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ASSESSMENT OF THE APPLICABILITY OF TRADITIONAL MEDICINAL PLANTS AGAINST THE EFFECTS OF COVID-19 INFECTION

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ABSTRACT

This research investigates the utilization of traditional medicinal plants during the COVID-19 pandemic among Indian youths. A cross-sectional survey of 335 participants reveals high usage (86.6%) of plants like *Ocimum sanctum* (Tulsi), *Zingiber officinale* (Ginger), *Tinospora cordifolia* (Giloy), and *Azadirachta indica* (Neem), primarily consumed as tea (65.1%). The study highlights strong community beliefs in the safety and efficacy of these plants (89.3%) over conventional treatments, influenced by traditional knowledge and online sources. Challenges include limited access to accurate usage information (21.2%). These findings emphasize the cultural significance and potential benefits of integrating traditional medicine into evidence-based healthcare strategies for managing global health crises like COVID-19.

Keywords: COVID-19, Traditional medicinal plants, *Ocimum sanctum*, *Zingiber officinale*, *Tinospora cordifolia*, *Azadirachta indica*, India, Community beliefs, Tea consumption, Evidence-based healthcare.

Introduction

The COVID-19 pandemic has catalysed a global quest for effective treatments, rekindling interest in traditional medicinal plants for their potential therapeutic benefits. Across cultures, including in India, traditional medicine has long relied on plant-based remedies to manage various ailments (Chopra *et al.*, 2020; Bashir *et al.*, 2020).

This review explores the current literature on the application of traditional medicinal plants in the context of COVID-19, with a particular focus on their use and relevance in Indian healthcare practices.

Traditional medicinal plants hold deep cultural roots and have been integral to healthcare systems worldwide for centuries. Valued for their historical use and perceived effectiveness, these plants have gained

prominence for their purported antiviral, immunomodulatory, and respiratory health-supporting properties during the COVID-19 crisis (Dhama *et al.*, 2020; Rahman *et al.*, 2021).

Among the prominent traditional medicinal plants studied for their potential against COVID-19 are Tulsi (*Ocimum sanctum*), Ginger (*Zingiber officinale*), Giloy (*Tinospora cordifolia*), and Neem (*Azadirachta indica*). These plants are recognized for their diverse pharmacological properties, including antiviral actions and immune system modulation, which are particularly relevant in combating respiratory infections such as COVID-19 (Chopra *et al.*, 2020; Bashir *et al.*, 2020).

In India, where Ayurveda and other traditional medicinal practices have a rich heritage, the widespread use of medicinal plants during the pandemic reflects cultural beliefs and historical

practices (Goyal *et al.*, 2020). Understanding their role in Indian healthcare traditions provides valuable insights into their potential integration into modern evidence-based healthcare strategies.

Despite their cultural significance, the scientific validation of traditional medicinal plants against COVID-19 remains an area of ongoing research. Robust clinical trials are essential to establish their efficacy, safety profiles, optimal dosage forms, and potential interactions with conventional treatments (Pulido *et al.*, 2022). Such research endeavours are crucial to bridging the gap between traditional knowledge and modern evidence-based medicine, ensuring informed healthcare decisions during global health crises.

This review aims to synthesize current knowledge on the use of traditional medicinal plants against COVID-19, highlighting their potential contributions to global health strategies, particularly within the context of Indian traditional medicine practices.

The COVID-19 pandemic has heightened interest in alternative treatments, particularly traditional medicinal plants, for their potential in managing and preventing infections. This review synthesizes current literature on the application of traditional medicinal plants, focusing on their relevance in Indian contexts.

Traditional Medicinal Plants and Their Role

Traditional medicine, rooted in cultural practices, has long utilized medicinal plants for various ailments. During the COVID-19 crisis, several plants have gained attention for their purported antiviral and immune-boosting properties.

