods:** An epidemiological cross-sectional study was conducted in Alegre, Espírito Santo, during November and December 2021. To assess the satisfaction level with the use of community pharmacies, a visual analogue scale (VAS) was applied, considering values from 0 (completely dissatisfied) to 10 (completely satisfied). Satisfaction was analyzed both as a continuous and categorical variable, with VAS scores ≥ 7.0 considered as the threshold for satisfaction and ≥ 9.0 for very high satisfaction. A Tobit regression analysis was used to identify factors associated with satisfaction with community pharmacies. **Results:** A total of 697 participants were interviewed, 86.9% of whom used private community pharmacies. The satisfaction level was high, with an average score of 9.43 (Standard Deviation = 1.10). When categorized, 96.0% of participants reported satisfaction with community pharmacy services (VAS ≥ 7.0), with 80.2% classified as very satisfied (VAS ≥ 9.0). Factors associated with higher satisfaction included individuals aged 60 years or older, females, and those with lower educational levels. **Conclusion:** The findings revealed a notably high level of satisfaction among users of community pharmacies amid the Covid-19 pandemic**.** The trust placed in these services reflects their importance as an accessible and reliable resource for the population, especially during times of crisis.

Keywords: patient satisfaction; community pharmacy services; health services; epidemiology.

Satisfação com farmácias comunitárias no Brasil durante a pandemia de Covid-19

Resumo

Objetivo: Avaliar a satisfação dos usuários e a frequência de utilização das farmácias comunitárias durante a pandemia de Covid-19, destacando o seu papel estratégico na promoção da saúde pública. **Métodos:** Estudo epidemiológico transversal foi realizado em Alegre, Espírito Santo, durante os meses de novembro e dezembro de 2021. Para avaliar o nível de satisfação com a utilização das farmácias comunitárias, foi aplicada uma escala visual analógica (EVA), considerando valores de 0 (totalmente insatisfeito) a 10 (totalmente satisfeito). A satisfação foi analisada tanto como uma variável contínua quanto categórica, considerando-se escores de EVA ≥ 7,0 como o ponto de corte para satisfação e ≥ 9,0 para satisfação muito elevada. Uma análise de regressão Tobit foi utilizada para identificar fatores associados à satisfação com as farmácias comunitárias. **Resultados:** Foram entrevistados 697 participantes, dos quais 86,9% utilizavam farmácias comunitárias privadas. O nível de satisfação foi elevado, com nota média de 9,43 (Desvio Padrão = 1,10). Quando categorizados, 96,0% dos participantes relataram satisfação com os serviços da farmácia comunitária (EVA ≥ 7,0), sendo 80,2% classificados como muito satisfeitos (EVA ≥ 9,0). Os fatores associados à maior satisfação incluíram indivíduos com 60 anos ou mais, mulheres e aqueles com menor escolaridade. **Conclusão:** Os resultados revelaram um nível notavelmente alto de satisfação entre os usuários dos serviços de farmácias comunitárias em meio à pandemia de Covid-19. A confiança depositada nestes serviços reflete a sua importância como recurso acessível e fiável para a população, especialmente em tempos de crise.

Palavras-chave: satisfação do paciente; serviços de farmácia comunitária; serviços de saúde; epidemiologia.

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Introduction

According to the National Pharmaceutical Assistance Policy (PNAF), pharmaceutical services play a fundamental role in the promotion, protection and recovery of individual and public health. Within this framework, community pharmacies have become critical healthcare access points, contributing to the rational use of medicines and ensuring accessible pharmaceutical care for the community[1].

Community pharmacies offer access to healthcare products, medication guidance, and essential health education, serving as a primary point of care within the healthcare system[2]. These services strengthen health systems by supporting ongoing treatments and contributing to the overall health of the population[3,4].

The strategic role of community pharmacies was underscored during the Covid-19 pandemic, as pharmacies not only facilitated access to medicines but also supplied products to curb viral transmission, such as masks and hand sanitizers, alongside other community-based health services[1]. Given the strategic role that community pharmacies play, evaluating the quality of the health services they provide is essential. User satisfaction surveys have become important indicators of healthcare quality, delivering valuable insights into the effectiveness and quality of these services[5]. Consequently, user satisfaction has emerged as a key metric for assessing the overall quality of healthcare services.

