

***Self-medication in pre- and postoperative conditions in tooth extraction****Automedicação em condições pré e pós-cirúrgicas de extrações dentárias**La automedicación en condiciones pre y post quirúrgicas de extracciones dentales*Andreia Rodrigues da Silveira-Miranda¹, Aletheia Moraes Rocha², Eva Mendes Monteiro¹, Hugo Christiano Soares Melo^{1,2}, Sandra Regina Cardoso-Afonso^{1,2}, Adriele Laurinda Silva-Vieira¹¹ Faculty Patos de Minas, Pharmacy Department. Patos de Minas. Minas Gerais, Brazil.² Faculty Patos de Minas, Dentistry Department. Patos de Minas. Minas Gerais, Brazil.**ABSTRACT**

Objective: to evaluate the prevalence and risk factors associated with self-medication in pre- and postoperative conditions in tooth extraction. **Method:** interviews were conducted with 40 patients from a university dental clinic between September and October 2018, addressing socio-demographic variables, medication use and comorbidities. Chi-square test with significance level of $p < 0.05$ was applied. **Results:** the prevalence of preoperative self-medication was 52.5% and 15% after surgery, of which 5% self-medicated before and after the procedure ($p < 0.001$). It was found that 68.4% of the respondents who self-medicated preoperatively were women, and postoperatively, 75% were men ($p < 0.05$). The most taken drugs before surgery were analgesic ($p < 0.05$) and after were anti-inflammatory ($p > 0.05$). **Conclusion:** tooth extraction was a protective factor for self-medication. This behavior varied between sexes, requiring specific prescription protocols for men and women in dental extraction.

Descriptors: Self Administration; Self Care; Dentistry; Oral Surgical Procedures.

RESUMO

Objetivo: avaliar a prevalência e os fatores de risco associados à automedicação em condições pré e pós-cirúrgicas de extrações dentárias. **Método:** foram efetuadas entrevistas com 40 pacientes de uma clínica odontológica universitária entre setembro e outubro de 2018, abordando variáveis sociodemográficas, uso de medicamentos e comorbidades. Aplicou-se o teste qui-quadrado com grau de significância $p < 0,05$. **Resultados:** a prevalência de automedicação no pré-cirúrgico foi de 52,5% e de 15% no pós-cirúrgico, destes 5% se automedicaram antes e após o procedimento ($p < 0,001$). Constatou-se que dos entrevistados que se automedicaram no pré-cirúrgico, 68,4% eram mulheres, e no pós-cirúrgico, 75% eram homens ($p < 0,05$). Os medicamentos mais consumidos antes da cirurgia foram os analgésicos ($p < 0,05$) e após foram os anti-inflamatórios ($p > 0,05$). **Conclusão:** a extração dentária foi um fator protetor para a automedicação. Esse comportamento variou entre os sexos, fazendo-se necessários protocolos de prescrição específicos para homens e mulheres nas extrações dentárias.

Descritores: Autoadministração; Autocuidado; Odontologia; Procedimentos Cirúrgicos Bucais.

RESUMÉN

Objetivo: evaluar la prevalencia y los factores de riesgo asociados con la automedicación en condiciones pre y post quirúrgicas de extracciones dentales. **Método:** 40 pacientes fueron entrevistados en una clínica dental universitaria entre septiembre y octubre de 2018, abordando variables sociodemográficas, uso de medicamentos y comorbidades. Se aplicó la prueba de chi-cuadrado con un nivel de significancia de $p < 0,05$. **Resultados:** prevalencia de automedicación en fue de 52,5% y 15% después de la cirugía, de los cuales 5% se automedicó antes y después procedimiento ($p < 0,001$). Se encontró que de los entrevistados que se automedicaron en el quirúrgicos, el 68,4% eran mujeres y en el período posquirúrgico, el 75% eran hombres ($p < 0,05$). Medicinas los más consumidos antes de la cirugía fueron analgésicos ($p < 0,05$) y luego fueron antiinflamatorio ($p > 0,05$). **Conclusión:** la extracción dental fue un factor protector para la automedicación. Este comportamiento varió entre géneros, haciendo necesarios protocolos de prescripción específicos para hombres y mujeres en extracciones dentales.

