Self-Medication During Oral Diseases In The Urban Commune Of Mahajanga-Madagascar

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Abstract – Self-medication is widely practiced in the world of which developing countries have had a great deal of experience.

The aim of this study was to determine self-medication practices during oral diseases in the urban commune of Mahajanga. A descriptive cross-sectional study was conducted from July to September 2019 in 384 patients aged 18 years and older, consulted for oral diseases.

Sixty-four point one percent of the patients surveyed practiced self-medication for oral diseases. Anti-inflammatory drugs (76.6%), analgesics (46.9%) and antibiotics (31.7%), taken alone or in combination, were frequently used drugs. Diclofenac (47.3%), paracetamol (50%) and amoxicillin (84.6%) were the most consumed. Toothache was the main trigger for self-medication (83.3%) and the lack of time to see a dentist was the main reason for self-medication (30.1%). Among patients who self-medicated, 54,1 % got their drugs from pharmaceutical establishments. Only 16.7% of patients surveys were aware of the danger of self-medication. A significant association was found between self-medication practice and age (p = 0.003), marital status (p = 0.01), possession of medical care (p = 0.000), type of oral health problem (p = 0.000).

Self-medication remains a widespread practice in the community. However, it is imperative to increase awareness to limit the risks associated with this practice.

Keywords – Self-medication, oral diseases, Madagascar.

I. INTRODUCTION

There is no single definition of self-medication in the literature. According to the World Health Organisation (WHO), "self-medication is the use, without a medical prescription, by individuals for themselves or their family members and on their own initiative to treat a condition or symptom that they have identified, without consulting a health professional, of medicines considered as much and having received marketing authorisation (MA), with the possibility of assistance and advice from pharmaticists" [1].

Self-medication is a common practice in both developed and developing countries, but the latter have had considerable experience [2]. Failures in health care delivery systems, especially in resource-limited countries, such as inequitable distribution, high health care costs, inaccessibility, lack of health professionals and unregulated distribution of medicines [3].

Self-medication is considered a major global public health problem because of potential for abuse, and should be a focus of everyone because of the risks, both plausible and proven, including acquired microbial resistance, drug interactions, serious side effects, failure of optimal treatment, intentional and unintentional poisoning, increased malignant and lethal disease, drug dependence and addiction [4-5].

In odontostomatological practice, apart from anxiety related to phobia of dentists and their practice, oral health problems such as dentalpain, gingival bleeding, gingival oedema and tooth mobility are the symptoms most likely to justify patients'self-medication [6, 7]. Self-medication practices of patients with a dental pain are common in many developing countries and, despite their adverse clinical impact on the dentition and their adverse effects [8].

In 2011, self-medication represented 2.118 billion euros in France, or 7.2% of drug market in value [9]. In 2012, the share of self-medication increased to 7.6% (2.189 billion euro), which corresponds to a growth of +3.2% compared to 2011, whereas the prescription drug market recorded a decline of -2.4% (26.640 billion euros) [10]. In 2015, the self–mediation market was worth € 2.256 billion [11]. Self-medication has been presented as one of the main triggers for this pattern of drug consumption [12].

II. MATERIALS AND METHODS

This single-center study was carried out in the urban commune of Mahajanga I of the Boeny Region, Madagascar. Mahajanga is a coastal town in the northwest of Madagascar, located 354.803 miles northwest of the capital Antananarivo, along the RN4. Mahajanga I covers an area of 57 Km^2 and is subdivided into 26 fokotany [13]. The population of the urban commune of Mahajanga I was estimed at 244 722 residents in 2018 according to the third General Census of Population and Housing (RGPH-3) [14].

