



Perception and knowledge on the medicinal use of traditional drugs among dental undergraduates - A survey

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ABSTRACT

The traditional drug, as characterized by the World Health Organization, is the aggregate of the information, aptitudes, and practices dependent on the hypotheses, convictions, and encounters indigenous to various societies, regardless of whether intelligible or not, utilized in the upkeep of well-being just as in the anticipation, analysis, improvement, or treatment of physical and psychological maladjustment. There is increasing usage of traditional drugs worldwide. To adequately manage safety issues associated with traditional drugs, the future dentists must possess good knowledge of them. Dental undergraduate students, totaling 100 students completed a questionnaire in a cross-sectional study that assessed their knowledge and attitude towards traditional drugs. Data was analyzed using SPSS software. The best known and used herb was chamomile and clove. Although with limited knowledge, the dental students showed a high level of personal use and good attitudes towards traditional drugs. Introduction of traditional drugs courses in their dental curriculum and also more awareness programs should increase their knowledge and attitude, so they could in the future adequately manage patients who used or intend to use traditional drugs.



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INTRODUCTION

Traditional drugs comprises medical aspects and developed over generations with various societies

before the age of recent medicine. It is of utmost importance to know the interaction and plant extracts with the body and other medications. Plant extracts possess antiseptic, antimicrobial, antibacterial, antifungal, antiviral and analgesic agents. This survey is to determine the knowledge and level of awareness in dental undergraduates about traditional drugs. In adequate knowledge about the traditional drugs may be a challenge towards using them (Telles *et al.*, 2014). For people in developing countries high dependence on herbal medicine may be due to the ease of accessibility, affordability, availability and acceptability. According to the world health organization, up to 80% of persons living in Africa, in traditional medicines for their primary health care needs. Traditional medicines include herbs, plants and animal

products, traditional materials, traditional preparations and products that contain parts of plants as active ingredients (Tilburt, 2008; Rajeshkumar et al., 2018a). Various studies have been conducted on the knowledge and attitude of dentists and dental students with regard to complementary and alternative medicine (Tobyn et al., 2010). Few studies have however been conducted to measure the dental students' knowledge and attitude towards herbal medicine specifically. Currently, none of the dental colleges in India have incorporated complementary and alternative medicine into their curriculum (Ozturk and Hakeem, 2019). This study therefore measured the dental students' perceptions and knowledge towards traditional drugs. Issues of adverse effects and drug herb interactions should be of important public health concerns because of their overall effect on human health and safety (Ameade et al., 2018). As herbal medicine is increasingly being used and continues to rise as a result of the widespread belief that preparations are natural, safe, low cost, and lots of physicians believe in the usefulness of herbal medicine (Mahapatra et al., 2019). According to the World Health Organization (WHO), 80% of the world population is dependent on traditional medicines (mainly herbal medicines) for their primary health care needs. In European Union, the use is as high as up to 90% of the population in some countries. In India also, herbal drugs are used by around 70% of the population (Lakshmi et al., 2015). Herbs commonly used worldwide include St. John's wort, ginkgo biloba, kava-kava, ginseng and garlic. The general belief that herbal drugs being natural are safe; increasing dependence of people on dietary supplements; and thus the low cost of some herbal drugs have led to the extensive use of herbal medicines worldwide. Herbal drugs are often self-prescribed and are freely available over-the-counter (Sharma et al., 2019).

Herbs are however not free from side effects, and some have been shown to be toxic. All this might cause serious safety concerns with usage of herbal medicines, including herb-drug interactions (HDIs); the increasing evidence of which are being documented nowadays. In a study by Gohil et al., St. John's wort was among the commonest herbs involved in HDIs, followed by ginkgo biloba, kava-kava, ginger and ginseng.

