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ETHNOBOTANICAL STUDY OF PLANTS USED FOR THE TREATMENT OF RESPIRATORY DISORDER AMONG THE INHABITANT OF LASPUR VALLEY, HINDUKUSH RANGE, CHITRAL NORTHERN PAKISTAN

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Abstract

The abundance of medicinal plant species in the region provide as a valuable resource for affordable healthcare, particularly for respiratory ailments within local inhabitants. This initial study was undertaken through the primary objective of systematically documenting traditional knowledge of folk herbal medicine used for respiratory disorders. Current study focused on the indigenous people of Laspur Valley in Northern Pakistan, using quantitative ethnobotanical methods to gather and analyze data. **Method.** The field study was conducted in study area from March 2017 to October 2019. The required data was gathered through interview with local communities, collected information was then analyzed using statistical indices Use Value index (UVi) and the (RFC) Relative Frequency Citation. **Results**. The study identified a total of 50 plant species belonging to 22 families that are ethnomedicinally used to treat nine (09) different respiratory disorders. Flowers emerged as the most frequently utilized plant parts and majority of medicines were made as decoctions. Significantly Carthamus tinctorius was the highest use value (0.47), followed by Juglans regia (0.42). Lens cullinaris (0.65) and Hordium vulgare (0.62) was noted with high Relative Citations Frequency (RCFC), indicating their significant mention among the informants. **Conclusion.** Current study presents for the first time information of traditional herbal medicines used by local communities in Laspur, Northern Pakistan, for respiratory disorders that are still in common practice. Certain newly documented ethnobotanical privileges in this study shown further clinical exploration. The medicinal plant species with the maximum use values, as documented in this study, suggest the potential presence of valued phytochemical, compounds. This signifies the importance of conducting further research to identify and explore these compounds for their potential as new drugs for the cure of various respiratory ailments.

Keywords: Ethnobotany Respiratory Diseases Used Plant Species Eastern Hindukush.

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1. INTRODUCTION

Respiratory diseases include a range of abnormalities in the respiratory tract, lungs, and blood vessels. Often, these conditions involve a combination of these factors (Qaiera, 1993; Asadbegi, 2014). They are broadly categorized into respiratory disorder like pulmonary disease, obstructive lung disease, whooping cough etc (Asadbegi *et al.,* 2014).

In developing countries, including Pakistan, respiratory infections, especially those affecting the lower respiratory tract, pose a significant threat to the health of children aged five and above. Neglecting these acute infections can lead to complications, and in Pakistan, respiratory infections contribute to 20% to 30% of all child deaths (Naz *et al.,* 2019). Addressing and preventing respiratory infections is crucial for reducing mortality and morbidity in this vulnerable population.

In current centuries, it has been interest in the exploration of medicinal plants and their traditional use in different regions of Pakistan (York *et al*., 2011; Shrivastava & Kanungo., 2013; Kayani *et al.,* 2019). This suggests an increasing recognition of the potential benefits of traditional remedies, possibly indicating a shift towards exploring alternative or complementary approaches to address health challenges like respiratory infections in the country. The respiratory ailments, like asthma, chronic pulmonary disease, bronchitis, respiratory toxicities, and influenza, pose a significant global fitness challenge (Heap & van Heel, 2009; Khaltaev, 2017; Ramdani *et al*., 2020). In response to this, medicinal plants have gained prominence as therapeutic agents, being utilized in folk medicine from long time. They are increasingly recognized as vital alternatives for treating various infections and physiological conditions (Amaral-Machado *et al.,* 2020; Dihia Hadj-Said & Belaid Bouazza, 2023). This highlights the growing interest in exploring alternative approaches, such as herbal remedies, to address respiratory health issues. Between 1990 and 2017, there was a noteworthy 39% increased chronic respiratory disease cases, as reported Xie *et al*. (2020). The most prevailing cases was Chronic Obstructive Pulmonary Disease (COPD) at 3.9% and asthma at 3.6%. In 2017 these respiratory conditions accounted for about 3.9 million deaths globally (Soriano, *et al*., 2021; Dihia Hadj-Said & Belaid Bouazza, 2023). This data underscores the escalating impact of chronic respiratory diseases on global health and emphasizes the urgent need for effective prevention and treatment strategies.

Many remote communities in Pakistan, facing challenges in accessing mainstream healthcare services, often rely on herbal medications. In such areas, therapeutic plants emerge as a viable solution to address various health issues (Jamal *et al.,* 2012). The utilization of phyto drugs is considered a safer alternative compared to synthetic options, providing significant therapeutic benefits. Rural communities, in particular, heavily depend on plant resources not only for economic purposes but also for healthcare, highlighting the multifaceted role of medicinal plants in these regions (Hussain, 2004). This reliance underscores the importance of understanding and incorporating traditional medicinal practices into healthcare strategies, especially in areas with limited access to conventional medical services. In many regions worldwide, herbal treatments are commonly employed to address respiratory diseases, often exacerbated by harsh

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weather conditions and limited access to modern medical facilities. The local population heavily depends on native plant resources to treat a spectrum of respiratory conditions, including lung issues, tracheal problems, upper respiratory tract infections, asthma, cough, bronchial tube disorders, breathing muscle complications and whooping cough. The utilization of various plants for healthcare among rural tribes and ethnic communities in the region. More extensive information is becoming available regarding the utilization of plants in traditional medicine systems, practiced by both rural communities and ethnic groups in the region. This surge in research reflects a heightened awareness and exploration of the rich traditional knowledge related to medicinal plants, emphasizing their significance in the healthcare practices of diverse communities throughout Pakistan (Reddy *et al*., 2006; Arellanes *et al.*, 2003; Maregesi *et al.,* 2007; Sulaiman *et al*., 2011; Mann *et al*., 2008; Ali, 2009; York *et al*., 2012; Nunkoo & Mahomoodally, 2012; Shrivastava & Kanungo, 2013; Kayani *et al* 20114; Ullah *et al* 2020).