User satisfaction is determined by individuals' subjective perceptions of the care they receive. It can be influenced by direct interactions with healthcare professionals as well as by service infrastructure factors, including equipment, medication availability, and amenities such as ventilation and comfort. Additionally, users' broader perceptions of the health-disease process may influence their satisfaction levels[6].

Evaluating healthcare services is a strategic management approach to improve care quality. It is a deliberate, technical, and political endeavor that reflects both ethical and social responsibilities, with the quality of professional-user relationships becoming a central objective[7].

Patient satisfaction becomes even more crucial in times of health crises, such as the Covid-19 pandemic, when access to healthcare services was widely affected and community pharmacies acted as frontline care units. Evaluating this satisfaction allows us to determine whether these units were able to adequately meet the population's needs in a context of emergency and vulnerability. Moreover, understanding users' perceptions of the services provided can contribute to strengthening the health system's response in future crises by promoting evidence-based and user-centered practices [8,9].

In the context of quality assessment, it is essential to measure user satisfaction, identify service gaps, and guide improvements aimed at enhancing care humanization and continually improving service quality. This study, therefore, seeks to analyze user satisfaction and service frequency in private community pharmacies in Alegre, located in the southern region of Espírito Santo, Brazil.

Methods

Population and study design

During the Covid-19 pandemic, a cross-sectional epidemiological study was conducted using a household survey in the Alegre city, Espírito Santo, between November and December 2021. The sample consisted of individuals aged at least 18 who agreed to participate and signed the Informed Consent Form (ICF). These were the inclusion criteria used in this study.

Sample selection

The study sample was selected based on the urban population of the municipality of Alegre. According to the 2010 census, the total urban population was 21,512 inhabitants, of whom 16,179 lived in the municipal seat and the remainder in the urban areas of the surrounding districts that are administratively part of municipality[10].

The sample size was calculated using the urban population of the municipality as a reference, which was 21,512 inhabitants, using a confidence level of 95% (error $\alpha = 0.05$), an estimated prevalence of 50% for various study outcomes, and a design effect of 1.5. Based on these conditions, the minimum sample required was calculated as 567 individuals, to which 10% was added to compensate for possible losses[11].

Sampling was carried out using the Probability Proportional to Size method. First, 10 out of the 37 urban census tracts in the municipality were randomly selected, considering the probability of selection proportional to the number of households in each area. After the draw, 7 census tracts located in the municipal seat of Alegre and 3 census tracts located in the districts of the municipality of Alegre were selected. It was then established that at least 60 individuals would be interviewed in each sector in order to reach the estimated sample size and ensure adequate representativeness of each area.

Data collection

Researchers conducted interviews using a structured, pre-coded questionnaire containing questions organized into the following sections: sociodemographic data, use of health services, pre-existing illnesses, medication use, and quality of life, measured with the European Quality of Life 5 Dimensions 3 Levels (EQ-5D-3L) questionnaire.

We used the Visual Analog Scale (VAS) applied to satisfaction, considering values from 0 to 10, where 0 (totally dissatisfied) and 10 (totally satisfied), to assess the level of satisfaction with private community pharmacies. The VAS was chosen because it is less susceptible to bias from confounding factors than the Likert scale. Furthermore, the VAS minimizes the ceiling effect and reduces the time it takes to fill in the questionnaire, making data collection more efficient[12].

In addition to analyzing satisfaction as a continuous variable, we adopted a categorical classification of Visual Analog Scale (VAS) scores to enhance the interpretation of results. The VAS used ranged from 0 to 10 cm, corresponding to the traditional 0–100 mm format commonly applied in the literature. Based on comparisons with Likert-type satisfaction scales from previous studies, we classified satisfaction levels as follows [13]:

- **Very satisfied**: VAS ≥ 9.0
- **Satisfied**: VAS from 8.0 to 8.9
- **Mostly satisfied**: VAS from 7.0 to 7.9
- **Neutral to unsatisfied**: VAS < 7.0

A score of **7.0 was considered the minimum threshold** to classify a participant as satisfied with community pharmacy services [13].

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Data collection began during the Covid-19 pandemic period, and precautions were taken to reduce risks during this phase. These measures included full vaccination of the research team, with at least two doses, the use of hand sanitizer during interviews, and the wearing of face masks and lab coats. Researchers randomly walked through the streets of the selected census tracts, approaching households sequentially without returning to those already visited. One or more individuals from the same household were allowed to participate in the interview. Additionally, all researchers were accompanied by Community Health Workers, who provided support throughout the data collection period.

