

Self-Care Remedies Used to Relieve Dental Pain among Sudanese in Khartoum State, Sudan

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Abstract Aim and objectives: This study aimed to identify self-care remedies used to relieve dental pain among Sudanese in Khartoum state, 2016-2017, with assessment of related concerns such as predisposing reasons, and consequences associated with this usage. **Methods and tools:** The appropriate sample was obtained by non-probability purposive sampling technique. The data were collected by investigator-handled community-based questionnaire and all statistical analysis was done using IBM statistical package of social science (SPSS) statistics version 22. **Results:** The study included 384 participants (75.5% male, and 24.5% female). Age of the participants started from 18 years old with most of the respondents aged between third to fifth decades of life. The most frequently used remedy was cloves (33.8%) alongside with a wide variety of other remedies. The potentiating factors for this usage included personal preference (47.4%), self apprehension (23.7%), high costs and lack of dental health services (22.4% and 5.2% respectively) and combination of some reasons. Although a number of complications were associated with those remedies such as pain (7.5%), burning sensation (4.2%), irritation (2.3%), discoloration (2.1%), bad smell (1.3%), 73.2% of participants stated that they would encourage other people to use those self-care remedies. This suggests a low level of awareness about the risk of oral health problems among the study population. **Conclusion:** Cloves is the most commonly used self-care remedy by the participants. Personal preference, among others, is the most predisposing motive for this usage. Upgrading awareness about risk of oral health problems, expanding health insurance services to include dental health care services, and demonstration of rational use of over-the-counter medicaments is needed.

Keywords: self-care remedies for toothache, dental pain self-medication, Sudanese, cloves

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1. Introduction

Dental pain is more common in populations that are at higher risk of dental caries, the prevalence of which depends upon many factors such as diet, socioeconomic status, and exposure to fluoride [1]. Dental pain may occur at any age, in any gender and in any geographic region and its diagnosis and relief are considered one of the main responsibilities of dentists [3]. However, sometimes when individuals are facing barriers to receive oral health care, especially in low-income rural areas, the residents often are either forced, or choose, to use alternative strategies, forgo treatment and/or use self-care remedies for relieving dental pain [4]. Self-care is one of the means by which people without access to professional care can actively engage in managing their oral health problems [5,6].

In Sudan, studies have shown that individuals aged 18-34 reported much higher experience of toothache than

those aged 75 or over. Among School children, 12% had experienced toothache before the age of five, and 32% by the age of 12. Dental trauma is extremely common and tends to occur more often in children than adults [2].

In dental profession, apart from anxiety due to phobia from dentists and their practice, toothache is the most likely symptom that may warrant patients to embark on self-medication [7,8,9,10]. The rite of consuming those remedies for self medication is increasing particularly in developing countries, although it has a serious side effects it wasn't surveyed enough by researches to consider an action for its control [11].

Although it is popularly noted that many Sudanese use some traditional methods, including self-care remedies to relieve dental pain especially in outskirts and rural areas, no previous studies were conducted before to explore these methods and find out the reasons why people use them. The aim of this study was to identify the traditional remedies used to relieve dental pain among Sudanese in Khartoum state, with assessment of related concerns of the study such as reasons predisposing this usage.

2. Materials and Methods

A descriptive cross-sectional community-based study was conducted in republic of Sudan, Khartoum State through the period (October 2016 – May 2017). As the study was concerned with the self-care remedies used to relieve, rather than the prevalence of dental pain, 384 participants were obtained by non-probability, purposive sampling technique. Those were geographically distributed in the three main cities of capital Khartoum, namely Omdurman, Khartoum, and Bahri. Selected individuals met the following criteria; Sudan nationals; above 18-years of age; accept to participate in the study; have all or some of their natural teeth present; experienced dental pain before; have not received any dental care to relieve the toothache; used home remedies, traditional methods, OTC analgesics or even changed their diet to treat dental pain before. Individuals who did not fulfill the above criteria or have mental illness or depleting systemic diseases were excluded.

