

Self-medication in urban and rural parishes: A case study in Ambato, Ecuador

Automedicación en parroquias urbanas y rurales: Un caso de estudio en Ambato, Ecuador

Automedicação em paróquias urbanas e rurais: um estudo de caso em Ambato, Equador

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Abstract

Self-medication is a global phenomenon and a potential factor in developing antibiotic resistance in human pathogens. To determine the prevalence of self-medication with non-steroidal anti-inflammatory drugs (NSAIDs) in the urban and rural population of Ambato in the period March-July 2020; a descriptive and cross-sectional study was conducted where participants went without prescription to community pharmacies in Santa Rosa and Izamba (rural area) and San Francisco and La Matriz (urban area) of Ambato. They were invited to answer a survey where sociodemographic aspects and general information (medications, causes, diseases) were evaluated. A sample of 760 people, primarily women (56.7%), with 29.6% living in rural areas, was used. The results showed that 45.7% of the subjects were self-medicating; of these, 65.4% belonged to the urban sector. In addition, factors predisposing to this practice were identified, such that most of them had a secondary or higher level of education. Likewise, the media had a direct influence, among which family (40.9%), the internet (27.7%), and advertisements (16.7%) stood out. In comparison, lack of time (34.3%) and proximity to community pharmacies (32%) were the main reasons for self-medication.

Keywords: Self-medication, Medical prescription, Biochemistry, Pharmacy, NSAIDs.

Resumen

La automedicación es un fenómeno global y un factor potencial en el desarrollo de resistencia a antibióticos en patógenos humanos. Con el fin de determinar la prevalencia de la automedicación con antiinflamatorios no esteroideos (AINEs) en la población urbana y rural del Cantón Ambato en el período marzo-julio 2020. Se realizó un estudio descriptivo y de corte transversal donde los participantes acudieron sin receta médica a farmacias comunitarias de Santa Rosa e Izamba (zona rural) y de San Francisco y la Matriz (zona urbana) del cantón Ambato. Fueron invitadas a responder una encuesta donde se evaluaron aspectos sociodemográficos e información general (medicamentos, causas, enfermedades). Se utilizó una muestra de 760 personas, en su mayoría mujeres (56.7%), donde el 29.6% radicaba en la zona rural. Los resultados determinaron que el 45.7% de sujetos se automedicaban y de estos, el 65.4% pertenecían al sector urbano. Además, se identificaron los factores que predisponen a esta práctica, de modo que, la mayor parte tenían un nivel de instrucción de secundaria y superior. Asimismo, los medios de comunicación influían directamente, entre los



que sobresalían la familia (40,9%), internet (27,7%) y propagandas (16,7%), en tanto que, la falta de tiempo (34,3%) y cercanía de las farmacias comunitarias (32%) fueron las principales razones para la automedicación.

Palabras claves: Automedicación, Prescripción médica, Bioquímica, Farmacia, AINEs.

Resumo

A automedicação é um fenômeno global e um fator potencial no desenvolvimento da resistência aos antibióticos em patógenos humanos. A fim de determinar a prevalência de automedicação com anti-inflamatórios não esteroides (AINEs) na população urbana e rural de Ambato no período de março a julho de 2020. Foi realizado um estudo descritivo, transversal, em que os participantes visitaram farmácias comunitárias em Santa Rosa e Izamba (zona rural) e San Francisco e La Matriz (zona urbana) do cantão de Ambato sem receita médica. Eles foram convidados a responder a uma pesquisa que avaliou aspectos sociodemográficos e informações gerais (medicamentos, causas, doenças). Foi utilizada uma amostra de 760 pessoas, a maioria mulheres (56,7%), 29,6% das quais viviam em áreas rurais. Os resultados mostraram que 45,7% dos sujeitos eram automedicação e destes, 65,4% eram do setor urbano. Além disso, foram identificados fatores predisponentes a esta prática, de tal forma que a maioria deles tinha um nível de ensino secundário ou superior. Além disso, a mídia teve uma influência direta, sendo a família (40,9%), a Internet (27,7%) e a publicidade (16,7%) as principais razões para a automedicação, enquanto a falta de tempo (34,3%) e a proximidade de farmácias comunitárias (32%) foram as principais razões para a automedicação.