Before starting the fieldwork, the researchers underwent practical training, during which information about the data collection instrument and the fieldwork process was reinforced. Additionally, a pilot study was conducted to test and evaluate the questionnaire, as well as to provide hands-on training for the researchers. The technical team responsible for the training consisted of professors and researchers from the Health Technology Assessment and Economics Group (GATES) at the Federal University of Espírito Santo (UFES).

Data analysis

We conducted a descriptive analysis using frequency distributions for sociodemographic and clinical characteristics, along with means and standard deviations (SD) for continuous variables. Missing data appeared in fewer than 5% of the questionnaires and occurred randomly. Given this low missing data rate and the 10% increase in minimum sample size to account for any omissions, we opted not to impute missing values[14]. Moreover, the sample size exceeded the minimum requirements for the study, supporting an analysis without the inclusion of missing data.

We applied Tobit regression analysis to identify factors associated with respondents' satisfaction with community pharmacy services, setting a significance level of 20% for the bivariate analysis and 5% for the multivariate analysis. To reduce the ceiling effect often encountered in satisfaction measurements using VAS, the Tobit regression was censored at an upper limit of 10[12]. The independent variables included patients' sociodemographic characteristics and general health status.

Ethical aspects

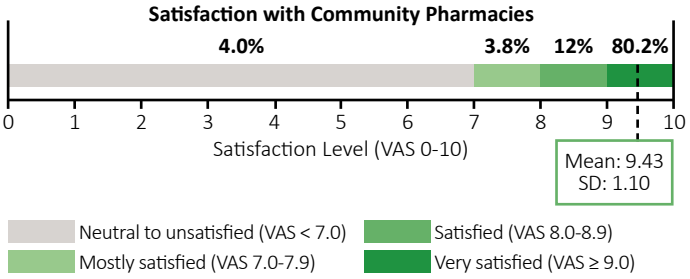
This study was approved by the Research Ethics Committee of the Federal University of Espírito Santo (UFES), under substantiated opinion number 4.732.878. All interviewed approved and signed the informed consent form. All procedures followed the ethical standards of the human research committee and the 1964 Declaration of Helsinki, revised in 2013[15].

Results

The study included 697 individuals, of whom 86.9% reported using community pharmacies during the pandemic. Participants expressed a high level of satisfaction, with an average satisfaction score of 9.43 (SD = 1.10). When satisfaction scores were categorized, most participants (80.2%) were classified as very satisfied (VAS ≥ 9.0), followed by 12.0% who were satisfied (VAS 8.0–8.9) and 3.8% who were mostly satisfied (VAS 7.0–7.9).

Only 4.0% of respondents were classified as neutral to unsatisfied (VAS < 7.0). Overall, 96.0% of the participants reported satisfaction with community pharmacy services (VAS ≥ 7.0), reinforcing the high level of user satisfaction observed in this study (FIGURE 1).

Figure 1. User Satisfaction Levels with Community Pharmacies (VAS 0–10)



Compared to non-users of community pharmacies, users were significantly older on average (53.7 vs. 48.6 years; p < 0.001) and more likely to reside in the municipal seat (71.0% vs. 58.8%; p = 0.022). Marital status also differed between groups, with a lower proportion of married individuals among users (25.0% vs. 35.3%; p = 0.045).

Regarding education, users had a higher proportion of individuals with technical or higher education (13.8% vs. 3.5%) and a lower proportion with only incomplete primary education (37.0% vs. 44.7%) (p = 0.023). In terms of income, users were significantly less likely to report earning up to one minimum wage (44.4% vs. 65.8%) and more likely to report earning more than two minimum wages (12.2% vs. 0.0%) (p = 0.001).

No statistically significant differences were observed between the groups in terms of sex, race, religion, or other educational categories (p > 0.05) (TABLE 1).

Compared to non-users, individuals who used community pharmacies were significantly more likely to report a lower quality of life (58.6% vs. 43.5%; p = 0.009) and to have visited a doctor in the past year (81.8% vs. 64.3%; p < 0.001). They were also more likely to have had a consultation with a nutritionist (10.6% vs. 0.0%; p = 0.003), to report having private health insurance (24.7% vs. 8.2%; p < 0.001), and to be on polypharmacy, using five or more medications (78.4% vs. 89.4%; p = 0.018). Additionally, the use of medicinal plants was more frequent among users than non-users (41.7% vs. 26.8%; p = 0.010).