Previous studies have predominantly conducted through qualitative methods, leaving a notable opportunity in quantitative ethnomedicinal plant research, current study addresses this disparity by initiating a contemporary study aimed at systematically documenting information on traditional herbal remedies used to treat respiratory disorders. The primary objectives include preserving the valuable and rapidly diminishing indigenous knowledge of the local inhabitants of Laspur Valley in the Khyber district of Chitral, Pakistan. Additionally, we used some quantitative approaches to analyze ethnomedicinal knowledge, specifically focusing on regular uses of medicinal herbs in the area with aim of contributing to their global dissemination.

2. METHODOLOGY

North Pakistan is located in the junction of world highest mountain ranges Hindukush, Hindu Raj Karakorum and Himalayas (Ali, 2009; Qadir *et al*., 2022). Among these ranges Laspur valley is situated in district upper Chitral, Khyber Pakhtunkhwa Province of Pakistan. This Valley covered about 640 sq km at the elevation range of 2525m - 6000m. Bordered East with Ghazer (GB), in North with Mastuj, the West through Mushabart mountain (Booni zoom), and the Southern portion is bounded by Kalam (Swat) and Komrad (Dir Upper) (Fig. 1). Laspur Valley contains six large villages (Gasht, Harchin, Raman, Broke, Baleem and Sour Laspur) and several sub-villages. The climate range from dry temperate to alpine. The summer is moderate while harsh winter experience with frequent snow fall from later of November to the end of March.

Administratively, the area comes under union council Laspur the population according to census report 2017 is 18000 individuals (Annon., 2017) big tribes i,e Boxokaey, Bahramaey, Cholakaey, Baduraey, Danzaey, Doronaey, Doshaey, Dasmanaey, Khiyaley, Khoshaey, Kalamey, Zhekanaey, Shaghniyae, Shakhmiraey, Shakarae, Saeed and along with their few minor tribes. In Laspur valley all the people are Muslim and only Indo-Aryan language (Khowwar) is spoken (Ali.2009).

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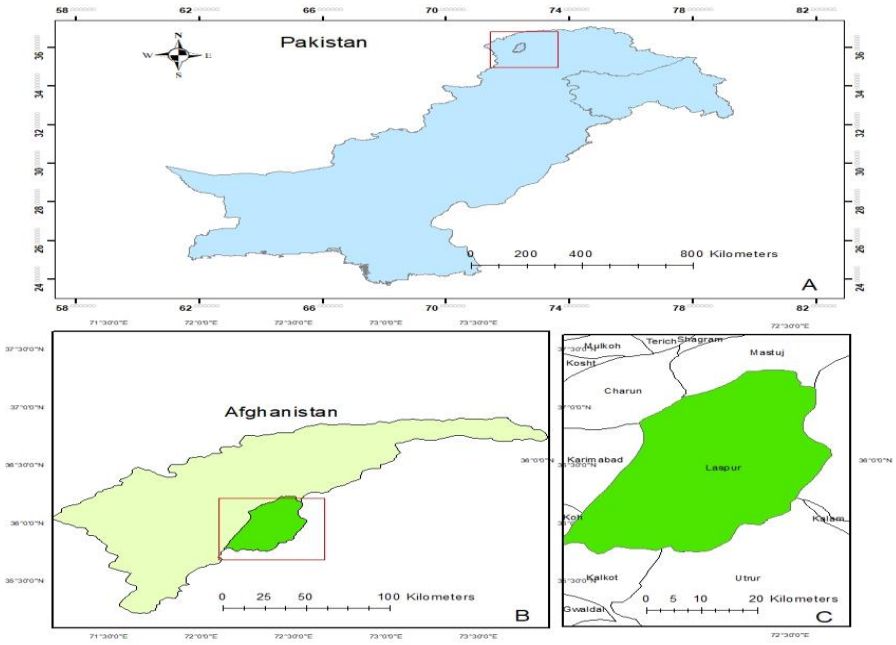

Fig 1: Map of the study area

2.1. Data collection and ethnobotanical survey

The research area was visited regarding gathering ethnomedicinal information of plants used for therapy of respiratory disease during flowering and fruiting seasons. The research area was visited frequently from 2017-2021 and data were documented. During field work interviews were conducted to get ethnomedicinally important information and uses of plants from local people. Semi structure questionnaire was approached (Martin 2010, Ijaz, *et al.,* 2015; Ijaz *et al.,* 2016) with some modifications.

Indigenous information was collected from 90 local informants belong to diverse education level, aged, gender, and experienced regarding uses of plant species as source of traditional medicine for the treatment of respiratory disorder (Table 2) Interviewed informants were belonging to various localities in the study area. The questionnaire were used to compile ethnobotanical information comprised of source, vernacular names, mood of utilization, preparation, part used and demographic information.

