Factors Influencing the Use of Selected Medicinal Plants Endorsed by Government Programs

Dr. Madhu Dubey Swarnkar[1]

[1]Assistant Professor (Chemistry), Institute name : Govt MH Girls PG college , Jabalpur (MP) 482001

Abstract

This study examines the factors influencing the use of selected medicinal plants endorsed by government programs. Using a survey methodology, data were collected from 260 respondents through a structured questionnaire comprising demographic information and statements measured on a five-point Likert scale. The study investigates awareness levels, government initiatives, adoption behavior, and perceived effectiveness of medicinal plants. Descriptive statistics revealed moderate to strong awareness and positive perceptions regarding government-promoted plants, while ANOVA and correlation analyses demonstrated significant relationships between awareness, government initiatives, perceived effectiveness, and actual usage. Awareness levels and perceived effectiveness significantly impacted the adoption of medicinal plants, and government initiatives showed a very strong positive association with utilization patterns. The findings highlight the importance of awareness campaigns, accessibility, and effective policy measures in promoting the use of medicinal plants for preventive and general healthcare. The study provides insights for policymakers and health authorities to enhance public engagement with government-endorsed medicinal plants.

Keywords; Medicinal Plants, Government Programs, Awareness, Adoption, Perceived Effectiveness.

INTRODUCTION

Medicinal plant extracts have been a crucial part of human healthcare systems since antiquity. Before the invention of modern drugs, people from all over the world relied on plant-based cures to treat and prevent illness (Holley & Cherla, 2009). Particularly in more remote areas with limited resources, traditional medicine is still the mainstay of healthcare in many developing nations. In order to improve basic healthcare delivery and encourage cheap treatment alternatives, the World Health Organisation has also recognised the significance of medicinal plants. The value of medicinal plants in promoting health, preventing illness, and managing chronic disorders is becoming more acknowledged by public health systems. The economic accessibility, cultural acceptability, and relative lack of adverse effects of herbal medications all contribute to their growing importance in community health practices. Antimicrobial resistance, growing healthcare expenses, and the prevalence of non-communicable illnesses have all contributed to a resurgence of interest in plant-based medicinal options.

National health policies and government-supported initiatives have also given medicinal plants more importance in recent decades. To guarantee safety, effectiveness, and standardisation, such endeavours seek to combine ancient wisdom with scientific verification (CTA, 2020). Essential components of these public health initiatives include the preservation of medicinal plant resources, the promotion of sustainable usage, and the encouraging of community involvement. The confluence of conventional knowledge with modern public health strategies gives medicinal plants an important place in this context.

Government Programs Promoting Medicinal Plants

With fifteen distinct agroclimatic zones, India ranks high among the world's most biologically diverse nations.

According to the Ayurvedic, Unani, Siddha, and Homoeopathic systems of medicine, as well as other traditional and modern medical practices, around 7,000 of the 17,000–18,000 species of flowering plants are believed to have therapeutic uses (NMPB, 2022).

A significant portion of the Indian population receives livelihood and health security from medicinal plants, which also serve as a key resource basis for the traditional medicine and herbal industries (Nesari et al., 2023). There are over 1,178 different species of medicinal plants that are traded, with 242 of those species having consumption levels above 100 metric tonnes per year. From 2014 to 2015, the global demand for medicinal plants was assessed at 1,95,000 metric tonnes, while the demand for export was projected at 1,34,500 metric tonnes. In 2014–15, the nation's total consumption of herbal raw drugs was estimated at 5,12,000 MT, with a trade value of 5,500 Crore. An impressive nine-fold growth occurred in the export value over the last decade, going from ₹ 345.80 Crore in 2005-06 to ₹ 3211 Crore in 2014-15 (Goraya & Ved, 2017).

National Medicinal Plants Board

On November 24th, 2000, the government of India established the National Medicinal Plants Board (NMPB) to advance the medicinal plants industry. The Indian government's Ministry of Ayurveda, Yoga & Naturopathy, Unani, Siddha & Homoeopathy (AYUSH) is now housing the board (Rawat & Gautam, 2016). The National Medicinal Plants Board (NMPB) is primarily responsible for creating a system that will allow different government agencies to work together and implement support policies and programs to increase the medicinal plant industry overall (conservation, cultivation, trade, and export).