Descritores: Autoadministración; Autocuidado; Odontología; Procedimientos Quirúrgicos Orales.

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INTRODUCTION

The World Health Organization defined self-medication as drug selection and use without medical or dental prescription, that is, without supervision and advice of a medic or dentist.¹ Self-medication can be: cultural, by using products from the knowledge acquired over time, passing through generations; advised, when the patient search for previous knowledge about drugs that intends to take; and encouraged, when the use of drugs is carried out due to advertisement and advertising campaigns for commercial purposes to offer the product for sale.² Therefore, self-medication is a matter of concern for health professionals, since a Brazilian population-based study, from questionnaires applied to 41,433 participants, demonstrated that the prevalence of self-medication was 16.1%.²

Self-medication is a world phenomenon, of which prevalence may vary depending on the population studied, method and recall period used: in Germany, the prevalence of drug use through self-medication was 27.7%;³ in Portugal, it was 26.2%;⁴ in Spain, it was 12.7%;⁵ in Cuba, it was 7.3%.⁶ In dentistry, self-medication may be more frequent, in part due to difficulty accessing oral health services and in part due to patient unawareness of his own health condition.⁷ In a study performed in an emergency dental service from Belo Horizonte in Minas Gerais, it was observed that among 174 questioned patients, 41.6% decided to take some medicine on their own, and 79.3% used some medicine for pain relief. It was also observed that more self-medication occurred in cases of pulpitis (dental pulp inflammation) and abscesses (purulent

Self-medication in pre- and postoperative collection in soft tissues). In addition, patients reported painful symptomatology about nine days before searching for emergency care, which revealed difficulty accessing public service.⁷

In this way, the use of dental drugs must be advised, supervised and monitored throughout its time of use because self-medication has consequences such as: intoxication, adverse effects, delay in diagnosis and drug interactions. Conversely, self-medication can also be a tolerated practice, and sometimes necessary, because for the World Health Organization, responsible self-medication can save resources in cases of simple illness, reduce lines in health posts and avoid absence in workplace.¹

As presented earlier, self-medication is more frequent in dentistry than in other health sections. In this context, a dental clinic must prioritize the proper and rational treatment of conditions that affect its patients. Thus, irresponsible self-medication must be prevented and avoided through practices that ensure the correct and advised prescription by means of well-elaborated and properly established pharmacotherapeutic clinical protocols. However, in the study place, there are difficulties in establishing pharmacological treatment protocols in dentistry. Thus, it is believed that the postoperative pharmacological prescription may be insufficient in pain and inflammatory control after dental extraction, which could also facilitate self-medication. Therefore, the current study aimed to determine the prevalence and risk factors associated with pre- and postoperative self-medication in tooth extraction conditions at a university dental clinic.

METHOD

This is a pharmacoepidemiologic, observational, cross-sectional, descriptive and analytical study for assessment of prevalence and risk factors associated with self-medication in pre- and postoperative conditions in tooth extraction at a university dental clinic between September to October 2018.

The sampling was probabilistic of stratified type. For definition of sampling parameters, 90% precision and 95% trust level were defined. According to literature data, a 64% frequency expectance of self-medication in dentistry was considered.⁷⁻⁸ The standard error probability $1 - \beta$ was 0.80, the effect size considered was medium (0.5) and the significance level was $\alpha=5\%$. For the sampling number calculus, G*power[®] (version 3.1.9.3, 2017) software was used, defining thus 40 participants. The dependent variables were the previous self-medication and self-medication after the dental extraction procedure. The independent variables were: sex, age, income, schooling, access to private health insurance, comorbidity presence, orofacial pain presence before and after the surgery, dental prescription and drug identification by ATC (Anatomical Therapeutic Chemical) classification of pharmacological classes.

The participants were selected at Clinic of Faculty Patos de Minas (FPM), from Patos de Minas (MG) city, which does not have pharmacotherapeutic protocols standardized and established by its professionals yet. By Informed Consent Form, the participants received advices concerning study procedures and had the right to decide whether they would participate or not in

Self-medication in pre- and postoperative

the study that was approved by Research Ethical Committee on Human Beings of Faculty Patos de Minas (No. 2.558.971). Potential participants were invited to participate in the study if they: (A) were over 18 years old; (B) would be undergone surgical procedures for tooth extraction in the data collection day; (C) did not presented neurological impairment or any incapability to answer the questionnaire.

