

Assessment of Knowledge, Attitude and Practice of Traditional Medicinal Plants usage among South Indian Urban Population- A Questionnaire Study

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Abstract

Traditional medicine is also called as complementary and alternative medicine (CAM) has proven to boost immune reactions over diseases. There is a marked rise in utilization of traditional medicinal plants for common ailments after the pandemic. The main objective of the present study is to explore the knowledge, attitude and utilization of traditional medicinal plants (TMP) for common ailments among urban population. The present study was conducted among a convenient sample comprising of 120 urban residents from Chennai, Tamil Nadu. The samples were selected by convenient sampling and each of them was given an 18-item questionnaire regarding their knowledge and attitude towards use of TMP for common ailments. SPSS package 24.0 was used for the statistical analysis. The overall response rate of the study was 83.33%. A total of 59% of subjects received information on the use of TMP was from their parents. A total of 98% used *Syzygium aromaticum*, 90% used *Azadirachta indica*, 88% used *Nigella sativa* and 85% used *Piper nigrum* for common ailments like cold and cough. We found high percentage of knowledge about various species of traditional medicinal plants among the subjects recruited in the study. Such studies will help establish the knowledge of medicinal plants and make sure quality research is carried out by scientists to evaluate their efficacy for different ailments.

Keywords: Traditional medicinal plants, complimentary alternative medicines, urban population, efficacy, plant species

Full-length article

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1. Introduction

The Traditional medicine is defined by the World Health Organization as “The total of the knowledge, skills, 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” [1]. Traditional medicine is also called as complementary and alternative medicine (CAM) has proven to boost immune reactions over diseases [2]. Plant-based drugs are deemed safe to humans and their surroundings compared to other artificial formulations in so-called modern era in which people live today. 25% of the total herbaceous drugs are estimated to be in utilization in the US whereas in emerging countries such as India and China, its usage is nearly 80%.

Ayurveda medicines predominantly practiced in India and other major systems of indigenous medicines such as Siddha, Homeopathy, Unani and Folk alternative treatments are deemed to be alternative medicines with equal potential as that of conventional allopathic drugs [3]. In agreement with the increasing importance of alternative medicines, WHO established an act called ‘WHO Traditional Medicine Strategy 2014-2023’ in 2013 which asserted to amalgamate traditional and complementary medicine to

improve global healthcare [4]. WHO states that 80% of global population still relies on conventional medicines for their healthcare needs. The marked utilization of plant substances for a broad spectrum of human diseases including communicable and non-communicable diseases in developing nations are associated with overpopulation, sparse supply of drugs, costly treatment options, adverse effects of counterfeit drugs, and drug resistance [5]. The main objective of the present study is to explore the knowledge, attitude and utilization of traditional medicinal plants (TMP) for common ailments among urban population.

2. Materials & methods

A descriptive, cross-sectional study was conducted among the urban population of Chennai, India. The study was conducted from January 2023 to March 2023. Ethical clearance was obtained from the Institution prior to subject recruitment (JCH2022/09/01) dated 01.09.2022. An eighteen-item questionnaire was framed and validated by the research experts before conducting the study. The questionnaire was divided to assess the knowledge, belief, attitude and self-use among the participants on the traditional medicinal plants. The questionnaire was validated by the experts in the field of public health and content validity was

done. Data obtained from male and female participants were segregated into separate arms for comparative analysis. A total of 120 participants were enrolled in the study. The sampling frame consisted of local residents residing in the city. A sample size of 120 was estimated by Rao-soft software using 5% margin of error, 95% confidence interval with expected response of 90%. A simple convenient sampling was used for the selection of study participants.

Inclusion criteria

- Participants between the age group of 18 to 70 years.
- Local inhabitants of Chennai who were having a Tamil ethnicity and past three generations spoke Tamil language as their native tongue.

Exclusion criteria

- Participants below 18 years and above 70 years of age.
- Participants who were not of Tamil ethnicity.