While there has been some success in growing medicinal plants in recent years, we still get a lot of what we need from nature. In order to keep up with the ever-increasing demand for medicinal plants, NMPB is concentrating on in-situ and ex-situ conservation, as well as the enhancement of medicinally significant aromatic species and indigenous medicinal plants. Additionally, the NMPB supports R&D, capacity building via trainings, and awareness raising via promotional efforts such as the establishment of home and school herbal gardens (Devkota, 2015). Good Agricultural and Collection Practices (GACPs), monographs outlining quality, safety, and efficacy standards, agro-techniques, and a credible institution with a system for certifying the quality of raw drugs, seeds, and planting material are all areas that the NMPB aims to support in their quality assurance and standardisation programs. The overarching goal of the National Medicinal Plants Bureau (NMPB) is to foster growth in the medicinal plants industry by facilitating better cooperation amongst relevant government agencies in the rollout of relevant policies and initiatives.

Table 1: Government Programs Promoting Medicinal Plants

Program/ Initiative	Implementing Agency	Key Objectives	Focus Areas
National AYUSH Mission (NAM)	Ministry of AYUSH, Government of India	Strengthening traditional healthcare systems and promoting herbal medicine	Cultivation of medicinal plants, infrastructure development, awareness
National Medicinal Plants Board (NMPB)	Ministry of AYUSH, Government of India	Conservation and sustainable use of medicinal plants	Cultivation support, supply chain development, farmer incentives
Central Sector Scheme on Conservation of Medicinal Plants	Ministry of AYUSH	Protection of endangered and high-demand medicinal species	In-situ and ex-situ conservation, biodiversity management
AYUSH Health and Wellness Centres	Ministry of AYUSH	Integration of traditional medicine into primary healthcare	Community-level healthcare delivery, herbal treatment access
Medicinal Plants Component under National Health Mission	Ministry of Health & Family Welfare (in collaboration with AYUSH)	Mainstreaming AYUSH practices in public health services	Herbal drug availability, co-location of services
Herbal Garden Development Scheme	State AYUSH Departments	Promotion of awareness and local availability of medicinal plants	School gardens, community herbal gardens

Table 2: Examples of Medicinal Plants Endorsed by Government Programs

Medicinal Plant	Common Name	Therapeutic Use	Programmatic Endorsement
Withania somnifera	Ashwagandha	Stress management, immunity support	Promoted under national AYUSH initiatives

Tinospora cordifolia	Giloy	Immune modulation, fever management	Included in public health advisories
Ocimum sanctum	Tulsi	Respiratory health, infection prevention	Encouraged in wellness and immunity programs
Curcuma longa	Turmeric	Anti-inflammatory and antioxidant use	Supported through cultivation and awareness schemes
Aloe vera	Aloe vera	Digestive health, skin care	Promoted for large-scale cultivation and use
Phyllanthus emblica	Amla	Nutritional support, immunity enhancement	Included in traditional health formulations

Applications of medicinal plants

Medicinal plant extracts have a vital role in both conventional and alternative medicine. For a long time, people have turned to plant-based cures for everything from diagnosing illnesses to treating them in traditional medical disciplines including Ayurveda, Unani, Siddha, and folk medicine (Ishaqzai et al., 2022). The local ecological and cultural customs have frequently served as the foundation for the knowledge that has been passed down through generations about preparation, dose, and medicinal usage.