The interview was done by means of questionnaires read aloud in a proper environment for 40 patients that would be undergone dental surgery in the next hour. After this, the participant was contacted via phone to verify whether there was any postoperative self-medication up to seven days after the procedure.

For obtaining the prevalence, it was considered as self-medication the drug use by patients on their own initiative, or on recommendation or indication by professionals except medics or dentists. For identifying drugs, it was requested, when possible, the presentation of packaging and/or pack or leaflet to minimize occasional data annotation errors by interviewer, as well as to minimize possible memory bias of the respondent. The recall period used was seven days prior to questionnaire application day to reduce possible memory biases.

The statistical analysis was both descriptive and inferential. For qualitative variables, the absolute and relative frequencies were determined. Next, chi-square hypothesis test was applied to compare frequencies between individuals who did not self-medicate with those who self-medicated before, after and before and after the surgical procedure. To compare the individuals who self-medicated before with those

who self-medicated after the surgical procedure, chi-square test paired for dependent data was applied. The variables sex, race, body mass index (BMI), income, schooling, orofacial pain and presence of other comorbidities were compared between the individuals who self-medicated and those who did not self-medicate before the dental extraction. The same comparison was made after the surgical procedure. Next, these independent variables were compared only between the individuals who self-medicated (before, after and before and after the surgical procedure).

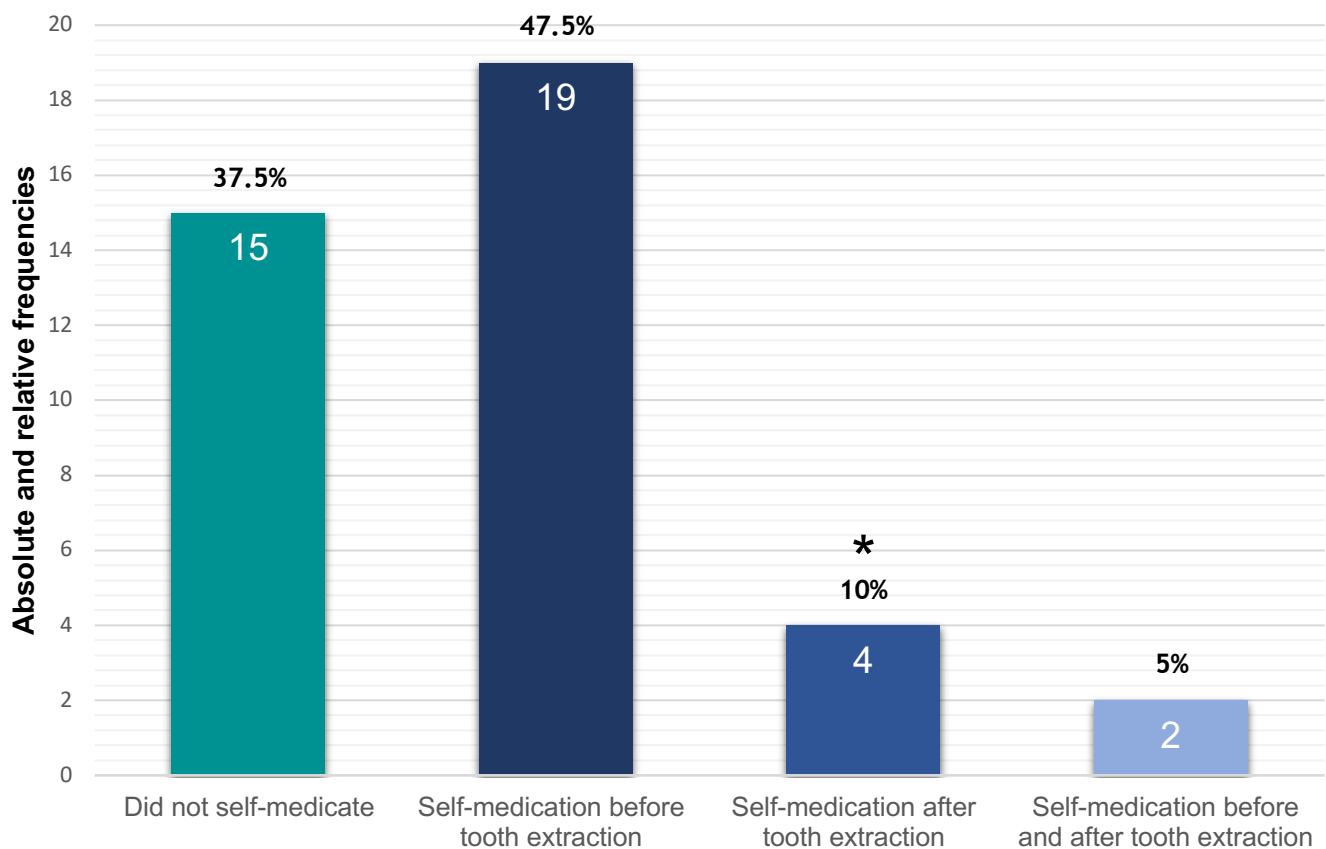
The variable age was submitted to tests of normality and homoscedasticity of variances, and then the means and respective standard deviations were determined. Next, they were submitted to *t*-test for mean comparison between two groups (individuals who self-medicated and those who did not self-medicate) and to ANOVA variance analysis for mean comparison between three groups that self-medicated: before, after