No significant differences were found between the groups regarding self-perceived health, dental consultations, physical activity, alcohol consumption, smoking, sleep duration, or self-medication practices (p > 0.05) (TABLE 2).

Regarding COVID-19, no significant differences were observed between users and non-users of community pharmacies in terms of previous diagnosis (19.3% vs. 15.5%; p = 0.405) or vaccination coverage (97.7% vs. 96.5%; p = 0.495).

However, users of community pharmacies reported significantly higher prevalence rates of several chronic conditions. These included hypertension (47.0% vs. 30.6%; p = 0.004), anxiety (46.4% vs. 30.6%; p = 0.006), dyslipidemia (26.8% vs. 12.9%; p = 0.006), and arthritis (16.3% vs. 7.1%; p = 0.026). No significant group differences were found for depression, obesity, diabetes mellitus, asthma, or cancer (p > 0.05) (TABLE 3).

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Table 1. Sociodemographic characteristics of respondents interviewed through a household survey during the Covid-19 pandemic in Alegre, Espírito Santo, Brazil (November–December 2021).

Variables	Used community pharmacy (n = 606)	Not used community pharmacy (n = 85)	Total (n = 697)	p-value
Age in years (mean. SD)	53.7 (18.3)	48.6 (22.2)	53.1 (18.8)	<0.001*
Sex				0.065
Female (n. %)	451 (74.2)	55 (64.7)	506 (73.0)	
Male (n. %)	157 (25.8)	30 (35.3)	187 (27.0)	
Race or color				0.529
White (n. %)	294 (48.4)	35 (42.2)	329 (47.6)	
Brown (n. %)	205 (33.7)	30 (36.1)	235 (34.0)	
Other (n. %)	109 (17.9)	18 (21.7)	127 (18.4)	
Marital status				0.045*
Married (n. %)	152 (25.0)	30 (35.3)	182 (26.3)	
Single/other (n. %)	455 (75.0)	55 (64.7)	510 (73.7)	
Region of residence				0.022*
Headquarters (n. %)	431 (71.0)	50 (58.8)	481 (69.5)	
District (n. %)	176 (29.0)	35 (41.2)	211 (30.5)	
Religion				0.309
No religion (n. %)	44 (7.2)	8 (9.4)	52 (7.5)	
Catholic (n. %)	309 (50.8)	34 (40.0)	343 (49.5)	
Protestant (n. %)	217 (35.7)	36 (42.4)	253 (36.5)	
Other (n. %)	38 (6.3)	7 (8.2)	45 (6.5)	
Education				0.023*
Incomplete primary education (n. %)	225 (37.0)	38 (44.7)	263 (38.0)	
Completed high school (n. %)	299 (49.2)	44 (51.8)	343 (49.5)	
Technician or higher (n. %)	84 (13.8)	3 (3.5)	87 (12.5)	
Income				0.001*
Up to 1 minimum wage (n. %)	255 (44.4)	52 (65.8)	307 (47.0)	
Up to 2 minimum wages (n. %)	249 (43.4)	27 (34.2)	276 (42.3)	
More than 2 minimum wages (n. %)	70 (12.2)	0 (0.0)	70 (10.7)	

SD: Standard deviation. *Statistically significant (p-value ≤ 0.05). Source: Authors.

The bivariate analysis showed that individuals aged 60 years or older had significantly higher levels of satisfaction with community pharmacies during the Covid-19 pandemic (β = 0.908; 95% CI: 0.427–1.389; p < 0.001). This finding remained significant after multivariate adjustment (β = 0.857; 95% CI: 0.368–1.347; p = 0.001), indicating that older age was an independent predictor of greater satisfaction. Female sex was also positively associated with satisfaction in the multivariate analysis (β = 0.557; 95% CI: 0.033–1.081; p = 0.037), suggesting that women reported higher satisfaction with the services provided than men (TABLE 4).

Education level was another factor strongly associated with the outcome. Individuals with up to a high school education reported greater satisfaction in both the bivariate (β = 1.017; 95% CI: 0.383–1.650; p = 0.002) and multivariate analyses (β = 0.812; 95% CI: 0.172–1.451; p = 0.013), compared to those with higher levels of education (TABLE 4).