2.1.2. Herbarium related activities

Collected plant specimens were processed and preserved followed by (Malek *et al.,* 2015; Ulla *et al*., 2020). Voucher specimens were identified based on the Flora Pakistan (Ali & Nasir, 1989-1991: Ali & Qaiser, 1993-2021) and taxonomists from herbarium Hazara University were also consulted. The current botanical names, citation and family were confirmed through The Plant List (ww.theplantlist.org). The voucher plants specimen deposited in (HUP) Herbarium Hazara University Mansehra.

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2.2. Statistical indices

The documented information were evaluated through statistical indices i.e., (Uvi) Use value index and (RFCs) relative frequency citation.

2.2.1. Use Value index (UVI)

This index provides a quantitative measure of the relative importance of plants neutrally. The formula used for calculating the Use Value (UVi) is UVi = ∑ Ui/Ni, where Ui represents the number of informants who reported a given species, and Ni is indicate the total number of informants which were interviewed for that particular plant species. This method allows for a quantitative evaluation of the comparative significance of each ethnobotanical species on the basis of frequency of its use among informant (Ullah *et a.,*/ 2022; Rahman *et al.,* 2016).

2.2.2. Relative frequency citation (RFCs)

The formula used for importance of each plant species, ie., RFCs = FCs/N, where FCs represents the number of informants who mentioned the use of a particular plant species, and N is the total number of informants (Rehman *et al.,* 2016).

3. RESULT AND DISCUSSION

This current study documents a total of 50 plants species from 22 different families which were used for the remedy of respiratory disorders. The table 1 present demographic data of informants while table no.2 provide the detailed about the medicinal plants. A sum of 120 people were taken interview, among them 60% were female informants and 40% male. Based on aged the informant were categorized to four major groups i.e., 20-35 (18.6%), 36-50 (21.45%), 51-65 (35.9%), 65 above (24.2%) among these traditional medicine knowledge were increased with increased age while the same traditional medicine knowledge were on the basis of education level i,e., Illiterate were more knowledge 39.5%, and decreased from primary and middle education level 20.75%, Matric 18.5%, Undergraduate 11.75% graduate level people were 9.5% (Table 1)

Table 1: Demographic categories information of informants

Variable	Demographic categories	Percentage
Gender	Male	40%
	Female	60%
Age	20-35	18.6%
	36-50	21.4%
	51-65	35.9%
	65 -above	24.2%
Education	Illiterate	39.5 %
	Primary and middle	20.75%
	Matric	18.5%
	Undergraduates	11.75 %
	Graduate	9.5 %

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In current it was observed that individuals with higher levels of education exhibited less familiarity with the uses of traditional herbal medicine as compared to those who were less educated. This phenomenon was attributed to the more revelation of educated individuals to innovations. Such finding shown in a study showed in the region of Ethiopia, suggesting a common trend where higher education levels may correlate with reduced familiarity with traditional medicinal plant usage. (Gedif and Hahn, 2003; Gidayi *et al*., 2009; Kayani *et al*., 2015; Ullah *et al*., 2022).