and before and after surgery. For all analyses, $p < 0.05$ significance level was set. Data were tabulated in spreadsheet editors and then submitted to statistical analyses through SPSS® 20.0.0 (Statistical Package of Social Sciences).

RESULTS

The interview applied to forty participants of this study showed that the self-medication prevalence before tooth extraction surgery was 52.5%. Nevertheless, this self-medication was reduced by 3.5 times postoperatively since the prevalence was only 15%. Of the individuals who self-medicated, 47.5% had this behavior only before the surgery, 10% only after the surgery and 5% before and after the procedure. Chi-square test showed statistical differences ($p < 0.05$), indicating that surgical procedure can be a protective factor for self-medication, as in Figure 1.

Figure 1: Absolute and relative frequencies in cases of self-medication in pre- and postoperative conditions in tooth extraction.



*Statistical differences by chi-square test ($\chi^2 = 40.0$; $p < 0.001$).

Relating to pharmacological classes, the patients self-medicated preoperatively with analgesic (57.14%), anti-inflammatory (33.3%), antimicrobial (4.76%) and antihistamine (4.76%) drugs - Figure 2. Postoperatively, the patients mostly self-medicated with anti-inflammatory (50%), analgesic (33.3%) and antimicrobial

(16.67%) drugs - Figure 3. Chi-square test for hypothesis verification in a sample showed that the preoperative use of analgesics was statistically more frequent ($p < 0.05$), fact that did not occurred postoperatively ($p > 0.05$) because the use of anti-inflammatory drugs was more prevalent.

Figure 2: Relative frequencies of self-medication in pre- and postoperative conditions in tooth extraction by pharmacological classes.