The other variables did not show statistically significant associations in the multivariate analysis. However, some demonstrated a trend toward association in the bivariate analysis, such as no alcohol consumption (β = 0.768; 95% CI: 0.247–1.288; p = 0.004), presence of hypertension (β = 0.702; 95% CI: 0.230–1.173; p = 0.004), and arthritis (β = 0.760; 95% CI: 0.131–1.139; p = 0.018), although they were not retained in the final model (TABLE 4).

Discussion

The results showed that individuals who used community pharmacies during the pandemic were generally older and presented a higher prevalence of chronic conditions such as hypertension, anxiety, dyslipidemia, and arthritis. They also reported lower quality of life scores, higher frequency of medical consultations and nutritionist appointments, greater use of medications (including polypharmacy and medicinal plants), and higher rates of private health insurance.

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Table 2. Clinical characteristics of respondents interviewed through a household survey during the Covid-19 pandemic in Alegre, Espírito Santo, Brazil (November–December 2021).

Variables	Used community pharmacy (n = 606)	Not used community pharmacy (n = 85)	Total (n = 697)	p-value
Quality of life				0.009*
< 0.885 (n. %)	356 (58.6)	37 (43.5)	393 (56.7)	
≥ 0.885 (n. %)	252 (41.4)	48 (56.5)	300 (43.3)	
Self-perception of health				0.083
Good/very good (n. %)	310 (51.0)	53 (62.4)	363 (52.4)	
Fair/bad (n. %)	298 (49.1)	32 (37.6)	330 (47.6)	
Medical appointments in the last year				<0.001*
Yes (n. %)	496 (81.8)	54 (64.3)	550 (79.7)	
No (n. %)	110 (18.2)	30 (35.7)	140 (20.3)	
Dental appointments				0.158
Yes (n. %)	235 (39.9)	25 (31.6)	260 (38.9)	
No (n. %)	354 (60.1)	54 (68.4)	408 (61.1)	
Consultation with a nutritionist				0.003*
Yes (n. %)	61 (10.6)	0 (0.00)	61 (9.3)	
No (n. %)	516 (89.4)	77 (100.0)	593 (90.7)	
Private health insurance				<0.001*
Yes (n. %)	150 (24.7)	7 (8.2)	157 (22.7)	
No (n. %)	458 (75.3)	78 (91.8)	536 (77.3)	
Do regular physical activity				0.857
Yes (n. %)	216 (35.5)	29 (34.5)	245 (35.4)	
No (n. %)	392 (64.5)	55 (65.5)	447 (64.6)	
Alcoholic beverages				0.138
Never drinks (n. %)	456 (75.1)	60 (71.4)	516 (74.7)	
Daily (n. %)	15 (2.5)	6 (7.1)	21 (3.0)	
Weekly (n. %)	72 (11.9)	9 (10.7)	81 (11.7)	
Monthly (n. %)	64 (10.5)	9 (10.7)	73 (10.6)	
Smoke				0.355
Yes (n. %)	79 (13.0)	14 (16.7)	93 (13.4)	
No (n. %)	529 (87.0)	70 (83.3)	599 (86.6)	
Sleep				0.526
< 6 hours (n. %)	140 (23.1)	21 (25.0)	161 (23.3)	
From 6 to 7 hours (n. %)	171 (28.2)	18 (21.4)	189 (27.4)	
From 7 to 8 hours (n. %)	199 (32.8)	28 (33.3)	227 (32.9)	
> 8 hours (n. %)	96 (15.8)	17 (20.2)	113 (16.4)	
Self-medication				0.233
Yes (n. %)	407 (70.3)	47 (63.5)	454 (69.5)	
No (n. %)	172 (29.7)	27 (36.5)	199 (30.5)	
Medicines in use				0.018*
Polypharmacy ≥ 5 (n. %)	131 (21.6)	9 (10.6)	140 (20.3)	
No polypharmacy < 5 (n. %)	475 (78.4)	76 (89.4)	551 (79.7)	
Use of medicinal plants				0.010*
Yes (n. %)	249 (41.7)	22 (26.8)	271 (39.9)	
No (n. %)	348 (58.3)	60 (73.2)	408 (60.1)	

*Statistically significant (p-value ≤ 0.05). Source: Authors.

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Table 3. Main comorbidities reported by respondents interviewed through a household survey during the Covid-19 pandemic in Alegre, Espírito Santo, Brazil (November–December 2021).

