Medicinal plants use for respiratory infections in the Post-COVID-19 era: Symptomatic overlap and disease-specific preferences

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Research

Abstract

Background: In the aftermath of the COVID-19 pandemic, difficulties in self-diagnosing between influenza, the common cold, and COVID-19—from mild to severe cases—have led to potential overlap in the use of medicinal plants. This study investigates whether medicinal plants are employed as symptomatic treatments or in a disease-specific manner.

Methods: An ethnobotanical survey was conducted between February 2024 and January 2025 with 72 informants from two Algerian communities, including herbalists, traditional healers, and plant users. The Jaccard Similarity Index (JSI) was used to assess overlap in plant usage, the Fidelity Level (FL) to evaluate disease-specific plant preferences, and the chi-square test to determine associations between plant selection and respiratory diseases.

Results: 30 medicinal plant species from 17 botanical families were identified. The Family Importance Value (FIV) highlighted *Myrtaceae* as the most cited family (FIV = 0.778). JSI revealed a substantial overlap (66.67%) in the use of plants for COVID-19 and for influenza/cold treatment. FL analysis showed that *Syzygium aromaticum* L. (FL = 90.90%) was highly specific to COVID-19, while *Ammi visnaga* Lam. (FL = 96%) was predominantly used for flu and colds. The chi-square test ($\chi^2 = 41.07$, $p < 0.05$) indicated a statistically significant association between plant use and disease type, confirming that plant selection was not random.

Conclusions: These findings provide new insights into post-pandemic trends in medicinal plant use and highlight the continued relevance of traditional knowledge in differentiating plant applications for various respiratory ailments, despite symptom overlap.

Keywords: Medicinal plants, COVID-19, influenza, cold, overlap, survey

Background

Alternative medicine based on medicinal plants is deeply rooted in the cultural and ethnopharmacological heritage of populations worldwide, including the native Algerian population (Tedjani *et al.* 2023). This traditional knowledge has historically guided scientific research in the selection of specific plant species for the use of their active principles in treating various ailments (Ahmed-Gaid *et al.* 2025). Today, these plants are used to address a wide variety of health conditions, such as digestive disorders (Boukezoula *et al.* 2022), infections caused by multidrug-resistant bacteria (Hanoun *et al.* 2023; 2025), and immune system enhancement (Sultan *et al.* 2014). Among the most prominent therapeutic applications is their use in the treatment of respiratory diseases. In Algeria, ethnobotanical studies have documented the widespread use of medicinal plants for these conditions (Hadj-Said & Bouazza 2023; Bourouaha *et al.* 2025). Several well-known species, such as Eucalyptus globulus Labill., Juniperus phoenicea L., and Origanum vulgare L., are widely recognized in traditional medicine for their effectiveness against respiratory disorders, including asthma, bronchitis, influenza, and the common cold (Kayani *et al.* 2014, Hadj-Said & Bouazza 2023).

In recent decades, respiratory health has become a major global concern in the 21st century (Greene & Abdulkadir 2024), with respiratory infections remaining a significant cause of morbidity and mortality. Seasonal influenza, for instance, continues to pose a serious health threat due to its high mutation rate, which increases the risk of more virulent strains and potential pandemics (Khanna *et al.* 2008). The emergence of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has further exacerbated this issue and has complicated the management of respiratory diseases and introducing uncertainty due to the lack of a standardized therapeutic protocol. This situation has led to a notable rise in self-medication (Malik *et al.* 2020), particularly using traditional remedies (Paudyal *et al.* 2021).

A key challenge in managing respiratory diseases is the significant overlap in symptoms between COVID-19 and other infections, which complicates accurate diagnosis for both healthcare professionals and the general public (Mowbray *et al.* 2021). COVID-19 manifests in four clinical forms: mild cases resemble the common cold, moderate cases present with pneumonia-like symptoms like influenza, while severe and critical cases involve respiratory distress and organ failure, closely resembling SARS (Czubak *et al.* 2021). This symptomatic similarity increases the risk of diagnostic confusion, which may in turn influence treatment choices, particularly in traditional medicine practices. As many individuals rely on symptom-based self-diagnosis, the selection of medicinal plants for treatment may not always align with the actual infection. However, the overlap in plant use across different respiratory infections raises the question of whether these species are selected based on similar symptoms for any respiratory disease or if their use is specific to each type of illness.

