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Original Research Article

Evaluation of Various Traditional Methods Used in the Treatment of Dental Diseases Using Natural Products Found in Abejukolo Community, Omala Local Government Area, Kogi State

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ABSTRACT

Natural products are compounds with pharmacological activities. This study used various traditional methods of treating dental diseases using natural products found in Abejukolo Community, Omala Local Government Area, Kogi State. The research data were mainly collected through interviews and oral examination. The findings were recorded in a data sheet. Ninety (90) people comprised of 10 traditional healers and 80 patients were investigated for the study. The major occupants of the populations used were farmers, traders, carpenters and teachers. They used various traditional methods in treating dental diseases including the use of herbs, physical manipulation, miscellaneous, potash, petrol and snuff. 67% believed that all the traditional methods used were quite effective while 22% said not effective, and 11% had no knowledge of the traditional methods. The data collected were subjected to various analytical procedures and the result from Pearson's product-moment correlation coefficient was found r=0.16 which was interpreted that there is a positive significant relationship between the various traditional methods of treatments and oral diseases. This study could be presented to government and oral health practitioners for further investigations and consequent adopted in oral health practices.

Keywords: Diseases, Effective, Herbs, Oral, Potash.

Introduction

Natural products are compounds that nature has endowed man and usually can be utilized for therapeutic purposes. These compounds have at least a biologically active chemical compound or substance that is usually found in nature and can be produced by a living organism.[1,2] Many natural products (awala, tulsi, betel nut, clove and its oil, etc.) have been found to be very useful in oral hygiene care and to cure various infections causing dental diseases. Dental infectious agents such as bacteria, fungi, parasites, etc. possess a great burden on many societies and cause various oral disorders.[3,4,5] Oral disorders can cause significant pains, improper chewing or digestion, dry mouth, abnormal speech, and altered facial appearance; and to suppress the onset of these disorders, it is important to control the total number of microorganisms found in the oral cavity.[6,7] Many natural products (awala, tulsi, betel nut, clove and its oil, etc.) have shown significant effectiveness in suppressing growths of oral infectious agents as they possess microbial activities at low concentrations.[3,8] Traditional medicine is sum total of the knowledge, skill, and practices based on the theories, beliefs, and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness.[9] Traditional medicine that has been adopted outside its indigenous culture by other population's culture is usually called alternative or complementary medicine.[10] In dental care, traditional medicines are usually used to relieve pains in patients, improve mastication efficiency and treat other oral diseases like periodontal diseases, gingivitis, etc., but many patients using traditional medicine comes out with a lot of complaints that is worrisome, and the sources of the complaints need to be investigated.

The general purpose of this study was to investigate some oral diseases in the community, to determine the effectiveness of the various natural products in the treatment of dental disease, and to authenticate the potency of the natural products.

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Material and methods

Research design

A cross-sectional survey of various traditional methods of treating-dental disease in the Abejukolo community was used for the study to ensure that all groups are well represented.

Study population and Sampling Technique

Abejukolo community has a total population of over 800 people. The population of the study consists of 10 herbalist and dental patients using traditional medicine in Abejukolo, Omala Local Government Area, Kogi State (Figure 1). A sample size of 80 patients who have undergone traditional treatment and 10 traditional healers were selected for the study. The traditional healers were few and patients

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were selected through referrals by the traditional healers using a convenience sampling technique.

Instrument of data collection
The questionnaire was designed to cover traditional healers and dental patients patronizing traditional healers. The questions were well arranged in three sections. *Section A* provided information on biodata.

Figure 1: Map of the study area

Section B gave an information on traditional healers by providing data on dental related problems, methods used in the treatment of oral problems by the traditional healers, preparation of the products, mode of the application, duration of the treatment before relief, how long does it take the patient to come back and daily patronage on the traditional products. *Section C* investigated on period of healing, re-occurrence of dental problems, time frame before the reoccurrence of the traditional products, adverse effect of the traditional products, oral health status of patients who have suffered oral problems and treated by the traditional healers and the effectiveness of the treatment.
The multiple-choice questions with pre-defined answers offering respondents the possibility to choose were provided in the questionnaire.