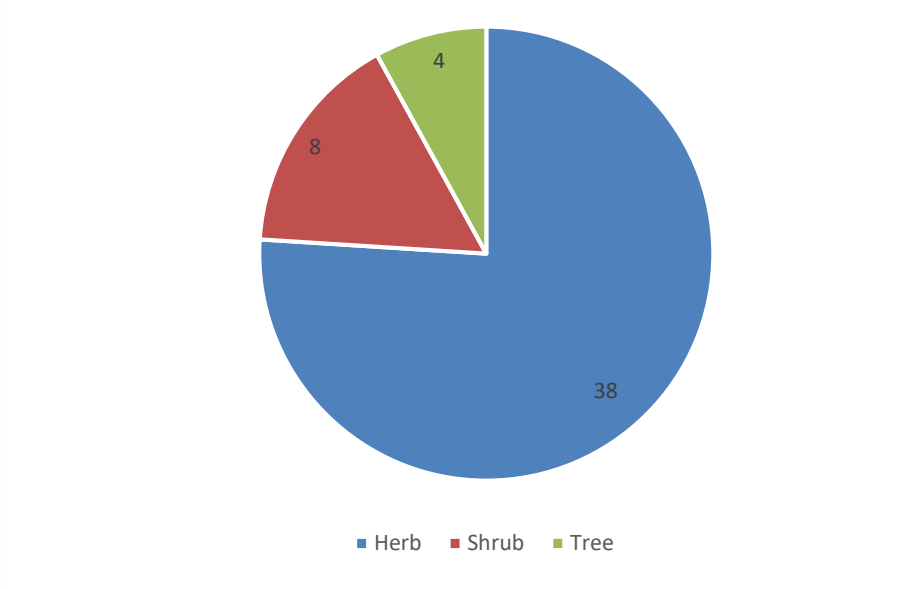

Fig 2: Life form of medicinal Plants

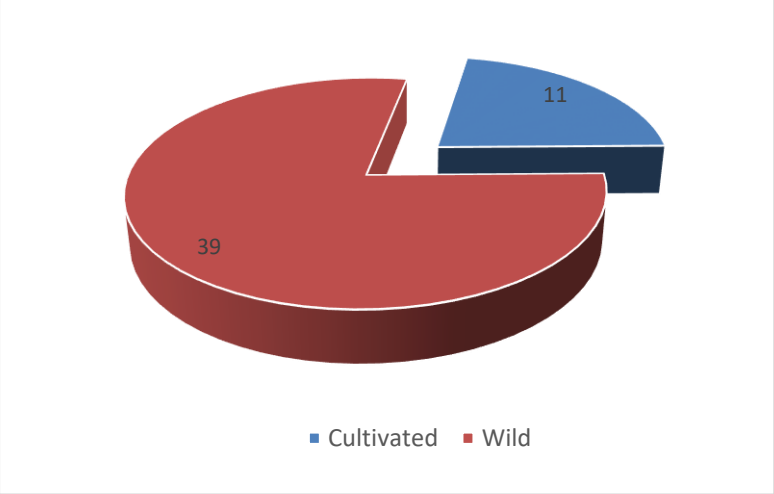

Fig 3: Source of plant used for respiratory disorder

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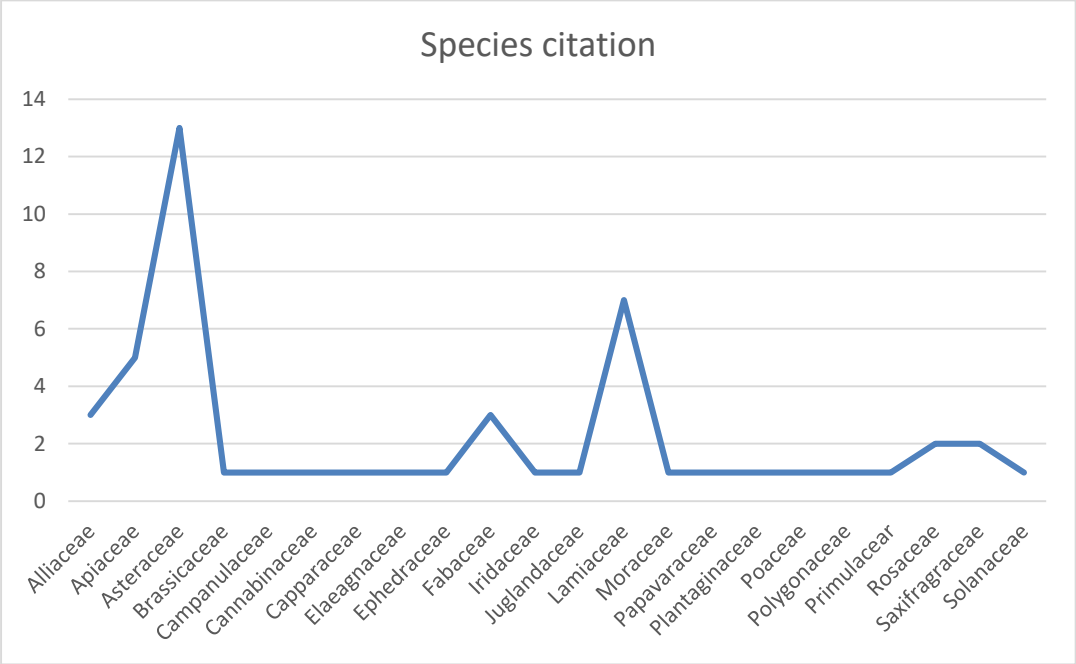

Fig 4: Family Importance Value (FIV)