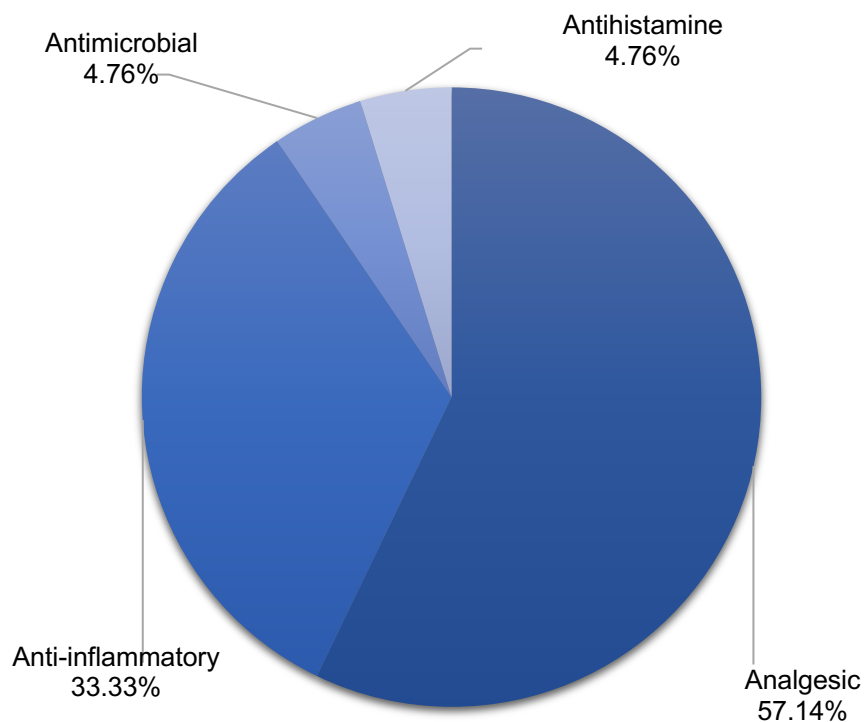
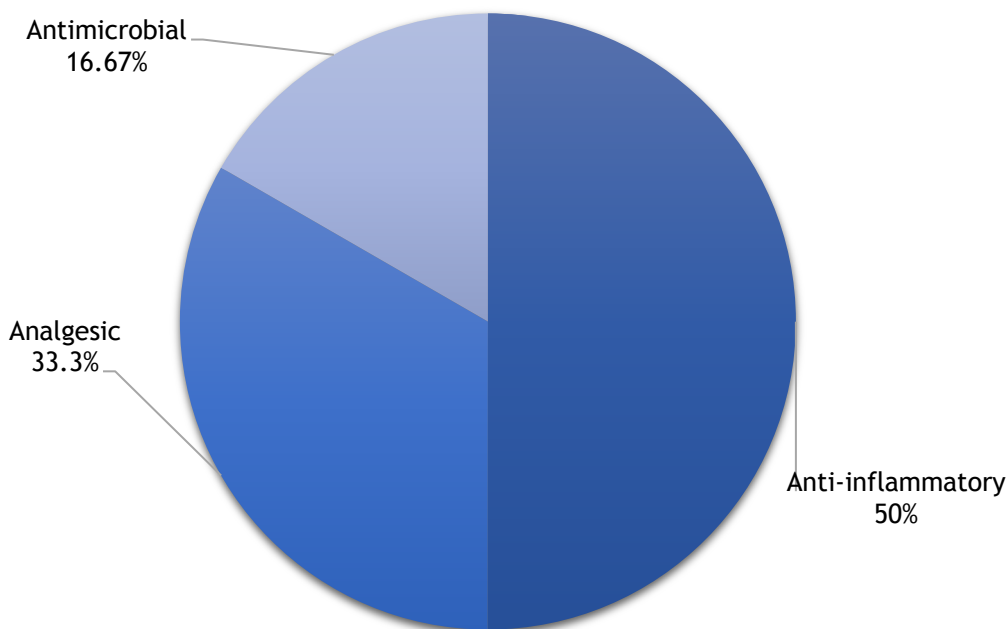


Figure 3: Relative frequencies of self-medication in pre- and postoperative conditions in tooth extraction by pharmacological classes.



Of six patients who self-medicated postoperatively, five of them had received prescription only for analgesic dipyrone (83.33%), demonstrating that isolated prescription of this

drug was inefficient for pain control. This may have contributed to the use of other pharmacological class such as anti-inflammatory as resort by the patient in trying to relieve his

pain condition or inflammation, which corroborates with the hypothesis of this study. Cases of self-medication by prescription drugs were not reported, except antimicrobial drugs that were taken preoperatively by a patient (4.76%) and postoperatively by another patient (16.67%).

None of 40 respondents had private health insurance. To verify other possible risk factors for self-medication before and after surgery, the cross tabulation was made to compare these factors between the participants who self-medicated and who did not self-medicate. For this, the following variables were considered: sex, race, body mass index (BMI), income, schooling, orofacial pain and presence of other comorbidities. Thus, it was verified that 61.9% of participants who self-medicated preoperatively

were female, 47.6% were black, 52.4% had BMI within normality values, 81% had income between 2 and 5 minimum wages, 66.7% presented other comorbidities and 76.2% presented orofacial pain at some point during dental treatment. However, no variable showed statistical differences related to participants who did not self-medicate ($p>0.05$), as in Table 1.