Method of data collection
A letter was collected from the Head of the Department to the district head of community (Abejukolo) for easy access. Prior informed consent was obtained from the traditional healers. Each of the selected patients was interviewed for information on their personal data, while the oral examination was used to determine how effective this traditional medicine is in treating dental diseases.

Statistical analysis
The data collected was tallied and coded at the end of the collection exercise and SPSS version 23 was used to analyze the coded data. Descriptive statistics of mean and frequency distribution tables were used in answering the research questions.

Results and Discussion

Demographic data
The numbers of participants in the study were presented in Table 1. The traditional healers were 10 in number, while the patients were 80 in number who participated in the research work.
For the gender, it was observed that 39% of the respondents were male, while 61% were female (Table 1). It was gathered that 15 (17%) of the respondents were 20-30 of age out of which 6 (7%) were males while 9 (10) were females; 22 (22%) were 31-40 of age out of which 9 (10) were males while 11 (12%) were females, 19 (21%) of the respondents were 41-50 of age out of which 8(9%) were males while 11 (12) were females, 8 (9%) of the respondents were 51-60 of age out of which 2 (2%) were male patients, while 3 (3%) were female patients and 3 (3%) were traditional male healers, and 28 (31%) were from age of 62 and above out of which 9 (10%) were male patients while 12 (13%) were female patients and 7 (9%) were traditional male healers (Table 1). The age range between 20 – 90 years.

Table 1: Demographic data of the respondents

Variables	No.	Percentage (%)
Age		
20 – 30	15	17
31 – 40	20	22
41 – 50	19	21
51 – 60	8	9
>61	28	31
Sex		
Male	35	39
Female	55	61
Marital status		
Single	23	26
Married	56	62
Divorced	11	12
Status		
Patients	80	89
Traditional healers	10	11

This age range is considered as adults who would give an appropriate response to the study. The study showed the level of education of the respondents, 19% had tertiary education, 14% had secondary education, 32% primary education, and 26% non-formal education, which revealed that the respondents were literate enough to understand the answer to the questions. It was equally noted that despite the traditional healers were educated enough many still practices the use of traditional medicine in treating diseases.
Out of 90 respondents, 23 (26%) were single that comprises 3 (4%) were healers, 11 (12%) were male and 9 (10%) were female. It was gathered that 56 (62%) were married, out which 5 (6%) were healers, 21 (32%) were male, 30 (33%) were female, and 11 (12%) were divorced out of which 2 (2%), 2 (2%), and 7 (8%) were healers, male and female respectively (Table 1).
Of the dental problems treated by the healers, 2 (20%) had dental carries problem, while 1 (10%) was periodontitis problem, 2 (20%) were bleeding gum problem, 1 (10%) were having sensitivity problem, 2 (20%) were replacement of lose tooth problem and 2 (20%) were oral thrush problem (Figure 2a). Dental problems treated by the traditional healers were dental caries, periodontitis, sensitivity, bleeding gum, replacement, oral thrush. This is in line with the research conducted on the role of herbal medicine in oral and dental health; ethnopharmacological study of medicinal plants by Al-Somaiday *et al*. (2020) reported that medicinal plants such as *Syzygium aromaticum*, and Mentha were used for the treatment of toothache while *Camellia sinensis* was used to cure Canker sore and oral ulcer and found out that different traditional medicine was very effective against different dental diseases.[11,12]
For the distribution of methods used for the treatment of oral problems by the traditional healers, out of 10 respondents, 2 (20%) treated with herbs, 1 (10%) treated with physical manipulation, 1 (10%) used potash for treatment, 2 (20%) used petrol for the treatment, 1 (10%) used miscellaneous, 3 (30%) treated with snuff