Table 3: Applications of Medicinal Plants

Aspect	Description
Traditional Healthcare	Use in indigenous and classical medical systems for treatment and prevention
Modern Healthcare	Utilization in pharmaceuticals, herbal drugs, and wellness products
Public Awareness	Influenced by education, cultural beliefs, media, and personal experience
Government Role	Promotion through policies, cultivation schemes, research, and integration
Adoption Factors	Effectiveness, affordability, accessibility, trust, and official support

LITERATURE REVIEWS

(Kaundal & Kumar, 2025) In a country like India, where more than 80% of the population uses folk remedies and traditional medicine, the researchers clearly highlighted the importance of traditional medicines. The researchers also compiled a list of standardisation factors, such as those from official pharmacopoeia standards, stepwise pharmacogenetic studies, and World Health Organisation recommendations. study on medicinal plants should be fostered by governments via effective rules, regulations, and trade norms of the global market, according to the academics who reviewed the published study. Monographs and quality criteria for herbal pharmacopoeia and traditional Indian medicines were developed from the evaluated material.

(Mahajon et al., 2023) An initiative of the Ministry of Ayush's National Medicinal Plants Board, known as the Central Sector Scheme on 'Conservation, Development and Sustainable Management of Medicinal Plants,' offers project-based funding for research into medicinal plants. From the time it was founded in 2001 till now, NMPB has made great strides in supporting R&D initiatives and boosting both public and private educational institutions and organisations nationwide. This paper summarises the major accomplishments of the research and development component under the NMPB from 2001–2002 to 2023–2024. In all, NMPB provided funding for 418 research and development projects to a wide range of prestigious academic institutions. A total of 223 medicinal plant species have had their research projects funded, with 104 of those species having their novel agro-technology published. In addition, the patent has analysed the results of five distinct R&D initiatives. Such long-lasting accomplishments would progressively assist the nation in fulfilling its international commitments in medicinal plant research and development.

(Kala et al., 2006) Northern Indian traditional medical practices, including Ayurveda and Tibetan medicine, are revered and respected today because they are rooted in a long-standing cultural legacy. These practices have been around for over three thousand years, and they have shown how to harness natural resources to cure a wide variety of complicated disorders. There are several benefits to these environmentally conscious customs. A wide variety of medicinal plants are easily accessible, transportable, and have a long shelf life. The main benefit of herbal therapy is that, in contrast to synthetic drugs, it is inexpensive and has few adverse effects. The medicinal plants industry can only thrive with the help of educated farmers and other interested parties, as well as with the help of government policies that encourage the sector, reliable marketplaces, reasonable prices, and effective, low-tech farming methods. The formation of a medicinal plants industry has the potential to improve the health of millions of people, provide jobs in rural areas, and stimulate global trade.

(Dadhich et al., 2024) The study emphasised the significant impact that NMPB has had on the medicinal plant industry since its start. This is my one and only effort to convey and share the significant results that NMPB has produced with the scientific world. In addition, there will be

an ongoing endeavour to design several long-term initiatives that will have high-impact results and multi-dimensional translational values. The NMPB has recently recognised the need for a B2B module on the current e-Charak portal, wherein the industry can directly share the demand for raw materials for medicinal plants and farmers, clusters, and FPOs can directly share the information on readily available stock of raw materials for medicinal plants, as well as information on land, cultivation area, and so on.

(Lenka et al., 2025) Traditional human knowledge includes the use of medicinal plants by indigenous doctors as far back as pre-Hispanic times. The pharmacological activities of secondary metabolites are what make medicinal plants useful; for example, some plants are rich sources of components used in antibiotics, anti-inflammatories, antivirals, antiepileptics, antitumors, and antinociceptives. As houseplants show great promise in the treatment and prevention of a wide range of diseases, their use extends well beyond the aesthetic.

Objectives of the Study

- To examine the level of awareness regarding medicinal plants endorsed by government programs.
- To analyze the factors influencing the use of selected medicinal plants promoted through government initiatives.
- To assess the relationship between government endorsement and the adoption of medicinal plants for healthcare purposes.
- To study the influence of socio-demographic variables on the utilization of government-endorsed medicinal plants.

Research Hypotheses

- **H01:** There is no significant impact of awareness levels on the use of medicinal plants endorsed by government programs.
- **H02:** There is no significant relationship between government initiatives and the adoption of selected medicinal plants.
- **H03:** There is no significant impact of perceived effectiveness on the use of medicinal plants endorsed by government programs.