As per a systematic review by Posadzki P et al., the most common HDIs were with antiplatelet agents and anticoagulants. Use of ginger, garlic, ginkgo, ginseng with anti-platelets may cause bleeding; St. John's wort may decrease the effectiveness of digoxin, oral contraceptives, warfarin, clopidogrel; and ginkgo may interact with a number of drugs

including benzodiazepines, atorvastatin, anticonvulsant drugs (Ezhilarasan et al., 2017b; Gupta et al., 2019). The HDIs may even result in severe interactions including transplant rejection, cardiovascular collapse, renal toxicity, liver toxicity, cardiotoxicity, organ fibrosis and death. Various studies have shown that the majority patients (Mehta et al., 2019) don't consider it necessary to disclose about their herbal medicine intake to physicians (Perumalsamy et al., 2018; Ezhilarasan, 2018; Ezhilarasan et al., 2018). In two different survey-based studies, nearly 70% of patients who took a herbal medicine with allopathic medicines, didn't inform their physician about herbal drug consumption (Anitha and Ashwini, 2017; Ashwini et al., 2017; Ezhilarasan et al., 2017a).

This is supported by the facts that a lot of physicians themselves rarely ask their patients about herbal medicine consumption, and lots are unaware of the potential risks of herb-drug interactions. Prescribers of modern allopathic medicine often have little or no training on the (Gheena and Ezhilarasan, 2019; Menon et al., 2018) effects of herbal medicines on humans and their potential to cause HDIs. Thus, the chances of suspecting HDIs become very less (Rajeshkumar et al., 2018b). The education and training of healthcare providers regarding herb-drug interactions is thus essential for safe and rational drug therapy.

MATERIALS AND METHODS

The advantage of this study was the properly defined population, as the study settings was online survey we were able to reach more people and the study population was educated, so they were able to make better knowledge choices. The disadvantages of this study was the language incompatibility and lack of communication which caused trouble with too few study populations with the understanding capacity. People involved in this study were the undergraduate students of saveetha dental college. The total sampling size of the survey was 100 and the sampling method used was simply randomized. Inclusion criteria was traditional drugs and the exclusion criteria was modern medicine.

The primary data collection was done through an online portal. Prominently known as google forms. The questionnaire totally consisted of 10 questions and it was developed based on previous studies elsewhere. After a free and informed consent was obtained all respondents were allowed at least 20 minutes to complete the questionnaire. The questionnaire had 2 segments which assessed the dental undergraduate student perception and knowl-

edge. Questionnaire validity checking was done in a standard manner. Output variables, the data collection software scores and represents the participant's awareness as a bar graph.

The statistical test used was descriptive analysis and mean variable statistics software used was SPSS. List of independent variables was modern drugs and list of dependent variables was traditional drugs. Analysis used was comparative analysis, correlation and association. Steps followed in software analysis were entering the data in Excel sheet and making the necessary steps and entering them in spss and generating the bar graph was required.

RESULTS AND DISCUSSION

Figure 1 represents that among the 100 respondents of the survey 64% male and 36% female. Figure 2 says that 9% of the students were studying 1st year, 42% was studying 2nd year, 30% was studying 3rd year, 13% was studying 4th year and 6% of the respondents were doing internships. Figure 3 represents students perception on using fennel root to treat inflammation for which 67.7% of the respondents said yes and 30.3% of the respondents said no. Figure 4 represents that 54% of the study population believed that traditional drug was prepared through crude method and 46% believed that its preparation was done through decoction. Figure 5 represents the method of using herbal medicine 64% suggested that it was through chewing, 17% suggested that it was through drinking, 12% suggested through topical application and 6% suggested through inhaling. Figure 6 represents students opinion on which plant part is to be used in toothache treatment 31% said skin, 17% said root, 18% said leaves, 14% said seeds and 20% said bark of the plant.