The city of Mahajanga has health facilities including:

- 02 University Hospital Centers : CHU PZaGa and CHU Mahavoky Atsimo

- 01 University Center for Dental Care and Treatment (CUSTD) at the "Institut d'Odonto-Stomatologie Tropical de Madagascar" (IOSTM)

- 06 Basic Health Center level II

- 03 public clinics

- 32 private dental practices

- 02 medical and vocational centers

- 01 Lutheran Hospital

- 02 inter-company medical services

This is a cross-sectional descriptive observational study. The study period was from July to September 2019. The study ran from April 2018 to December 2019.

Inclusion criteria was all persons aged 18 years and over who were seen for oral health problems and who agreed to answer the questionnaire.

The sample size xas determined with Anderson's equation:

$$n = \frac{z^2 p(1-p)}{i^2}$$

n: sample size

p: prevalence of self-medication in oral diseases (50%, as no prevalence was found in Madagascar)

z: confidence coefficient for a degree of 95% (1.96)

i: Margin of error 5% (standard value of 0.05)

$$n = \frac{1.96^2 \times 0.5(1 - 0.5)}{0.05^2}$$

n = 384

Patients

The sampling was simple random. Patients who showed signs of oral disease on the day of the survey or in the last three months prior to the survey and who came consultation were randomly selected.

Dental practices

Thirteen dental practices were selected by convenience, namely

- 3 dental surgeries at the University Hospital Center

- 1 University Center for Dental Care and Treatment

- 3 dental praxtices of the inter-compagny medical services

- 2 medical and vocational center

- 1 dental practice at a CSB II

- 3 private dental practices

Data collection

All patients were interviewed using a structured questionnaire developed from previous studies on self-medication [2-15–16-17]. A pre-test with ten (10) patients was carried out before the survey to see the reliability of the items and their validation in order to make changes to question s that were misunderstood or difficult to answer.

Data analysis

The collected were processed and analysed with SPSS 20.0 (Statistical Package for Social Sciences) for Windows. Univariate analysis was conducted for descriptive statistics. Bivariate analysis was conducted to investigate the relationship between the variables using Chi2 test. The difference was considered significant at a $p < 0.05$.

Ethical and deontological considerations

Before the actual survey is carried out, it is imperative to take into account the ethics process:

- Authorisation to survey the line mangers of each health

- Informed verbal consent of the respondent with extensive information on the purpose and conduct of the survey

- Respect for human rights (women's rights, patients' rights, freedom of opinion)

- Respect for anonymity, confidentiality and professional secrecy during and after the study

Limitations of the study

The study was limited by the study site, the sincerity of the responses and the recollection of the respondents. Other unstudied factors concerning self-medication.

III. RESULTS

Socio-demographic characteristics of the patients surveyed

The distribution according to socio-demographic characteristics, 57.6% were female and male accounted for 42.4% of the sample. The age of our study population ranged from 18 to 68 years.

The age group between 25 and 34 years was the most represented with a proportion of 30.7%. the majority of respondents were married (58.9%).

The distribution of our study population according to the possession of a medical care insurance showed that the majority (67.7%) of the respondents did not have one, only 32.3% were benefeciaries.

Characteristics of self –medication in oral diseases

Among the patients who participated in the study, 246 resorted to self-medication. A prevalence of self-medication was 64.1%.

According to the symptoms of oral disease, the most common reason for self-medication was a toothache (83.3%), followed by dental abscess (13.4%). Self-medication during gingivitis and other symptoms was less frequent, thes percentage were 2.9% and 0.2% respectively.

In our study, the most commonly self-medicated drugs were non-steroidal anti-inflammatory drugs: 77.6% of the patients who reported self-medication used NSAIDs (mostly diclofenac in 50% of case), 46,9% used painkillers (paracetmal in 97.3% of case) and 31.7% used antibiotics (mostly amoxicillin in 84.6% of case).

Only 40.2% of the subjects admitted to know the dosage of the drugs they using, while 59.8% did not know. The inappropriate or excessive dose was marked in 59.6% of patients. As for the duration of self-medication, 52.4% practised self-medication between 2 and 4 days.