In this context, the present study aims to examine how the local population in Algeria manages respiratory infections based on perceived symptoms in the post-pandemic period. Specifically, it compares the plant species traditionally used for influenza and the common cold with those employed for COVID-19. Additionally, it explores potential diagnostic confusion and the association or independence of plant species choice and ailments.

Materials and Methods

Study area

The study was conducted in two distinct regions of Algeria: Annaba and Bechar provinces (Fig. 1). Annaba, located in northeastern Algeria, is a coastal province bordered by the Mediterranean Sea. It is characterized by a mild Mediterranean climate, with hot summers and rainy winters. The landscape includes coastal plains, fertile agricultural land, and the Edough Massif, which reaches elevations of around 1,008 meters. Annaba is located at 36° 54′ 15″N and 7° 45′ 07″E, and it is bordered by Skikda to the west, Guelma to the south, and El Tarf to the east. Bechar Province is located in southwestern Algeria, on the northern edge of the Sahara Desert. The region is characterized by an arid desert climate, with hot, dry summers and cold winters. The province features oases and palm groves, along with vast expanses of rocky and sandy desert, including portions of the Grand Erg Occidental. The city of Bechar is situated at an altitude of approximately 800 meters, at 31° 37′ 00″ N and 2° 13′ 00″ W. The region is bordered by three provinces: Tindouf to the southwest, Adrar to the southeast, and Naâma to the north.

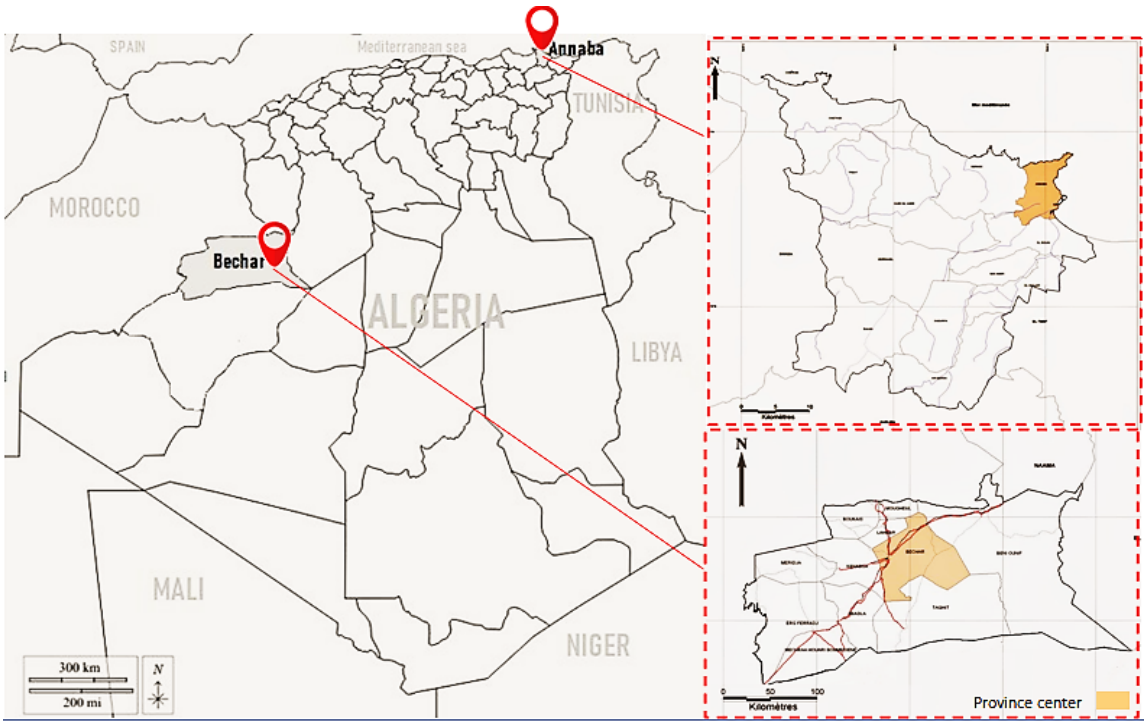

Figure 1. Study area

Data collection

The ethnobotanical survey was conducted between 2023 and 2024. A total of 72 informants, including 4 herbalists, 8 traditional healers, and 60 regular plant consumers from both Annaba and Bechar, participated in the study. Informants were interviewed using a pre-established questionnaire covering various aspects, including the symptoms they consider when diagnosing respiratory infections and their traditional use of medicinal plants for the common cold and influenza, as well as those specifically used for COVID-19.

