Khalij-Libya Journal of Dental and Medical Research
http://journal.khalijedental.com.ly/ eISSN:2708-888X

Original Article

Use of Traditional Recipes for Oral Care by Local People in Janzour City, Libya: A Qualitative Study

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ABSTRACT

Background and objectives: Traditional medicine (TM) has gained attention from the public globally in recent times. However, a lack of studies is identified for individuals' use of traditional medicine to treat dental issues. Libya's traditional medicine is an example of traditions that include a number of plant- and non-plant-based approaches to dental and oral health. A qualitative descriptive study was used to explore the views on, use of, and access to TM in dentistry as an alternative to conventional dental care and oral pain relief among Libyans. A purposive sample of residents older than eighteen living in the city of Janzour was used, and sixteen semi-structured individual interviews were conducted virtually. The interviews aimed to gather data, including locally used names for plants used medicinally for oral health, ways of using the treatments, their effectiveness, adverse impacts, and how far each remedy was in popular use. Data analysis was conducted, and the results were fairly consistent and indicated relatively high levels of knowledge and usage of TM. Three main themes were extracted from the interviews:1) Different perspectives of the participants on TM. 2) Current practice and experience with TM. 3) Reasons for choosing TM. This study provides understandings for dentistry professionals of the kinds of traditional medicines which the public use for oral health. Building such understandings and awareness of the use of traditional medicines can help dental professionals to promote discussions of the practices which patients use, providing an opportunity for education in this area.

Keywords: *Oral Diseases, Traditional Recipes, Oral Pain Relief, Alternative Treatment, Libya, Qualitative Study*

Citation: Elhaji A, Femi-Ajao O, Kashbour W. Use of Traditional Recipes for Oral Care by Local People in Janzour City, Libya: A Qualitative Study. Khalij-Libya J Dent Med Res. 2022;6(1):43-52.
https://doi.org/10.47705/kjdmr.216108
Received: 27/01/22; **accepted**: 03/02/22

INTRODUCTION

Throughout human history, people have looked to the natural world to treat diseases, and this traditional medicine (TM) is the first known approach to caring for health [1]. TM has been traced through multiple-century traditions and across many locations and ethnicities, with multi-generational transmission and accumulation of knowledge [2]. The study of ancient peoples has given evidence for this transmission, and the position of TM as central to ancient forms of healthcare [2].

As modern western medicine spread, oriental TM approaches were pushed to the margins of medical practice [3], but before this time, were widely applied across the spectrum of medical issues [1]. The World Health Organisation reports that globally, 80% of the population primarily relies on traditional herbal medicines to treat health issues, based on the fact that such medicines are easy to access, inexpensive and

accepted within the local culture [4]. Moreover, developing indigenous TM and the application of herbal treatments to a range of conditions can bring benefits in economic terms [5]. Approximately one-quarter of modern medicines in the developed world are drawn from plant and plant derivative sources [6]. While the origins of TM are in treating medical complaints, an increase in the tendency to apply TM within dental health for the relief of toothache, conditions of the oral mucosa and periodontal inflammation have been identified [2]. Within Indian traditional healing practices, the use of 2.5 thousand plant species has been identified, with 100 of these being regularly used as medicinal resources [2]. Accepted systems for inclusion in oral healthcare practices include homoeopathy (which was first developed in India), Siddha, Unani, Yoga and Ayurveda. These practices centre a holistic approach to patients, rather than a focus on an isolated system or part of the body, and address spiritual, physical and mental spheres. Multiple prior studies have discussed the importance of homoeopathic, Ayurvedic and Unani approaches to oral healthcare [7,8]. In terms of toothbrushing practices, various medicinal plants have been used in indigenous societies for the purpose of cleaning teeth [2]. Moreover, these plants have been proposed to stimulate circulation through volatile oils, clean and tighten gums through tannins and assist in gum maintenance through constituents such as vitamin C. A US study also demonstrates that the affordability of dental care is an issue that can lead individuals to seek alternate treatment to relieve tooth pain [9], including products on prescription, over-the-counter products and home remedy use [9]. At the same time, few of the constituents of herbal remedies have been investigated through RCTs to establish toxicity levels, with a small number of such species having gained approval based on established medical characteristics [2]. The majority of patients have been found to consider herbal medicines to be harmless, without the potential for serious toxic effects, and a proportion does not exercise care in their use, based on perceiving them to come from nature. This is concerning considering the potential of some herbal treatments for serious and sometimes fatal toxicity were improperly used [2]. In light of this, there is a need for the use of TM in Libya to be studied and understood in the dentistry sector, and for greater awareness among dental professionals of efficacy, safety and usage data for TM and non-prescription treatments, through integrating this within core curricula for dental students. Thus, professionals would be able to bring together TM and conventional approaches to optimise dental care and improve outcomes. Moreover, knowledge regarding the physiological actions of herbal treatments and how they interact with medicines would enhance dental professionals' ability to treat patients with appropriate strategies, with a number of plant extracts demonstrating anti-inflammatory action and/or prevention of bleeding: both significant functions in dentistry [10]. It should be noted here that North African and Middle Eastern regions are generally poorly represented in terms of scientific productivity [11], and this is especially the case for Libya [12,13]. Thus, there is little published research on TM for dental and oral healthcare in the country. However, there is some study evidence that shows a frequent role played by native Libyan plants in self-treating oral conditions, in addition to the use of fruit and leaf infusions in hygiene for the mouth and teeth. Based on this, the current study aimed to uncover and evaluate TM approaches to treating oral and dental diseases among the public in the Libyan city of Janzour.