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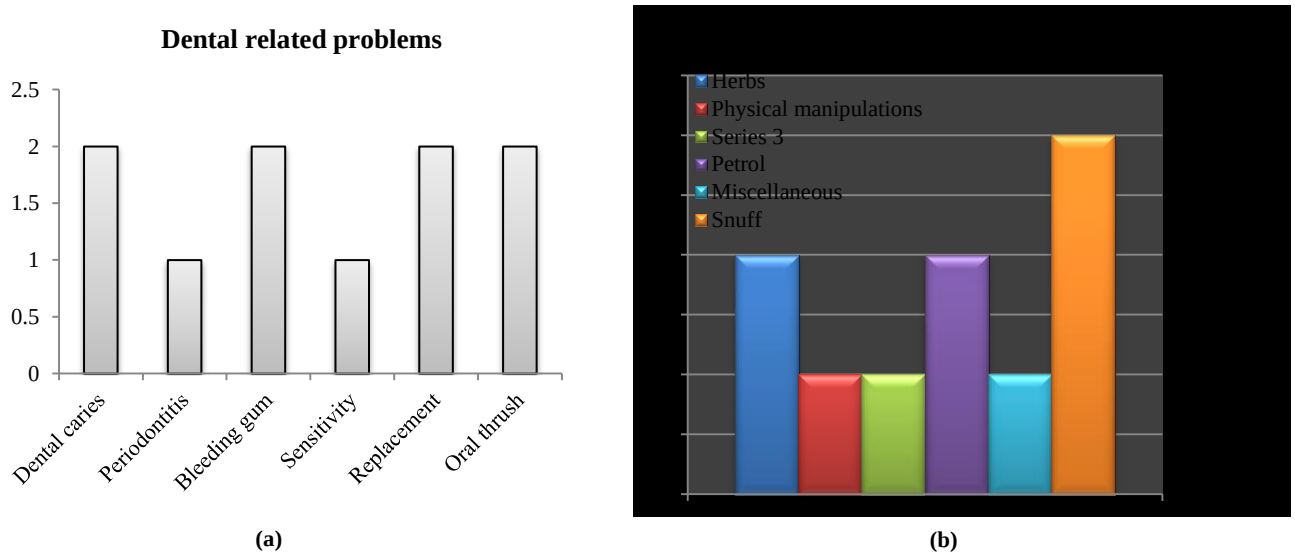

Figure 2: (a) Dental problems, (b) methods used for the treatment of oral problems

