

Traditional Knowledge and Current Usage Patterns of Medicinal Plants: A Survey-Based Study

Reena Rastogi

Assistant Professor, Department of Botany
R. B. A. Government Degree College, Gajraula.

Abstract: Medicinal plants remain an important component of household healthcare and traditional medical knowledge in India. This cross-sectional online survey assessed knowledge sources, procurement practices, frequency and purpose of medicinal-plant use, preparation methods, perceived effectiveness, barriers to utilization, and attitudes toward further learning among 214 respondents. Books and formal education were the leading reported source of knowledge (113/214; 52.8%), followed by family tradition (60/214; 28.0%) and traditional healers (50/214; 23.4%). Home gardens were the most frequently reported procurement source (109/214; 50.9%). 80 respondents (37.4%) reported daily use. Cold/cough (46.3%), skin problems (36.0%), and fever (33.2%) were the leading ailments for which medicinal plants were reportedly used. Tulsi (75.2%), Aloe vera (56.1%), and Neem (44.4%) were the most frequently reported plants. A total of 148 respondents reported increased use during the COVID-19 pandemic; this corresponds to 69.2% of the sample. Perceived effectiveness was generally favorable, with 132 respondents (61.7%) rating it 4 or 5 on a five-point scale. Lack of knowledge (42.1%) and preference for modern medicine (36.4%) were the principal barriers. Importantly, 198 respondents (92.5%) expressed interest in learning more about medicinal plants. The findings indicate continued community interest in medicinal plants and highlight the need for evidence-based education, responsible use, quality control, and conservation-oriented home cultivation. Because the study used a voluntary online convenience sample, the findings should not be generalized to the wider population without further representative studies.

Keywords: Medicinal plants; traditional knowledge; ethnobotany; usage patterns; home garden; survey; COVID-19; public perception.

I. INTRODUCTION

Medicinal plants have been associated with human healthcare for centuries and remain important sources of traditional remedies and pharmacologically active compounds. Traditional knowledge concerning medicinal plants is embedded in cultural practices and is transmitted through families, healers, written texts, education, and increasingly through mass and digital media. In India, medicinal-plant use occurs within established systems such as Ayurveda, Siddha, and Unani, as well as diverse local and household practices. Reviews of Indian ethnobotany have documented extensive medicinal-plant knowledge and emphasized the importance of recording and preserving such knowledge (Ayyanar & Ignacimuthu, 2011; Jain, 2007). The World Health Organization has emphasized the importance of traditional medicine and the need for appropriate standards of safety, quality, and evidence-based evaluation (World Health Organization, 2013). The importance of medicinal plants extends beyond household healthcare. Traditional knowledge can contribute to biodiversity conservation, bioprospecting, and the discovery of pharmacologically useful compounds. Fabricant and Farnsworth (2001) reported that, among 122 plant-derived compounds used as drugs, 80% had ethnomedical uses identical or related to the current uses of the active plant constituents, highlighting the research value of traditional

medicinal knowledge. At the same time, traditional claims should not automatically be interpreted as proof of clinical efficacy; safety, dosage, identification, preparation, and drug–herb interactions require appropriate scientific evaluation. Knowledge transmission is also changing. Formal education and written resources may complement or replace oral family transmission, while urbanization and changing healthcare preferences can alter the frequency and context of medicinal-plant use. Home cultivation may provide convenient access to commonly used plants and can potentially reduce collection pressure on wild populations, although cultivation and harvesting practices themselves need to be sustainable.

The COVID-19 pandemic generated renewed public interest in traditional and plant-based approaches to health. The present survey therefore included a retrospective question asking respondents whether their medicinal-plant use had increased during the COVID-19 pandemic. This question measures respondents' reported change in use and should not be interpreted as evidence that medicinal plants prevent or treat COVID-19.

OBJECTIVES

- To assess the level and major sources of public knowledge regarding medicinal plants.
- To document current procurement and household usage patterns, including frequency, ailments treated, and preparation methods.
- To identify commonly used medicinal plants and assess respondents' perceived effectiveness.
- To examine barriers to access and utilization of medicinal plants.
- To assess reported changes in medicinal-plant use during the COVID-19 pandemic and interest in further learning about medicinal plants.

II. MATERIALS AND METHODS

1 Study Design and Study Area

A descriptive, cross-sectional online survey was conducted in June 2021 among respondents from Gajraula, Amroha, Uttar Pradesh, India. Gajraula is a Nagar Palika Parishad in Amroha district, Uttar Pradesh. The survey was conducted using a structured questionnaire administered through Google Forms. The questionnaire was distributed through social media, academic groups, and community networks. The study therefore represents a voluntary convenience sample rather than a probability-based sample.