MATERIALS AND METHODS

Study Design

A qualitative descriptive approach was utilised to determine the traditional therapeutic methods used by Libyans to treat oral diseases. The qualitative approach was appropriate in order to gain insight into and explore the local people's perceptions and beliefs regarding the use and acceptability of TM.

Study Setting

This study was conducted virtually in Janzour, Libya. This is a city in north-western Libya, situated on the Libyan coastline of the Mediterranean Sea, and located to the west of the capital Tripoli. It has a population of 199,338 [14].

Participants

This study included a purposive sample of 16 local people, Libyans over 18 years old, who had been residents of Libya for more than 5 years and had experience with oral health problems. This number was decided upon based on existing research evidence, which suggests that this is adequate considering the number of interviews required to generate the data needed for the study. Guest et al. find that 12 interviews from a homogenous group are all that is needed to reach saturation [15]; however, for this study, data saturation was achieved through the mentioned sample, purposive sampling was selected based on the purpose of the study.

Data Collection

Written consent forms were obtained from all potential study participants. Online audio-recorded semi-structured individual interviews were conducted to elicit information from the participants. The interviews were held in Arabic, transcribed and then translated into English by the first author. The information elicited included demographic information regarding the participants, the local names of the medicinal plants/products used for the management of oral and dental problems, their routes of administration, cost, popularity, pain relief efficiency and side effects. All study participants were reassured verbally and in writing that responses would be kept strictly confidential and would not be linked to demographic data or descriptors that could lead to deductive disclosure.

Ethical Concerns

Ethical approval for this study was granted by the University of Manchester Research Ethics Committee 3. The approval code is - Project Ref: 2020-8775-14926. Written informed consent was obtained from individuals who agreed to participate in the study.

Data Analysis

The data obtained were analysed using specific software for the social sciences (Nvivo version 12), summarised using inductive thematic analysis (following Braun and Clarke) [16] and presented as themes and sub-themes.

The data analysis process started with reading transcripts and field notes to identify recurring concepts, which were coded according to the objectives of the study. The codes were grouped into similar categories and subcategories and described in detail. Each category was assessed, and common themes were then identified. The transcripts were analysed so that the frequency of words mentioned by the participants was measured and used to create word clouds for each major theme.

As described by Morse et al., reliability, validity, and generalisability were used as a framework to ensure rigour in this study [17]. This was accomplished through purposive sampling, an iterative process of data collection and analysis, following up on new and recurring concepts, and tracking and checking changes. Analysis was validated by a discussion with the second author.

In this study, the deep saturation of research enhanced its validity. Through continued data collection, most responses became more consistent across larger numbers of samples, and the data became more reliable.

RESULTS

A total of 16 participants were included in this study, 10 of whom were female (62.5%) and 6 males (37.5 %). Their ages ranged from 18-45 years, with different education levels, ranging from low to high-income levels. Table 1 summarises the demographics of the participants. These participants were given a numerical code from P1 to P16, to indicate how many participants were included in this data (Table 1).