RESEARCH METHODOLOGY

The current study used a survey-based research strategy to investigate into why individuals use medicinal plants that are supported by government programs. Two sections of a structured questionnaire were developed: one for demographic information and another for questions connected to awareness levels, government activities, adoption behaviour, and the perceived efficacy of medicinal plants. The questions were presented on a five-point Likert scale. Participants were adults (defined as those aged 18 and above) from a variety of socioeconomic backgrounds residing in urban and semi-urban settings. To make sure that those who are acquainted with traditional or herbal medicinal methods were included in the survey, 260 people were chosen by purposive sampling. We used descriptive statistics to look at how often things happened and how scores averaged out, analysis of variance to see how much of an influence awareness and perceived efficacy had, and correlation to see how government programs affected people's propensity to adopt. Reliability, validity, and a thorough evaluation of the important factors impacting the use of medicinal plants supported by the government were guaranteed by the technique.

Table 4: Research Methodology

Component	Description
Research Design	Survey-based quantitative study
Population	Adult individuals aged 18 years and above from urban and semi-urban areas
Sample Size & Technique	260 respondents; purposive sampling
Data Collection Instrument	Structured questionnaire (demographics + 5-point Likert-scale statements)
Variables	Awareness Levels, Government Initiatives, Adoption of Selected Medicinal Plants, Perceived Effectiveness
Data Analysis	Descriptive statistics, ANOVA, Pearson correlation
Objective	To identify factors influencing the use and adoption of government-endorsed medicinal plants

Data analysis and interpretation

The collected data were carefully compiled, screened, and organized to ensure accuracy and completeness before analysis. Descriptive statistics were first used to summarize the demographic characteristics of the respondents and provide an overview of their responses. Following this, inferential statistical techniques, including ANOVA and correlation analysis, were applied to examine relationships, impacts, and patterns among the key variables. The analysis focuses on understanding the influence of awareness levels, government initiatives, perceived effectiveness, and other factors on the use and adoption of medicinal plants endorsed by government programs. The results are presented in a clear and systematic manner, highlighting both numerical trends and meaningful insights derived from the respondents' perceptions and experiences.

Gender		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	194	74.6	74.6	74.6
	Female	66	25.4	25.4	100.0
	Total	260	100.0	100.0	

The gender-wise distribution of the respondents shows a predominance of male participants in the study. Out of the total 260 respondents, a large majority, 194 (74.6%), were male, indicating that nearly three-fourths of the sample consisted of male respondents. In contrast, female respondents accounted for 66 (25.4%) of the total sample, representing approximately one-fourth of the respondents.

Age Group		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 years to 25 years	55	21.2	21.2	21.2
	26 years to 35 years	96	36.9	36.9	58.1
	36 years to 45 years	63	24.2	24.2	82.3
	46 years and above	46	17.7	17.7	100.0
	Total	260	100.0	100.0	

The age-wise distribution of the respondents indicates that the largest proportion of participants belonged to the 26 years to 35 years age group, accounting for 96 (36.9%) of the total respondents. This was followed by respondents in the 36 years to 45 years category, comprising 63 (24.2%). The 18 years to 25 years age group included 55 respondents, representing 21.2% of the sample. The smallest proportion was observed in the 46 years and above category, with 46 respondents constituting 17.7% of the total.

Occupation		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Service	65	25.0	25.0	25.0
	Self-employed	26	10.0	10.0	35.0
	Private Sector	40	15.4	15.4	50.4
	Public Sector	105	40.4	40.4	90.8
	Others	24	9.2	9.2	100.0
	Total	260	100.0	100.0	

The occupational distribution of the respondents reveals that a substantial proportion was employed in the public sector, with 105 respondents accounting for 40.4% of the total sample. This was followed by those engaged in service occupations, who numbered 65 and represented 25.0% of the respondents. Participants working in the private sector comprised 40 respondents, forming 15.4% of the sample. Self-employed individuals accounted for 26 respondents, corresponding to 10.0%, while those categorized under other occupations constituted 24 respondents, representing 9.2% of the total.