Relating to risk factors for self-medication after dental surgery, it was verified that 83.3% of participants who self-medicated postoperatively were male ($p<0.05$), 66.7% were brown, had normal weight and income from 2 to 5 minimum wages ($p>0.05$). Half of them had other comorbidities ($p>0.05$), and all of them presented some type of orofacial pain ($p=0.082$), as in Table 1.

Table 1: Absolute and relative frequencies of self-medication between participants who self-medicated and who did not self-medicate before and after dental surgery.

Independent variables		Self-medication									
		Before surgery				Chi-square p-value	After surgery				
		Yes		No			Yes		No		Chi-square p-value
n	%	n	%	n	%	n	%				
Sex	Male	8	38.1	10	52.6	0.852 p=0.356	5	83.3	13	38.2	4.191 p=0.04*
	Female	13	61.9	9	47.4		1	16.7	21	61.8	
	Total	21	100	19	100		6	100	34	100	
Race	White	2	9.5	1	5.3	2.639 p=0.268	0	0	3	8.8	0.737 p=0.692
	Black	10	47.6	5	26.3		2	33.3	13	38.2	
	Brown	9	42.8	13	68.4		4	66.7	18	52.9	
	Total	21	100	19	100		6	100	34	100	
BMI	Normal	11	52.4	9	47.4	0.303 p=0.860	4	66.6	16	47.1	0.800 p=0.670
	Overweight	5	23.8	4	21.1		1	16.7	8	23.5	
	Obese	5	23.8	6	31.5		1	16.7	10	29.4	
	Total	21	100	19	100		6	100	34	100	
Income	Up to 1 wage	4	19	7	36.8	3.011 p=0.222	2	33.3	9	26.5	0.275 p=0.872
	2 to 5 wages	17	81	11	57.9		4	66.7	24	70.6	
	Above 5 wages	0	0	1	5.3		0	0	1	2.9	
	Total	21	100	19	100		6	100	34	100	

Schooling	Elementary	14	66.7	12	63.2	0.479 p=0.787	4	66.6	22	64.7	1.097 p=0.578
	High	6	28.5	5	26.3		1	16.7	10	29.4	
	University	1	4.8	2	10.5		1	16.7	2	5.9	
	Total	21	100	19	100		6	100	34	100	
Orofacial pain	Yes	16	76.2	12	63.2	0.807 p=0.369	6	100	22	64.7	3.025 p=0.08
	No	5	23.8	7	36.8		0	0	12	35.3	
	Total	21	100	19	100		6	100	34	100	
Comorbidities	Yes	14	66.7	10	52.6	0.819 p=0.366	3	50	21	61.8	0.294 p=0.588
	No	7	33.3	9	47.4		3	50	13	38.3	
	Total	21	100	19	100		6	100	34	100	

*It presented statistical differences.

Age did not vary statistically between the participants who self-medicated both before and after the dental surgical procedures (Table 2).

This shows that the patient’s age was not a risk factor for self-medication throughout dental treatment.

Table 2: Statistical analysis of age of self-medication participants before and after dental surgical procedures.

Self-medication		Age				
		Descriptive statistics		Inferential statistics		
		n	Mean and standard deviation	Mean comparison test	Value	p-value
Before surgery	Yes	21	46.81±16.17	t-test	0.297	0.768
	No	19	45.42±12.98			
After surgery	Yes	6	50.17±12.42	t-test	0.728	0.471
	No	34	45.44±14.97			
Self-medication period	Before	19	46.42±16.38	ANOVA	0.126	0.882
	After	4	50.00±11.63			
	Before and after	2	50.50±19.10			

Table 3 illustrates the possible risk factors for self-medication after surgical procedure compared to the preoperative period. It is observed that 68.4% of individuals who self-medicated before procedure were female, 75% of individuals who self-medicated after procedure were male, and 100% of individuals who self-

medicated before and after were also male (p=0.045). Regarding the following variables: race, body mass index (BMI), income, schooling, orofacial pain and presence of other comorbidities, there were no statistical differences between the period before and after dental surgery (p>0.05).