The reliability of the questionnaire was evaluated with Cronbach's alpha (0.78) using SPSS version 25.0. Face validation of the questionnaire was done by conducting a pilot study on 10 participants and the participant's feedback was incorporated in the final data collection form. The data obtained during the pilot study was not included in the final analysis. A total of 120 questionnaires were distributed out of which only 100 questionnaires were returned complete. Data obtained from incomplete forms was not included in the final analysis. The main framework of the questionnaire included knowledge related questions which were framed as open-ended questions.

2.1. Statistical analysis

The data was analysed using Statistical Package of Social Sciences (SPSS) (IBM, version 24.0). Descriptive analysis was performed to estimate the percentages and frequencies. The demographic characteristics of the participants included in the study along with the percentage distribution of answers were analysed. Association of dependent variables including knowledge, attitude, beliefs and self-perceived effectiveness and independent variables, such as demographics were estimated using Pearson's Chi-square. Chi-square test was also done to find out the association between the age of the population and their knowledge levels and preferences for traditional medicinal plant usage. Non-parametric Mann-Whitney test was used to compare the difference between continuous variables. An alpha value of 0.05 or less was considered statistically significant.

3. Results and discussion

A total of 120 subjects were recruited in the study out of which 100 (83.33%) subjects completed the questionnaire and 20 (16.67%) did not complete the questionnaire. The overall response rate of the study was 83.33%. Subjects between the age group of 18 and 70 years were included in the study. The minimum age was 18 years and maximum age was 65 years with a mean age of 36.97 years. Both genders were included in the study out of which 54% were females and 46% were males. Among the subjects, 3% were academicians, 16% administrators, 6% businessmen, 10% engineers, 12% health workers, 8% housewives, 3% lawyers, 4% retired personnel, 11% students and 27% teachers. For question titled do you believe in traditional medicinal plants for diseases and disorders, 95% replied yes and 5% replied no. When asked about the source

of information about traditional medicinal plants, a majority of 59% said they received information from their parents, 10% said they received information from friends, 16% from internet, 7% from newspapers/magazines, 59% from parents, 3% from physicians and 5% from television/radio. When asked about the source of medicinal plants, 22% sourced them from a traditional herbalist after consultation, 27% purchased it from an herbalist shop, 32% picked them from the outdoor environment, 6% from their own garden and 13% from supermarkets and grocery shops. (Fig 1,2) Question 6 had a set of herb names, and the subjects were asked to tick the herbs used by them for any ailment at least once before. 98% used *Syzygium aromaticum*, 90% used *Azadirachta indica*, 88% used *Nigella sativa* and 85% used *Piper nigrum*. When asked about the ailments for which the subjects most commonly used traditional medicinal plants, 63% used for cough/cold followed by 55% for indigestion, 50% for joint pains/arthritis, 28% for diabetes, 9% for tooth ache and menstrual issues. Questions 8 to 12 were open ended questions for which different answers were received. For item number 8, subjects were asked to name a few medicinal plants used for indigestion. A total of 28% mentioned around 10 common plant names. When the education level was compared with the answers given for questions using chi square test, we found that there was significant knowledge among subjects who were educated above under graduation level with a significance of 0.039. There was positive correlation between the educational level and the knowledge of the subjects. There was no correlation between the age and the knowledge of the subjects. ($p=0.010$). A total of 120 subjects were recruited in the present study. The overall response rate of the study was 83.33%. Subjects between the age group of 18 and 70 years were included in the study. The minimum age was 18 years and maximum age was 65 years with a mean age of 36.97 years. Both genders were included in the study out of which 54% were females and 46% were males. (Fig 1) Subjects belonging to different professions participated in the study. We found good knowledge levels of medicinal plants among our study group which was similar to a study done in the urban population in Paramaribo, Suriname. The authors used a stratified random household sample, semi-structured questionnaires, and multivariate analysis. The respondents mentioned a total of 144 medicinal plant species similar to our study. Also, there was higher knowledge about plant usage among literate subjects [6,7]. In our study, a large majority (59%) said that their prime source of information on the use of TMP was from their parents. These results were similar to a study by Anel and Carvalheilo who stated that a majority (72%) of participants in their study had received knowledge on herbs, from their family [6]. Majority of subjects in our study stated that they used the medicinal plants only when needed or recommended which showed that the urban population had good knowledge and awareness about long term use of medicinal plants. Most of the herbs mentioned by the participants were household names that are frequently used in the kitchens of Tamil Nadu. Many of these herbs like *Syzygium aromaticum*, *Azadirachta indica*, *Piper nigrum* and *Nigella sativa* have been clinically evaluated in a number of health conditions demonstrated safety and general utility among all masses. *S. aromaticum* has showed good bactericidal and bacteriostatic activities against *Plasmodium*, *Babesia*, *Theileria* parasites, Herpes simplex, and hepatitis C viruses.