Table 1. Demographics of the participants

Category	N (%)
Gender Male	6 (37.5%)
Female	10 (62.5)
Age	
18-25	1 (10%)
26-35	8 (50%)
36-45	7 (44%)
46-55	0
>56	0
Education level	
Low	1 (10%)
Medium	7 (44%)
High	7 (44%)
Income level	
Low	0
Medium	14 (88%)
High	2 (12%)

The sixteen participants who took part in this study had some understanding of and used TM in relation to dental care, which indicates the prevalence of TM amongst local people in Janzour / Libya. Although the participants were of different age groups, and different education and income levels, there was participant consensus on and interest in the use of TM.

From the collected data, 10 herbal traditional recipes and 5 non-herbal recipes were identified as traditional medicinal approaches that are widely used in Libya, and these are represented in Table 2 and Table 3 respectively.

In general, the results were fairly consistent among the participants, and three main themes along with several associated sub-themes were identified (Table 4). The first theme concentrated on the different perspectives the participants had on TM; the second theme outlined the current practice and experience of the participants, and the third theme focused on reasons for using TM in Libya.

Table 2. Traditional plant recipes in Libya.

Family name	Local name	Adjunct	Traditional medicinal uses	Therapeutic action	Ref
Mentha piperita L. Lamiaceae	Nanah Leaves	Warm water	Gargle, for gum inflammation and halitosis.	Sedative action.	[18]
Thymus capitatus L. (Hoffm. & Link). Thymus serpyllum L. Thymus vulgaris L. Thymus algeriensis Boiss. Lamiaceae	Zather Leaves	Warm water	Gargle, for gum inflammation.	Has powerful antibacterial and antioxidant properties.	[18]
Salvadora persica Wallich, Salvadoraceae	Swak Leaves and sticks		Chewing sticks used for tooth cleaning and polishing		[18]
Syzygium aromaticum	Clove oil and sticks		Locally applied to the affected area, for pain relief.	Can effectively numb the pain and reduce inflammation. Contains eugenol, which is a natural antiseptic.	[19]
Oleaceae (Olea europaea)	Olive leaves		Chewing, for gum inflammation.	Anti-inflammatory action.	[20]
Lythraceae (Lawsonia inermis)	Henna leaves	Warm water	Chewing, for gum inflammation. Henna is ground and gargled to treat mouth ulcers.	Sedative action. Anti-inflammatory Capacity.	[21]
Amaryllidaceae (Allium sativum) (Garlic)	Thom		Locally applied to the affected area for pain relief.	Can kill harmful bacteria. Can also act as a pain reliever.	[22]
Teaaceae (Camellia sinensis)	Shai leaves	Warm water	Gargle or locally applied to the affected area for pain relief.	Sedative action.	[22]
Psidium guajava	Guava leaves	Warm water	Chewing the tender leaf, relieve the pain via the leaf's juice. Use as a mouthwash after boiling the leaves with saltwater.	Anti-inflammatory properties and antimicrobial activity.	[22]
	Peppermint tea bags		Can be used to numb pain and soothe sensitive gums.	Pain reliever.	[22]

Table 3. Traditional non-plant recipes in Libya.

Scientific name	Local name	Adjunct	Traditional medicinal uses	References
Sodium chloride	Melh	Warm water	Gargle, for gum inflammation + mouth ulcers. A natural disinfectant. Help to reduce inflammation and heal any oral wounds.	[23]
Himalayan salt	Melh al Himalaya	Warm water	Gargle, for gum inflammation+ mouth ulcers.	[23]
Acetic acid (apple cider vinegar)	Khal	Warm water	A natural antiseptic helps disinfect areas of the mouth. Gargle, antibacterial action.	[20]
Ice (cold compress)	Thalj		Small cubes on the affected area or tooth for pain relief. For trauma which has caused toothache.	[20]
2-Acetoxybenzoic acid	Aspirin tablets		Locally on the affected tooth for pain relief.	[24]
Physiculus nematopus (charcoal)	Al fahm		Locally for teeth cleaning and polishing.	[23]
Honey	Asal		Locally for mouth ulcers.	[25]

Table 4. Themes and sub-themes

Main theme	Sub-themes
1- A different perspective on TM	• A different definition of TM • Involvement of spirituality • Involvement with the environment • Knowledge and usage of TM
2- Current practice and experience with TM	• Plant recipes • non-plant recipes • Relationship between traditional and western medicine
3- Reasons to use TM	• Pain relief efficiency of TM • Access to TM • Cost of TM • Adaptation and substitution

A different perspective of TM

Nearly all of the participants were in consensus on the use of TM as the first option for their oral care and dental problems. Typical responses included:

"TM is the use of natural resources, native plants, and traditional remedies" (Participant 2) P2.