2. Study Population and Sample Size

A total of 214 respondents participated. Inclusion criteria were age 18 years or above, willingness to participate and ability to understand the questionnaire. Incomplete responses and respondents below 18 years were excluded. Demographic characteristics should be reported in a separate table if the original Google Forms dataset is available.

3. Questionnaire

The questionnaire was developed after reviewing literature on ethnobotany and traditional medicine and was pre-tested on 10 individuals for clarity and relevance. It contained four sections: (A) demographic information; (B) knowledge and sources; (C) usage patterns; and (D) attitudes and perceptions. Multiple-choice and open-ended questions were included.

4. Data Collection

The questionnaire was administered using Google Forms. A short study description and confidentiality statement were provided. Participation was voluntary and respondents could discontinue participation at any time.

5. Data Analysis

Responses were compiled in Microsoft Excel and analyzed using descriptive statistics. Frequencies and percentages were calculated using 214 as the denominator for the reported count-based results. For perception of effectiveness, a five-point Likert scale was used, with 1 = not effective and 5 = very effective. The reported mean effectiveness score was 3.66. No inferential statistical tests were conducted.

6. Ethical Considerations

Informed consent was obtained at the beginning of the online questionnaire. No personal identifiers were collected. The demographic distribution (age, gender, education and occupation) was not included in the supplied dataset; therefore, these variables have not been fabricated in this manuscript.

III. RESULTS

The survey included 214 respondents. Several questions allowed more than one response; therefore, percentages for such questions are not expected to total 100%. Percentages below have been recalculated from the supplied counts to one decimal place.

Table1. Primary sources of knowledge about medicinal plants.

Source	n	%
Books/Education	113	52.8
Family Tradition	60	28.0
Traditional Healers	50	23.4

Books/education were the leading reported source of knowledge (52.8%), followed by family tradition (28.0%) and traditional healers (23.4%).

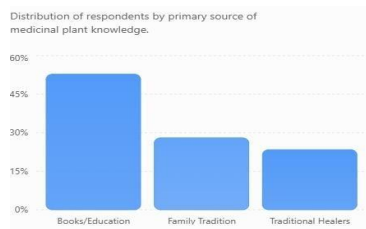


Table2. Reported sources of Procurement medicinal plants.

Procurement source	n	%
Home Garden	109	50.9
Market/Shop	73	34.1
Wild Collection	44	20.6

Home gardens were the most frequently reported source (50.9%), followed by markets/shops (34.1%) and wild collection (20.6%).

Table 3. Frequency and Common Purpose of Medicinal Plant use

Parameter	n	%
Daily use	80	37.4
Cold/Cough	99	46.3
Skin problems	77	36.0
Fever	71	33.2

Daily use was reported by 37.4% of respondents. Cold/cough, skin problems and fever were the most frequently reported ailments.

Table 4. Frequently used medicinal plants at home.

Plant	n	%
<i>Ocimum tenuiflorum</i> (Tulsi)	161	75.2
<i>Aloe vera</i>	120	56.1
<i>Azadirachta indica</i> (Neem)	95	44.4
<i>Mentha sp.</i> (Pudina)	83	38.8
<i>Zingiber officinale</i> (Ginger)	82	38.3

Tulsi was the most frequently reported household medicinal plant, followed by Aloe vera, Neem, Pudina and Ginger.

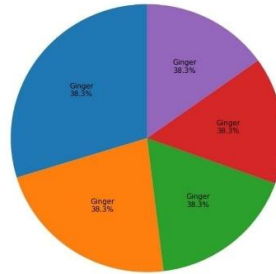


Figure 2. Frequently used medicinal plants at home.

Table 5 Preparation Method

Preparation method	n	%
Paste/Powder	92	43.0
Decoction	89	41.6

Paste/powder and decoction were the most frequently reported preparation methods among the supplied responses.

Table 6 Perceived Effectiveness

Effectiveness response	n	%
Very Effective (5)	86	40.2
Rating 4	46	21.5
Rating 4 or 5 (combined)	132	61.7

The supplied dataset reports a mean effectiveness score of 3.66. A total of 132 respondents (61.7%) selected a rating of 4 or 5. These are perceptions and should not be presented as clinical evidence of efficacy.

Table 7. Major barriers to Medicinal Plant access and utilization.

Barrier	n	%
Lack of Knowledge	90	42.1
Preference for Modern Medicine	78	36.4
High Cost	66	30.8

Lack of knowledge was the leading barrier, followed by preference for modern medicine and high cost.

Table 8. Reported change in medicinal-plant use during the COVID-19 pandemic

Response	n	%
Increased use	148	69.2
No increase/other	66	30.8

The supplied count of 148 corresponds to 69.2%, not 69.8%. This correction should be used consistently throughout the manuscript.