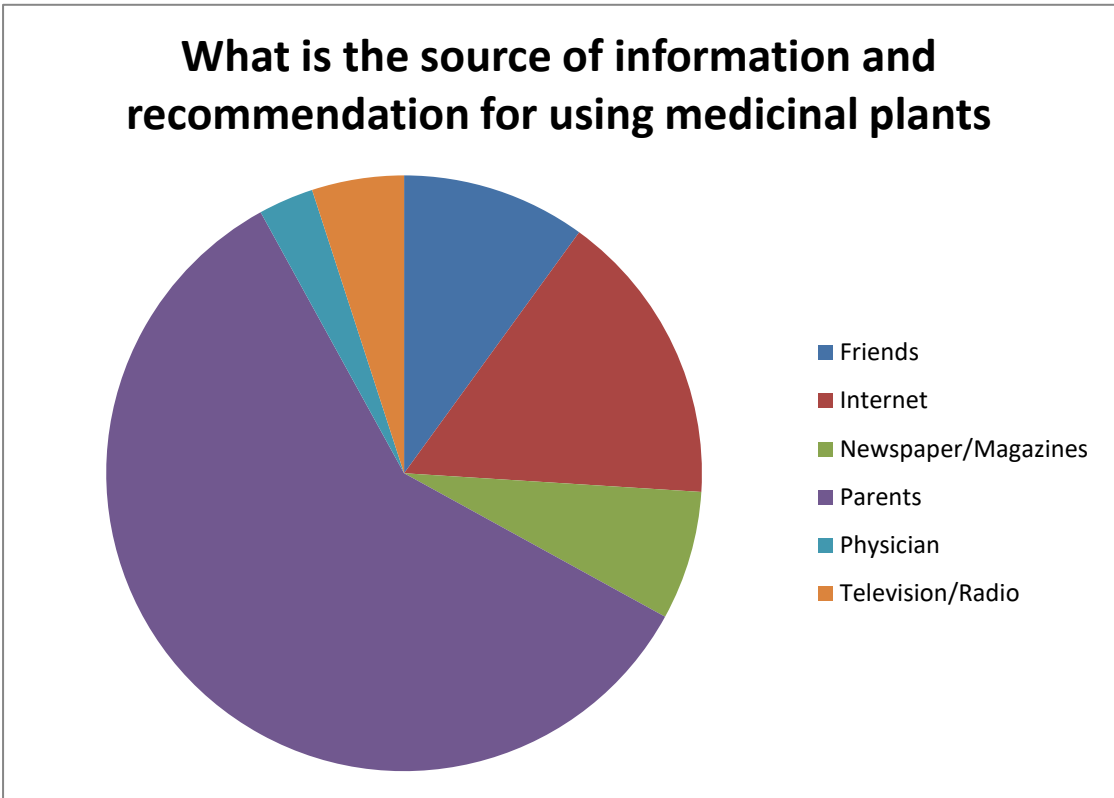


Figure 1: Data on the source of information about traditional medicinal plants

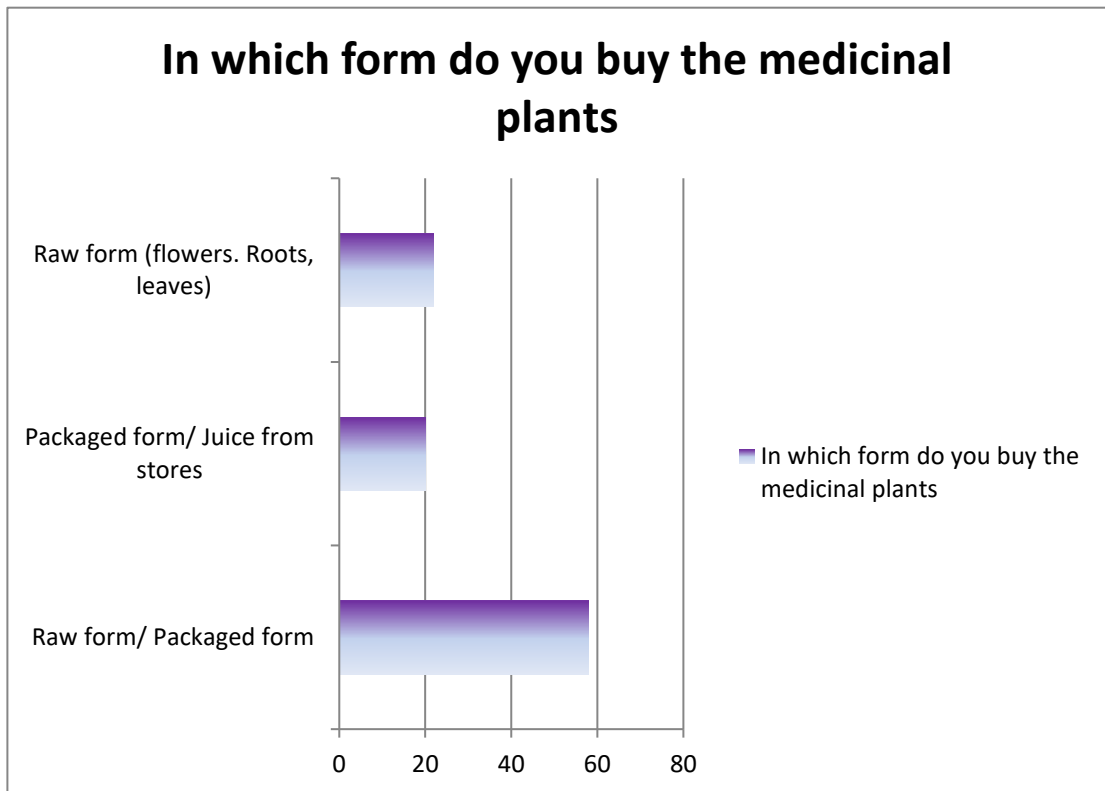