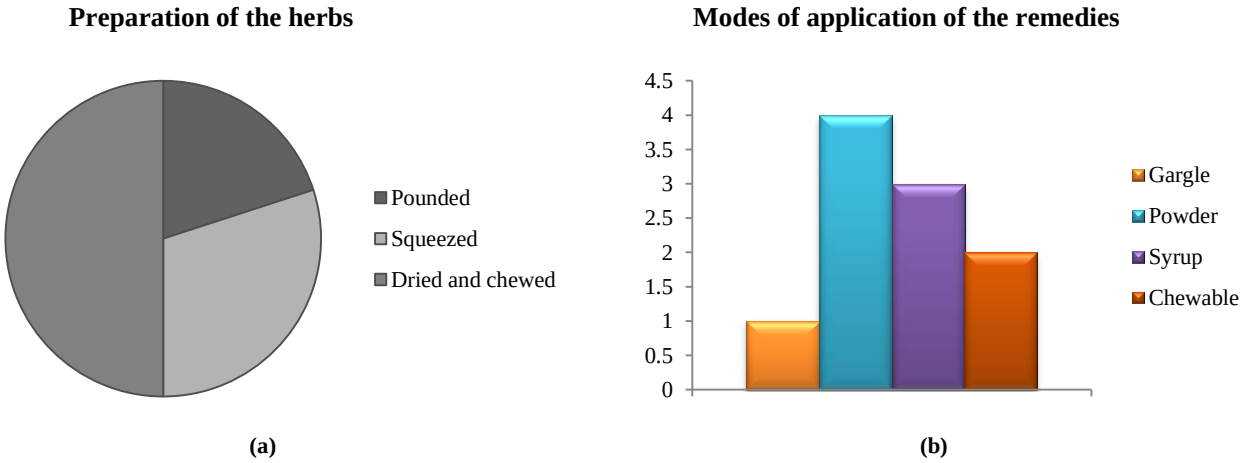

Figure 3: (a) preparation of the herbs; (b) modes of application of the remedies

(Figure 2b). Out of 10 participants, 2 (20%) of the traditional healers pounded the herbs, 3 (30%) squeezed the herbs while 5 (50%) dried the herbs and give their patients for chewing (Figure 3a). This shows that there was no standard practice in traditional medicine, which is in line with previous studies, that indicates the effectiveness of some traditional methods in treating oral diseases but lack standardization.[13,14] For the modes of application of the remedies, out of 10 traditional healers, 1 (10%) applied herbs to patients as a gargle, 4 (40%) used as powder, 3 (30%) applied the product as syrup while 2 (20%) used the product as chewable (Figure 3b).

For the duration of the treatment before the patients were relieved from the various ailments, out of 10 traditional healers, 2 (20%) believed that it takes two days for the patient to get relief, 3 (30%) thought relief usually lasted for three days, 2 (20%) conceived four days before relief, 2 (20%) claimed six days before relief and 1 (10%) trusted one week before relief (Figure 4a). It was observed that the time for relief after treatment varies from patient to patient. This is in line with research conducted on perceptions of childhood diarrhea and its treatment in rural Zimbabwe by de Zoysa *et al*., (1984), who reported that traditional medicines have been found very useful for the relieve of toothaches with specific plant products and extract for decayed and broken teeth. [12,15]

For the time frame before the patient's re-visitation which varies from individuals, out of 10 traditional healers, 3 (30%) claimed it usually takes the patient 1-2 months before revisiting, 2 (20%) believed on 3 months frame time before re-visitation and 3 (30%) had no ideas on when patients revisited for treatment (Figure 4b).

For the daily patronage of the traditional healers by the dental patients, out of 10 traditional healers, 2 (20%) believed 1 patient was treated daily, 2 (20%) had thoughts that 2-3 patient treated daily, 3 (30%) claimed that 4-5 patients were treated daily, 2 (20%) usually treated more than 5 patients daily, while 1 (10%) conceived that treatment usually not done in some days (Figure 5).

For the number of patients who suffered from the oral problem and treated by the traditional healers, out of 80 respondents, 44 (55%) claimed that the healing process was between 1-6 months, 18 (22.5%) believed the period healing usually between 6-12 months while 18 (22.5%) were not specified (Figure 6). This also depicts the re-occurrence of dental problems. Out of 80 respondents, 44 (55%) claimed that the diseases re-occurred after while 36 (45%) believed there was no re-occurrence of the dental problems. The interval period before the re-occurrence of the dental problems usually occurred was revealed. Out of 80 respondents, 9 (11%) believed the interval of reoccurrence is 1-6 months, 27 (34%) claimed the interval of reoccurrence is between 6-12 months, 9 (11%) thought the interval of reoccurrence is above 12 months while 35 (44%) said they cannot remember how long it took to re-occur (Figure 7). This result showed that the process of healing differs from one individual to another. [11,12,15]