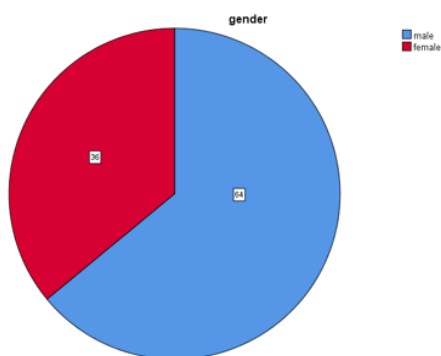


Figure 1: Pie chart represents the gender of the respondents

Figure 7 represents that 70% of participants preferred clove as their most efficient traditional drug they have used, while 11% Chamomile, 5% said

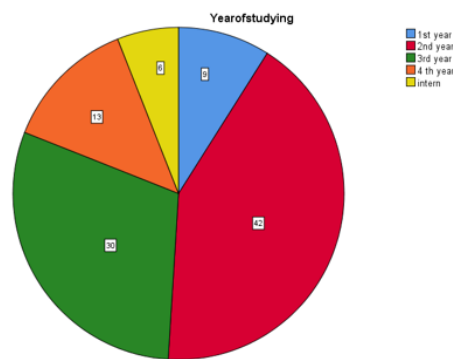


Figure 2: Pie chart represents the year of study of the participants

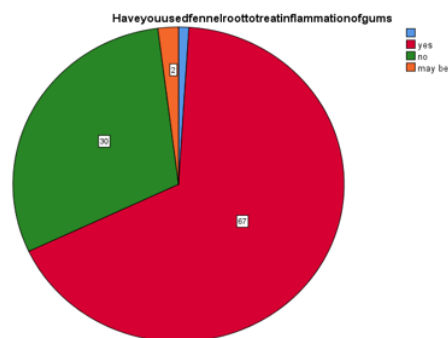


Figure 3: Pie chart represents usage of fennel to treat inflammation of gums

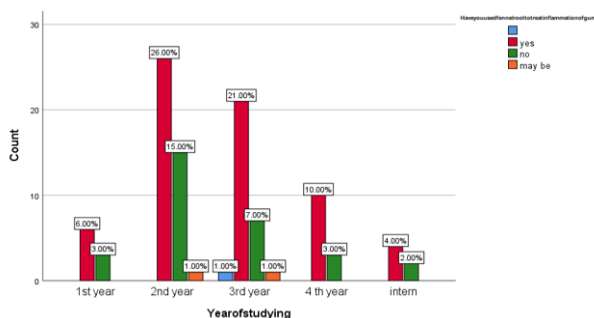


Figure 4: Pie chart denotes the association between usage of fennel to treat inflammation of gums and the year of studying