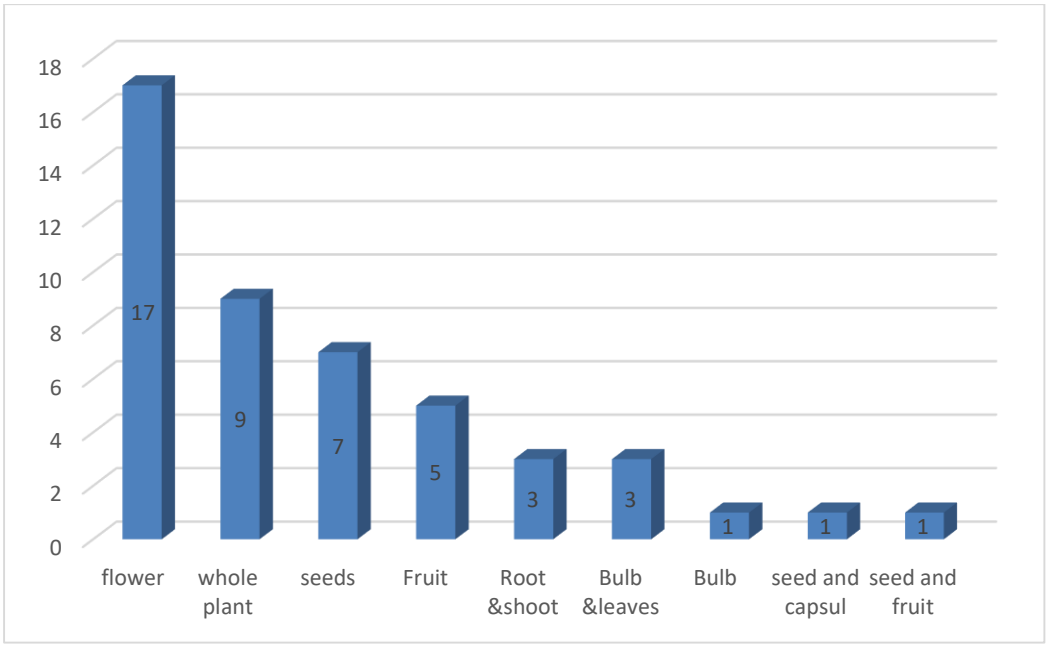

Fig 5: Medicinal plant part used for respiratory diseases

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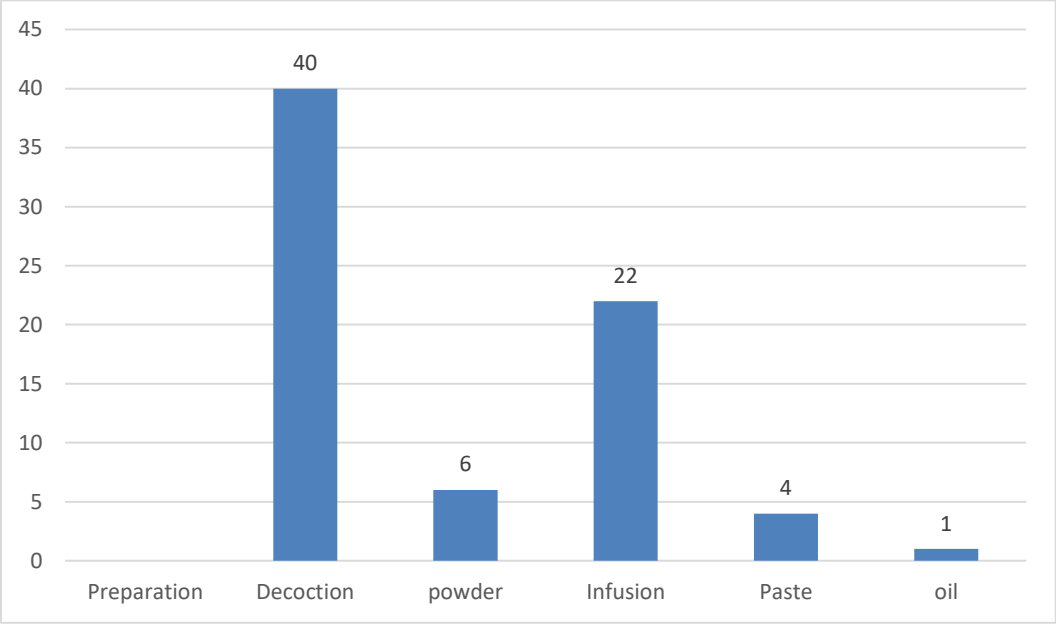

Fig 6: Preparation of ethnomedicinal plants

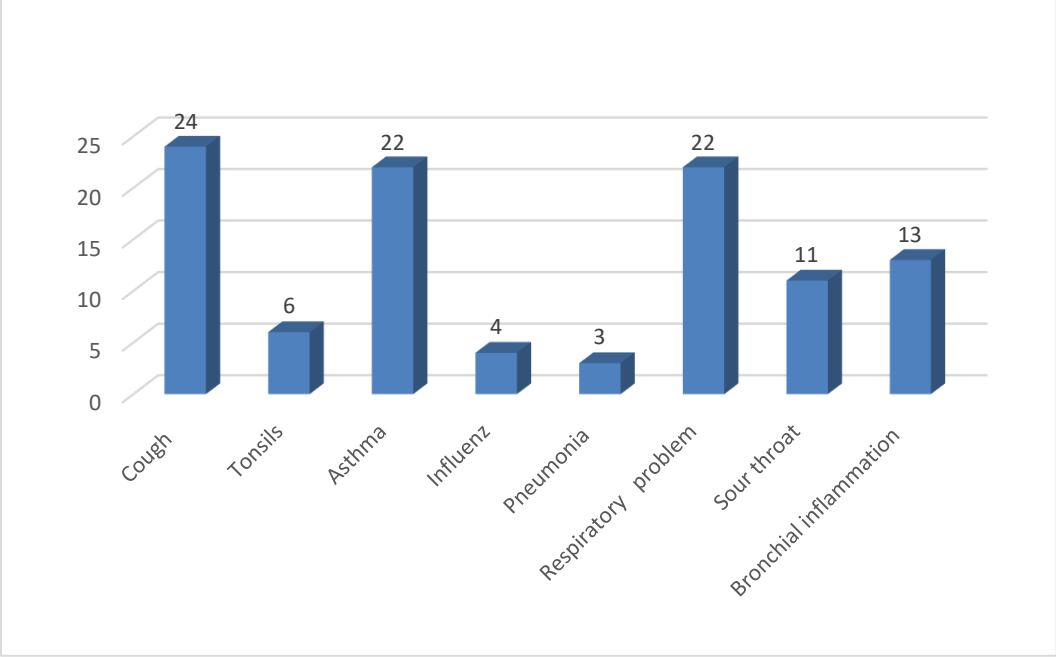

Fig 7: Number of plant species used for each respiratory disorder

The research area falls in dry temperate, sub alpine climatic condition and area has a rich plant diversity among the a total of 50 medicinal plants, diversity shown herbs were primary source of medicine 43 (86%) followed by trees (8%) and shrubs (6%) (Fig. 3). The common use herbaceous plant species by local inhabitant due to their availability in high altitude region (Ayyanar & Ignacimuthu, 2005; Uniyial *et al*., 2006; Ali 2009; Kayani