Table 3: Comparison between absolute and relative frequencies of self-medication before, after and before and after surgical procedure of tooth extraction.

Variables		Comparison between self-medication						Chi-square test	p-value
		Before		After		Before and after			
		n	%	n	%	n	%		
Sex	Male	6	31.6	3	75	2	100	5.295	0.045*
	Female	13	68.4	1	25	0	0		
	Total	19	100	4	100	2	100		
Race	White	2	10.5	0	0	0	0	1.772	0.778
	Black	9	47.4	1	25	1	50		
	Brown	8	42.1	3	75	1	50		
	Total	19	100	4	100	2	100		
BMI	Normal	10	52.6	3	75	1	50	2.544	0.639
	Overweight	4	21.1	0	0	1	50		
	Obese	5	26.3	1	25	0	0		
	Total	19	100	4	100	2	100		
Income	Up to 1 wage	4	21.1	2	50	0	0	2.205	0.332
	2 to 5 wages	15	78.9	2	50	2	100		
	Above 5 wages	0	0	0	0	0	0		
	Total	19	100	4	100	2	100		
Schooling	Elementary	13	68.4	3	75	1	50	3.473	0.483
	High	5	26.3	0	0	1	50		
	University	1	5.3	1	25	0	0		
	Total	19	100	4	100	2	100		
Orofacial pain	Yes	14	73.7	4	100	2	100	1.974	0.373
	No	5	26.3	0	0	0	0		
	Total	19	100	4	100	2	100		
Comorbidities	Yes	13	68.4	2	50	1	50	0.672	0.715
	No	6	31.6	2	50	1	50		
	Total	19	100	4	100	2	100		

*It presented statistical differences.

DISCUSSION

In this study, it can be verified that self-medication before tooth extraction surgery was 52.5%, more than three times greater than the Brazilian prevalence in 2016 estimated at 16.1% by a population-based study for general health conditions.² Nevertheless, postoperatively, the prevalence was 15%, thus similar to Brazilian one. This shows that the dental extraction surgical procedure may have reduced the dental problems that facilitated self-medication. This corroborates with one of the hypotheses of this

study, which it was believed that the prevalence of self-medication in dentistry would be higher than those by other health problems. However, postoperatively, it was verified that self-medication was not as often as expected considering the difficulty in establishing postoperative pharmacological protocols in the dental clinic studied.

The prevalence of self-medication before extraction surgery of this study was lower than the one obtained by another study from 2012, which showed its occurrence in 79.3% of patients

undergone any dental procedure.⁷ In another study that evaluated self-medication of children attended in a dental emergency service, most of the parents interviewed (67.2%) were favorable to self-medication and affirmed the reuse of old prescriptions (27.9%).⁸

The prevalence of self-medication of this study was also below the one of 63.25% in patients that reported self-medication in general dental conditions in Saudi Arabia in 2018⁹ and the one of 80% in Nigeria.¹⁰ As for in another study also performed in Brazil, there was a prevalence of 21.7% of self-medication among children and young patients attended at a dental clinic,¹¹ and it is, then, lower than the prevalence reported in this study. Furthermore, the patient's age of this study was not associated with a greater chance of self-medication ($p>0.05$). The comparison of these results with the studies available in literature is difficult due to the great methodological variability. Moreover, studies that evaluated self-medication particularly in pre- and postoperative situations were not found.

Studies showed that the self-medication practice is still very common in less developed and developing countries.⁹⁻¹⁰ This probably occurs due to the difficulty faced in accessing oral health services, fact corroborated by this study in which all respondents did not have access to private health insurance. Nevertheless, by investigating the possible risk factors for self-medication related to socioeconomic profile as schooling and income, none of these factors were related to a greater chance of self-medicating both pre- and postoperatively ($p>0.05$). Therefore, preoperative self-medication was very common regardless of participant socioeconomic profile.