Variables	Used community pharmacy (n = 606)	Not used community pharmacy (n = 85)	Total (n = 697)	p-value
There was Covid-19				0.405
Yes (n. %)	116 (19.3)	13 (15.5)	129 (18.8)	
No (n. %)	486 (80.7)	71 (84.5)	557 (81.2)	
Vaccinated (Covid-19)				0.495
Yes (n. %)	593 (97.7)	82 (96.5)	675 (97.5)	
No (n. %)	14 (2.3)	3 (3.5)	17 (2.5)	
Main comorbidities				
Hypertension (n. %)	286 (47.0)	26 (30.6)	312 (45.0)	0.004*
Anxiety (n. %)	282 (46.4)	26 (30.6)	308 (44.4)	0.006*
Dyslipidemia (n. %)	163 (26.8)	11 (12.9)	174 (25.1)	0.006*
Depression (n. %)	128 (21.1)	11 (12.9)	139 (20.1)	0.080
Obesity (n. %)	103 (16.9)	9 (10.6)	112 (16.2)	0.136
Arthritis (n. %)	99 (16.3)	6 (7.1)	105 (15.2)	0.026*
Diabetes mellitus (n. %)	90 (14.8)	10 (11.8)	100 (14.4)	0.455
Asthma (n. %)	39 (6.4)	3 (3.5)	42 (6.1)	0.296
Cancer (n. %)	22 (3.6)	2 (2.4)	24 (3.5)	0.550

*Statistically significant (p-value ≤ 0.05). Source: Authors.

Such characteristics suggest that pharmacy users tended to have more complex health needs, which may explain their greater engagement with pharmaceutical services. This reinforces the role of community pharmacies as accessible healthcare points, especially for individuals with chronic diseases and those requiring continuous care, medication management, and additional health support [16].

Most interviewees (86.9%) used the services of community pharmacies during the pandemic in Alegre, Espírito Santo. This high level of use may be related to health needs and the significant increase in the number of pharmacies in recent years[17]. According to the Pharmaceutical Research Industry Association, retail sales of medicines grew by 55.1% between 2017 and 2021, totaling 88.3 billion reais in 2021[18], which reflects the greater demand for these health services.

In addition, a study on the perceptions and use of pharmacy services by Portuguese people showed that, when asked about their first option when facing minor health problems, more than a third of the participants (36%) said they go to the pharmacy. In addition, the majority (54%) stated that the pharmacy is the first place they go to clarify doubts about medicines[19].

It is worth noting that the Covid-19 pandemic has caused continuous disruptions to health services around the world. A World Health Organization (WHO) survey conducted in 2021 revealed that more than half of the countries analyzed faced difficulties in guaranteeing access to primary and community care[20]. This may have contributed to the high use of private community pharmacies, since there was a high frequency of self-medication during the Covid-19 pandemic, mainly related to non-prescription drugs, such as analgesics and antipyretics. This fact reinforces the importance of the professional pharmacist in the community pharmacy for the management of self-limited health problems and the rational use of medicines[21].

The results of this study revealed a high level of user satisfaction with community pharmacies. These results are in line with what other studies have found in different countries such as Iran, Portugal, and India[19,22,23]. According to Policarpo *et al*. [19], assessing patient satisfaction and the importance attributed to the various pharmaceutical services is fundamental to supporting the development of innovative services aligned with patients' needs and preferences, as well as maximizing the potential of community pharmacies at both local and national levels.

According to Fernandes *et al*. [24], user satisfaction is a relevant health outcome, but it is difficult to measure due to the unique and intangible characteristics of services, whose production and consumption occur simultaneously. This simultaneous nature makes the evaluation subjective, as it seeks to capture the degree of satisfaction with the service received, something that cannot be fully assessed through direct observation alone.

The current study found that participants aged 60 and over had higher satisfaction level compared to those under 60. These results are in line with previous studies, such as those by Ayele *et al*. [25], and Al Zaidan *et al*. [26], who also identified higher satisfaction with pharmacy services among older patients (≥ 60 years) compared to other age groups. This evidence suggests that the elderly population tends to value the services provided by pharmacies more highly, possibly due to their greater need for medicines and health advice, as well as their more frequent relationships with pharmacists.