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et al 2015). Different medicinal plants were used for tradition medicine among them the flower (17 repots) was most frequent used, (9 reports), for whole plant followed by seeds (7 reports), fruits (5 reports) root and shot (3 reports each),bulb and leaves 3 reports each while bulb, bulb and leaves, seed and fruit, seed and capsule were (1 reports) each respectively (Fig. 5). Many of population used aerial parts in medicine (Mahesh *et al*., 2005; Ignacimiuthu, *et al.,* 2006). The preparation of medicine plant parts was divided in to five sub classes (Fig.6) among these often used method of crude preparation was Decoction reports (40) followed by infusion (23), (7) reports for powder, (5) past and oil was only (1) report. Decoction was used for crude preparation for the cure of respiratory disorder is a traditional practice by the indigenous inhabitant of Laspur valley. Mode of utilization of the tradition medicine were orally given which agreed with some other research conducted in various studies (Samy *et al*., 2008; Andrade Cetto, 2009; Ali, 2009; Kayani *et al*., 2015).

The indigenous inhabitant favored plant species most often for medication of the cough 24 medicinal plant species, 23 plant for asthma, 22 plants for respiratory infection, 13 plants for bronchial inflammation,11 plants for sour throat, 6 plants for tonsils, 4plants for influenza, 4 plants for pneumonia and 2 plant species used for whooping cough (Fig. 7).

Quantitative analysis

Family Importance value

The dominant family was Asteraceae which showed Family importance value (FIV) as leading family with (59.09%) FIV followed by Lamiaceae (31.81%), Apiaceae (22.72%), Fabaceae and Alliaceae with each (13.63%) and the least value was observed for Campanulaceae, Capparaceae, Cannabanaceae, Cuppricaceae, Eleaugnaceae, Plantaginaceae, Polygonaceae, Ephedraceae, Brassicaseae, Iridaceae, Moraceae ,Papavaraceae, Poaceae, Solanaceae, Primulaceae, Juglandaceae each with (4.54%) (Fig. 4).

Relative frequency citation (RFC) was calculated to determine that medicinal plants which is maximum common used for the respiratory complaints. Based on RCFC Value number local informants who cited the plant species at various localities for respiratory disorder was *Lens cullinaris* (0.65), followed by *Hordium vulgare (*0.62) and least RCFC was observed for *Artemisia scoparia* (0.20) (Table 2).

Relative Frequency of Citation (RFC) indicate that these species were widely recognized and well-known among the informants. This suggests a prevalent and frequent used of these plants in the traditional knowledge of the community.

The (UVi) is a quantitative technique used for the relative importance of species or families within a populations. This method, employed for data validation, has been recognized as a valuable tool for evaluating the significance of different species or families, as highlighted in studies (Vendruscolo and Mentz.,2006; Ijaz *et al.*, 2016).

In current study, the higher UVs revealed for *Carthamus tinctorius* (0.47), followed by *Juglans regia (0.42)* while least Uvi was observed for *Lagochillus cabulicus* (0.7).

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The Diversity and Utilization of Medicinal Plant Species used for respiratory diseases in The Eastern Hindukush Chitral

Species Name/V.No	L.N	Family	Habit	Source	Part Use	Preparation	Utilization mood	Diseases treated	FC	RFCs	Uvi
Artemisia scoparia Waldst. & Kitam. /HUP:8779	khrkalich	Asteraceae	Ph	Wild	Fl	Decoction	Oral	Dry cough, respiratory disorder	19	0.20	0.31
Artemisia maritima L./HUP:9053	Dron	Asteraceae	Ph	Wild	Fl	Decoction, infusion	Oral	Asthma, sour throat	20	0.21	0.14
Taraxicum officinale Weber/ HUP:13476	Phowu	Asteraceae	Ph	Wild	Fl	Decoction	Oral	Asthma, flu and cough.	21	0.22	0.11
Allardia glabra Decne. /HUP:9065	Anogulsambar	Asteraceae	Ph	Wild	Fl	Decoction	Oral	sour throat and cough	22	0.23	0.15
Mentha arvensis L./HUP:13489	Podeena	Lamiaceae	Ph	Wild	WP	Decoction	Oral	respiratory infection, influenza	22	0.23	0.17
Allium sativa L./HUP:8739	Threshtu	Alliaceae	Ph	Cult.	Bu, le	Decoction	Oral	cough respiratory infection	22	0.23	0.21
Astagalus psilocentros Fisch. /HUP:13457	Garmezu	Fabaceae	Ph	Wild	WP	Powder, infusion	Oral	Bronchial inflammation	23	0.25	0.14
Artemisia brevifolia Wall.ex.DC./HUP: 8774	Zhaa	Asteraceae	Ph	Wild	Sh	Infusion	Oral	respiratory disorder	23	0.25	0.21
Tragopogon pratensis L./HUP:8794	Cheron	Asteraceae	Ph	Wild	Sh	Infusion	Oral	Bronchial inflammation	21	0.25	0.23
Allium cepa L./ HUP:8738	Wreshnu	Alliaceae	Ph	Cult.	Bu, Le	Decoction	Oral	Cough sour throat, whooping	24	0.26	0.25
Iris germanica L./HUP:8879	Sosan	Iridaceae	Ph	Cult.	Ro	Decoction, infusion	Oral	cough, influenza, asthma	26	0.28	0.33
Cicer microphyllum Benth./HUP:8936	Qaquchung	Fabaceae	Ph	Wild	WP	Decoction	Oral	Respiratory disorder, sore throat	27	0.29	0.13
Rosa webbiana Wall.ex.Royle/ HUP:9009	Throny	Rosaceae	Sh	Wild	Fr, Fl	Infusion	Oral	Asthma and cough.	27	0.29	0.14