Regarding the source of information on self-medication, most participants (28.9%) said they got advice from their family, 17.1% from a previous doctor's prescription, 14.6% from their neighbour, 14.2% from friends, 11.8% from himself or herself, 8.3% from health care personnel and 4.9% from pharmacy personnel.

Fifty-four point one percent of the patients surveyed went to the pharmacy to obtain drugs freely, 33.7% bought them in the market or on the street (street vendor, grocery shop), the rest (12.2%) used medicines stored at home.

Among the reasons for self-medication, lack of time (30.1%), financial problems (24.4%) and dentisophobia (15.4%) were amog the most frequent.

Of the patients who self-medicated, 83.3% were unaware of the risks involved, 39% cited gastric ulcer, 26.8% overdose, 9.3% bacterial resistance, 4.9% allergy and 9.8% death.

The proportion of patients who self-medicated during oral health care was higly significant across age groups (*p*=0.003). however, the highest proportion (78%) was observed in the 25-34 age group (**Table I**).

The association between self-medication and marital status showed that 74.8% of single people were self-medicating during oral diseases and this association was significant (*p*=0.001) (**Table II**).

The proportion of patients without health care coverage who used self-medication was 70.8%. the association between self-medication and the possession or enjoyment of savings to cover medical care is highly significant (*p*=0.000) (**Table III**).

The non-use of self-medication was very high among patients with other signs of oral disease (95.7%) apart from toothache, gingivitis and dental abscess. The association is highly significant (*p*=0.000) between self-medication and signs of oral disease (**Table IV**).

IV. DISCUSSION

This study consists in determining the practice of self-medication during oral diseases in the Urban Commune of Mahajanga I. It is a preliminary study concerning self-medication in odontostomatology in the adult population in Madagascar. This is with a view to providing data for a prevention policy to reduce the practice of self-medication and for the promotion of the health of the Malagasy population. In this study, we were able to determine the practice of self-medication during oral diseases by measuring its prevalence, which was 64.1%, and by describing the different characteristics of the practice of self-medication of patients consulted at the level of the oral health care centres in the Urban Commune of Mahajanga I.

This is a cross-sectional descriptive observational study of self-medication in oral diseases. We calculated our sample size for the population of the urban commune of Mahajanga I by opting for a prevalence of self-medication during oral diseases of 50% because we could not find a previous prevalence. The context may change from one region to another. Therefore, our results cannot be extrapolated for Madagascar but the method used can be reproduced in other cities for a better representativeness.

The study population was predominantly female with a sex ratio of 0.73. this female predominance has been reported in other studies on the same topic: Kaboré WAB *et al.* in Ouagadougou Burkina Faso in 2016 and Basha N *et al.* in Virajpet India in 2016 found a female predominance of 54.5% and 57.6% [17- 18]. This result can be explained by the high female composition of the Malagasy population. Indeed, the last general population and housing census (RGPH-3) in Madagascar in 2018 found 25 680 342 inhabitants of which 50,67% are women [14].

The use of self-medication during oral diseases was frequent in our study with a prevalence of 64.1%. this rate is relatively similar to that of Aldeeri A *et al.* 63.2%, in their study in Saudi Arabia in 2018, but much higher than that of general population in China 32% according to a meta-analysis by Shaghahi *et al.* in 2014 on the predictors of self-medication. Pain and functional discomfort were among the most important signs of oral disease that required immediate treatment [20]. However, most patients resorted to self-medication for pain relief, according to a study conducted by Omitola OG *et al.* in Nigeria in 2010 [21]. In our study, dental pain or toothache was the main sign of oral diseases that triggered self-medication (81.3%). This result corroborates the results found by Giriraju A et al. in Karnatalka, India in 2014 (74%) and Agbor MA *et al.* in Cameroun in 2010 (54.7%) [16-5]. The drugs commonly used by the patients in our study were non-steroidal anti-inflammatory drugs (77.6%), analgesics/antipyretics (46.9%) and antibiotics (31.7%) used alone or in combination. The majority of respondents used paracetamol, followed by diclofenac and amoxicillin. Mbanya NE *et al.* in Cameroun in 2018 and De Lima *et al.* in Brazil in 2016 [22–23] showed similar results in their studies. One of the reasons for the use of these molecules is accessibility, their affordable cost, and their self-administration often recommended by health care personnel. Indeed, self-medication is often associated with misuse of the drug and multi-drug therapy [24–25].

