Original Article

The Extend and Reasons behind the Use of Herbal Medicine as an Alternative Treatment in Dentistry

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Abstract

Oral health is an integral component of the individual`s general health, well-being and considerably affects the quality of life. Oral diseases are major health problems with dental caries and periodontal diseases have been reported to be among the most important preventable diseases worldwide. Herbal products are widely utilized for preventing and treating many diseases including oral and dental diseases and play an important role in the health care systems worldwide. This study aims to assess the population's attitude about the use of herbs as alternative medicine in dealing with dental problems in the western region of Saudi Arabia. It also aims to determine the common types of herbal medicine to identify the reasons behind their usage and perceptions about their therapeutic outcome. This study is a survey done in the form of an online questionnaire distributed randomly through social media to the Arab population living in the western region of Saudi Arabia over one month and results were calculated and statistically analyzed.

Keywords: Herbal medicine, Oral health, Uses, Saudi Arabia, Questionnaire, Outcome

Introduction

Since ancient times, humans recognized the use of herbal medicine in preventing and curing diseases. Later, the usage of herbal medicines continues to expand rapidly across the globe. [1]. A herb is a plant that is used for its flavor, scent, or medicinal purposes. Medicinal plants contain inherent active ingredients that are used to cure disease or for pain relief. They also offer a useful and effective source of treatment for various diseases [2, 3].

Undoubtedly, oral health is an integral component of the individual`s general health and wellbeing and considerably affects the quality of life [4]. Oral diseases are major health problems with dental caries and periodontal diseases have been reported to be among the most important preventable diseases worldwide [5].

Herbal extracts have been widely used in dentistry in many prospective: to reduce inflammation, used as antiseptics, antioxidants, antifungals, antibacterial, and antivirals as well as analgesics. Additionally, they also aid in healing processes and are effective in controlling microbial plaque in gingivitis and periodontitis, thus improving an individual's immunity [3].

In Saudi Arabia, many studies have been carried out to report the awareness and attitude of the use of herbal medicine among special groups like women [6], children [7], and patients with cancer [8] but few are done in the field of dentistry.

Materials and Methods

This survey was carried out in the western region of the Kingdom of Saudi Arabia from 31 January till the end of February 2021 in the form of an online survey. Ethical approval was taken by the Vision college ethical committee (approval number 21-2/4). It was electronically distributed by making a link that directly sent the questionnaire to the participants through social networking platforms as WhatsApp Telegram, Instagram, Twitter, and Snap chat. This study involved 421 adults, randomly selected from different regions from the western area of Saudi Arabia. The inclusion criteria were Arabs living in the Kingdom of Saudi Arabia

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How to cite this article: Ismail RWK, Turkistani H, Alharthi R, Kariri AM, Khan A. The Extend and Reasons behind the Use of Herbal Medicine as an Alternative Treatment in Dentistry. Arch Pharm Pract. 2021;12(1):135-40. https://doi.org/10.51847/gtTfyyfRHr

whether Saudi or non-Saudi including both sexes. The questionnaire was developed and administered in the Arabic language and the main objective of the study was to find out the population's attitude about the use of alternative medicine in dealing with oral or dental diseases. A description of the study was provided to the participants, they were asked to voluntarily contribute to the study and were ensured about the anonymity of their responses.

The questionnaire consisted of 25 questions divided into 3 sections: 1) Personal data (name, gender, age, nationality, region, city, occupation, and level of education attained). 2) Questions about the oral health status including oral hygiene regimen, attitude towards dental regular check-ups, and the reason for visiting the dental clinic in case if there are dental or oral problems. 3) Questions about the concept of using herbal supplements in dealing with the oral and dental problems, extent and purpose of use, types used, method of administration, the source of their usage recommendation, whether the use of herbal medicine is safe, any previous experience about the use of herbal medicine orally as well as the attitude of the participants about the effectiveness of the herbal medicine used. The data collected were statistically analyzed using the statistical package of MS Excel 2013.

Results and Discussion

A total of 421 participants completed the survey questionnaire. The results showed that 74% of the study participants were females compared to 2٦% of them were males. Moreover, the majority of the study participants were Saudi (87.6%) compared to 12.4% of the study respondents who were non-Saudi. Regarding the study participants' age, 38% of the study participants aged between 21-30 years which represented the highest age group, followed by the more than 50-year old age group that constituted around 22% of the sample.

In terms of education level, it can be noted that 63.2 % of the study participants attained a university level of education. In addition, 8.1% of the study participants obtained a higher level of education, while the rest received less than the university level. The results also indicated that 84.4% of the study participants reside in Makkah, Jeddah, and Taif cities. Interestingly, approximately one-third of the study participants were students. Furthermore, 27.8% of study participants were unemployed compared to 27.3% of them who currently have a job. **Table 1** presents the sociodemographic characteristics of the study participants.