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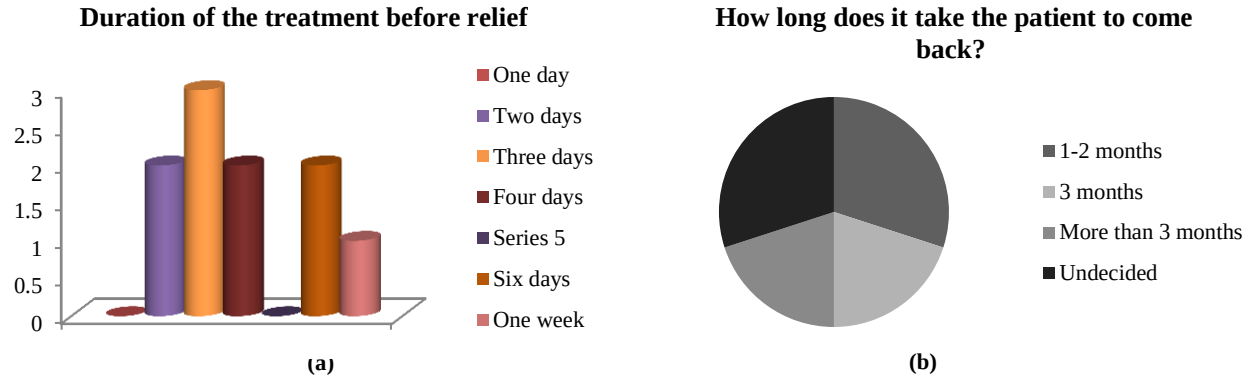

Figure 4: (a) duration of the treatment before relieved, b; time it took patients for another treatment

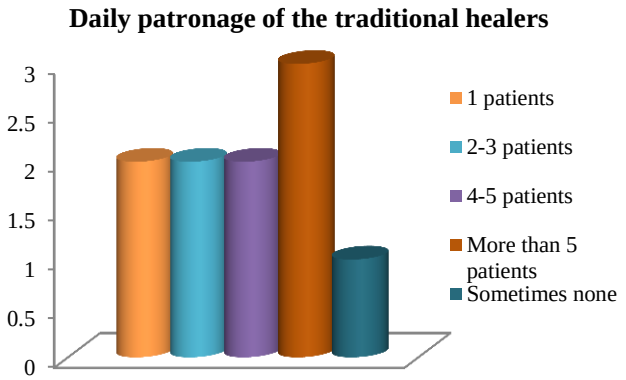

Figure 5: Daily patronage of the traditional healers.