Botanical identification

Plants mentioned by the informants were either collected directly from their natural habitats or purchased from local herbalists. The species were identified by Dr. A. Abdelhakem from the National Nature Agency, and voucher specimens were deposited at the Chiral Separation Laboratory (BMCS) and the Herbarium of Bioactive Molecules in the Medicinal Plant Encyclopedia. Bechar, Algeria.

Quantitative analysis

Family Importance Value (FIV)

It reflects the local importance of plant families mentioned in the study. It is calculated using the following formula (Haq *et al.* 2022):

$$FIV = \frac{FC(f)}{N}$$

Where:

FC (f) : is the number of informants citing a particular family.

N : is the total number of informants.

Fidelity level (FL)

It indicates the degree of consistency with which a plant species is used to treat an ailment by informants within a community. It is calculated using the following formula (Friedman *et al.* 1986):

$$FL\ (\%) = \frac{Np}{N} X100$$

Where:

Np : is the number of informants citing a plant for a particular ailment

N : is the number of informants who mentioned the same plant for any ailment.

Jaccard Similarity Index (JSI)

It indicates the degree of similarity in terms of the use of the mentioned medicinal plants in the two contexts studied: their specific use in treating COVID-19 and their use for both influenza and colds. It is calculated using the following formula (González-Tejero *et al.* 2008):

$$JSI\ (\%) = \frac{c}{(a+b-c)} \times 100$$

Where:

a : is the number of species cited to treat COVID-19.

b : is the number of species cited to treat influenza and cold.

c : is the number of species cited to treat COVID-19, influenza and cold.

Chi-Square Test

The Chi-square (χ^2) test was used to assess the association between medicinal plant usage and specific respiratory diseases: COVID-19 and influenza / cold. The hypotheses tested were as follows:

H_0 (null hypothesis): There is no significant difference in the use of medicinal plants between COVID-19 and influenza / cold.
H_1 (alternative hypothesis): The use of medicinal plants differs significantly among these ailments.
Statistical analyses were conducted using Excel, with the significance level set at 5%.

Results and Discussion

Informants' Profile

The survey was conducted between 2024 and 2025 and included 72 informants: 4 herbalists, 8 traditional healers, and 60 regular consumers. Table 1 presents the demographic profile of the informants.

Table 1. Informants' sociodemographic characteristics

Variable	Categories	N
Gender	Male	25
	Female	47
Age	20-30	27
	31-50	30
	51 and above	15
Province	Bechar	47
	Annaba	25
Experience in medicinal plants	Herbalist	04
	Traditional healer	08
	Regular plant consumer	60

Of the total participants, 47 (65.3%) were female, while 25 (34.7%) were male. The age distribution indicates that most informants (42, 58.3%) were between 31 and 50 years old, followed by those aged 20-30 years (31, 43.1%). The 51 and above age group included 15 participants (20.8%). In terms of geographic distribution, most informants were from Bechar (47 participants), while 25 participants were from Annaba. These demographic trends are consistent with findings from other studies, which reported a predominance of female informants (Meddour & Meddour 2015, Senouci *et al.* 2019, Baziz *et al*. 2020), often attributed to the integration of medicinal plants into both their culinary and therapeutic practices (Bouassla & Bouassla 2017). Similarly, Ouelbani *et al.* (2016) found that the 30-40 age group was the most represented in their study, which aligns with our results where individuals aged 31-50 years were dominant. This age group often plays an intergenerational role in the transmission of traditional knowledge.

Botanical diversity and Family Importance Value (FIV)

Table 2 summarizes 30 plant species from 17 botanical families cited by informants for their use in treating respiratory conditions, including COVID-19, flu and colds. This demonstrates the considerable diversity of plant sources used. The most represented families in terms of species cited are *Asteraceae* (5 species), *Lamiaceae* (4 species), *Apiaceae*, and *Myrtaceae* (3 species each).