Palavras-chave: Automedicação, Prescrição médica, Bioquímica, Farmácia, AINEs.

1. Introduction

According to the World Health Organization (WHO), *self-medication* is defined as the use of one or more drugs available in pharmacies, on one's initiative and without a prescription, to take care of oneself autonomously, which grew in the 1960s and 1980s, being a common phenomenon in the entire population worldwide, occupying almost 69%, since its acquisition was easy and fast [1], [2]. Self-medication has a potential danger in the face of irresponsible and inappropriate use of medications by aggravating and lengthening infectious diseases causing drug dependence, and resulting, as a result, in increased morbidity and mortality [3]. Economic, political, and cultural factors have stimulated the increase of self-medication in the world; unfortunately, the pharmaceutical industries, through misleading advertising, make the use of medication synonymous with health due to its greater availability in the market [4].

A study on European and Latin American populations observed a high prevalence of self-medication, evidenced by 98.1%, due to short time and lack of money [5]. On the other hand, in the state of Hidalgo in Mexico City, the prevalence of self-medication is 87.61%, mentioning headache as the primary symptom that leads to this practice [6]. While in Cartagena - Colombia, its prevalence was 89.7%, showing that the primary influence comes from the family being the everyday use of NSAIDs (ibuprofen, ketorolac) in 95.1% [7]. In the United States, 40% of drugs consumed are NSAIDs, while in Latin American countries, their use is equal to or higher; for example, in Brazil, 36% of NSAID drug sales correspond to self-medication. According to Albarrán, a study conducted in Chile found that 55% of the people surveyed in a rural area self-medicated with NSAIDs and were unaware of their use [8]. In Ecuador, the pharmaceutical budget has increased by 53% in the last four years, given the high morbidity rate in the country; therefore, 69% of the pharmaceutical products acquired are imported, and 9% of the total medicines are generic (Ortiz-prado et al., 2016). Of the total number of registered drugs, 1739 (12.7%) are considered over-the-counter, and 11539 (84.3%) are dispensed under medical prescription [9].

Self-medication is a fundamental problem at the social level; in developed and developing countries, it is present in the acquisition of medicines without prescription, administering medication under the concept of colleagues, friends, and others, in addition to consuming leftover drugs stored at home or sharing them with family members [10]. In addition, self-medication makes the patient more independent in making decisions about minor health problems. However, it also generates numerous setbacks and risks for the patient; the prevalence of over-the-counter medications varies according to geographic location and population demographics [10], [11]. Several studies showed that it affects between 35% and 79% of elderly patients, increasing hospitalizations and public health spending; one of the primary drugs used in self-medication is NSAIDs [12]. The manifestations of self-medication with NSAIDs are a potential risk, widespread worldwide, with around 60%. This increase in frequency can be attributed to the free sale of NSAIDs in underdeveloped and developing countries, over-saturation of health services, and unemployment [13].

The relevance of this problem lies in the negative impact on quality of life, morbidity, mortality, and on the personal economy, given that its prevalence reaches up to 65% due to different factors, regardless of disease,

age, gender, social stratum, and educational level (Zavala et al., 2018). The cost of medical care for patients with resistant diseases is much more expensive than for patients with illnesses considered as usual due to the longer duration of the disease, additional tests needed, and the use of much more expensive drugs [14].

2. Methodology

2.1. Type of research

The type of research used was field research since data was collected through a survey directed to the inhabitants of Ambato's urban and rural parishes. In addition, it was descriptive research since it refers to events or occurrences, leaving aside explanations. On the other hand, it is not experimental since the variables were not manipulated; instead, the phenomenon was described as it occurs in its nature. It is cross-sectional since the data was collected in an established period (March - June 2020).

2.2. Population-sample

The population consisted of all those who visited community pharmacies in urban parishes (San Francisco and La Matriz) and rural parishes (Santa Rosa and Izamba) in Ambato. It should be mentioned that the population was selected according to population density. In addition, the following inclusion criteria were considered: individuals between 15 and 70 years of age, who could read and interpret the survey, who attended community pharmacies during the period March-July 2020, who gave their consent for the application of the survey; and exclusion: individuals with ages outside the study range (15 to 70 years), any physical or psychological limitation that prevented self-completion of the questionnaire, individuals who did not give informed consent for the survey.