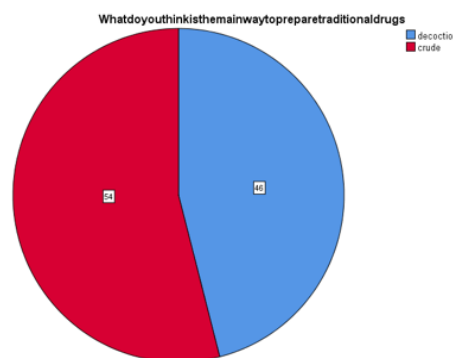


Figure 5: Pie chart represents method of preparation of traditional drugs

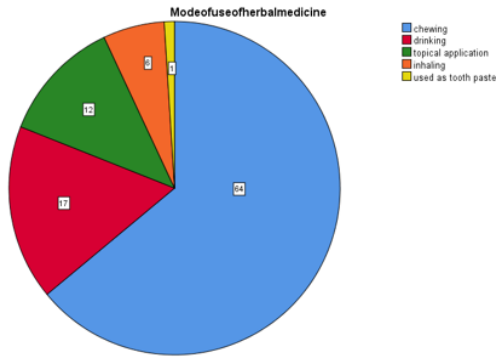


Figure 6: Pie chart shows method of using herbal medicine

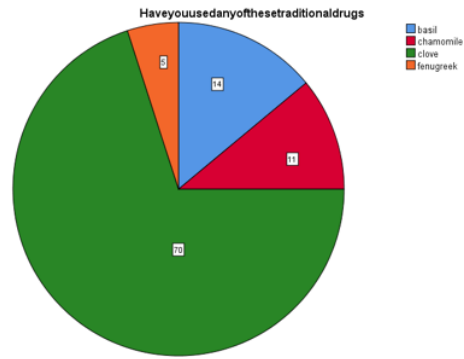


Figure 10: Pie chart represents usage of certain traditional drugs

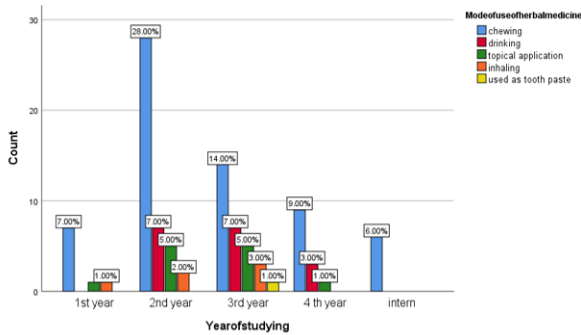


Figure 7: Bar graph denotes the association between mode of using herbal medicine and year of studying

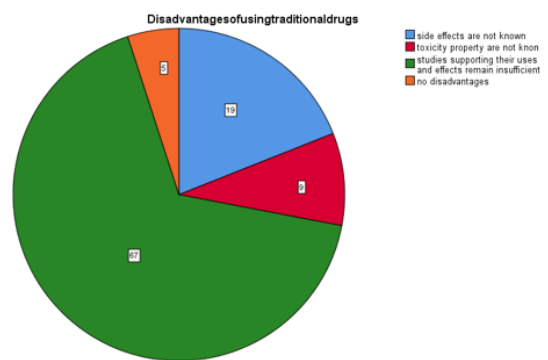


Figure 11: Pie chart represents disadvantage of using traditional drug

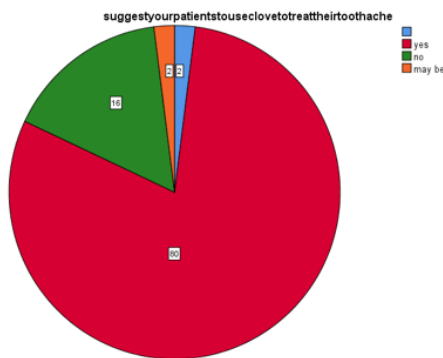


Figure 8: Pie chart represents suggestion of using clove in treating toothache

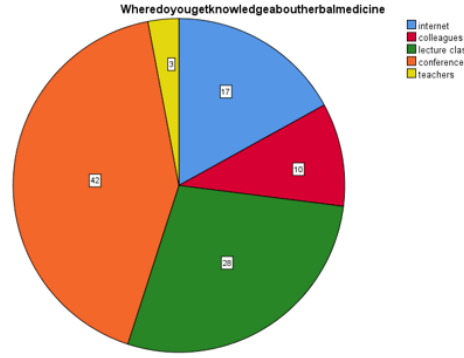


Figure 12: Pie chart represents source of gaining information about traditional drug

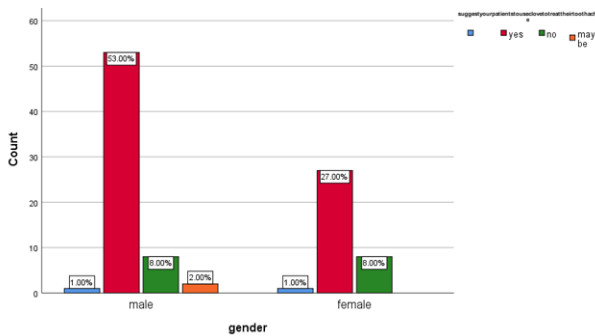


Figure 9: Bar graph represents the correlation between suggestion of using clove in treating toothache and the gender

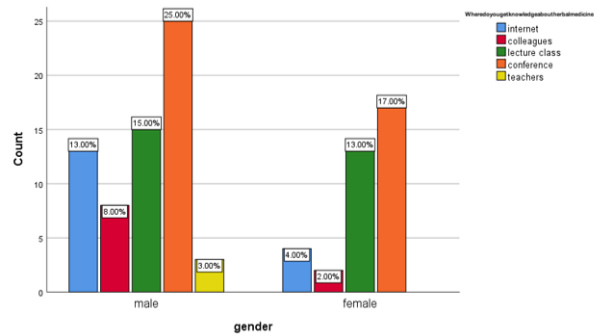


Figure 13: Bar graph denotes the association between source of gaining information about traditional drug and gender