The Family Importance Value (FIV) serves as a valuable metric for assessing the significance of botanical families in a local ethnomedicinal context. Families with a high FIV suggest a strong local reliance on the species they include. Conversely, families with lower FIV values may represent underutilized resources or traditional knowledge at risk of being lost. In the present study, *Myrtaceae* exhibited the highest FIV (0.778), this significant value reflects the frequent and diverse use of species such as clove and eucalyptus, both well-known for their therapeutic properties against respiratory ailments. Comparatively, an ethnomedicinal study by Benamar *et al.* (2024) in North Central Morocco identified the *Myrtaceae* family as dominant, with a FIV of 0.305, citing the frequent use of its species to boost immunity and combat SARS-CoV-2 infections. Likewise, Belmouhoub *et al.* (2024) reported *Myrtaceae* among the most cited families (FIV = 0.24) in their ethnobotanical survey of plants used by the local population of central Algeria cured of SARS-CoV-2. *Lamiaceae* demonstrated a high FIV (0.597) in our study. Known for its aromatic richness, this family includes species such as *Thymus* and *Mentha*, which have been extensively cited for treating respiratory ailments. Hadj Said and Bouaaza (2023) also reported *Lamiaceae* as the most frequently used family by the Kabylie population for addressing respiratory conditions. The therapeutic properties of *Lamiaceae* species, including the ability of their bioactive compounds to modulate immune responses, were reported to be useful in the control and treatment of CoV-induced lung disorders (Kianmehr *et al.* 2024).

Families with low FIV values, such as *Moringaceae*, *Myristicaceae*, and *Papaveraceae* (each with FIV = 0.014), exhibited limited use among the informants, indicating potential underutilization or a narrow scope of traditional knowledge. Interestingly, while *Asteraceae* was represented by a higher number of species (5), it showed a moderate FIV (0.306). This may be attributed to the broader distribution of knowledge across multiple species within the family rather than the dominance of a single species.

Table 2. List of medicinal plants reported by informants

Botanical family	Scientific name and Voucher specimen	Part used	Use method	Use reports		FIV
				Covid-19	Flu / cold	
Amaryllidaceae	*Allium cepa* L. **MPE-12-101**	Bulb, juice	Fumigation, Topical: juice to the scalp	1	2	0,069
	Allium sativum L. **MPE-12-102**	Bulb	Decoction in olive oil	2	2	
Apiaceae	*Ammi visnaga* Lam. **MPE-14-121**	Seeds	Infusion	3	24	0,375
	Cuminum cyminum L. **MPE-12-117**	Seeds	Infusion	0	1	
	Pimpinella anisum L. **MPE-19-127**	Seeds	Infusion	0	1	
Asteraceae	*Artemisia herba alba* Asso. **MPE-12-183**	Aerial part	Infusion, decoction	12	6	0,306
	Chamaemelum nobile (L.) All. **MPE-12-119**	Flowers	Infusion, decoction	2	0	
	Cotula Cinerea (Del) **MPE-12-172**	Aerial part	Infusion	1	0	
	Matricaria pubescens Desf. **MPE-12-173**	Leaves	Infusion, mastication	3	1	
	Saussurea costus (Falc.) **MPE-22-202**	Roots	Decoction	2	1	
Brassicaceae	*Lepidium sativum* L. **MPE-14-211**	Seeds	Infusion	1	0	0,014
Cupressaceae	*Juniperus phoenicea* L. **MPE-14-159**	Aerial part	Infusion, fumigation	6	3	0,097
Lamiaceae	*Mentha pulegium* L. **MPE-12-18**	Aerial part	Infusion	1	1	0,597
	Mentha spicata L. **MPE-12-057**	Leaves	Infusion, decoction	7	5	

	Origanum vulgare L. **MPE-12-128**	Aerial part	Infusion, fumigation	17	34	
	Rosmarinus officinalis L. **MPE-12-067**	Aerial part	Infusion, decoction	0	6	
Lauraceae	*Cinnamomum verum* J.Presl **MPE-12-049**	Stem bark	Infusion	4	2	0,069
Moringaceae	*Moringa oleifera* Lam. **MPE-23-125**	Leaves	Infusion, decoction	1	0	0,014
Myristicaceae	*Myristica fragrans* Houtt **MPE-14-107**	Seeds	Decoction	0	1	0,014
Myrtaceae	*Eucalyptus globulus* Labill. **MPE-12-023**	Leaves	Infusion, fumigation	10	15	0,777
	Syzygium aromaticum (L.) Merr. & Perry **MPE-12-025**	Flower buds	Decoction, infusion	40	14	
	Myrtus communis L. **MPE-14-108**	Aerial part	Infusion	2	1	
Papaveraceae	*Papaver rhoeas* L. **MPE-18-73**	Flowers	Infusion	0	1	0,014
Piperaceae	*Piper nigrum* L. **MPE-18-72**	Seeds	Fresh (powder)	0	1	0,014
Renonculaceae	*Nigella sativa* L. **MPE-14-161**	Seeds	Fresh	2	1	0,041
Rutaceae	*Citrus limon* (L.) Osbeck **MPE-12-002**	Fruit, leaves, juice	Fresh	15	11	0,277
Schisandraceae	*Illicium verum* Hook. F. **MPE-14-53**	Fruit	Decoction	1	1	0,027
Verbenaceae	*Aloysia citriodora* Palau **MPE-12-075**	Leaves	Infusion, decoction	7	12	0,180
Zingiberaceae	*Curcuma longa* L. **MPE-15-207**	Roots	Fresh (powder)	4	1	0,277
	Zingiber officinale Roscoe **MPE-13-201**	Roots	Infusion, decoction	14	16	