Figure 2: Form in which the traditional medicinal plants are purchased

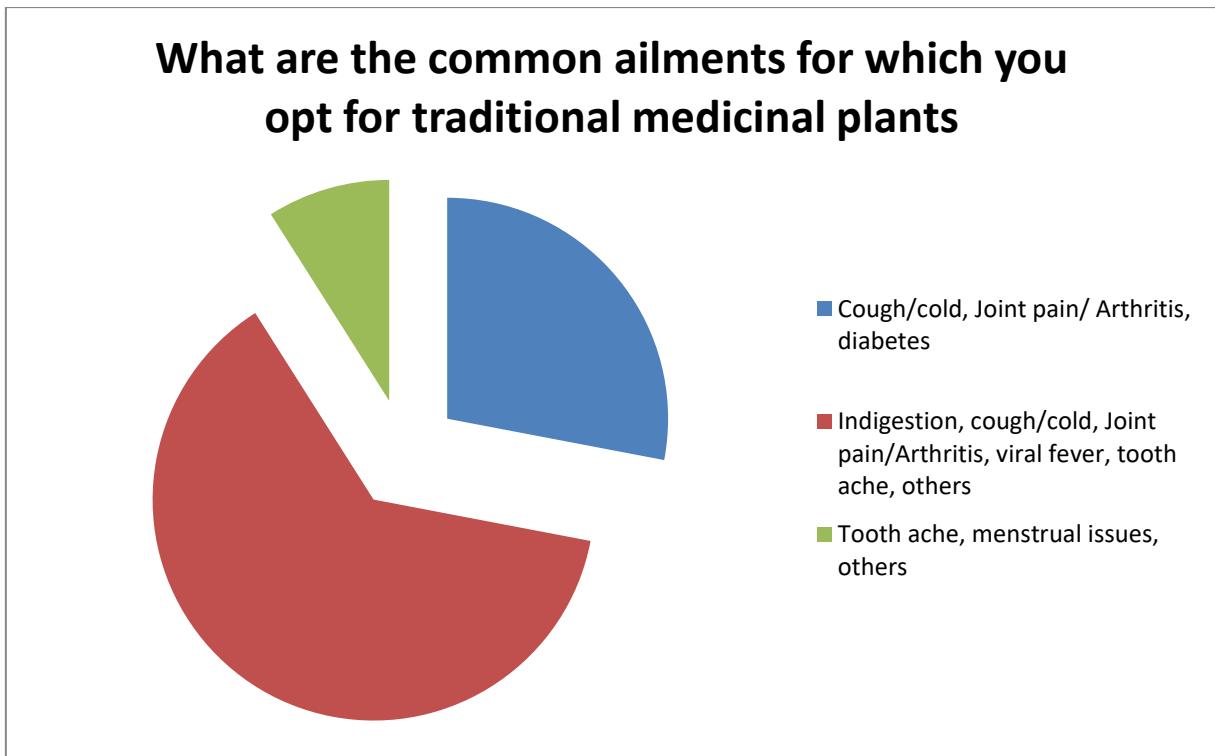


Figure 3: Common ailments for which