Table 1. Sociodemographic characteristics of participants (n = 421)

Characteristics	Frequency	Percentage
Gender		
Male	311	74%
Female	110	26%
Nationality		
Saudi	369	87.6%
Non-Saudi	52	12.4%
Age		
<20	33	8%
21-30	159	38%
31-40	63	15%
41-50	72	17%
>50	94	22%
Education level		
Primary	6	1.4%
Intermediate	19	4.5%
Secondary	88	20.9%
University	266	63.2%
Higher education	34	8.1%
Other	8	1.9%
City		
Makkah	163	38.7%
Jeddah	151	36.0%
Taif	41	9.7%
Yanbu	38	9.0%
Medina	28	6.6%
Employment status		
Student	121	28.7%
Unemployed	117	27.8%
Employed	115	27.3%
Pensioner	68	16.20%

The responses to individual attitudes statements are listed in **Table 2**. It has been found that 86% of the study participants brush their teeth regularly compared to the least proportion 14% who do not or rarely brush their teeth. In addition, when they were asked about the frequency of teeth brushing, more than half of the study participants brushed their teeth twice daily. It is apparent from this table that almost one-third of the study participants brush their teeth less than one time daily. However, only 13% of the study participants brushed their teeth more frequently. A remarkable aspect of this table is that when the participants were asked about the number of dental visits per year, 35% of the participants visited the dental clinic once per year compared to approximately one-third of the sample who visits the dental clinic three times or more yearly while 14% does not visit the dental clinic annually. Moreover, the first common reason to visit the dentist was for restoration purposes (52.8%), followed by teeth cleaning (49.7%). The third common reason was for root canal treatment (36.4%) followed by 26.6% for teeth extraction, other reasons are included in **Table 2**.

Table 2. Study participants' attitudes towards oral health status. (n = 421)

Statements	Frequency	Percent
Brush regularly		
Yes	362	86%
No	59	14%
Times of brush daily		
0	7	2%
1	123	29%
2	238	56%
3 or more	54	13%
The number of dental visits per year		
0	60	14%

1	146	35%
2	91	22%
3	48	11%
More	76	18%
The reason for the dental visit		
Cleaning	205	49.7%
Bleaching	46	11%
Restoration	218	52.8%
Extraction	110	26.6%
Root canal treatment	150	36.4%
Fixed restoration	72	17.4%
Removable restoration	12	2.9%
Teeth alignment	56	13.5%
Oral ulcers	16	3.8%
Other	33	8%
Abscess	15	3.5%
Oral swelling	20	4.70%
Facial swelling	74	17.5%
Gum problems	34	8%
Oral ulcers	5	1.1%
Oral legion	51	12.1%
Bad oral breath	21	4.9%
Other		
Herbal products are safe		
Yes	266	63%
No	155	37%
Used herbs to deal with oral problems	209	50.5%
Yes	212	49.5%
No		
Alternative medicine replaces dentist		
Yes	65	15%
No	356	85%
Alternative therapy is effective		
Yes	383	91%
No	38	9%
Methods of application		
Chewing	36	11.9%
Drinking	12	4.0%
Posture is at the site of pain	95	31.6%
Toothpaste	24	7.9%
Mouth Rinse	126	41.8%
Other	8	2.6%
Reason		
Fear of the dentist	23	7.8%
Emergency	145	49.7%
Availability	42	14.3%
Low cost	54	18.4%
Other	29	9.8%
Source		
Family members and friends	163	58.4%
Internet	67	24%
Media	7	2.5%
Books and Brochures	9	3.2%
Doctor	23	8.2%
Other	10	3.7%

The results, as shown in **Table 3**, indicated that 54% of respondents reflected that throat herbal products can be used to treat oral and dental problems whilst 46% of participants believed that herbs are not effective when dealing with them. 40.3% of the study participants rated the dental cavity as the most common oral and dental problem. Moreover, gum problems and abscess ranked as the highest second and third problems while bad oral breath came in fourth place. More than one-third of the study participants (63%) agreed that herbal products are safe to be used compared to 37% who did not trust the safety of herbal products.

Furthermore, 50.5% of participants used herbs as an alternative medicine to deal with dental problems. The most common herbs used by the participants are presented in **Figure 1.** When asked if alternative medicine can replace the dentist, (85%) responded that alternative medicine cannot replace the dentist, whereas, the least proportion believed it can replace the dentist (15%). When asked whether alternative therapy is effective, 91% of participants responded positively. Regarding the methods of application, 41.8% indicated that it can be used as a mouth rinse, followed by 31.6% demonstrated that it can be placed at the site of pain; other methods of application are included in **Table 3**. Emergency was found to be the most frequent reason for using alternative medicine (49.7%). Less than 20% believed that the cost of alternative medicine is another reason to use alternative medicine. Finally, almost two-thirds of the surveyed participants (58.4%) said that they obtained information from Family members and friends. Internet was another source of information as rated by the participants (24%). Health care professionals, namely doctors are considered a third source of information (8.2%).