- **Tulsi (*Ocimum sanctum*):** Known as "Holy Basil" in India, Tulsi is valued for its immunomodulatory and antiviral effects. It is commonly used to support respiratory health and immunity, which are critical during respiratory infections like COVID-19 (Chopra *et al.*, 2020).
- **Ginger (*Zingiber officinale*):** Integral to Indian cuisine and traditional medicine, Ginger exhibits anti-inflammatory and antioxidant properties. It has been studied for its potential to alleviate respiratory symptoms and enhance immune function, beneficial in viral infections such as COVID-19 (Bashir *et al.*, 2020).
- **Giloy (*Tinospora cordifolia*):** A staple in Ayurvedic medicine, Giloy is recognized for its immunomodulatory and antiviral properties. It is believed to bolster the body's defenses against infections, potentially reducing the severity of viral illnesses (Dhama *et al.*, 2020).
- **Neem (*Azadirachta indica*):** Neem, widely used in Indian traditional medicine, possesses broad-spectrum antimicrobial properties. It has been investigated for its ability to enhance immune responses and combat respiratory infections, including those caused by viruses like COVID-19 (Rahman *et al.*, 2021).

Community Perceptions and Usage

In India, traditional medicinal plants have been embraced during the COVID-19 pandemic due to their perceived safety and effectiveness. Cultural beliefs and historical usage play a significant role in their widespread acceptance among communities (Goyal *et al.*, 2020).

Research Gaps and Future Directions

Despite their popularity, scientific validation through rigorous clinical trials remains limited for traditional medicinal plants in the context of COVID-19. Future research should prioritize studies to establish efficacy, safety profiles, optimal dosage forms, and potential interactions with conventional treatments (Pulido *et al.*, 2022). Collaboration between traditional healers, researchers, and healthcare providers is crucial to integrate these practices into evidence-based healthcare strategies effectively.

Materials and Methods

1. **Study Design:** This cross-sectional survey aimed to gather data on the use of traditional medicinal plants for preventing or treating COVID-19. It focused on understanding demographic distribution, treatment preferences, and factors influencing plant usage.
2. **Questionnaire Development:** A structured questionnaire was developed, covering demographic information, COVID-19 history, treatment methods, use of medicinal plants, information sources, decision-making factors, and perceptions of plant safety and efficacy. (**Pic. 1**)
3. **Sampling:** Participants were recruited through convenience sampling. The survey was distributed online via Google Forms to ensure broad accessibility, targeting adults with experience in COVID-19 or knowledge of traditional medicinal plants.
4. **Data Collection:** Data was collected anonymously through Google Forms, shared via email, social media, and relevant online forums to reach a diverse audience.
5. **Ethical Considerations:** Ethical approval was obtained from the institutional review board.

Participants were informed about the study's purpose, and consent was obtained prior to participation. Respondent confidentiality was strictly maintained.

6. **Data Analysis:** Quantitative data were analysed using descriptive statistics to summarize demographic profiles and response frequencies. Qualitative data from open-ended questions underwent thematic analysis to identify common themes related to plant use for COVID-19.
7. **Validity and Reliability:** The questionnaire underwent pre-testing to ensure clarity and relevance, with adjustments made based on pilot feedback. Reliability was assessed through internal consistency of survey items.
8. **Limitations:** The study's reliance on self-reported data may introduce recall or social desirability biases. Additionally, the convenience sampling method may limit the generalizability of findings beyond the surveyed population.

Results

A total of 335 respondents participated in the study, predominantly aged between 11-20 years (63.6%) and primarily female (53.4%). Urban participants constituted the majority (57.3%) compared to rural participants (42.7%). (**Fig. 1, 2, 3**)

Regarding COVID-19 experiences, 45.7% of participants reported a diagnosis, with 80.6% opting for home/self-care treatment. A significant majority (86.6%) considered or used traditional medicine or medicinal plants to enhance immunity against COVID-19, with Tulsi (91.7%), Ginger (60.3%), Giloy (54.5%), and Neem (53.8%) being the most cited plants.

Tea (65.1%) were the preferred form for using medicinal plants, followed by extracts (22.1%) and infusions (12.8%). Participants often relied on traditional knowledge (59.4%) and online sources (17.3%) to learn about the benefits of medicinal plants, though 21.2% struggled to find accurate usage information. (**Fig. 4 to 9**)

Belief in the safety of medicinal plants over conventional treatments was strong (89.3%), particularly influenced by traditional sources (79.3%) and online information (31.6%). The overwhelming majority (92.8%) supported further research on

medicinal plants for COVID-19, highlighting a need for more scientific exploration in this area.

Discussion

This study highlights the prevalent use of traditional medicine and medicinal plants among a predominantly young, urban population during the COVID-19 pandemic. A significant number of participants reported a COVID-19 diagnosis (45.7%), with home/self-care treatments being the preferred choice (80.6%). Tulsi, Ginger, Giloy, and Neem emerged as popular choices for enhancing immunity (86.6%), primarily consumed in tea form (65.1%).