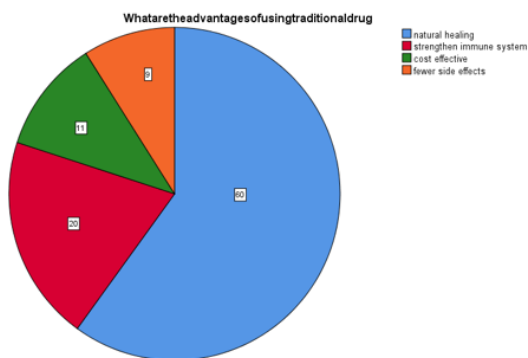


Figure 14: Pie chart represents advantage of using traditional drug

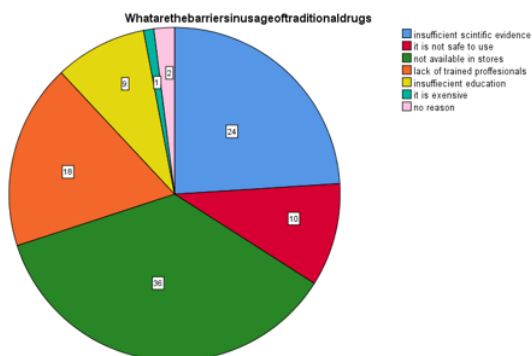


Figure 15: Pie chart represents the barriers of using traditional drugs

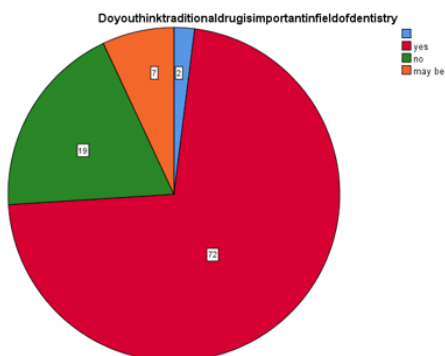


Figure 16: Pie chart represents participants' opinion on the importance of traditional drugs

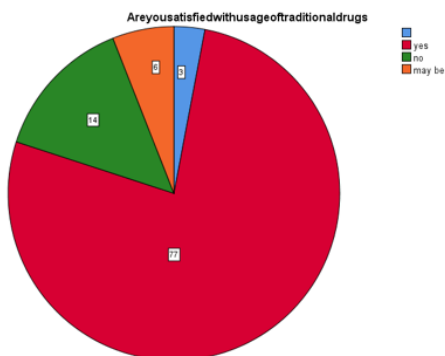


Figure 17: Pie chart represents participants opinion on usage of traditional drug

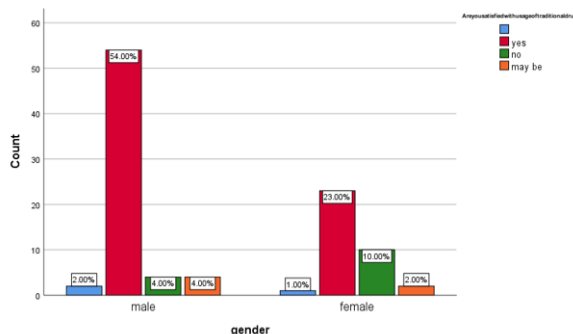


Figure 18: Bar graph denotes the participant's opinion on usage of traditional drug and the gender

fenugreek and 14% preferred basil. Figure 8 says that 67% said the main disadvantages of using traditional drugs was the studies supporting their uses and effects remain insufficient. Figure 9 represents that 42% of the participants attain knowledge about traditional drugs from conferences, 17% participants from the internet, 10% of participants from colleagues and 28% of participants from lecture class. Figure 10 says that 60% choose natural healing as the advantage of using traditional drug, 20% said it strengthen the immune system, 11% said it is cost effective and 9% said fewer side effects. Figure 11 represents that 24% said insufficient scientific evidence was a barrier in traditional drug usage, 10% said it is not safe to use, 36% said it is not available in stores, 19% said lack of trained professionals and 9% said insufficient education was the barrier. Figure 12 says that 73.55 think traditional drugs are important in dentistry. Figure 13 represents that 79.4% are satisfied with the usage of traditional drugs.