"Herbal medicine comes from plants" P5.

"I believe that it is widespread. In general, most people have the knowledge to use it, and especially families who live together, that is when they have older people, so they have sufficient knowledge of these remedies" P7.

Current practice and experience with TM

Most of the participants expressed the view that TM was broadly used and shared their experiences regarding TM. For example:

"I use a number of traditional remedies and natural plants. For example, I use warm saline water and I wash out my mouth. I also use an infusion of cloves and I use a garlic clove by placing it on the site of the pain. I also use a number of other popular remedies" P2.

"With regards to herbs, many people have recommended henna for reducing toothache, by using henna leaves and chewing them or by using dry henna powder" P1.

"Using clove oil or whole cloves almost acts as a local anaesthetic, but if used incorrectly, for example when using the oil, it must be used with a cotton [bud] so that it can be applied to the area of pain, but if the oil is applied generally it can lead to inflammation in the gums. Therefore, I think over time one can learn the side effects of using clove oil or cloves and try to reduce them. However, gargling is safe" P2.

Reasons to use TM

As described above, most participants reported that they used TM very widely. The reasons provided for choosing traditional generally included family tradition, access to traditional methods, low cost, and efficiency in providing pain relief. Some said:

"Mostly it is not costly. It is available in our homes because we use these items in our daily lives, in our daily food" P4.

"Mostly it is very easy for someone to apply them for himself. They don't require in their application the assistance of someone else or another individual to assist him" P5.

"Yes. It was effective regarding cleaning and purifying the gums" P2.

"Locally applied remedies I use several times, depending on the pain. Time of the day is also a factor, as I might not be able to visit the dentist at night for example. I think using locally-applied traditional remedies is ideal for when it is not possible to visit a dentist, [as they can] help reduce or even eliminate pain" P5.

"They are very popular as people share these remedies between themselves" P7.

The original quotes collected regarding the participants' perspectives on traditional medicine and their current practices and experience with traditional medicine were used to create a word cloud (Figure 1). Font size correlates with the greater frequency of the word in the interviews.

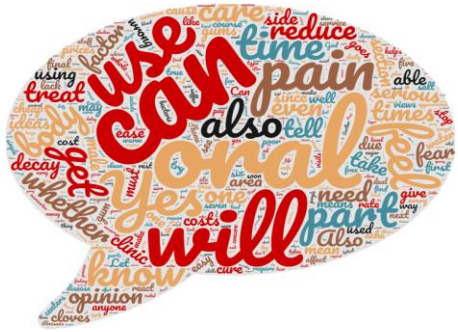

Figure 1: Word cloud created from the original quotes collected from the participants' perspectives of traditional medicine and the participants' current practices and experience with traditional medicine. Font size correlates with a greater frequency of occurrence of the word in the interviews.

DISCUSSION

Prevalence and popularity of TM

This study has examined the experiences of the Libyan local population with traditional medicine and is the first attempt to do so. The findings reveal that TM is prevalent and frequently used by Janzour residents, and this is in line with previous research findings for other countries, which showed strong familiarity with

TM among participants. A New Zealand-based study investigating TM prevalence and association with assessments of oral hygiene across populations of various ethnicities found high levels of TM usage [26]. Another study in Ethiopia assessing medicinal plant use in treating toothache [27] found that TM was an important part of addressing this problem in the country. It also documented the extent of traditional understandings of treatment for dental issues among indigenous groups in the country. Moreover, research in Mexico which was conducted on plant-based TM to treat dental diseases found a range of plants that showed antimicrobial and antibacterial activity which could offer alternative approaches to treating a range of periodontal conditions [10].

The literature review conducted for this study did not uncover previous research investigating the experience of people in Libya as related specifically to traditional medicine for oral/dental healthcare. However, Louhaichi's 2011 study investigated plants used for medicine in the Mediterranean coastal region of Libya [28], and among the findings were a range of species applied in oral TM. Moreover, in Agiel's 2017 Libyan aromatic plant survey [18], a number of plant species are reported as in use among the population for oral care.

Personal knowledge and lay understanding of TM

The current study explored views on TM, its availability and usage among a sample of residents of Janzour in Libya. Each participant discussed their TM usage, and the findings show that participants agreed on the plants commonly applied in treating toothaches. The participants described using TM due to cultural reasons, previous experiences and having previously seen these approaches be effective. The findings reveal 3 main themes with a number of subthemes. The themes comprised participant perspectives on traditional medicine, practices presently in use, and the rationale for TM use within the Libyan context.