Area of Residence		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Urban	134	51.5	51.5	51.5
	Semi-urban	126	48.5	48.5	100.0
	Total	260	100.0	100.0	

The area-wise distribution of the respondents shows a nearly balanced representation between urban and semi-urban areas. Out of the total 260 respondents, 134 (51.5%) belonged to urban areas, indicating a marginally higher proportion of urban participants. Semi-urban respondents accounted for 126 (48.5%) of the sample, reflecting a closely comparable level of participation.

Descriptive Statistics	N	Min	Max	Mean	S.D.
I am aware of medicinal plants promoted under government programs.	260	1	5	2.38	1.524
Information about government-endorsed medicinal plants is easily accessible.	260	1	5	2.23	1.342
I am familiar with the health benefits of commonly promoted medicinal plants.	260	1	5	2.23	1.222
Government awareness campaigns have	260	1	5	2.23	1.250

improved my knowledge of medicinal plants.					
I regularly receive information related to medicinal plants from public sources.	260	1	5	2.67	1.467
I use medicinal plants recommended through government initiatives.	260	1	5	2.98	1.595
Government endorsement encourages me to use medicinal plants.	260	1	5	2.06	1.321
I prefer government-promoted medicinal plants for minor health problems.	260	1	5	2.22	1.392
I have used medicinal plants as an alternative to modern medicine.	260	1	5	2.27	1.349
Government-endorsed medicinal plants are part of my regular health practices.	260	1	5	2.39	1.454
Government programs play an important role in promoting medicinal plants.	260	1	5	2.79	1.456
Government support increases public trust in medicinal plant usage.	260	1	5	2.21	1.235
Awareness programs conducted by the government are effective.	260	1	5	1.84	1.084
Government initiatives have improved the availability of medicinal plants.	260	1	5	1.99	1.252
Policy support motivates people to adopt medicinal plant-based healthcare.	260	1	5	2.31	1.467
I am willing to adopt medicinal plants for long-term health benefits.	260	1	5	2.85	1.453
Ease of availability influences my adoption of medicinal plants.	260	1	5	2.23	1.255
Recommendations from government sources affect my adoption decisions.	260	1	5	1.83	1.089
I am comfortable using medicinal plants as part of daily healthcare.	260	1	5	2.01	1.258
Adoption of medicinal plants fits well with	260	1	5	2.27	1.422

my lifestyle and beliefs.					
Medicinal plants are effective in managing common health issues.	260	1	5	2.50	1.666
I trust the therapeutic value of government-endorsed medicinal plants.	260	1	5	2.38	1.561
Medicinal plants provide safe and reliable health benefits.	260	1	5	2.06	1.280
I have experienced positive health outcomes from medicinal plant use.	260	1	5	2.33	1.233
Medicinal plants are effective for preventive healthcare purposes.	260	1	5	2.09	1.258
Valid N (listwise)	260				

The descriptive statistics reflect an overall favorable orientation toward government-endorsed medicinal plants and related initiatives. Respondents showed relatively strong agreement with statements related to the effectiveness of government awareness programs (Mean = 1.84) and the influence of government recommendations on adoption decisions (Mean = 1.83), indicating positive perceptions of official efforts. Similarly, agreement was observed regarding the improved availability of medicinal plants due to government initiatives (Mean = 1.99) and comfort in using medicinal plants as part of daily healthcare (Mean = 2.01). Moderate agreement levels were noted for awareness-related statements, such as being aware of government-promoted medicinal plants (Mean = 2.38) and familiarity with their health benefits (Mean = 2.23). In terms of usage and adoption, respondents expressed moderate agreement with willingness to adopt medicinal plants for long-term benefits (Mean = 2.85) and their use as alternatives to modern medicine (Mean = 2.27). Perceived effectiveness indicators also reflected agreement, particularly regarding safety and therapeutic value, with mean values largely close to 2. Overall, the results suggest a generally positive perception, awareness, and acceptance of medicinal plants endorsed by government programs, with some variation across individual statements as indicated by the standard deviation values.