According to boparai et al. the previous study is in contradiction with current study. In the previous study, only 40% said they were satisfied with usage of traditional drug but in our currency study 79.4% was satisfied (Boparai, 2019). The previous study is in contradiction with current study. In the previous study, only 12% said traditional drugs are important in the field of dentistry but in our current study 73.55% thinks traditional drugs are important. The main limitations of this study was the sample size, limited knowledge of the participant study population was less, there was a difference in the lifestyle and different opinions among different participants, most importantly the findings are based on self reported information (Karthiga et al., 2018). The main future scope of this research is extensive research can help to develop new traditional drugs and also improve the knowledge about existing traditional drugs (Sharma et al., 2019).

In Figure 1, 64% of the participants were male [blue region] and 36% of the participants were female [red region]. In Figure 2, 9% [blue region] of the students were studying 1st year, 42% [red region] were studying 2nd year, 30% [green region] were studying 3rd year, 13% [orange region] were studying 4th year and 6% [yellow region] of the respondents were doing internships. In Figure 3, This graph represents the participants' opinion on using fennel root to treat inflammation. 67.7% [red region] said yes that fennel root can treat inflammation and 30.3% [green region] said no and 2% [orange region] said may be. In Figure 4, X-axis represents the year of studying and y-axis represents the usage of fennel to treat inflammation of gums (red color represents yes, green color represents no and orange color may represent. Majority of 2nd year students have used fennel to treat inflammation of gums. However, the difference is not statistically significant. (Chi-square test - 4.750, $p=0.96$ ($p>0.05$ indicating not significant)). In Figure 5, 54% [red region] of study population believed that traditional drug was prepared through crude method and 46% [blue region] believed that its preparation was done through decoction. In Figure 6, 64% through [blue region] chewing, [red region] 17% through drinking, [green region] 12% through topical application and 6% [yellow region] through inhaling. In Figure 7, X-axis represent the year of studying and Y-axis represents mode of use of herbal medicine. Blue color indicates chewing, red color indicates drinking, green color indicates topical application, orange color indicates inhaling and yellow color indicates using toothpaste. The majority of the 2nd year students use chewing as the method of using traditional drug. However, the difference is not statistically significant. Chi-square test -12.780, $p=0.68$ ($p>0.05$ indicating not significant). In Figure 8, Responses were as follows 81.6 [red region] said yes and 16.3% [green region] said no and 2% [orange region] said may be. In Figure 9, X-axis represents gender and Y-axis represents clove in treatment of toothache. Red color indicates yes, green color indicates no, orange color indicates may be and blue color represent those who have not responded to this question majority of male' have said that they will suggest clove to treat toothache. However, the difference is not statistically significant. chi-square test -2.832, $p=0.41$ ($p>0.05$ - indicating not significant).

In Figure 10, 70% [green region] preferred clove as their most efficient traditional drug they have used, while 11% [red region] Chamomile, 5% [orange region] said fenugreek and 14% [blue region] preferred basil. In Figure 11, The X-axis represents the

various responses and the Y-axis denotes the number of respondents. 67% [green region] said the main disadvantage of using traditional drugs was the studies supporting traditional drugs uses and effects are less, 19% [blue region] said that the disadvantage is due to unknown side effects, 9% [red region] said that the disadvantage was the unknown toxicity property. In Figure 12, 17% [blue region] from the internet, 10% [red region] from colleagues and 28% [green region] from lecture class. In Figure 13, X-axis represents gender and y-axis represents source of gaining information about traditional drug. Blue color denotes internet, red color denotes colleagues, green color denotes lecture class, orange color denotes conference and yellow color denotes teachers. The majority of males and females gain knowledge about traditional drug from conference. However, the difference is not statistically significant. Chi-square test -5.633, $p=0.22$ ($p>0.005$ -indicating not significant). In Figure 14, 60% [blue region] choose natural healing as the advantage of using traditional drug, 20% [red region] said it strengthen the immune system, 11% [green region] said it is cost effective and 9% [orange region] said fewer side effects.