Table 3. Study participants` responses on using herbal supplements in dealing with dental and oral problems. (n = 421)

Statements	Frequency	Percent
Herbal products can manage oral and dental problems		
Yes	229	54%
No	192	46%
Oral and dental problems treated by herbs		
Dental cavity	170	40.3%
	63	14.9%

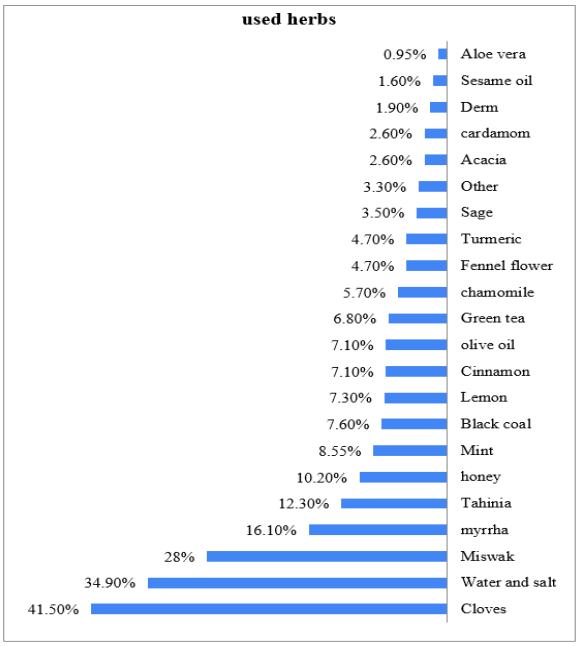

Figure 1. The most commonly used herbs by the participants

The results of the association between the study participants demographic data and question answers to the use of herbal medicine in managing oral problems:

The results indicated that females were more accepting of the use of the herbal product in managing oral and dental problems ($p<0.05$). In addition, Saudi participants demonstrated more acceptance of the use of herbs. Moreover, the education level of people who attained the tertiary level of education or less appeared to accept the use of herbal products significantly in managing oral or dental problems compared to non-Saudi participants. The findings suggested that elderly people aged more than 30 years expressed a positive response to all questions related to the use of herbal products. For instance, participants aged 30 years supported the notion to use the herbal product in treating oral and dental products significantly compared to the young people aged less than 30 years. This significant difference is also noted when the elder participants indicated that the herbal product is safe to be used and substitutes the traditional medicine. Additionally, elder study participants expressed a notion that alternative medicine can replace dentists and it is effective compared to young people. However, there is no statistically significant difference in the study participants' responses concerning the employment status, as reported in **Table 4**.

Table 4. Relationships between Statements Answers and Participant Characteristics

Statement	Gender				Nationality				Education level				Living city			
	M	F	χ^2	p	S	NS	χ^2	p	Beginner	Advance	χ^2	p	Central (Makkah, Taif, Jeddah)	Others	χ^2	p
Herbal products manage oral and dental problem (Yes)	79	162	2.3	0.02	152	139	3.47	0.02	97	78	1.68	0.01	70	85	4.21	0.33
Herbal products are safe (Yes)	98	187	4.2	0.02	77	74	4.02	0.32	73	103	2.36	0.01	84	91	1.08	0.21
Use the herbs as alternative medicine (Yes)	107	111	1.21	0.21	102	99	2.35	0.206	87	76	1.84	0.41	64	75	2.34	0.32
Altrnative medicine replace dentist (Yes)	21	20	2.22	0.33	38	43	1.96	0.32	94	102	3.24	0.34	78	77	3.25	0.19
Alternative therapy is effective (Yes)	84	79	3.21	0.42	56	49	3.24	0.41	122	108	4.25	0.24	95	88	4.26	0.27

Table 4. Relationships between Statements Answers and Participant Characteristics (continue)

Statement	Age		χ^2	p	Employment		χ^2	p
	Younger (less than 30)	Elder (more than 30)			Employed	No Employment		
Herbal products manage oral and dental problem (Yes)	77	257	3.4	0.03	135	121	2.14	0.41
Herbal products are safe (Yes)	67	246	2.9	0.02	97	99	3.78	0.19
Use the herbs as alternative medicine (Yes)	84	194	1.89	0.03	112	109	1.67	0.34
Alternative medicine replace dentist (Yes)	28	29	1.65	0.52	56	63	2.85	0.35
Alternative therapy is effective (Yes)	94	102	4.25	0.38	84	90	2.45	0.11

Please note that students or pensioners or retired were considered non-employed

Herbal medicines are widely used for the prevention and treatment of several health disorders worldwide, including Saudi Arabia [9].