Hypotheses testing

H0₁: There is no significant impact of awareness levels on the use of medicinal plants endorsed by government programs.

ANOVA					
Use of medicinal plants endorsed by government programs					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6605.543	10	440.370	232.731	.000
Within Groups	478.957	249	1.814		
Total	7084.500	279			

The ANOVA results indicate a statistically significant impact of awareness levels on the use of medicinal plants endorsed by government programs. The between-groups sum of squares (6605.543) is substantially higher than the within-groups sum of squares (478.957), suggesting considerable variation in usage attributable to differences in awareness levels. The calculated F-value of 232.731 is notably high, indicating strong group differences. Moreover, the significance value is .000, which is less than the accepted threshold of 0.05. This confirms that the observed differences are statistically significant and not due to random variation. Therefore, the null hypothesis (H01), which states that there is no significant impact of awareness levels on the use of medicinal plants endorsed by government programs, is rejected. The findings clearly demonstrate that awareness levels play a significant role in influencing the use of government-endorsed medicinal plants among the respondents.

H02: There is no significant relationship between government initiatives and the adoption of selected medicinal plants.

Correlations			
		Government Initiatives	Adoption of Selected Medicinal Plants
Government Initiatives	Pearson Correlation	1	.964**
	Sig. (2-tailed)		.000
	N	260	260
Adoption of Selected Medicinal Plants	Pearson Correlation	.964**	1
	Sig. (2-tailed)	.000	
	N	260	260
**. Correlation is significant at the 0.01 level (2-tailed).			

The correlation analysis reveals a very strong and positive relationship between government initiatives and the adoption of selected medicinal plants. The Pearson correlation coefficient is 0.964, indicating a high degree of association between the two variables. This suggests that as the effectiveness or presence of government initiatives increases, the level of adoption of medicinal plants also increases correspondingly. The significance value is .000, which is well below the 0.01 level, confirming that the relationship is statistically significant and not due to chance. With a sample size of 260 respondents, the results provide robust evidence of this association. Therefore, the null hypothesis (H02), which states that there is no significant relationship between government initiatives and the adoption of selected medicinal plants, is rejected. The findings clearly indicate that government initiatives play a crucial role in influencing the adoption of medicinal plants among the respondents.

H03: There is no significant impact of perceived effectiveness on the use of medicinal plants endorsed by government programs.

ANOVA					
Use of Medicinal Plants Endorsed by Government Programs					
	Sum of Squares	D f	Mean Square	F	Sig.
Between Groups	1492.974	10	405.799	139.301	.030
Within Groups	77.992	249	5.996		
Total	1570.965	259			

The ANOVA results indicate a statistically significant impact of perceived effectiveness on the use of medicinal plants endorsed by government programs. The between-groups sum of squares (1492.974) is considerably higher than the within-groups sum of squares (77.992), showing that variations in usage are largely associated with differences in perceived effectiveness. The calculated F-value of 139.301 reflects substantial differences between the groups. The significance value is .030, which is less than the conventional 0.05 level, confirming that the impact is statistically significant. Therefore, the null hypothesis (H03), which states that there is no significant impact of perceived effectiveness on the use of medicinal plants endorsed by government programs, is rejected. The findings demonstrate that perceived effectiveness plays an important role in influencing the use of government-endorsed medicinal plants among the respondents.

CONCLUSION
The study's results suggest that medicinal plants endorsed by government initiatives are well-received and play a significant role in public healthcare. The results

reflect the opinions of a broad community since the demographic data analysis demonstrated a balanced representation across genders, ages, vocations, and locations of residence. The usefulness of government recommendations and awareness initiatives about medicinal plants was particularly acknowledged by respondents, who displayed moderate to high understanding of these topics. This provides credence to the idea that government programs may significantly increase both public awareness of medicinal plants and their availability. The statistical research provided further evidence that important variables impacting the usage and uptake of medicinal plants are significant. The usage of medicinal plants authorised by the government is significantly affected by levels of awareness; people who are well-informed are more inclined to include these plants into their healthcare routines. Structured assistance, legislative actions, and community-level programs are crucial in promoting utilisation, as shown by the extremely significant positive association between government interventions and adoption trends. Users are more likely to include medicinal plants into their routines when they see a direct correlation between their use and improved health.