In Figure 15, 24% [blue region] said insufficient scientific evidence was a barrier in traditional drug usage, 10% [red region] said it is not safe to use, 36% [green region] said it is not available in stores, 19% [orange region] said lack of trained professionals and 9% [yellow region] said insufficient education was the barrier. In Figure 16, The 72 [red region] think traditional drugs are important in dentistry while 19.4% [green region] think it is not important. In Figure 17, 77% [red region] are satisfied with the usage of traditional drugs and 14.4% [green region] are not satisfied and 6% [orange region] said maybe. In Figure 18, X-axis represents gender and Y-axis represents "participants satisfaction in usage of traditional drug". X-axis represents the gender and Y-axis represents "participants satisfaction in usage of traditional drug". red color indicates yes, green color indicates no, orange color indicates may be, blue color indicates the unresponded participants. The majority of the male participant are satisfied with usage of traditional drug. However, the difference is statistically significant. Chi-square test value -8.911, p value = 0.03 ($p<0.05$ indicating significant).

CONCLUSION

Traditional medicine refers to the knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures, used in the maintenance of health and in the preven-

tion, diagnosis, improvement or treatment of physical and mental illness. Traditional medicine is often termed alternative or complementary medicine in many countries. Herbal treatments are the most popular form of traditional medicine and 70% to 80% of the Region has used a form as primary health care. Within the limits of the study, the knowledge and awareness about traditional drugs and its application in dentistry was evaluated. Upon evaluation, it is found that dental undergraduate students had a good level of knowledge about traditional drugs and showed more interest in using them, which can be improved by delivering further more information and exposure to traditional drugs further.

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Conflict of Interest

The authors declare that there is no conflict of interest for this study.