Self-medication with analgesic drugs in handling the dental pain is a common practice, as most of these medicines are available without needing dental prescription. The use of analgesic drugs in this study was 57.14% preoperatively and 33.3% postoperatively, and the use of anti-inflammatory drugs that also act in the sense of relieving pain of inflammatory origin was reported by 33.3% of individuals who self-medicated preoperatively and 50% postoperatively. These data do not corroborate the results found by a study in Malaysia, in 2018, in which it was shown that the prevalence of self-medication with analgesic drugs in patients with orodental pains was only 29.4%, therefore lower than the results of this study.¹² The self-medication with analgesic and anti-inflammatory drugs in this study may be occurred because the orofacial pain was associated with the high prevalence of both pre- (76.2%) and postoperative (100%) self-medication ($p=0.082$), which corroborates with another hypothesis of this study: the lack of pharmacotherapeutic protocols properly established could facilitate the self-medication in this pain and inflammatory conditions indicated by pharmacological classes used in self-medication.

In a study published in 2012, the high prevalence of pain and use of analgesic drugs in dentistry was demonstrated because among 174 volunteers interviewed, 60.3% put something on tooth to relieve the pain and among these, 52.3% reported some pain relief.⁷ However, no participant of this study reported the practice of local analgesic drug. According to the author, self-medication is not always the best way for pain control since its practice may indicate a

difficulty accessing health services, constituting a barrier to patient to solve his problem. Additionally, the dentist intervention was the main factor for relief of symptomatology, fact occurred in this study that showed a lower prevalence of preoperative self-medication, demonstrating that the surgical treatment was a protective factor for self-medication due to orofacial pains ($p < 0.05$).⁷

In dentistry, contradictory self-medication is relatively frequent and can occur even using non-over-the-counter drugs, as occurred when a participant self-medicated with antimicrobial drugs (16.64%), and three others self-medicated with anti-inflammatory drugs (50%) postoperatively. These drugs may be stored at patient's home by remainder of other treatments or can be purchased directly from the pharmaceutical establishment, unfortunately even without medical or dental prescription. This can be serious due to the rise of cases of antimicrobial resistance as a result of the irrational use of antimicrobial drugs.¹³

In this study, it was verified that 68.4% of individuals who self-medicated before the procedure were female ($p > 0.05$), 75% of individuals who self-medicated after the procedure were male ($p < 0.05$), and 100% of individuals who self-medicated before and after were also male ($p = 0.07$). This shows that women self-medicated more often before the surgery, and men self-medicated more often postoperatively. These data agree with a study performed in Catalonia, Spain, in which the authors verified that men take more medications on their own compared to women (34% males and 25% females).¹⁴ This demonstrates, as in current

study, that males are more susceptible in self-medicating postoperatively. Nevertheless, women, initially, care more about their own health condition than men. These data emphasize the necessity in establishing specific postoperative pharmacological protocols for males due to their higher probability of feeling pain in relation to women.¹⁵

Current study limitations include the possibility of memory bias of the respondents who may have forgotten that self-medicated before or after surgery or did not remember the exact name of the drug in use. Another limitation was the non-validation of the questionnaire of this study since most of the participants underwent surgery only once, and it was not possible to repeat the application of questionnaires to determine the Kappa Coefficient. In literature, the pre-validated questionnaires for self-medication verification particularly in dentistry were inexistent as well.

CONCLUSION

The prevalence of self-medication in preoperative conditions was 3.5 times greater than in postoperative conditions in tooth extraction. Orofacial pain was associated with the use of analgesic and anti-inflammatory drugs because they were the most taken pharmacological classes by patients on their own, both pre- and postoperatively. Of the socio-demographic variables, only sex influenced in self-medication behavior. Females self-medicated more before surgery, while males self-medicated more postoperatively. This indicates the need of prescription protocols in specific pain and surgical conditions for each sex. Therefore,

this study demonstrated that the extraction dental treatment was a protective factor for self-medication, but further studies should be

conducted in order to determine and understand other risk factors for self-medication particularly in dentistry.

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AVAILABILITY OF DATA

Does not apply.

FUDING SOURCE

Does not apply.

CONFLICTS OF INTEREST

There are no conflicts of interest to declare.

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