The results of the present study show that women not only represented the majority of community pharmacy users - approximately three-quarters of the participants- but also reported higher satisfaction with pharmaceutical services than men. This finding is consistent with the literature, which indicates that women are more active in health care, more likely to seek health services, and often the main individuals responsible for obtaining medications for family members[27-29].

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Table 4. Factors associated with satisfaction among users of community pharmacies interviewed through a household survey during the Covid-19 pandemic in Alegre, Espírito Santo, Brazil (November–December 2021).

Variables	Bivariate analysis				Multivariate analysis			
	β1 Coefficient	CI (95%)		p-value	β1 Coefficient	CI (95%)		p-value
		Inf.	Sup.			Inf.	Sup.	
Age group (> 60 years)	0.908	0.427	1.389	<0.001*	0.857	0.368	1.347	0.001
Sex (female)	0.435	-0.089	0.959	0.103*	0.557	0.033	1.081	0.037
Race (brown/black)	0.070	-0.398	0.537	0.770	-	-	-	-
Marital status (married)	0.270	-0.200	0.742	0.259	-	-	-	-
Place of residence (district)	0.039	-0.476	0.555	0.881	-	-	-	-
Have a religion (yes)	0.584	-0.270	1.438	0.180	-	-	-	-
Education (up to high school)	1.017	0.383	1.650	0.002*	0.812	0.172	1.451	0.013
Income (> 1 MW)	0.000	-0.483	0.485	0.997	-	-	-	-
Quality of life (≥ 0.885)	0.062	-0.412	0.537	0.797	-	-	-	-
Self-perception of health (fair/poor)	0.439	-0.028	0.906	0.065*	-	-	-	-
Medical consultations (no)	0.081	-0.532	0.694	0.795	-	-	-	-
Dental appointments (no)	0.321	-0.167	0.810	0.197*	-	-	-	-
Consultations with a nutritionist (no)	0.254	-0.549	1.040	0.544	-	-	-	-
Health insurance (yes)	0.073	-0.472	0.618	0.792	-	-	-	-
Physical activity (yes)	0.180	-0.312	0.672	0.472	-	-	-	-
Use of alcohol (no)	0.768	0.247	1.288	0.004*	-	-	-	-
Smoking (no)	0.268	-0.412	0.948	0.440	-	-	-	-
Sleep (< 7 hours)	0.250	-0.219	0.718	0.296	-	-	-	-
Contracted Covid-19 (no)	0.111	-0.479	0.702	0.711	-	-	-	-
Vaccinated (Covid-19) (no)	0.675	-0.973	2.324	0.421	-	-	-	-
Self-medication (no)	0.098	-0.421	0.616	0.712	-	-	-	-
Polypharmacy (yes)	0.255	-0.329	0.840	0.392	-	-	-	-
Use of medicinal plants (no)	0.334	-0.144	0.813	0.171*	-	-	-	-
Asthma (yes)	0.102	-0.859	1.063	0.835	-	-	-	-
Anxiety (yes)	0.032	-0.438	0.500	0.894	-	-	-	-
Arthritis (yes)	0.760	0.131	1.139	0.018*	-	-	-	-
Cancer (yes)	0.692	-0.640	2.023	0.308	-	-	-	-
Depression (yes)	0.297	-0.285	0.880	0.317	-	-	-	-
Diabetes (yes)	0.319	-0.364	1.002	0.360	-	-	-	-
Dyslipidemia (yes)	0.043	-0.485	0.570	0.874	-	-	-	-
Hypertension (yes)	0.702	0.230	1.173	0.004*	-	-	-	-
Obesity (no)	0.524	-0.081	1.128	0.090*	-	-	-	-

Source: Authors. CI: Confidence interval; MW: Minimum wage. The Tobit regression model was used with significance levels of p-value ≤ 0.20 in the bivariate analysis and p ≤ 0.05 in the multivariate analysis. * Variables included in the multivariate analysis.

Furthermore, studies such as El-Kholy et al.[30] suggest that women exhibit greater emotional involvement in health care and tend to seek more information about medications, as well as more frequently discuss their health needs with pharmacists - factors that may contribute to the higher level of satisfaction observed.

A potential confounding factor related to this finding concerns the composition of the sample itself. The greater presence of women among respondents may be associated not only with behavioral patterns related to health care, but also with their greater availability at the time of the interview. This aspect may have directly influenced the analyzed sample, introducing a selection bias. Therefore, the association between sex and satisfaction levels with pharmaceutical services may not reflect an actual difference in perceived quality, but rather an overrepresentation of women influenced by contextual factors, such as the timing of data collection[31].