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Nepeta cataria L./HUP:8901	Mutruch	Lamiaceae	Ph	Wild	WP	Decoction	Oral	Cough and respiratory infection.	27	0.29	0.18
Anthemis catula L./HUP:8772	Sherest	Asteraceae	Ph	Wild	Fl	Decoction, infusion	Oral	Bronchial inflammation, sour throat and cough	27	0.29	0.31
Juglans regia L./ HUP:8881	Birmogh	Juglandaceae	T	Cult.	Se	Decoction, oil	Oral	Respiratory track pain and tonsils.	31	0.29	0.42
Bergenia stracheyi (Hook.f. & Thorns.) Engl. /HUP:9027	Besabur	Saxifragraceae	Ph	Wild	Ro	Decoction, infusion	Oral	asthma, and whooping cough	29	0.31	0.19
Carthamus tinctorius L./ HUP:9061	Powm	Asteraceae	Ph	Cult.	Fl	Powder	Oral	sour throat and cough	29	0.31	0.47
Crataegus sonagarica K.Koch. /HUP:9019	Guni	Rosaceae	T	Wild	WP	Decoction, infusion	Oral	Respiratory problems, influenza	30	0.32	0.15
Allaja rhomboidei (Benth.) /HUP:13487	leekun	Lamiaceae	Ph	Wild	Fl	Decoction	Oral	respiratory disorder, asthma	30	0.32	0.24
Capparis spinosa L./ HUP:8817	Kavir	Capparaceae	Sh	Wild	Fl	Decoction, infusion	Oral	Asthma, cough and respiratory disorder	30	0.32	0.34
Plantago major L./HUP:8975	Espaghol	Plantaginaceae	Ph	Wild	Se	Decoction	Oral	respiratory infection	32	0.35	0.21
Thymus lineris Benth. Sub Hedgei Jalas/HUP:8891	Seaw	Lamiaceae	Ph	Wild	Fl	Decoction, Powder	Oral	asthma, sour throat ,cough	32	0.35	0.21
Rheum tibeticum Maxim.ex.Hook.F. /HUP:8992	Ishpar	Polygonaceae	Ph	Wild	WP	Decoction, infusion	Oral	respiratory infection and pneumonia	33	0.36	0.31
Primula rosea Royl. /HUP:13512	Bulisqar	Primulacear	Ph	Wild	Fl	Decoction,	Oral	chest infection and respiratory disorder	34	0.37	0.11
Bergenia ciliata (Haw.)Sternb. /HUP:13515	Gholja	Saxifragraceae	Ph	Wild	WP	Infusion, decoction	Oral	Asthma , Bronchial inflammation	34	0.37	0.15
Foniculum vulgare Mill/HUP:13472	Budiong	Apiaceae	Ph	Wild	Se	Powder, Decoction	Oral	pneumonia and asthma	34	0.37	0.17
Mentha longifolia (L.) L./HUP:8804	Baen	Lamiaceae	Ph	Wild	WP	Decoction	Oral	influenza, asthma	34	0.37	0.17