The data were collected from the participants by an investigator-handled questionnaire designed by the researchers. The questionnaire consisted of objectives-oriented questions, some of which were also obtained from similar studies that conducted in other countries [4,11]. The questionnaire was prepared in English first and then translated into Arabic. It included about 16 questions ordered to obtain, socio-demographic and socio-economic characteristics of the participants, characteristics of dental pain they perceived, remedy/remedies they used and why. Respondents were then asked about the consequences\ complications they noted as a result of self-care remedies. Some questions were also included to assess the study population awareness about the risk of oral health problems and importance of dental clinic visits. These, for example, include previous and frequent dental clinic visits, and whether they encourage other people to use such strategies to deal with their toothache. Regarding SES, it was assessed using different features of the participants in socio-economic characteristics section rather than specific scale. Similarly, pain severity was according to the participants' verbal description being asked how they would describe that pain either mild, moderate or severe. The designed questionnaire then tested for its reliability and validity on 38 samples and the cronbach's alpha value was above 0.7. Participants were interviewed in different areas in Khartoum until the sample size was reached. Sample size was calculated from the following equation; $n = z^2 pq/\sigma^2$ where z^2 is z value (1.96 for 95% confidence level), pq is the variability of the population (0.5 used the remedies & 0.5 did not), and σ^2 is level of margin of error squared (confidence interval 0.5). The study was approved by the faculty of oral and maxillofacial medicine, international university of Africa and was registered in the Ministry of Health, Khartoum state, Sudan. Consents were also obtained from all included participants. The data were analyzed using the Statistical Package for the Social Sciences (SPSS, version 22).

3. Results

As shown in Table 1, which demonstrate socio-demographic characteristics of the participants, most of

the respondents were males, ranging between 32 to 51 years old, resident in Omdurman, and enrolled in university. More than one third of the participants were employees and cannot afford dental treatment moreover, more than two thirds were not enrolled in health insurance, as shown in Table 2 demonstrating the participants' socio-economic characteristics.

Table 1. Distribution of the Participants According to Their Socio-Demographic Characteristics (N=384)

Gender	Frequency	Percent
Male	290	75.5
Female	94	24.5
Age groups		
18 – 31 years	123	32.0
32 - 51 years	187	48.7
52 - 71 years	69	18.0
72+ years	5	1.3
Residence		
Khartoum	123	32.0
Omdurman	138	36.0
Bahri	123	32.0
Education		
Illiterate	9	2.3
Primary	115	28.4
Secondary	109	28.4
University	157	40.8
Total	384	100.0

Table 2. Distribution of the Participants According to Their Socio-Economic Characteristics (N=384)

Occupation	Frequency	Percent
Workless	17	4.4
Housewife	23	6.0
Student	32	8.3
Workers	72	18.8
Free trade	91	23.7
Employee	149	38.8
Affordability		
Yes	98	25.5
No	191	49.7
Sometimes	95	24.7
Insurance		
Yes	119	31.0
No	265	69.0
Total	384	100.0

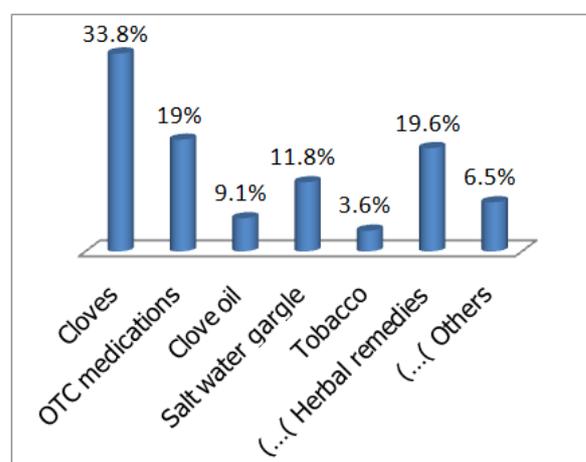


Figure 1. Frequency of Self-Care Remedies Used (N=618) *N=Number of Remedies Used

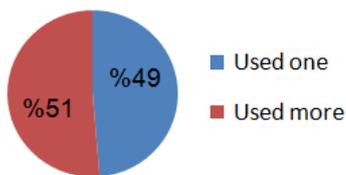


Figure 2. Number of Remedies Used By Single Participant (N=384) N= Sample Size

As presented in Figure 1, findings of this study show that cloves was the most frequently used remedy along with herbal remedies and OTC medications. Almost half of respondents used more than one remedy, as shown in Figure 2.