the traditional medicinal plants are used

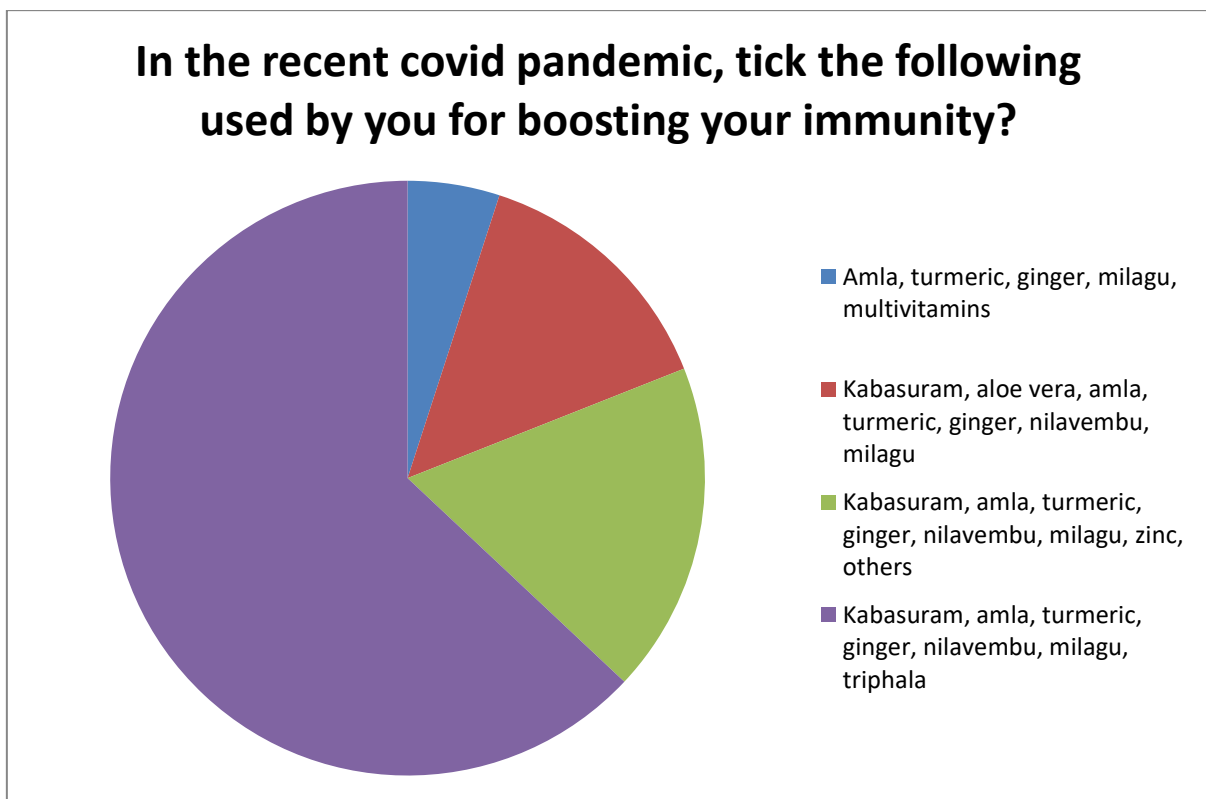


Figure 4: Covid pandemic and the use of traditional medicinal plants to boost immunity