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Cuminum cyminum L./HUP 8754	Zeera	Apiaceae	Ph	Wild	Se	Decoction	Oral	cough and respiratory disorder	34	0.37	0.21
Morus Alba L./HUP:8920	Bedana	Moraceae	T	Cult.	Fr	Decoction, past	Oral	respiratory infection and cough	34	0.37	0.21
Allardia tomentosa Decne. / HUP:8768	Dron Gmburi	Asteraceae	Ph	Wild	Fl	Decoction, Infusion,	Oral	Asthma, sour throat and cough	34	0.37	0.23
Allium carolinianum DC/HUP:8737	Kach	Alliaceae	Ph	Wild	Bu	Decoction	Oral	Cough, respiratory infection	34	0.37	0.23
Campanula leucantha Gilli/HUP:8815	Danu	Campanulaceae	Ph	Wild	Ro	Infusion	Oral	Bronchial inflammation	34	0.37	0.23
Artemisia rutifolia Spreng./ HUP:8778	Phespok	Asteraceae	Ph	Wild	Fl	Decoction Infusion,,	Oral	Asthma, cough and respiratory disorder	34	0.37	0.26
Carum copticum L. /HUP:13471	Shunjmok	Apiaceae	Ph	Wild	Fl	Decoction, powder	Oral	Asthma, Bronchial inflammation	34	0.37	0.26
*Lactuca orientalis (*Boiss) /HUP:8784	Khalawthespuk	Asteraceae	Ph	Wild	Fl	Decoction, Infusion	Oral	Asthma and tonsils	34	0.37	0.26
Carum carvi L./ HUP:8753	Hojoj	Apiaceae	Ph	Wild	Se	Decoction	Oral	Asthma and Bronchial inflammation	34	0.37	0.27
Ephedra intermedia Schrenk&C.A Meyer/HUP:8858	Sumani	Ephedraceae	Sh	Wild	Fr	Decoction, infusion	Oral	asthmatic and bronchitis	34	0.37	0.29
Ferula narthex Boiss. / HUP:8757	Raw	Apiaceae	Ph	Wild	Sh	Infusion, powder	Oral	asthma, cough and respiratory infection	34	0.37	0.35
Artemisia absinthium L./ HUP: 9066	Kharkhalich	Asteraceae	Ph	Wild	Fl	Decoction, Paste	Oral	Asthma, cough and respiratory disorder	34	0.37	0.39
Cichorium intybus L/HUP:9071	Khasty	Asteraceae	Ah	Wild	WP	Decoction	Oral	respiratory disorder Bronchial inflammation	36	0.39	0.12
Lagochillus cabulicus Benth./ HUP:8893	Asqar zukhu	Lamiaceae	Ph	Wild	Fl	Decoction	Oral	sour throat and cough	37	0.40	0.07
Elaeagnus angustifolia L /HUP:8855	Shinjur	Elaeagnaceae	T	Wild	Fr	Decoction, powder	Oral	Sour throat, cough and bronchial inflammation	40	0.44	0.25
Canabas sativa L./HUP:8816	Bongh	Cannabinaceae	Ah	Cult.	Fl, Se	Decoction, infusion	Oral	Asthma, cough and respiratory disorder	42	0.46	0.31

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Sisymbrium irio L./ HUP:8814	Khelikhel	Brassicaceae	Ah	Wild	Se	Infusion	Oral	Tonsils, Bronchial inflammation	44	0.48	0.23
Mentha spacata L./13490	Saspro	Lamiaceae	Ah	Cult.	Fl	Decoction, infusion	Oral	sour throat, Bronchial inflammation	58	0.5	0.40
Solanum nigrum L./HUP:9042	Pirmelik	Solanaceae	Ah	Wild	Fr	Infusion, Paste	Oral	Asthma, dry cough and respiratory disorder	46	0.51	0.16
Papaver somniferum L./HUP:8930	Cocnar	Papavaraceae	Ah	Cult.	Se, ca	Infusion, Paste	Oral	Asthma and cough, sour throat	59	0.61	0.10
Hordium vulgare L./HUP:13447	Khaches	Poaceae	Ah	Cult.	Se	Decoction	Oral	influenza, asthma, pneumonia	45	0.62	0.19
Lens cullinaris Medik./HUP:8667	Sirju	Fabaceae	Ah	Cult.	Fr	Decoction	Oral	Bronchial inflammation and tonsils	47	0.65	0.24

Table to key: Vn=Voucher number, LN=Local Name, Habit: Ah=Annual herb, Ph=perennial herb, Bh=Biennial herb, Source: Wil=Wild, Cult=Cultivated, Part use: FL=Flower, Se=seed, Ca=Capsule, Fr=Fruit, WP=Whole plant, Bu=Bulb, Ro=Root, Le=Leaves, Sh= Shoot

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Novelty and the future impacts

This study is the first insight in the entire study area providing novel insights into the effective traditional medicinal uses of plant species for respiratory disorders. It stands out as a unique contribution to the field of ethno-respiratory knowledge.

While there are some points of relevance with certain ethnobotanical studies within the region and globally, this research, in particular, documents a total of 50 medicinal plant species particularly used for respiratory disorders.

The findings reveal variations in the plant part used, mode of preparations of drugs by the indigenous peoples both inside the county and globally.

This diversity in practices adds fresh perspectives to ethnomedicinal knowledge, contributing to the broader understanding of traditional healing methods for respiratory issues.

CONCLUSION

The study highlights the practice of traditional medicine among the indigenous inhabitants, emphasizing that precise knowledge of medicinal plants is detained by a limited number of individuals within these communities. There is required for a comprehensive assessment of traditional medicinal knowledge retain each indigenous community. Such an exploration is important to preserve the valuable knowledge that goes the risk of disappearing over time.

The study emphasizes the importance of documenting and understanding traditional ethnomedicinal practices before they are lost. Therefore, our study holds significance in inhibiting the loss of medicinal traditions knowledge in Laspur Valley. The species with the maximum use values in our research suggest the possible presence of valuable phytochemical compounds, demanding exploration for potential new drugs to address various respiratory ailments. Further assessment through phytochemical and pharmacological studies is essential. Priority should be given to plants with high use values and high relative frequency of citation. This comprehensive approach can contribute to the validation and development of ethnomedicinal practices for respiratory health in the region. The survey stands as a valuable and enduring compilation, contributing to the preservation of knowledge regarding the use of medicinal plants. Furthermore, it has the potential to spark the interest of upcoming generations in traditional medicinal practices. Beyond its cultural significance, the survey may also play a key role in supplementing the socioeconomic conditions of the local residents. This consideration takes into account the conservation status of the region's valuable natural resources, highlighting the interconnectedness of traditional knowledge, cultural heritage, and sustainable resource management.

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