Despite the reliance on traditional knowledge and online sources, many participants faced challenges in accessing accurate usage information (21.2%). Strong beliefs in the safety of medicinal plants over conventional treatments (89.3%) were influenced by traditional and online sources. The overwhelming majority supported further research on medicinal plants for COVID-19 (92.8%), indicating a community-driven interest in integrating traditional practices with evidence-based healthcare.

These findings underscore the need for reliable information dissemination and collaborative research efforts to optimize the role of traditional medicine in public health strategies.

Proforma of Questionnaire

Questionnaire

1. What is your Age?
2. What is your Gender?
3. Where do you live?
4. Have you ever been diagnosed with COVID-19?
5. What is your treatment method for COVID-19?
6. Have you personally used or considered using Traditional Medicine/Medicinal plants to prevent/boost your immunity or treat COVID-19?
7. If yes, please specify which plant(s).
8. In which form is the plant preferred?
9. Have you used traditional medicinal plants for health purposes in the past?
10. How did you learn about the potential benefits of these medicinal plants for COVID-19?
11. What factors influenced your decision to use medicinal plants for COVID-19?
12. Were you able to obtain accurate information about the correct usage and dosage of medicinal plants for COVID-19?
13. Do you believe that medicinal plants are a safer alternative to conventional treatments for COVID-19? If yes, mention the source.
14. Do you believe that more research should be conducted on the use of medicinal plants for COVID-19?
15. Any additional comments, experiences, or suggestions related to medicinal plants usage in the context of COVID-19.