The sample for the present investigation was established using the formula for the finite model in (1). The rural population was 26566 (Santa Rosa 15003-Izamba 11563), and the urban population was 47330 (San Francisco 21680- La Matriz 25650).

$$n = \frac{z^2 * p * q * N}{e^2 (N-1) + z^2 * p * q} \quad (1)$$

According to the calculations made, the present investigation was carried out with a sample of 760 individuals (378 in rural areas and 382 in urban areas) belonging to Ambato from urban parishes (San Francisco and La Matriz) and rural parishes (Santa Rosa and Izamba), so that this number is necessary for a confidence level of 95% according to the formula for finite samples.

2.3. Procedure

The research was conducted in three phases: Phase I: Preparation, structuring, and validation of the survey; Phase II: Application of the survey and delivery of the triptych with information on self-medication and irrational use of NSAIDs; Phase III: Analysis, Correlation, and Interpretation of the data.

The survey was applied to Ambato's urban and rural population, who visited community pharmacies without a prescription from March-July 2020. This instrument consisted of 11 closed questions; the first section corresponds to demographic information (age, education, and gender) and general information (medications, causes, diseases) in the next section. It was validated by six health professionals, biochemists, and pharmacists. In addition, a health education campaign was carried out for the participants to inform them of the advantages and disadvantages of self-medication.

2.4. Data collection

At the end of the survey, the data collected were tabulated in a spreadsheet and subsequently analyzed using SPSS v25 statistical software for descriptive statistical analysis.

3. Results

A total of 760 individuals were surveyed, and of these, 382 (50.3%) were participants from urban parishes, while 378 (49.7%) belonged to rural areas. On the other hand, of the total number of respondents, 56.7% were female, 29.6% were concentrated in rural parishes, while 43.3% were male, with a higher frequency of 23.2% in urban areas. In terms of age, there was a higher percentage of young adults between 19-35 years (53.8%), followed by 36-59 years (40.1%); there was a more significant number in the urban parishes with

a difference of 5.9% about the rural zone. The educational level of the individuals was also identified (Table 1).

These results were obtained because the study period included months in which the country was isolated during the SARS-COVID-19 (coronavirus) pandemic. There was a higher number of infections in the urban area, which implies a higher frequency of patients who go to community pharmacies in search of treatment [15, pp. 16–18].

Table 1: The educational level of individuals surveyed in urban and rural parishes of Ambato.

INSTRUCTION LEVEL	PARISHES		Total
	Urban Parishes N (%)	Rural Parishes N (%)	
No education	0 (0)	15 (2)	15 (2)
Primary	10 (1.3)	98 (12.9)	108 (14.2)
Secondary	145 (19.1)	207 (27.2)	352 (46.3)
Higher	227 (29.9)	58 (7.6)	285 (37.5)
Total	382 (50.3)	378 (49.7)	760 (100)

It was found that 347 of 760 persons surveyed were self-medicated, which corresponds to 45.7%. Three factors associated with self-medication with NSAIDs were identified: self-medication with educational level, self-medication with the media, self-medication, and reasons for its incidence. At the same time, hypotheses were put forward that will be tested to generate more confidence in the research, which will be presented below.

Table 2 shows the correlation of self-medication with the level of education, showing that 65.4% of self-medicated individuals (65.4%) belonged to urban areas, while 34.6% belonged to rural parishes. There was a higher prevalence in secondary and higher education (53.3% and 31.4%, respectively).

Table 2: Prevalence of self-medication in Ambato's urban and rural parishes regarding the education level.

INSTRUCTION LEVEL	PARISHES		Total
	Urban Parishes N (%)	Rural Parishes N (%)	
Primary	10 (2.9)	43 (12.4)	53 (15.3)
Secondary	118 (34)	67 (19.3)	185 (53.3)
Higher	99 (28.5)	10 (2.9)	109 (31.4)
Total	227 (65.4)	120 (34.6)	347 (100)

In addition, it was possible to deduce that individuals in rural areas treated their pathologies with home remedies and went to community pharmacies only when the clinical condition worsened since, having a lower level of education, it is challenging to identify pathology and, even more so, to know or acquire medicines.