The findings reveal perceptions that TMs are non-chemical, natural and risk-free, and a majority of the sample felt that TM had very few side effects due to having plant-based origins. Those who used TM reported gaining their skill and knowledge in this area from family, being taught by older generations, and through their culture: this is in line with existing literature evidence that supports multi-generational transmission and accumulation of knowledge of TM [2]. The majority of the sample also reported family traditions as a reason for using TM, as well as the length of time for which such treatments had been in usage. This length of usage within the population was also given as evidence of safety. There remains debate however as to whether a lack of reports of toxicity can be used to confirm herbal treatments as safe [2], and further work is needed to give evidence of this safety, as well as of effectiveness.

Our study results show usage of clove oil for treating and relieving toothache, and this preparation has acetyl eugenol and eugenol within it, which are shown to offer analgesia and anti-inflammatory properties [29].

According to Gupta, clove oil has a centuries-long history of use in rural communities for toothache prevention [30]. At the same time, reports suggest anti-platelet action from this treatment, which could potentially interact with warfarin [31]. For this reason, screening must be conducted among dental patients for TM usage, and in particular for patients taking warfarin [31]. If dental professionals are aware of the ways TM can potentially interact with specific prescribed drugs, patient care can be enhanced. While for most TMs, safety profiles are not comprehensive, patients will continue to use them, and frequently use them as a first-line treatment, based on their lengthy usage history [2]. At the same time, if there were research showing harm from the use of TM, the participants report that they would discontinue their usage of treatment. While this study has investigated the perspectives of the Libyan public on TM, its usage, and access to this treatment tradition, further studies could investigate the effects TM has on dental/oral healthcare.

Perceived facilitators and barriers to TM

The majority of the sample reported turning to TM initially when experiencing dental issues, and if the problem did not resolve after seeking help from professionals. There was a range of justifications given for this approach, such as believing TM treatments to be effective, as well as affordability, simple access, being easy to use, and having few to no adverse impacts. Less frequently, issues including being afraid of dental appointments, dental instruments, untrusted sterilisation, and rising prices for dental work were reported.

This study confirms the ongoing presence of traditional indigenous knowledge on treating toothache and other dental/oral health issues among Libyan communities. Thus, this knowledge must be preserved through appropriately documenting it, identifying the plants used, which part of each plant, how they are prepared and what they are applied for. The findings create a basis for further research to investigate the herbs selected for treating toothache and combatting pathogenic microbes in the mouth, to allow these to be phytochemically and pharmacologically investigated. Therefore, this study contributes to research efforts to find efficacious, accessible and safe alternatives to conventional toothache treatments by promoting the scientific investigation of plant species frequently used in TM for toothache. Identifying plants in frequent use for this purpose in the Libyan community, as with other communities globally, can support the evidence for the activity of such species.

While the overall study population may not be represented by the study sample, and the picture provided of TM may not be comprehensive, the research has nonetheless given in-depth and rich descriptions of TM use within Libya. Further, it has given wider insights into Libyan people views on and practice of TM, promoting open discussions of participants' experiences and leading to discoveries of meanings as well as, a new view of objectivity with the potential to be extended in future work. The various strengths of the research project include the sampling approach taken, which was purposive and heterogeneous, allowing detail and depth of information to be gathered from a group that varied by age and educational level. In addition, the use of Arabic meant that participants were able to engage fully with the interview questions and give full answers without linguistic constraints, and transcription and translation of each interview was later conducted by a qualified team.

CONCLUSION

This research project has generated in-depth findings related to views on the usage of and rationale for using traditional medicine among the Libyan public. These findings offer valuable insights for dental professionals in considering the range of TM for oral health in use with the public and highlight the positive light in which most respondents view TM positively. Through awareness and knowledge regarding this situation, professionals are enabled to promote an environment in which the patient is more likely to be open about using traditional medicines, leading to enhancements in the care that can be provided. Future work is now required that can build on the insights from respondents here, in order to consider the efficacy of the TMs in use and their potential for driving improvements in dental and oral health.

Disclaimer

The article has not been previously presented or published and is not part of a thesis project.

Conflict of Interest

There are no financial, personal, or professional conflicts of interest to declare.

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