Most used plants

Figure 2 illustrates the most frequently used plants for treating symptoms of COVID-19, influenza and cold. Among these, *Syzygium aromaticum* emerged as the most frequently used plant, particularly for COVID-19 treatment. Several studies have demonstrated the antiviral potential of its bioactive compounds, such as eugenol and β-caryophyllene, against SARS-CoV-2. Molecular docking analyses suggest that eugenol inhibits viral replication by disrupting the viral envelope, and it has been shown to interfere with the binding of the SARS-CoV-2 spike protein to the ACE2 receptor, potentially reducing viral infectivity (Manivannan *et al.* 2022). Additionally, β-caryophyllene selectively targets the spike protein (Iqhrammullah *et al.* 2023). Origanum vulgare was frequently mentioned by informants for both COVID-19 and influenza. It exhibits notable antiviral potential due to bioactive compounds such as carvacrol, which is known for its anti-inflammatory, antiviral, and immunomodulatory effects relevant to COVID-19. Additionally, it was demonstrated that it may interfere with ACE2 receptors (Javed *et al.* 2021). *Citrus limon* is widely recognized for its richness in vitamin C, a compound known to enhance immune system function. In silico studies suggest that compounds such as eriodictyol, quercetin, and diosmetin found in lemon may effectively interact with the viral main protease, demonstrating promising antiviral activity against COVID-19 (Khan *et al.* 2022). Zingiber officinale was commonly used by informants to treat colds, influenza, and COVID-19.

In Algerian traditional medicine, ginger is well regarded for its ability to alleviate respiratory ailments such as cough, flu, and allergies (Benarba 2016) and was also employed to manage COVID-19 symptoms (Belmouhoub & Aberkane 2021, Belmouhoub *et al.* 2024). Ginger exhibits both antiviral and anti-inflammatory effects and presents broad-spectrum inhibitory effect against the main proteases of SARS-CoV-2, SARS-CoV, and MERS-CoV (Nallusamy *et al.* 2021). Ammi visnaga

is another plant extensively used for treating influenza and cold symptoms. Its bioactive compounds, particularly khellin and visnagin, have demonstrated significant antiviral properties, and in silico analyses indicate that they may interact with SARS-CoV-2 protease, contributing to their antiviral potential as antiviral agents against COVID-19 (Mostafa *et al.* 2022). Eucalyptus globulus was cited for its use in treating influenza and cough (Miara *et al.* 2019, Benarba 2016) as well as COVID-19 (Benamar *et al.* 2024, Chaachouay *et al.* 2021). The plant's leaves, rich in 1,8-cineole, exhibit notable antiviral properties and may interfere with the SARS-CoV-2 spike protein, offering potential benefits in COVID-19 treatment (Ćavar Zeljković *et al.* 2022). Artemisia herba-alba is another key plant recognized for its antiviral activity, particularly against respiratory viruses. Its bioactive compounds, such as artemisinin and its derivatives, were demonstrated to possess antiviral properties against some viruses, including SARS-CoV-2, via inhibition of viral proliferation and modulation of the immune response (Kshirsagar & Rao 2021).