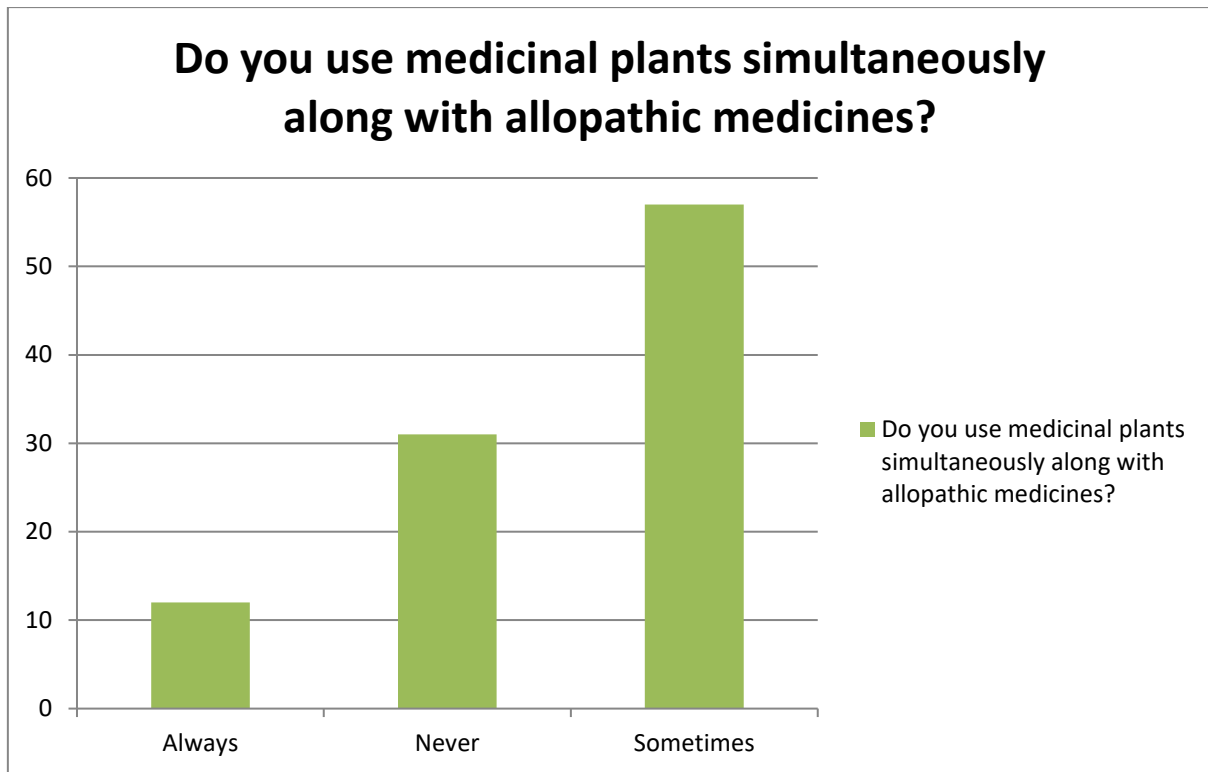


Figure 5: Participant’s usage of traditional medicinal plants along with allopathic medicines