The result of the present study showed that the duration of self-medication during oral diseases by the majority of the sample was less than one week (52.4%) which was in line with the study conducted in Saudi Arabia in 2017 by Aldeeri *et al.* where 70.7% of their study population were self-medicating for less than one week. On the other hand, in Nigeria in 2014, the majority of the population (70.7%) was self-medicating for at least two weeks according Anyanechi CE *et al.* [15-7]. As for the knowledge of the dose of drugs, 40.2% of our sample claimed to have known it. Comparatively, this rate is much higher than that of the study done by Anyanechi CE *et al.* in Nigeria in 2014 on toothache and self-medication practice where only 3.2% of the subjects knew the proper dose of self-medication drugs [7]. According to WHO in 2001, the inappropriate use of medicines, particularly antibiotics, was associated with an increased risk of developing bacterial resistance. Self-mediation led to delayed diagnosis which could aggravate the existing lesion [26]. As for anti-inflammatory drugs, self-medication with this type of medication during toothache was one of the risk factors for cervico-facial odontogenic cellulitis according to a study conducted by Randrianandraina MP *et al.* in Mahajanga, Madagascar in 2017 [27]. However, the minuse of paracetamol can be fatal in some patients, in this case those with renal disease. Paracetamol could increase the risk of chronic kidney disease [28].

In addition, the sources of information and advice on self-medication varied considerably, including pharmacy staff, parents, friends, media, traditional healers and the patient's own knowledge and previous experience of the symptom [5]. In the present study, most participants (28.9%) reported getting advice from their families, 17.1% from a previous doctor's prescription, 14.6% from their neighbours. This result was in line with the study of Alqahtani HA *et al.* in the United Arab Emirates in 2018 and was proved by a meta-analysis of 70 articles on self-medication conducted by Shaghahi *et al.* in 2013 in Iran in wich most of the subjects who self-medicated were advised by their families [4- 29]. The present result may be due, on the one hand, to the experience of family members on self-medication which created an influence on others and on the other hand they sometimes recommended to other members to use the same prescription in their previous prescription to relieve symptoms.

Regarding the source of access to medicines, more than half of the patients (54.1%) obtained medicines freely from pharmacies and 33.7% bought them from the market or in the street. This result corroborates the results found by Kaboré WAD *et al.* in Ouagadougou, Burkina Faso in 2016 (81.6% from pharmacies and 15.8% from street vendors and markets) and by Singh RK *et al.* in Karala, India in 2016 (76.5%from pharmacies) [16- 30]. While direct purchase from pharmacies and the use of medicines from the family pharmacy are found in most European studies, the acquisition of medicines in the market or on the street is a specificity of Africa and even of developing countries [31– 32].

In our study, lack of time was the main reason for self-medication (30.1%). This result is in line with the study conducted by Aldeeri A *et al.* in Saudi Arabia in 2018 (54.5%) but different from the result found by Agbor MA *et al.* in Cameroun in 2010 here the main reason for self-medication during oral diseases was financial problem (46.6%) [15-5].

In this study, the occurrence of adverse events affected 38.6% of the respondents who were self-medicating. A study by Shamsudeen SM *et al.* in Chennai, India in 2016 and 2017 showed a similar result with 37.8% of patients who self-medicated had adverse effects [34]. This is due to the lack of knowledge about the potential adverse effects of drug. However, their use is very dangerous [35]. The present study found that 83.3% were unaware of the risks involved in self-medication. Mbanya NE *et al.* found the same in a study conducted in Cameroun in 2018 with a rate of ignorance of the dangers of self-medication at 74% [22]. Lack of awareness about the dangers of this practice was among the causes of this ignorance.