Table 9. Interest in Further Learning About Medicinal Plants

Response	n	%
Interested to learn more	198	92.5
Not interested	16	7.5

Table 10. Consolidated Key Findings

Parameter	Category	n	%
Knowledge source	Books/Education	113	52.8
Knowledge source	Family Tradition	60	28.0
Procurement	Home Garden	109	50.9
Frequency	Daily	80	37.4

Ailment	Cold/Cough	99	46.3
Ailment	Skin Problems	77	36.0
Ailment	Fever	71	33.2
Plant	Tulsi	161	75.2
Plant	Aloe Vera	120	56.1
Plant	Neem	95	44.4
Post-COVID change	Increased Use	148	69.2
Effectiveness	Rating 4 or 5	132	61.7
Barrier	Lack of Knowledge	90	42.1
Barrier	Modern Medicine Preference	78	36.4
Learning	Interested	198	92.5

IV. DISCUSSION

The findings show that medicinal-plant knowledge among respondents is supported by both formal and informal transmission. Books and education were the most frequently reported source, while family tradition remained important. This pattern is consistent with ethnobotanical literature showing that medicinal knowledge is transmitted through multiple channels and that written sources can increasingly influence knowledge selection and transmission (Ayyanar & Ignacimuthu, 2011; Jain, 2007).

The prominence of home gardens as a procurement source is noteworthy. Home cultivation provides convenient access to commonly used plants and can contribute to conservation when harvesting from wild populations is reduced and cultivation is managed responsibly. Previous studies have documented the importance of household and community plant resources in maintaining ethnobotanical knowledge and supporting local healthcare (Negi et al., 2015; Rai & Lalramnghinglova, 2011).

Tulsi, *Aloe vera*, and Neem were the leading household plants in this survey. Their prominence is compatible with the established place of these plants in Indian traditional medicine. However, frequency of use should not be equated with proven clinical efficacy. Ethnobotanical records can identify culturally important species and research priorities, but therapeutic claims require botanical authentication, phytochemical studies, pharmacological evaluation, and, where appropriate, well-designed clinical studies (Fabricant & Farnsworth, 2001; Rupani & Chavez, 2018).

The reported increase in medicinal-plant use during the COVID-19 pandemic is one of the notable findings. Since the survey was cross-sectional and the question was retrospective, the result reflects respondents' reported perception of change rather than a longitudinal measurement of actual consumption. The finding nevertheless indicates that the pandemic period may have influenced attitudes toward household remedies and plant-based health practices.

Perceived effectiveness was generally positive, and the mean score of 3.66 suggests moderate-to-favorable confidence in medicinal plants. However, perceived effectiveness can be influenced by cultural beliefs, personal experience, symptom resolution, placebo effects, and concurrent healthcare practices. Therefore, these perceptions should not be interpreted as evidence of clinical efficacy.

Lack of knowledge was the leading reported barrier, while preference for modern medicine was another important barrier. These results suggest that future educational programmes should focus on correct plant identification, appropriate preparation, safe use, contraindications, possible drug-herb interactions, and situations in which professional medical care is necessary. Such programmes can support informed use without displacing evidence-based medical treatment.

The high level of interest in further learning (92.5%) provides an important opportunity for developing scientifically informed educational programmes. Such programmes could combine local ethnobotanical knowledge with information on plant identification, responsible cultivation, safe household use, conservation, and the limits of traditional remedies.

V. LIMITATIONS

1. The sample was a voluntary online convenience sample and may overrepresent people with internet access and an interest in medicinal plants.

2. The study did not use probability sampling; therefore, findings cannot be generalized to the entire population.

Most findings were self-reported and may be affected by recall and response bias.

The study did not botanically authenticate plants used by respondents or verify preparation, dose, duration, or clinical outcomes.

Because the survey was cross-sectional and the COVID-19 question was retrospective, reported changes during the pandemic cannot establish causality.

Several questions allowed multiple responses; therefore, percentages for those questions are not expected to total 100%.

Demographic characteristics were not included in the supplied dataset and therefore could not be analyzed in the present manuscript.

VI. CONCLUSION

This survey demonstrates that medicinal plants continue to have a meaningful place in household healthcare among the respondents studied. Books and education, family tradition, and traditional healers were important sources of knowledge, while home gardens were the leading procurement source. Tulsi, *Aloe vera*, and Neem were the most frequently reported household medicinal plants, and most respondents expressed favorable perceptions of their effectiveness.

The reported increase in medicinal-plant use during the COVID-19 pandemic and the very high interest in further learning indicate an opportunity for structured public education. Future programmes should combine respect for traditional knowledge with scientific validation, accurate plant identification, safety information, quality control, and conservation-oriented cultivation. Larger, geographically representative studies using validated questionnaires and appropriate inferential analysis are recommended to confirm and extend these findings.

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