REFERENCES

- Ameade, E. P. K., Ibrahim, M., Ibrahim, H.-S., Habib, R. H., Gbedema, S. Y. 2018. Concurrent Use of Herbal and Orthodox Medicines among Residents of Tamale, Northern Ghana, Who Patronize Hospitals and Herbal Clinics. *Evidence-Based Complementary and Alternative Medicine*, 2018:1-8.
- Anitha, R., Ashwini, S. 2017. Antihyperglycemic activity of *Caralluma fimbriata*: An In vitro approach. *Pharmacognosy Magazine*, 13(51):499-499.
- Ashwini, S., Ezhilarasan, D., Anitha, R. 2017. Cytotoxic Effect of *Caralluma fimbriata* Against Human Colon Cancer Cells. *Pharmacognosy Journal*, 9(2):204-207.
- Boparai, J. K. 2019. Generalized seizure following lignocaine administration: Case report and literature review. *Journal of family medicine and primary care*, 8(10):3440-3442.
- Ezhilarasan, D. 2018. Oxidative stress is bane in chronic liver diseases: Clinical and experimental perspective. *Arab Journal of Gastroenterology*, 19(2):56-64.
- Ezhilarasan, D., Lakshmi, T., Nagaich, U., Vijayaragavan, R. 2017a. Acacia catechu ethanolic seed extract triggers apoptosis of SCC-25 cells. *Pharmacognosy Magazine*, 13(51):405-405.
- Ezhilarasan, D., Lakshmi, T., Vijayaragavan, R., Bhullar, S., Rajendran, R. 2017b. Acacia catechu ethanolic bark extract induces apoptosis in human oral squamous carcinoma cells. *Journal of Advanced Pharmaceutical Technology & Research*, 8(4):143.
- Ezhilarasan, D., Sokal, E., Najimi, M. 2018. Hepatic fibrosis: It is time to go with hepatic stellate cell-specific therapeutic targets. *Hepatobiliary & Pancreatic Diseases International*, 17(3):192-197.
- Gheena, S., Ezhilarasan, D. 2019. Syringic acid triggers reactive oxygen species-mediated cytotoxicity in HepG2 cells. *Human & Experimental Toxicology*, 38(6):694-702.
- Gupta, R. C., Srivastava, A., Lall, R. 2019. *Nutraceuticals in Veterinary Medicine*. Springer. Springer, ISBN: 9783030046248.
- Karthiga, P., Rajeshkumar, S., Annadurai, G. 2018. Mechanism of Larvicidal Activity of Antimicrobial Silver Nanoparticles Synthesized Using *Garcinia mangostana* Bark Extract. *Journal of Cluster Science*, 29(6):1233-1241.
- Lakshmi, T., Krishnan, V., Rajendran, R., Madhusudhanan, N. 2015. *Azadirachta indica* : A herbal panacea in dentistry - An update. *Pharmacognosy Reviews*, 9(17):41-41.
- Mahapatra, D. K., Bharti, S. K., Asati, V. 2019. Recent Perspectives Of Chalcone-Based Molecules As Protein Tyrosine Phosphatase 1b (Ptp1b) Inhibitors. *Medicinal Chemistry with Pharmaceutical Product Development*, pages 235-251.
- Mehta, M., Deeksha, Tewari, D., Gupta, G., Awasthi, R., Singh, H., Pandey, P., Chellappan, D. K., Wadhwa, R., Collet, T., Hansbro, P. M., Kumar, S. R., Thangavelu, L., Negi, P., Dua, K., Satija, S. 2019. Oligonucleotide therapy: An emerging focus area for drug delivery in chronic inflammatory respiratory diseases. *Chemico-Biological Interactions*, 308:206-215.
- Menon, S., Devi, K. S., et al. 2018. Selenium nanoparticles: A potent chemotherapeutic agent and an elucidation of its mechanism. *Colloids and Surfaces B: Biointerfaces*, 170:280-292.
- Ozturk, M., Hakeem, K. R. 2019. Plant and Human Health. volume 3. Univ. of Malaya. Plant and Human Health, Volume 3: Pharmacology and Therapeutic Uses. Springer, ISBN: 9783030044084.
- Perumalsamy, H., Sankarapandian, K., Veerappan, K., Natarajan, S., Kandaswamy, N., Thangavelu, L., Balusamy, S. R. 2018. In silico and in vitro analysis of coumarin derivative induced anticancer effects by undergoing intrinsic pathway mediated apoptosis in human stomach cancer. *Phytomedicine*, 46:119-130.
- Rajeshkumar, S., Agarwal, H., Kumar, S. V., Lakshmi, T. 2018a. Brassica oleracea Mediated Synthesis of Zinc Oxide Nanoparticles and its Antibacterial

Activity against Pathogenic Bacteria. *Asian Journal of Chemistry*, 30(12):2711–2715.

Rajeshkumar, S., Kumar, S. V., Ramaiah, A., Agarwal, H., Lakshmi, T., Roopan, S. M. 2018b. Biosynthesis of zinc oxide nanoparticles using *Mangifera indica* leaves and evaluation of their antioxidant and cytotoxic properties in lung cancer (A549) cells. *Enzyme and Microbial Technology*, 117:91–95.

Sharma, P., Mehta, M., Dhanjal, D. S., Kaur, S., Gupta, G., Singh, H., Thangavelu, L., Rajeshkumar, S., Tambuwala, M., Bakshi, H. A., Chellappan, D. K., Dua, K., Satija, S. 2019. Emerging trends in the novel drug delivery approaches for the treatment of lung cancer. *Chemico-Biological Interactions*, 309:108720.

Telles, S., Pathak, S., Singh, N., Balkrishna, A. 2014. Research on Traditional Medicine: What Has Been Done, the Difficulties, and Possible Solutions. *Evidence-Based Complementary and Alternative Medicine*, pages 1–5.

Tilburt, J. 2008. Herbal medicine research and global health: an ethical analysis. *Bulletin of the World Health Organization*, 86(8):594–599.

Tobyn, G., Denham, A., Whitelegg, M. 2010. The Western Herbal Tradition E-Book: 2000 years of medicinal plant knowledge. Elsevier Health Sciences. Elsevier Health Sciences, ISBN: 9780702048456.