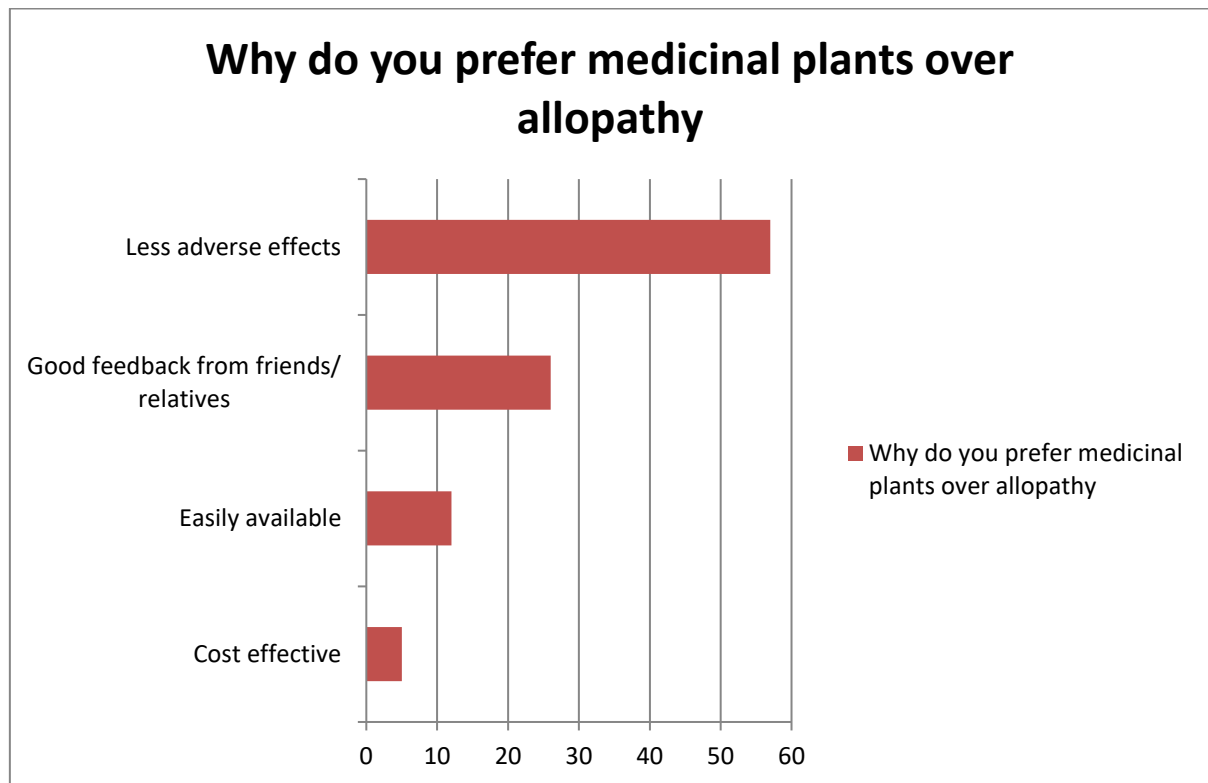


Figure 6: Reason for preferring traditional medicinal plants over allopathy

It also exhibits analgesic effect by activating chloride and calcium channels in ganglionic cells and is a well-documented solution for toothache and joint pain [7]. Quercetin and β -sitosterol are polyphenolic flavonoids found in the fresh leaves of *Azadirachta indica* (neem) and are known to have antifungal and antibacterial activities. Studies have showed that lyophilized powder of the neem extract for 10 days at the dose of 30 mg twice daily showed significant decrease in gastric acid secretion and can heal duodenal ulcers [8]. In our study the most common ailments for which the subjects used TMP were cough and cold followed by indigestion and joint pain. Similar results were documented from previous studies by Picking et al and Delgoda et al. Both studies found that cough and cold were the most common ailments for which the populations preferred herbal medicines. Medicinal plant use was highest (70 to 100%) among people who suffered from cold, fever, hypertension, headache, uterus problems, injuries, and urinary tract problems (including sexually transmitted diseases) [9,10] (Fig 3). A good majority of 28% of subjects in our study used medicinal plants for diabetes. Our results were similar to earlier studies where high usage of medicinal plants for diabetes was observed. Diabetes patients often used bitter vegetables and tonics to ease their symptoms. Research on some of these species (e.g., *Phyllanthus amarus* and *Momordica charantia*) has confirmed their ability to lower blood glucose levels. The frequent use of bitter plants to prevent diabetes was also reported among urban citizens in Nigeria, Jamaica, and among Ghanaian and Surinamese migrants in The Netherlands [11, 12].

A good number of participants stated that they never consulted a physician before using TMP and a majority of 57% used TMP along with allopathic medicines. 98% of the participants said that their usage of traditional medicinal plants has increased after the covid 19 pandemic. (Fig 4) During the covid lockdowns when clinics and hospitals were closed for general consultations, many participants began using medicinal plants for various ailments. In the present study, 63% used TMPs like kabasura kudineer, amla, turmeric, ginger, nilavembu, triphala and *Piper nigrum* to boost their immunity during the pandemic. A majority of 95% of subjects used kabasuram kudineer. Our results were similar to a study done previously by Bala in 2021 who stated that 70% of subjects in his study used kabasura kudineer to boost their immunity during covid-19 pandemic [13]. A sudden increase in interest on TMP was evident in the pandemic period due to a lack of evidence based therapeutic options in allopathy. The hesitation towards vaccination was also an essential factor that propelled populations towards