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In this study, it was observed that individuals with up to high school education reported greater satisfaction with the services offered by community pharmacies. This finding corroborates the study by Al Zaidan *et al*. [32] who found that participants with higher levels of education had lower satisfaction rates. This may suggest that people with lower levels of education value aspects of community pharmacies, such as customer service or accessibility, differently.

On the other hand, a study carried out in Malaysia showed that participants with at least secondary education were more likely to report satisfaction than those without formal education. The authors also found that individuals with higher monthly incomes were less likely to be satisfied than those with lower incomes. In addition, participants with two or more comorbidities were less likely to be satisfied compared to those with only one comorbidity[33].

The level of user satisfaction with the services provided by community pharmacies can vary significantly depending on the region analyzed. Studies carried out in Brazil indicate that factors such as local infrastructure, access to health services, sociodemographic profile of the population, training of pharmaceutical professionals and implementation of regional public policies directly influence users perception of the quality of services. Furthermore, socioeconomic inequalities and cultural differences between regions can affect both the expectations and the evaluation of the services received [24, 28, 34].

According to Birsan *et al*.[35], the implementation of quality pharmaceutical services can be an effective strategy for increasing patient satisfaction and, indirectly, promoting prevention and health. Assessing the level of patient satisfaction is seen as a crucial indicator of the quality of a healthcare system. In addition, greater patient satisfaction is associated with better adherence to treatment and greater persistence[32].

The high use of community pharmacies during the pandemic (86.9%), coupled with a high satisfaction level (9.43 out of 10) highlights the relevance and effectiveness of pharmaceutical policies aimed at access and the rational use of medicines. In accordance with law no. 13,021, of August 8, 2014, community pharmacies play an essential role as accessible points of care, offering the dispensing of medicines and pharmaceutical guidance, which directly contributes to the proper use of treatments and the promotion of collective health. These indicators are fundamental for measuring the impact of these policies, as high satisfaction suggests that users' needs are being met appropriately and efficiently and that private community pharmacies are fulfilling their role as healthcare establishments.

This study has some limitations inherent to its methodology. Firstly, as this is a cross-sectional study, it is possible to identify associations between variables, but not to establish causal relationships, which restricts the interpretation of the results. In addition, the use of VAS to measure user satisfaction can lead to an oversimplification of perceptions, since satisfaction is a multidimensional concept, and evaluation on a single scale may not capture important information. Another point to consider is the subjectivity of responses, which can be influenced by momentary or contextual factors, such as the respondent's mood or recent experience at the pharmacy, compromising comparability between participants. Finally, the sample may not adequately reflect the diversity of community pharmacy users throughout Brazil. Therefore, caution should be exercised when generalizing the results to other populations or regions.

Conclusion

The study revealed a high utilization rate of community pharmacies during the Covid-19 pandemic, with high levels of satisfaction reported by participants. The results indicated that factors such as age, sex, and educational level were significantly associated with satisfaction regarding pharmaceutical services.

These findings highlight the strategic role of community pharmacies, particularly in health crisis contexts such as the Covid-19 pandemic. During this period, these facilities not only ensured access to medications and personal hygiene products but also played a key role in providing guidance to the population and alleviating pressure on other levels of the healthcare system, emphasizing their importance as accessible, reliable, and essential resources for promoting public health.

The relevance of this study lies in providing empirical evidence on users' perceptions of community pharmacies, contributing to the strengthening of public policies aimed at pharmaceutical care and the organization of healthcare services in emergency situations.

Given the limitations of the cross-sectional design, future research is recommended to adopt longitudinal or qualitative approaches to deepen the understanding of user satisfaction and its determinants, as well as to explore the sustainability and effectiveness of interventions implemented by community pharmacies in various social and health contexts.

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Author contributions

PS Bazoni contributed to the conception and design of the study, data collection, data analysis, interpretation of results, and manuscript writing. MRR da Silva, JBR dos Santos, and AM da Silva contributed to the conception and design of the study, data collection, data analysis, interpretation of results, and critical revision of the manuscript for intellectual content. AL Horsth, RJ Faria, and EF Meira contributed to data collection, data analysis, and the critical revision of the manuscript for intellectual content. All authors have read and approved the final version of the manuscript.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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