In this study, females` participation (74%) was higher than that of males (26%) which may be attributed to the increased females` knowledge about the recognition and uses of herbs. This finding was in agreement with P. Howard [10] reported that women being housewives, plant gatherers, home gardeners, and informal plant breeders predominate in plant biodiversity management. In addition, Kennedy *et al*. [11] showed that herbal medicine is used by the majority of pregnant women.

In this study, herbal use was prevalent among participants between 21-30 years of age (38%), unlike the previous study which revealed that the older age group was more prevalent [12]. The underlying reason may be related to self-education

provided by social media about the benefits of herbs or advertising in online newspapers. A high percentage of the participants were educated (63% university level), and this explains why most of them believed in the importance of seeking a professional oral health care provider and although the use of alternative medicine is beneficial and effective, they believe that it cannot replace the dentist. There was a direct relationship between the increase of the educational level of the participants and their awareness of a routine dental visit and good oral hygiene.

The percentage of participants who believed that medicinal herbs can manage the oral and dental problem is (54%) and that is following previous studies which investigated the utilization of herbs by dental patients in other regions [13, 14]. The use of herbal medicine may be related to the traditions and cultures present in Saudi Arabia passing from one generation to another which encourage the use of such recipes. Other contributing factors are the availability and simplicity of herbs, which also participated in the increase of their use as the cost of using herbal medicine, is cheaper than the professional oral health care [15]. 63% of the respondents in the current study replied that the alternative medicine is safe, and the majority believes that it is effective and this is consistent with other studies [9, 13, 15, 16].

Similar to other studies [9, 16], family and friends' advice [58.4%] represented the main source of participants' information for using herbal medicine. This was followed by online resources [24%].

The main incentive purpose for using herbs as alternative medicine in this study was related to emergencies, mainly for pain sedation. This may be attributed to the analgesic substances present in the herbal content [17].

Of the herbal supplements used, cloves were the most commonly used among participants (41.50%). This may be because cloves have a high concentration of eugenol that helps to alleviate pain by the direct application at the site of soreness and has many other therapeutic uses and act as antibiotic with broad antibacterial, antifungal, antiviral, antimicrobial, and antibiofilm activity [18, 19]. These properties are used to manage gingivitis [19, 20], treat halitosis [21], inhibit the growth and adherence of Streptococcus mutants which plays a vital role in tooth decay [18].

34.90% of the participants used water and salt, a physiological solution in dealing with problems related to the oral cavity. It is believed by people a long time ago that rinsing the mouth with sodium chloride (NaCl) solution can speed oral ulcer healing and promotes healthy gums and until now many dentists advise their patients to rinse their mouth with a salt solution to maintain oral health [22]. In our study, (28%) of the participants used Miswak as alternative medicine. This may be related to the Islamic background of the use of Miswak. Studies revealed that Miswak contributes to preventing the incidence and progression of gingival and periodontal problems due to its anti-inflammatory properties [23]. The chemical agents in Miswak assist to control plaque accumulation and combat the development of carious lesions by reducing cariogenic bacteria such as Streptococcus Mutants since it possesses antibacterial activity [24, 25].

16.10% of the participants used Myrrh. This may be related to the fact that Myrrh assists wound healing [26] and is used to reduce plaque, gingivitis, and ulcers because of its anti-inflammatory, antimicrobial and immune-potentiating properties [27].

Other traditional recipes have been also used by the participants including in a descending order Tahina, honey, Mint, black coal, lemon cinnamon, and olive oil. Sesame oil was also used by the respondents as it has several medicinal properties and is more cost-effective than mouthwashes, also available in most houses [28]. Using this oil as a mouthwash by the participants is related to the fact that the topical use of Sesame oil contributes to wound healing, alleviates pain, erythema, and the size of recurrent aphthous stomatitis; and this is attributed to its innate antimicrobial and anti-inflammatory activity [29].

Conclusion

Herbs are commonly used by the Arabs in the western region of Saudi Arabia to manage oral and dental problems. The most common used types are cloves, salt, and water, and miswak mainly by females. A respectable percentage of the population in the western region of Saudi Arabia utilizes herbal medicine to deal with oral and dental problems, mainly in emergencies. It is believed that herbal medicine is safe, effective, and with no side effects but cannot replace the dentist.

ACKNOWLEDGMENTS: None
CONFLICT OF INTEREST: None
FINANCIAL SUPPORT: None
ETHICS STATEMENT: None

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