The prevalence of self-medication showed a highly significant difference (p=0.003) between self-medication and age. It was 78% in the 25 to 34 year olds in our study. This result is in line with the conducted by Kaboré WAD et al. in Burkina Faso in 2016 (p=0.001) for 19 to 40 age group (76.3%) [16]. This age group was part of the active population, always busy.

Concerning the cross between self-medication and marital status, this study found that there was a statistically significant difference (p=0.01) between these two variables with a high prevalence among single people (74.8%). This result is in line with the study by Agbor MA et al. on self-medication and oral health problems in Cameroun in 2010 (p=0.02) where the prevalence was 73.2% among singles [5].

The absence of health care increased the risk of self-medication. The present study showed a statistically high significant between self-medication and medical coverage (p=0.000) with a prevalence of 70.8% among non-beneficiaries. A study conducted by Karimy M et al. in Iran in2016 showed a similar result (p=0.001) with a percentage of 83.9% [36]. Only civil servants and private companies' employees benefit from a system of reimbursement of consultation and pharmacy expenses. Those who did not benefit from this system preferred to buy medicines directly from pharmacies.

A statistically high significant (p=0.000) was found in the study (95.7%) between non-use of self-medication and other signs of oral diseases (other than toothache, gingivitis and abscess). This result corroborated the study by Aldeeri A et al. in Saudi Arabia in 2018 (p=0.000) with a percentage of 72% [15].

V. CONCLUSION

In our study, the prevalence of self-medication is 64.%. In general, it is dental pain that drives individuals to self-medicate. It is very difficult to talk about the total suppression of self-medication in Madagascar given the socio-economic and health situation of the country. Given the uneven distribution of oral health workers and the lack of functional and adequate infrastructure within the primary health care system, the majority of the population of oral diseases go untreated and people resort to self-medication or traditional medicine. In view of this, a more in-depth study on self-medication and its risk factors would be more appropriate to limit this practice.

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Tables

Table I: Distribution of individuals according to the practice of self-medication and age group

Practice self-medication	Age group													
	18-24		25-34		35-44		45-54		55-64		65 and over		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Yes	50	61.7	92	78**	57	62	30	48.4	15	55.6	2	50	246	64.1
No	31	38.3	26	22	35	38	32	51.6	12	44.4	2	50	138	35.9
Total	81	100	118	100	92	100	62	100	27	100	4	100	384	100

**$p = 0.00$

Table II: distribution of individuals by self-medication

Self-medication	Marital status									
	Single		Married		Widowed		Other		Total	
	N	%	N	%	N	%	N	%	N	%
Yes	101	74.8*	131	58	7	63.6	7	58.3	246	64.1
No	34	25.2	95	42	4	36.4	5	41.7	138	35.9
Total	135	100	226	100	11	100	12	100	384	100

*$p= 0.01$

Table III: distribution of according to the practice of self-medication and the management of medical care

Practice of self-medication	Coverage of medical care					
	Yes		No		Total	
	N	%	N	%	N	%
Yes	62	50	184	70.8***	246	64.1
No	62	50	76	29.2	138	35.9
Total	124	100	260	100	300	100

***$p= 0.000$

Table IV: distribution of individuals according to the practice of self-medication and signs of oral diseases

Practice of self-medication	Signs of oral disease									
	Dental pain		Gingivitis		Abscess		Other		Total	
	N	%	N	%	N	%	N	%	N	%
Yes	205	65.7	7	58.3	33	91.7	1	4.3	246	64.1
No	107	34.3	5	41.7	3	8.3	23	95.7***	138	35.9
Total	312	100	12	100	29	100	24	100	384	100

***$p= 0.000$