Majority of participants just preferred those remedies over the actual dental treatment. Other predisposing factors listed in Table 3 with some respondents picked more than one reason.

Table 3. Reasons for Self-Care Remedies Use (N=384)

Reasons	Frequency	Percent
Self apprehension	91	23.7
I prefer it	182	47.4
Lack of dental health services	20	5.2
High costs of dental services	86	22.4
Self apprehension & high costs	3	0.8
Lack of dental health services & high costs	1	0.3
Self apprehension, lack of dental health & high costs	1	0.3
Total	384	100.0

The remedies used were found to be associated with a number of complications with pain being the leading adverse effect, burning sensation, irritation, discoloration, bad smell, and a few cases experienced a combination of two or more of the above mentioned complications, majority of the participants did not experience any as shown in Table 4.

Table 4. Side Effects or Complications Associated with Self-Care Remedies Usage (N=78)

Side effect	Frequency	Percent
Pain (Hotness)	29	7.5
Bad smell/taste	4	1.3
Irritation	10	2.3
Burning sensation	16	4.2
Teeth discoloration	8	2.1
Saliva changes	3	0.8
Bad smell/taste & Irritation	2	0.5
Irritation & burning sensation	3	0.8
Burning sensation & teeth discoloration	2	0.5
Teeth discoloration & saliva changes	1	0.3
Total	78	20.3

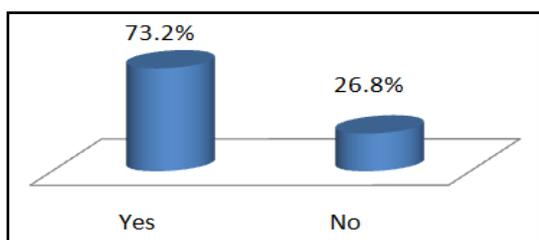


Figure 3. Reflects If Participants Would Advise Other People To Use Those Self-Care Remedies (N=384). *N=Sample Size

4. Discussion

Many previous studies have reported a wide variety of self-care strategies for relieving dental pain. Some of these studies revealed over-the-counter analgesics as the most commonly used compared with other remedies [4,11,7,12,13]. The results of this study showed that among different remedies used by the participants, cloves was the most frequently used remedy 33.8% along with herbal remedies 19.6% and OTC medications 19%. 51% of participants used more than one remedy, whereas those who used one remedy were 49%. Certainly, differences in specific remedies were also availed in this study with majority of the participants considered cloves as their favorite remedy 33.8%. This is might have been attributed to its availability, effectiveness, and cost efficiency.

In general, self-care remedies have been widely but not often used in relieving dental pain in addition to dental treatment measures as our findings have shown that 65.6% use both methods, 27.3% were considered on occasional basis, and 7% use only self-care remedies. These behaviors could be interpreted by the nature of pain they suffer, financial factors allowing them to visit the dentist some but not all the time, or the efficacy of the remedy they use. This conforms to other researches which found that toothache sufferers used combination of self-care and formal care strategies with nonprescription medicines and self-care remedies being used as a temporary solution usually preceding dental clinic visits [14,15,16,17]. Statistically, the results revealed that majority of the participants 48.7% were between third to fifth decade. Unlike other research, there was male predominance in this study with the percentage of 75.5% as compared to female 24.5% [4,18,19]. This predominance might be but not necessarily related to social behaviors as men have more tendency to try different strategies to alleviate their pain despite the inherent risk in such practices.

Regarding educational level, illiterate respondents were relatively low 2.3% in relation to those who have attained education to certain degree (primary 28.4%, secondary 28.4%, and university 40.8%). Despite the increased number of literacy, there seems to be negligence in dental care awareness or sensitization which might be related to low SES. This is consisted with what was presented by Baig Qa et. al [20] and other findings in Egypt, India, and Sri Lanka [21].