The first hypothesis, on whether the level of education affects self-medication, obtained a significance of less than 0.05% ($p < 0.05$), so it was decided to accept the hypothesis, showing a clear difference in self-medication between parishes, which in turn was demonstrated in Table 2 since there is a higher percentage of individuals with secondary and higher education who perform this practice in the urban area.

In addition, it was found that a higher percentage of individuals from urban parishes preferred to self-medicate (65.4%), due to the lack of time to go to a medical appointment because of their workload, in addition to the proximity of community pharmacies to their homes, the high cost of private consultations, over-saturation of the health system and continuous medical care.

Once the prevalence of self-medication among the respondents had been established, the factors that directly influenced this practice were identified. Table 3 shows the communication they used to obtain medication information before acquiring it in community pharmacies. It is noted that 40.9% went to their family to find out what pharmacological treatment could be administered for their ailments or pathologies, with a considerable number of cases in urban parishes (28.8%). Following this, 27.7% used the internet as a source of consultation. Of these, the majority were concentrated in urban areas (19.3%), which could be explained by the fact that rural parishes have less availability of this service.

Table 3: Means of communication used to obtain information on medicines in urban and rural parishes of Ambato.

MEANS OF COMMUNICATION	PARISHES		Total
	Urban Parishes N (%)	Urban Parishes N (%)	
Advertising (tv, radio, newspaper)	30 (8.6)	28 (8.1)	58 (16.7)
Family	100 (28.8)	42 (12.1)	142 (40.9)
Internet	67 (19.3)	29 (8.4)	96 (27.7)
Other (information from health professionals, healers)	30 (8.6)	21 (6.1)	51 (14.7)
Total	227 (65.4)	120 (34.6)	347 (100)

Finally, it was found that 16.7% of people who self-medicated preferred to use television, radio, or newspaper advertisements to find out what medications they could acquire to improve their pathological conditions. Information on medicines is available in these media through ads. This phenomenon is widespread in Latin America since, in developed countries, it has been seen that the population prefers professional advice for a correct diagnosis and management of medicines [16, p. 6]. As for the section on other means of communication, these refer to the search for information on drugs in sources other than those mentioned, such as traditional medicine, visits to healers, other health professionals, or people who say they know what medication a patient should take for any ailment, showing that 8.6% of people from urban parishes opted for this response, while 6.1% were from rural sectors.

On the other hand, Table 4 shows the results of the reasons why individuals self-medicate, where 34.3% answered that they lacked or did not have enough time to go to a doctor's office, with these values prevailing in both urban and rural parishes (17.3% and 17%, respectively).

Table 4: Reasons for self-medication in urban and rural parish respondents.

REASONS	PARISHES		Total
	Urban Parishes N (%)	Urban Parishes N (%)	
Proximity to the pharmacy	79 (22.8)	32 (9.2)	111 (32)
Lack of time	60 (17.3)	59 (17)	119 (34.3)
Lack of money to go to a private practice	29 (8.4)	10 (2.9)	39 (11.2)
The medical center is overcrowded	10 (2.9)	9 (2.6)	19 (5.5)
Continuous medication	49 (14.1)	10 (2.9)	59 (17)
Total	227 (65.4)	120 (34.6)	347 (100)

In addition to these results, 32% of people justified self-medication by indicating that their residence was close to a community pharmacy. The percentage was higher in urban parishes (22.8% of the total cases) because many community pharmacies are concentrated in the urban center of Ambato [17].

On the other hand, the last two reasons selected were the lack of money to go to a private consultation and the oversaturation of medical centers in 11.2% and 5.5%, respectively, with a higher prevalence in urban parishes (8.4% and 2.9%). The study period included months in which the country was in isolation due to SARS-CoV2, so there was a significant reduction in economic income, mainly in the urban area. In addition, the health system collapsed, and users preferred to self-medicate rather than expose themselves to possible contagion [18, p. 12].

Thus, these reasons directly influence self-medication, especially the one related to the lack of time people have to visit a doctor since there is a higher percentage of individuals who mentioned self-medication for this reason (34.3%).