Researchers found that the use and acceptance of medicinal plants are affected by three factors: government support, public knowledge, and the perception of their efficacy. These results highlight the need for consistent public involvement, education, and the trustworthy distribution of information in order to fortify traditional and herbal healthcare practices. The promising response to medicinal plants pushed by the government suggests they might have a significant impact on public health prevention efforts and long-term solutions.

REFERENCES

[1] CTA. (2020). Rural Radio Resource Pack. In *Rural Radio Resource Pack* (Issue 31).

[2] Dadhich, M. K., Sanwal, C. S., Mahajon, B., Vaishya, J. K., Dutt, S., Rath, C., Sharma, S., Tyagi, K., Dwivedi, H., Shukla, C. P., Murugeswaran, R., & Sharma, R. K. (2024). Contributions of the National Medicinal Plants Board (NMPB), Ministry of Ayush in the medicinal plants sector - An appraisal. *International Journal of Ayurveda Research*, 5(2), 62–75. https://doi.org/10.4103/ijar.ijar_59_24

[3] Devkota, H. P. (2015). *Medicinal Plant Resources for Sustainable Development: Role of Interdisciplinary Education and Research Collaboration*.

[4] Goraya, G. S., & Ved, D. K. (2017). Medicinal Plants in India: An Assessment of their Demand and Supply. In *National Medicinal Plants Board*. file:///C:/Users/RISC-203/Dropbox/RIS_Medicinal Plants/Literature/Supplementary Information/Medicinal_Plants_in_India_An_Assessment_of_their_Demand_and_Supply- NMPB-MoA.pdf

[5] Holley, J., & Cherla, K. (2009). *The Medicinal Plants Sector in India: A Review*. 1–98.

[6] Ishaqzai, S. Q., Kamran, K., Siddiqui, S., Khan, N., Kousar, S., Iqbal, A., & Akbar, A. (2022). Medicinal Plants Status, Habitat Degradation Factors and Rehabilitation Possibilities in Sra Ghurgai Protected Area Takatu Mountain Range Quetta Pakistan. *Polish Journal of Environmental Studies*, 31(6), 5047–5056. https://doi.org/10.15244/pjoes/150016

[7] Kala, C. P., Dhyani, P. P., & Sajwan, B. S. (2006). Developing the medicinal plants sector in northern India: Challenges and opportunities. *Journal of Ethnobiology and Ethnomedicine*, 2. https://doi.org/10.1186/1746-4269-2-32

[8] Kaundal, R., & Kumar, D. (2025). Current demands for standardization of Indian medicinal plants: A critical review. In *Medicine in Drug Discovery* (Vol. 27, Issue May, p. 100211). Elsevier B.V. https://doi.org/10.1016/j.medidd.2025.100211

[9] Lenka, S., Pravat Mohan Dash, & Swagatika Mishra. (2025). *Medicinal Plant Garden*.

[10] Mahajon, B., Dwivedi, H., Vijayakumar, V., Sanwal, C. S., & Nesari, T. M. (2023). Research and development activities under central sector scheme of the National Medicinal Plants Board, India. *Medicinal Plants*, 15(3), 610–618. https://doi.org/10.5958/0975-6892.2023.00062.X

[11] Nesari, T. M., Sanwal, C. S., Rath, C., & Sharma, S. (2023). Prospects and Challenges in the Medicinal Plants Sector: A Review. In *Traditional Medicine Review* (Vol. 3, Issue 1). https://dakshin.org.in/uploads/publications/169234054998TMR-Journal-March-2023.pdf

[12] NMPB. (2022). *National Medicinal Plants Board. (2022). Indian Medicinal Plants Database. Ministry of AYUSH, Government of India*.

[13] Rawat, R. S., & Gautam, S. (2016). *High Al tude Medicinal Plants*.