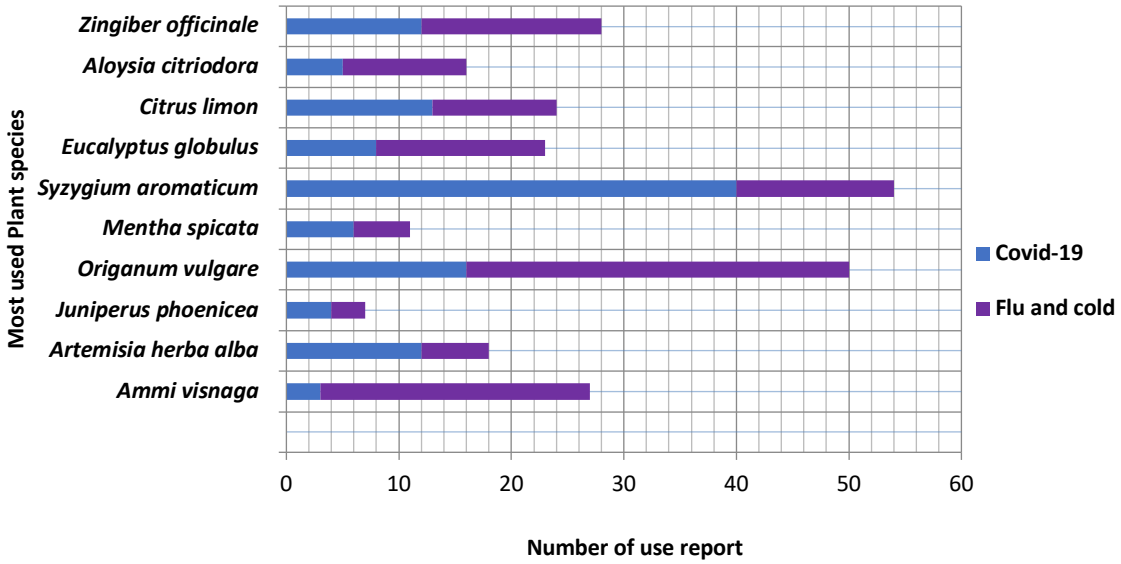

Figure 2. Distribution of use reports for the most frequently cited species used in the treatment of COVID-19 and influenza/cold.

Confusion in self-diagnosis of some respiratory infections

The practice of self-diagnosis and self-medication for respiratory infections is common, but the overlapping symptoms of some diseases often lead to confusion and misdiagnosis. Indeed, COVID-19 symptoms can affect the upper respiratory tract, similar to SARS, influenza, and the common cold, representing a significant diagnostic challenge even for clinicians (Czubak *et al.* 2021). Some symptoms, such as nasal congestion and dysfunctions in smell and taste, can be the initial manifestations of COVID-19 (Lovato & de Filippis 2020). Moreover, there are notable differences between COVID-19 and influenza, with the former more frequently presenting neurological and digestive symptoms, while fever, productive cough, vomiting, and otolaryngological symptoms are more commonly seen in influenza (Osman *et al.* 2021). In our study, during the interviews, informants expressed difficulty in distinguishing the symptoms of COVID-19 and those of the common cold or influenza, especially at the onset of the illness.

We attempted to summarize their reports in the chord diagram (Fig.3). According to most informants, the most commonly reported symptoms for suspecting COVID-19 include loss of taste and smell -strongly indicative of COVID-19- along with shortness of breath, chest and back pain, fever, and severe cough.

Overlap in medicinal plant use and Jaccard Similarity Index

The overlap in self-diagnosis has significant implications for self-medication practices, particularly in the use of medicinal plants, which are often selected based on symptom similarity rather than disease specificity. In our study, it was observed that some individuals used specific plants for each condition; however, others declared that they used the same plants for all respiratory conditions. Four plants were specifically mentioned for COVID-19 treatment: *Chamaemelum nobile*, *Cotula cinerea*, *Moringa oleifera*, and *Lepidium sativum*. In contrast, other plants were cited exclusively for the treatment of flu and influenza, including *Rosmarinus officinalis*, *Cuminum cyminum*, *Pimpinella anisum*, *Myristica fragrans*, *Papaver rhoeas*, and

Piper nigrum. Among the thirty reported medicinal plants, a total of 20 plant species were identified as being commonly used for COVID-19, cold and influenza (Fig. 4).