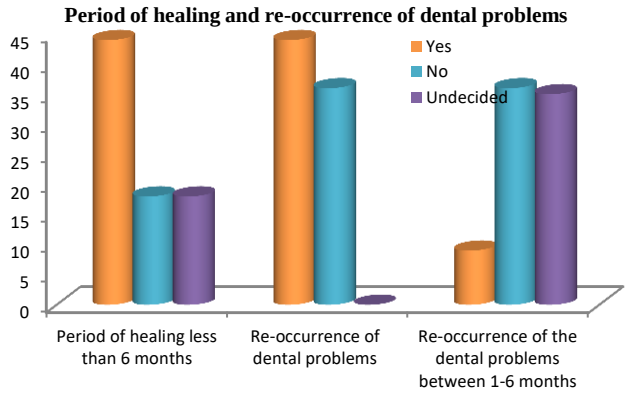

Figure 6: The period of healing and re-occurrence of dental problems

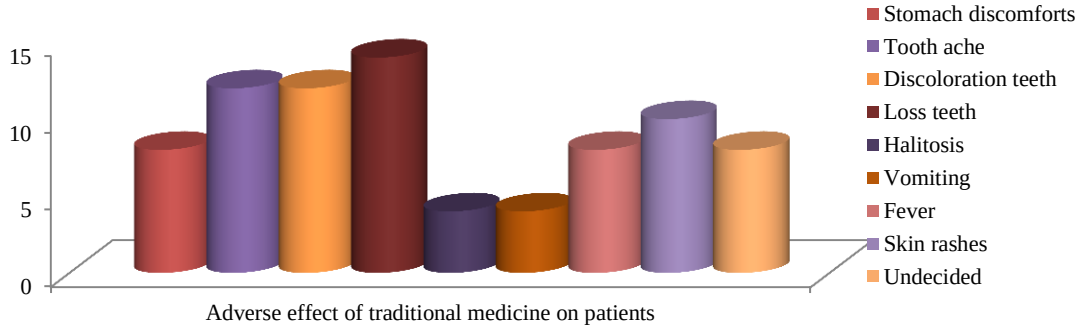

Figure 7: Adverse effect of traditional medicine on patients

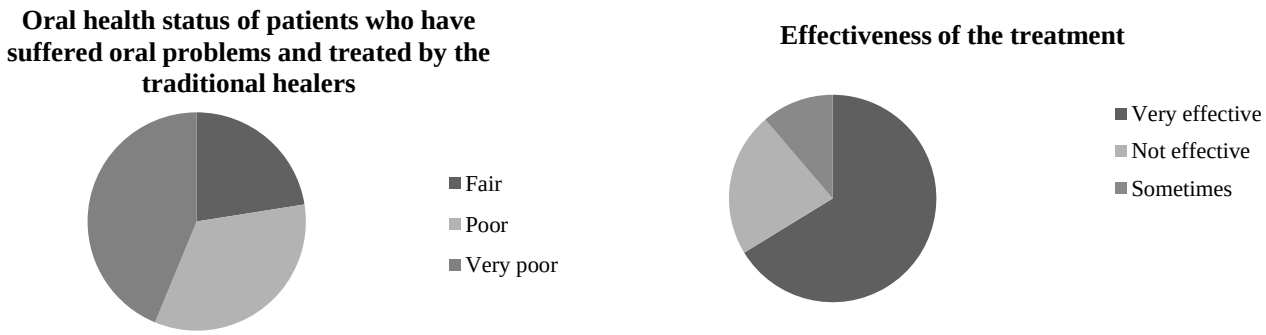

Figure 8: (a) oral health status of patients who have suffered oral problems and treated by the traditional healers; (b): effectiveness of the treatment.

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For the adverse effect of traditional medicine on patients, out of 80 respondents, 8 (10%) affirm strongly the traditional medicine made to suffer for stomach discomfort after treatment, 12 (15%) agreed that the medicine causes discoloration of teeth, 12 (15%) agreed that the medicine causes toothache, 14 (17.5%) believed the medicine induces loss of the tooth, 4 (5%) affirmed that the treatment causes halitosis, 4 (5%) believed the tradition medicine induces vomiting, 8 (10%) had fever after administering of the treatment, 10 (12.5%) believed the medicine causes rashes while 8 (10%) agreed that the medicine had no adverse effects.

This is in line with research conducted on lead poisoning from traditional Indian medicines by Garnier and Poupon, (2006), which indicates that active ingredients used in medical plants are potentially toxic that can contain dangerous elements and heavy metals.For the oral health status of patients who have suffered oral problems and treated by traditional healers, out of 80 respondents, 18 (22.5%) of the respondents responded that medicine is fair for the mouth, 27 (33.75%) of the respondents responded that medicine is poor for the mouth while 35 (43.75%) of the respondents believed that medicine was very poor mouth (Figure 8a).

For the effectiveness of the treatment, out of 80 respondents, 53 (66.25%) of the respondents agreed that the methods of treatment are very effective, 18 (22.5%) affirmed that the method of treatment is not effective, while 9 (11.25%) supported that the method is sometimes effective depending on how the method is used and the traditional healers involved (Figure 8b). The effectiveness of the treatment varies from one individual patient to another. In some cases, it might be the fault of the patient not taking the full dose as traditional healers said.

Conclusion

The study revealed that natural products have been traditionally used in dentistry. The demand for natural products used by traditional healers in the Abejukolo community increased every day as an alternative method of oral disease treatment and the reason was the inherent belief in traditional medicine where certain conditions are traditionally branded, and economical attributes, and long-distance in receiving the synthetic product.

The application of natural products in developing dental care products will reduce the cost of introducing a synthetic dental drug into the health care delivery that will serve as another source of income thereby increase the gross domestic product and create more job opportunities. Based on the findings of the study, the use of various traditional methods of treating dental diseases should be encouraged and systemically studied in other to improve on them to serve as an alternative method.