easily available traditional plant-based medications. When asked if they believed in the efficacy of traditional medicinal plants, 85% said they believed in the efficacy and 15% said they were not sure. People from India have always retained their age-old belief in TMP for various diseases and this is fundamental reason for them to turn towards complimentary medicines for their ailments. The science of complementary and alternative medicine has been substantially passed on over generations predominantly by the efforts of elderly people who verbally disseminate their knowledge. This explains how people's belief in TMP plays an important role in survival of this science beyond time. A significant number of participants (57%) preferred TMP over allopathic medicines for its lesser adverse effects. (Fig 6) The other

reasons for using TMPs were that it is easily available, cost effective and is suggested and preferred by friends/relatives. Our results were similar to previous studies which documented that subjects used traditional medicinal plants because they were more effective, had fewer side effects than prescription medicine, and were safe because of their natural origin. Similar results were brought forward by herbal medicine users in Brazil, Peru, and Jamaica, UK, Netherlands, and USA [14, 15]. Though TMPs from different countries are considered to be safe and healthy, majority of medicinal plant material are harvested from the wild, where intrinsic and extrinsic factors result in varied production of phytochemical constituents. Such plant materials in raw form with inconsistent concentrations of biologically active compounds may affect the efficacy and safety of the medicine. Some biologically active secondary metabolites synthesized by plants may be mutagenic, genotoxic or carcinogenic. Further studies are needed to evaluate the safety of TMPs from different geographical locations. Quality control in the form of strict screening, standardization, packaging and labelling should be followed while selling these plant-based medicines in shops. Guidelines for registration and licensing of plant-based medicines should be strictly adhered to ensure the safety of customers. ⁽¹⁶⁾

4. Conclusions

The present study is an attempt to assess the utilization of traditional medicinal plants among urban population and their attitudes, beliefs and perceptions surrounding it in the pandemic era. We found high percentage of knowledge about various species of traditional medicinal plants among the subjects recruited in the study. Such studies will help establish the knowledge of medicinal plants and make sure quality research is carried out by scientists to evaluate their efficacy for different ailments. Clinical trials have to be conducted by researchers across the country to document the efficacies and drug interactions of various plant species.

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