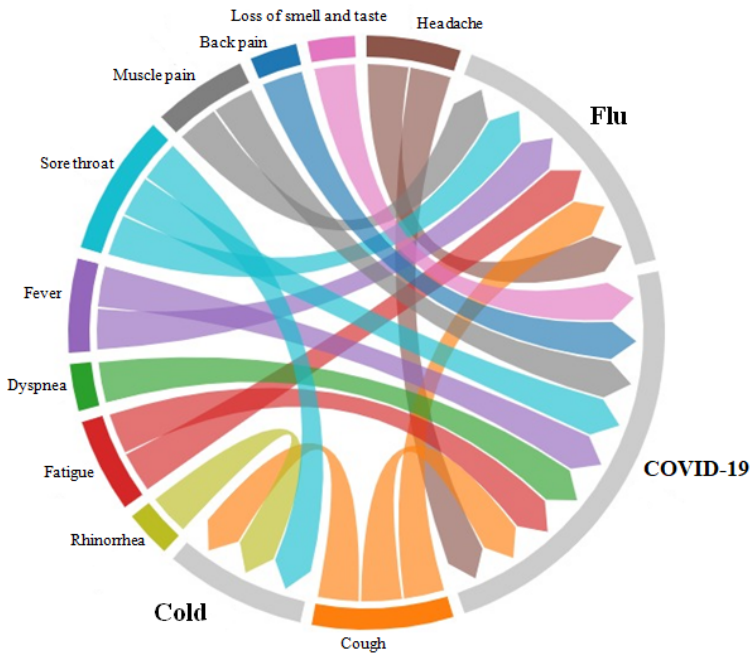

Figure 3. Chord diagram of informants' symptomatic overlaps between COVID-19, influenza, and cold.

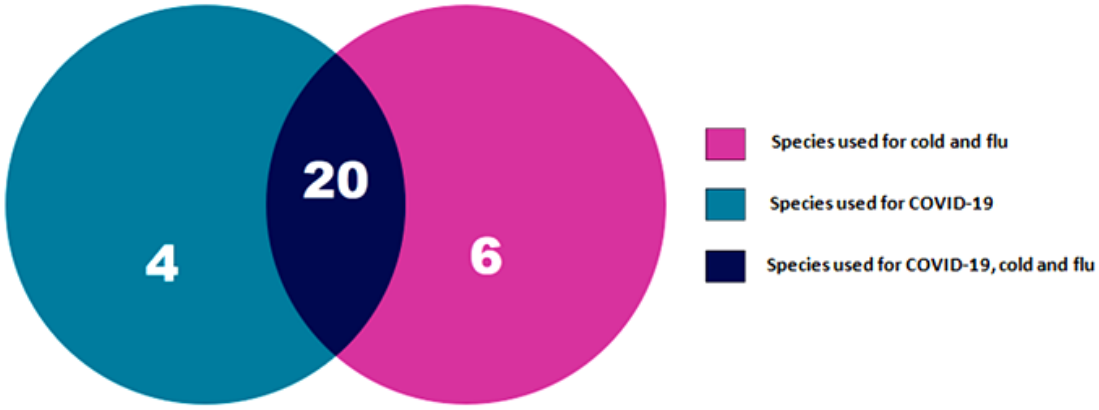

Figure 4. Venn diagram of the overlapping use of medicinal plants for COVID-19 and cold/influenza.

The Jaccard index was calculated at 66.67%, indicating a high level of similarity in the plant species used for these ailments. This suggests a significant overlap in the use of medicinal plants, which may be due to their role in symptomatic treatment and the perception that these respiratory diseases share similar pathological mechanisms.

Specific use and fidelity level of the most cited plant species

The fidelity level (FL) analysis allows for the identification of the specific use of the reported plants for each condition. FL of the most used medicinal plants by informants for studied respiratory infections are shown in table 3. Indeed, a high specificity for influenza and cold treatment was observed by using especially, *Ammi visnaga, with an FL of* (96%) but a very low FL for COVID-19 (12%). *Origanum vulgare* (91.89%) and *Aloysia citriodora* (78.57%) also exhibited a high FL for flu and cold indicating a traditional use predominantly for common respiratory infections rather than COVID-19 condition. *Rosmarinus officinalis* was cited only for flu and cold treatment (FL of 100%). In the same context, for instance, Benarba (2016) reported that O. vulgare exhibited an FL of 69.56% for respiratory tract diseases in Algeria, while Rosmarinus officinalis showed a lower FL of 24.4% in a study conducted by Bouasla & Bouasla (2017). This difference may reflect regional variation in traditional practices. Other medicinal plant species were reported by informants with high specificity for COVID-19 treatment. Among them, Syzygium aromaticum exhibited the highest fidelity level (90.90%) for this condition, with a considerably lower FL for flu and colds (31.81%). This suggests that informants perceived and recognized its strong