Conflict of Interest

The authors declare no conflict of interest.

Authors' Declaration

The authors hereby declare that the work presented in this article is original and that any liability for claims relating to the content of this article will be borne by them.

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References

1. Gurnani N, Mehta D, Gupta M, Mehta BK. Natural Products: Source of Potential Drugs. Afr J Basic Appl Sci. 2014; 6(6):171-186.
2. Atanasov AG, Waltenberger B, Pferschy-Wenzig E. Linder T, Wawrosch C, Uhrin P, Temml V, Wang L, Schwaiger S, Hesiss EH, Rollinger MJ, Schuster D, Breuss JM, Bochkov V, Mihovilovic MD, Kopp B, Bauer R, Dirsch MV, Stuppner H. Discovery and resupply of pharmacologically active plant-derived natural products: A review. Biotechnol Adv. 2015; 33(8):1582-1614.
3. Gupta P and Shetty H. Use of natural products for oral hygiene maintenance: revisiting traditional medicine. J Compl Integr Med. 2018; 15(3):1-5.
4. Ikuesan AJ, Ajaegbu EE, Ezeh UC, Dieke AJ, Onuora AL, Nduka FO, Ezugworie FN, Izekor ES, Tunde AA, Bassey NU, Ewa-Elechi JN, Nwigwe JO, Komolafe OO. HPLC Analysis and Antimicrobial Screening of Methanol Extract/Fractions of Root of *Millettia aboensis* (Hook.f.) Baker against *Streptococcus mutans.* Curr J Appl Sci Technol. 2020; 39(22):1-11.
5. Shah N. Oral and dental diseases: Causes, prevention, and treatment strategies. Division of Conservative Dentistry and Endodontics (Centre for Dental Education and Research All India Institute of Medical Sciences, New Delhi); 2018.
6. Haime L, Meurman JH, Laine P. Oral findings in patients with active or inactive Crohn's disease. Oral Surg Oral Med Oral Pathol. 1993; 76(2):175-181.
7. Sakagami H and Tomomura M. Dental application of natural products. J Med. 2018; 5:21-24.
8. Krause J and Tobin G. Discovery, development, and regulation of natural products, In: Using old solutions to new problems – Natural drug discovery in the 21st century, Edited by Anna Kulka (IntechOpen, UK). 2013.
9. WHO. General guidelines for methodologies on research and evaluation of traditional medicine. Geneva: World Health Organization 2000b.
10. Gurib-Fakim A. Medicinal plants: traditions of yesterday and drugs of tomorrow. Mol Aspects Med. 2006; 27(1):1–93.
11. Al-Somaiday HM, Al-Samaray ME, Al-Samydai A. Role of Herbal Medicine in Oral and Dental Health; Ethnopharmacological Study of Medicinal Plants in Iraq/Baghdad. Int J Res Pharm Sci. 2020; 11(1):1-8.
12. Ashu MA and Sudeshni N. Ethnomedicinal Plants Used by Traditional Healers to Treat Oral Health Problems in Cameroon. Evid-Based Compl Altern Med. 2015; 2015:1-10.
13. Ashu MA and Sudeshni N. Knowledge and practice of traditional healers in oral health in the Bui Division, Cameroon. J Ethnobiol Ethnomed. 2011; 7(6):1-8.
14. Morris K. Tackling thorny issues of herbal medicines worldwide. Lancet 1998; 351:9110.
15. de Zoysa I, Carson D, Feachem R, Kirkwood B, Lindsay-Smith E, Loewenson R. Perceptions of childhood diarrhoea and its treatment in rural Zimbabwe. Soc Sci Med. 1984; 19(7):727-734.
16. Garnier R and Poupon J. Lead poisoning from traditional Indian medicines. Presse Med. 2006; 35:1177-1180.