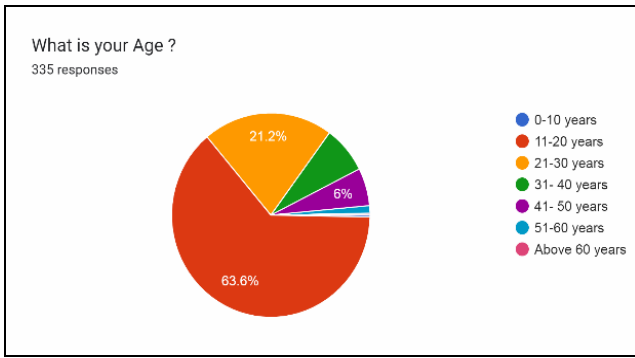


Fig. 1: Age

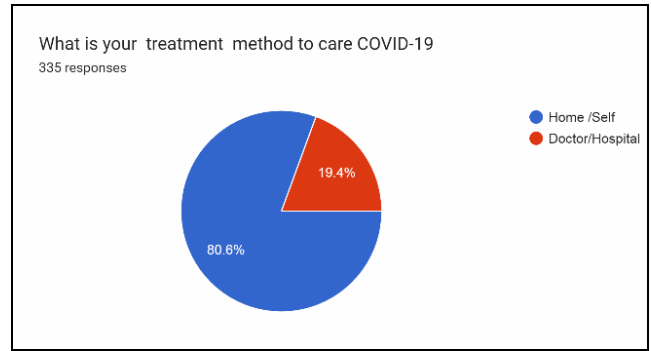


Fig. 5: Treatment method

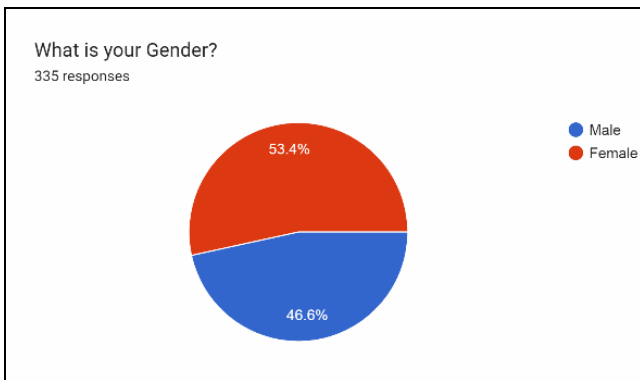


Fig. 2: Gender

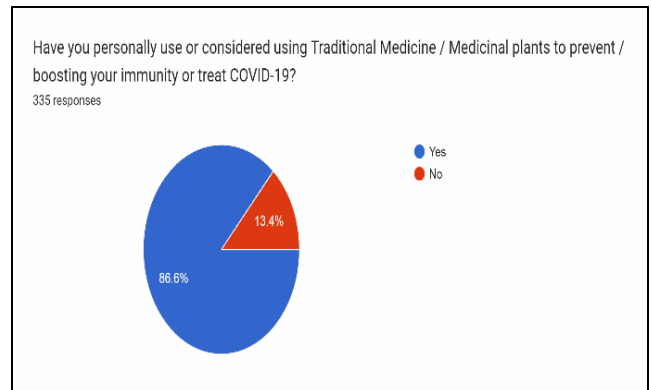


Fig. 6: Use of traditional medicines

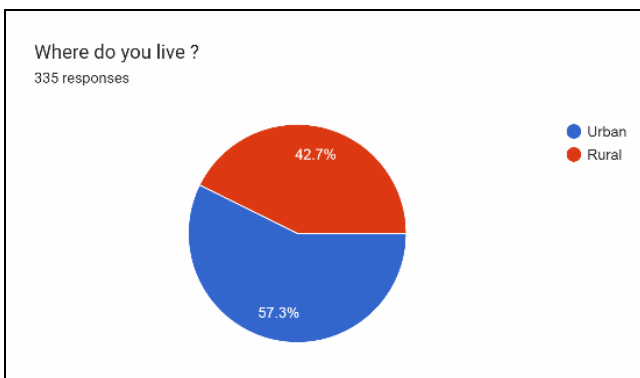


Fig. 3: Residence

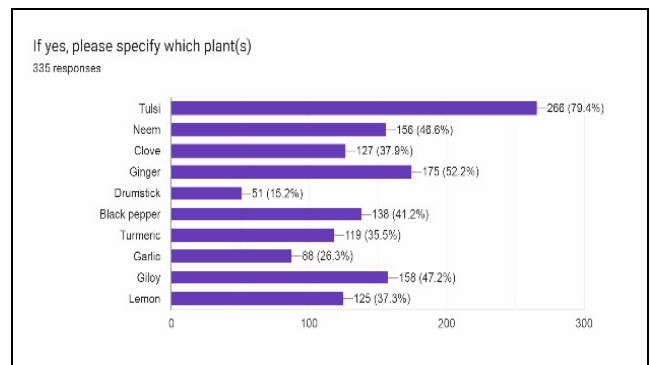


Fig. 7: Plant usage

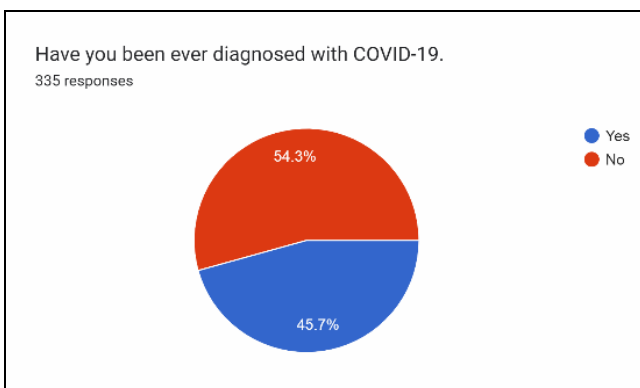


Fig. 4: Diagnosis

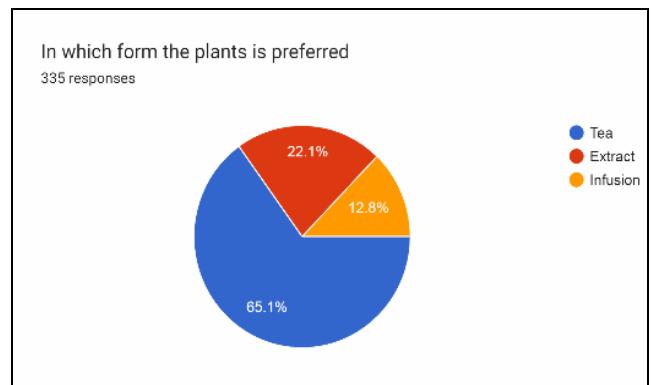