There was no standard scale used to measure the severity of the pain that the participants have experienced, but according to their verbal description, 66.9% of them have reported to have been experiencing severe toothache, 26.8% moderate and 6.3% mild toothache. In contrast, previous studies assessed the severity of toothache using the Numeric Pain Rating scale. The participants were asked to choose a number, on a scale of 0–10 (where 0 = no pain and 10 = worst possible pain), that best described his/her level of dental pain. Findings of these researches were comparable to the above results [4,5].

With respect to pain pattern and duration, it is noticed that the highest percentages (77.9% and 60.7%) experienced intermittent dental pain and of less than a week, respectively. This reflects the timely usage of self-care strategies to get rid of toothache. In prior study by Cohen et al. approximately one-quarter of the respondents

(22.5%) reported their pain lasted less than 1 day, while 41.4% reported pain lasting 1-3 days, another 23.4% reported pain lasting 4 days to 1 month, and 12.7% said their pain lasted more than 1 month. Pain intensity, and pain duration were not found to be significantly associated with the respondents' demographic background [5].

Regarding reasons for self-care remedies use, individual preference accounted for the highest percentage 47.4% followed by self apprehension and high costs of dental services (23.7% and 22.4% respectively). Furthermore, lack of dental health services is attributed with a percentage of 5.2%. The remaining of the respondents picked more than one reason including the previously mentioned ones. Although our study has similar component features to other researches pertaining those motives, still personal preference is remarkably a leading factor among Sudanese that may be related to low dental health awareness [22,23].

Previous studies have also correlated poverty, low SES, illiteracy and poor access to health services as potentiating factors for self-care practice [22]. In this study, some characteristics of the participants were obtained to represent their socioeconomic status namely occupation, affordability for dental health services, and enrollment in health insurance. We assume that most of the participants have low SES as 49.7% of participants cannot afford dental health services, and 69% are not enrolled for health insurance services. Even though 31% were on health insurance, 75% of them (90/119) were enrolled in governmental health insurance that do not include dental health services. The study also encompassed a considerable number of participants who are workless, housewives, and students. Most of the respondents found those remedies very effective 48.4% and always available 75.8%. These findings accentuate their use, as mentioned in previous reports [22]. This may also give an interpretation for personal preference, at least from the participants' viewpoint.

Nevertheless, these remedies were found to be associated with a number of complications with pain being the leading adverse effect 7.5%, burning sensation 4.2%, irritation 2.3%, discoloration 2.1%, bad smell 1.3%, and a few cases experienced a combination of two or more of the aforementioned complications, majority of the participants (80%) did not experience any. These arising complications are likely to be associated with longstanding use of these remedies or the nature and type of the remedy used such as sulfuric acid, acetone, peppermint oil, eugenol, garlic and others. There is insufficient data in the available literature regarding the harmful effect of self-care remedies on dentition and oral tissues. However, other studies have reported that some topically applied substances when taken for tooth pain relief cause oral chemical pain as in Richard J. et al. recently reported case of oral mucosal burn of the maxillary vestibule caused by topical application of crushed raw garlic [24,25].

Concerning dental clinic visit, 79.4% were found to have visited the clinic before and 17.2% had never visited the dentist. However, only 3.4% had regular dental check-up which is an indicator of low dental awareness or misconception that dental care is a luxury. In addition, most of the participants 73.2% have stated that they would

encourage other people to use these self-care remedies. This could play a major role in increasing the prevalence of self-care remedies usage according to previous researchers who found that most people involved in self-medication practices acquire the knowledge from medicine dealers, neighbors, relatives, friends and media houses both print and electronic [12,26,27,28].

5. Conclusion

A wide variety of self-care remedies are used by Sudanese residing in Khartoum state, with cloves being the most commonly used. This usage is attributed to personal preference, self apprehension, and high costs and lack of dental health services.

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Statement of Competing Interests

We declare that this study is our own work. It has not been submitted to any other journal. We also declare that we have no conflicts of interest to this study.

List of Abbreviations

- " et. al." et alia which means "and others".
- "IBM " International Business Machines.
- "No." Number.
- "OTC" Over-the-Counter.
- "SES" Socio-economic Status.
- "SPSS" Statistical package of social science.

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