4. Discussion

Self-medication is a widespread habit in the world population, and pain is the most frequent symptom for which this practice is adopted. For symptomatic treatment, over-the-counter NSAIDs are used in oral and topical preparations. Misuse can worsen the clinical picture and complicate the evolution of diseases if a physician does not control them. Among Ecuador's most commonly used drugs are Ibuprofen, Naproxen, and Diclofenac, among others [19].

The research determined that 347 of 760 persons surveyed were self-medicated, representing 45.7%. This percentage is similar to that obtained by Gonzalez and collaborators in their article on "Self-medication with NSAIDs by users of two primary care offices", where 42% of the sample self-medicated, emphasizing that these values are considered, which is why the pharmacist needs to offer health education in the event of signs of this practice, avoiding the appearance of adverse effects derived from self-medication. Furthermore, in the same research, the authors recommend that people who suffer from chronic pain or who have a history of chronic or duodenal ulcers should not self-medicate with non-steroidal anti-inflammatory drugs [20, p. 57].

The results showed that 37.5% of individuals had higher education, of which 29.9% belonged to urban parishes, which was to be expected since it has been seen that the urban population has more academic preparation than the rural population. It is essential to mention that, during the study period, it was concluded that people with secondary and higher education in both areas were the ones who generally went to community pharmacies because they understood the instructions given by the pharmacist more easily. In a study conducted in Colombia at the Catholic University of Manizales, Álvarez and collaborators demonstrated that the level of education directly influences self-medication, so it could be thought that individuals with low education (primary) are those who go to community pharmacies for medication. However, it is indicated that this does not always happen because people with higher education self-medicate before a greater availability of information [21, p. 95]. Similarly, it is mentioned that there is a more significant number of therapeutic noncompliance and medication errors associated with the self-medication of these patients since they believe they know the basic information on the use of medications, which leads to making erroneous decisions regarding their pharmacological treatment [22, p. 56].

The research by Tobón and collaborators in Colombia indicated that 49% of those surveyed preferred to consult their relatives or neighbors about medications. Similar to that obtained in this research. However, it is mentioned that people in the family circle have insufficient knowledge since they do not have the necessary experience or studies to attend health consultations and aspects related to pharmaco-safety [23, p. 125]. The studies corroborate this by Menéndez and Chávez, which detail the media's influence on self-medication. It is considered that advertisements on radio, internet, television, or newspapers refer mainly to male and female esthetics, i.e., dendritic, soaps, antiseptics, and rarely refer to drugs such as analgesics, NSAIDs, and antiemetics, among others. The population is based on the criteria that their relatives or acquaintances have about the experience with a drug to treat a disease, so this is the factor that most influences the decision to self-medicate, as observed in this research [16, p. 12], [22, p. 58].

5. Conclusions

The research identified the factors predisposing to self-medication with NSAIDs in patients attending Ambato's urban and rural community pharmacies. In this way, most of them had a secondary and higher education level, leading to determining that it is associated with the incidence of self-medication. Most of them came from urban parishes (34% and 28.5%, respectively), which is indisputable since in the rural areas, most of the population is engaged in agriculture or livestock farming, so few people are academically prepared, with 12.4% having only a primary school level.

It is increasingly common to resort to self-medication through the media. 40.9% of the people choose to use medicines without a medical prescription due to the influence of their family, 27.7% through the Internet, and 16.7% due to the effect of advertisements. The health education provided to the participants was enriching, thus encouraging new awareness campaigns and avoiding this lousy practice. Social networks offer large amounts of information, and people often resort to this advice, which is counterproductive for their pathologies.

Meanwhile, lack of time (34.3%) and proximity to community pharmacies (32%) were other reasons people self-medicated. This mainly happens in urban areas with more community pharmacies nearby. It is convenient and essential to mention that all the effects derived from self-medication of NSAIDs, such as gastric ulcer and dyspepsia, cannot always be avoided by the pharmacist and have no health justification. Other anti-inflammatory drugs do not require a prescription and are similar to those, so they are easily purchased in community pharmacies without restriction. At the same time, it is more profitable to dispense those that do not require a prescription and are sold over the counter.

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Conflicts of Interest

The author declares that they have no conflict of interest.

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