therapeutic potential for managing COVID-19 symptoms. Similarly, Artemisia herba-alba showed a high FL for COVID-19 (80%) but a much lower one for flu and cold (40%). Hassaïne & Benmalek (2022) found a much higher FL for A. herba-alba (96.66%) for general respiratory ailments. This trend may be attributed to its well-established role in traditional medicine, where it is valued for its broad-spectrum therapeutic properties. Consequently, people were more inclined to test its efficacy against COVID-19. A relatively balanced use for both conditions was observed in certain species, such as Mentha spicata (60% for COVID-19, 50% for flu and cold) and Citrus limon (65% for COVID-19, 55% for flu and cold). Chaachouay *et al.* (2019) also reported high FL values for similar species: *Mentha citrata* (100%) for colds, and Citrus sinensis (FL 100%) for tuberculosis in Moroccan populations. The comparable fidelity levels across the studied conditions suggest that they are perceived as effective for general respiratory ailments rather than being strongly associated with a specific disease.

Table 3. Fidelity Level and Chi-Square test for the most cited plants

Plant species	Np		FL (%)		Chi-square test
	Covid-19	Cold/Flu	Covid-19	Cold/Flu	
***Ammi visnaga* Lam.**	3	24	12	96	
***Artemisia herba alba* Asso.**	12	6	80	40	
***Origanum vulgare* L.**	16	34	43,24	91,89	
***Mentha spicata* L.**	6	5	60	50	$\chi2$= 41.07
***Syzygium aromaticum* (L.) Merr. & Perry**	40	14	90,90	31,81	*df*= 8
***Eucalyptus globulus* Labill.**	8	15	34,78	65,21	***p*-value** = 0,000
***Citrus limon* (L.) Osbeck**	13	11	65	55	
***Aloysia citriodora* Palau**	5	11	35,71	78,57	
***Zingiber officinale* Roscoe**	12	16	60	80	

Assessment of association between plant choice and respiratory infection: Chi-test analysis

The results of the Chi-square test ($\chi2$=41.07, p< 0.001) indicate a statistically significant difference in the use of plants between the treatment of COVID-19 and that of cold/influenza, meaning the probability of these differences occurring by chance is extremely low. This finding demonstrates a strong association between plant selection and the type of respiratory infection studied. It suggests that certain plants were preferentially used for specific ailments rather than being randomly chosen for all respiratory conditions, and these preferences were clearly reflected in the fidelity level results. The observed pattern may reflect traditional knowledge guiding plant selection based on perceived efficacy for distinct symptoms or disease severity. Although previous studies have not applied statistical tests to assess such associations, several authors the differential use of some species depending on the respiratory ailments. For example, clove (*Syzygium aromaticum*), known for its antimicrobial and antiviral properties, was frequently used during the COVID-19 pandemic in Algeria (Belmouhoub & Aberkane 2021, Benamar *et al.* 2024). Similarly, *Origanum vulgare* has been consistently cited in ethnobotanical literature for the treatment of respiratory disorders (Tahri *et al*. 2020, Hassaïne & Benmalek 2023) and was also among the most used plants during the COVID-19 period (Brahmi *et al.* 2023, Benamar *et al.* 2024). *Ammi visnaga*, on the other hand, is traditionally employed for asthma and bronchial conditions (Bouasla & Bouasla 2017), which aligns with its high fidelity level for flu and cold observed in our results.

Conclusion

This study indicated that while medicinal plant use for COVID-19 and influenza/cold shares significant overlap, the selection of specific plants follows distinct traditional knowledge patterns. High similarity was estimated by Jaccard Index which indicates that the studied diseases share a large proportion of medicinal plants, and suggesting they are treated similarly within traditional medicine. However, the frequency of use varies significantly, fidelity level and Chi-test indicated that some plants are strongly preferred for COVID-19, while others are more commonly used for influenza/cold. These findings reflect both overlapping traditional knowledge and disease-specific preferences in medicinal plant selection and validate the role of traditional medicine in distinguishing plant use for different respiratory infections.

Declarations

List of abbreviations: FIV - Family Importance Value, FL - Fidelity level, JSI - Jaccard Similarity Index

Ethics approval and consent to participate: Informed consent was obtained from all participants prior to data collection through the administration of the questionnaire.

Consent for publication: All authors have read and approved the final version of the manuscript and agreed to its submission for publication.

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