Fig. 8: Preparation

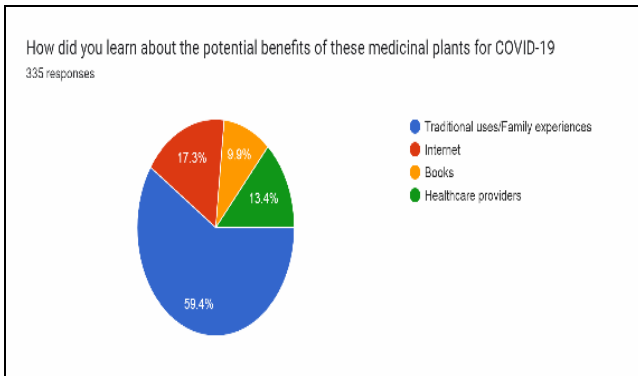


Fig. 9: Source of information

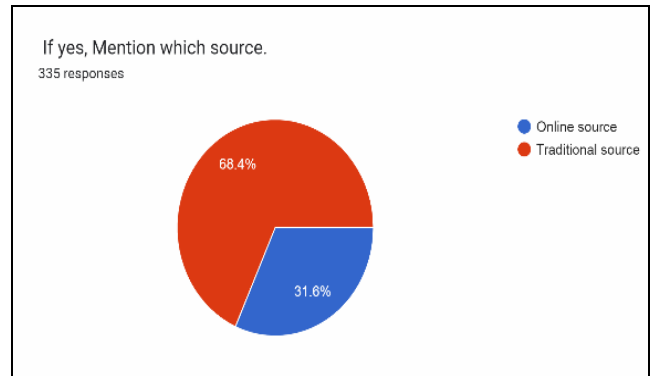


Fig. 12: Source of informations

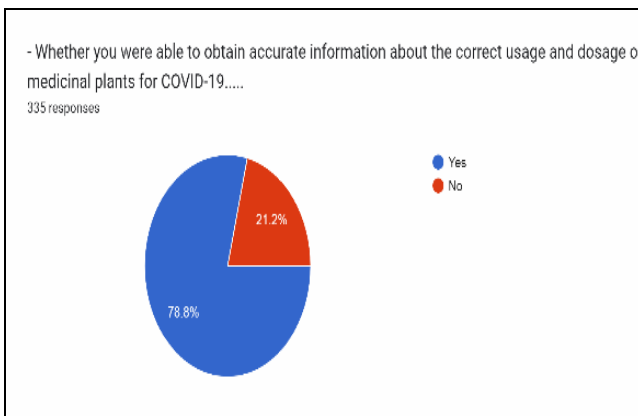


Fig. 10: Knowledge of applicability

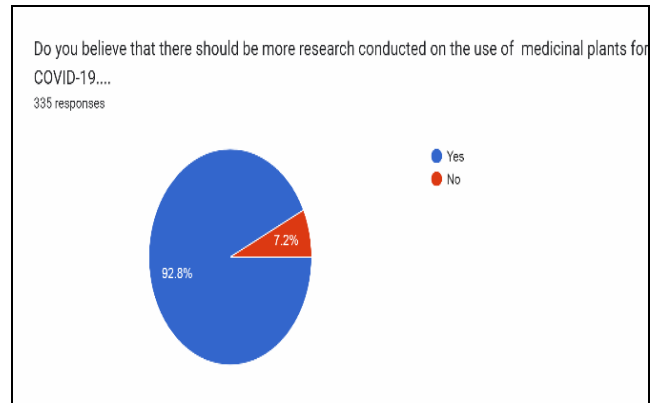


Fig. 13: Future perspectives of study

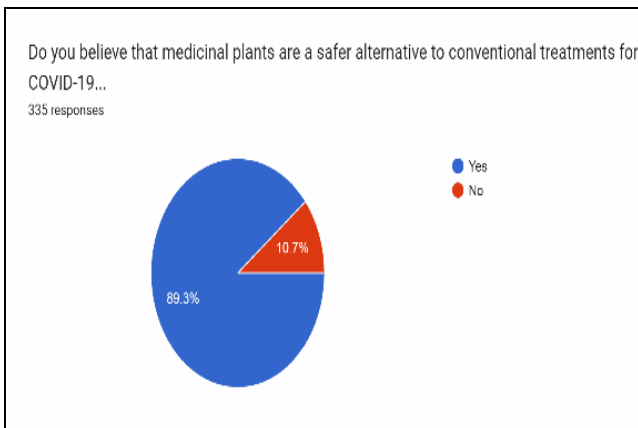


Fig. 11: Plants as alternative medicine

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