

## ETHNOBOTANICAL STUDIES OF MEDICINAL PLANTS IN DHAKA CITY, BANGLADESH

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**Keywords:** Perception, Urban area, Ethnomedicinal plants, Consensus, Quantitative ethnobotanical analysis.

### Abstract

This ethnomedicinal study is mainly focused on the perception of the inhabitants of Dhaka City on the medicinal plants used to treat various ailments. The study was conducted between July 2023 and July 2024 using the semi-structured interview technique and supplemented by field interviews, checklist interviews, and market surveys. The study revealed 127 medicinal plant species belonging to 55 families with 376 formularies to treat 82 ailments. The most dominant families were Malvaceae, Fabaceae, Cucurbitaceae, Lamiaceae, Apocynaceae, Moraceae, Arecaceae and Asteraceae. Leaves, having 32% application in traditional medicinal recipes, are the most commonly utilized plant part followed by fruits (22%). According to citation frequency, the most cited medicinal plants were *Ocimum tenuiflorum* L. (7.8%), *Azadirachta indica* A. Juss. (5.5%), *Terminalia arjuna* (Roxb. ex DC.) Wight & Arn. (5.1%), *Aloe vera* L. (4.7%) and *Cynodon dactylon* (L.) Pers. (3.8%). Out of 376 formularies 82% were of internal applications and the rest 18% were external applications. The ailments were recorded under 12 categories such as dermatological disorders, neurological disorders, diabetes, gastro-intestinal disorders, cardiovascular disorders, respiratory disorders, etc. Neurological disorders (0.93) showed the highest Informant consensus factor were values followed by diabetes (0.91) and respiratory disorders (0.90). Among the most cited species, 6 species scored FI values of 100%. They are *Lawsonia inermis* L., *Carissa carandas* L., *Piper nigrum* L., *Senna alata* (L.) Roxb., *Withania somnifera* (L.) Dunal and *Aegle marmelos* (L.) Corrêa. Some novel modes of treatment in respect of earlier studies around this area were unravelled through this study such as the use of *Urtica dioica* L. in treatment of wounds; the combined consumption of *Beta vulgaris* L., *Daucus carota* L., *Cucurbita moschata* Duch. and *Lagenaria siceraria* (Mol.) Standl. against folliculitis; *Nyctanthes arbor-tristis* L. in fever; *Cuminum cyminum* L. in insomnia etc. Sale rates varied from nurseries to nurseries due to the difference in supply and demand rates of medicinal plants. Though the lack of promotion and inadequate breeding of native medicinal plants seemed to be a common problem in all nurseries, during the nursery interviews, in some of the nurseries where plant breeding was done, it was observed that they breed exotic ornamental species more than the native medicinal ones, saying that they were easier to breed.

### Introduction

People's perception of using ethnomedicinal plants for ailments and healthcare can be a stepping stone to the identification of new plant species with prospective commercial appeal. Future research for modern drugs can be based on the list of medicinal plants with high consensus levels (Khan *et al.*, 2014). According to data from the World Health Organization (WHO), about 80% of the world's population, especially the people of developing countries like Bangladesh, still primarily rely on traditional medicines (Islam, 2010). Over 50% of all pharmaceutical drugs have been found to have originated from ethnomedicine (Van Wyk *et al.*, 1997). As people move to Dhaka from all corners of Bangladesh, the city has turned into a melting pot of different cultures. This constant migration has actually helped keep various regional, traditional healing secrets alive as people share their practices with one another. Adequate documentation of such knowledge is

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important because ethnomedicinal healers have a long association with herbs and their medicinal properties (Kabir *et al.*, 2014). Instead of top-down approaches to development, the newly emerging bottom-up oriented development models give more credence to local perspectives (Preston, 1996; Narman, 1999). The alarming news is that the biodiversity of the city is being lost at a high rate due to pollution, overpopulation, excessive use, unplanned industrialization and urbanization etc., threatening many species. Though some preliminary works have been done on this topic and some were done in relation to specific diseases (Alam, 1992; Alam *et al.*, 1996), very few detailed documentations of overall medicinal plants around this city could be found (Uddin *et al.*, 2019, Uddin *et al.*, 2024). So, it seems crucial to collect and preserve the vast knowledge pool before it is lost and determine which plants are in need of conservation or commercialization and which ones have potential for pharmaceutical research. One of the most key sources of flora in the city are nurseries. Numerous nurseries that have been constructed in various parts of the city are crucial to the effective execution of programs for planting trees and establishing forests. Although they could shed some information on the current demand and availability of medicinal plants in the city, these nurseries were not included in the earlier ethnomedicinal research conducted in this area. Though a study was conducted in Jessore and Gazipur districts to assess the socio-economic status of plant nursery business in Bangladesh (Haque *et al.*, 2007), but the supply, sales and demand rates for medicinal plants were not considered.

We found no earlier ethnobotanical research that explicitly examined nurseries for the development of metrics related to the trade in medicinal plants. In Bangladesh, some projects (Rahman *et al.* 2022) incorporated nursery owners only as key informants, without quantifying plant sales. An ethnobotanical survey in Turkey (Kaya *et al.* 2025) focused on the importance of plant based traditional knowledge, not nurseries. Another research (Phondani *et al.* 2015) included nursery owners in a broad stakeholder interview set. Recently, Oubida *et al.* (2025) performed a national nursery-manager survey for tree seedlings, yet this did not target medicinal plants. These examples show that formal nursery surveys are almost absent in the previous ethnobotanical studies, confirming that our nursery survey (tracking sale/demand of native medicinal plants) is novel within this field.

The primary objective of this study was to document the traditional healthcare knowledge of local plant species, to identify the most common medicinal plants and their probable therapeutic potential by quantitative ethnobotanical analysis, to observe which plants are more in demand in nurseries and have less supply than demand and to assess local public opinion on prioritizing species for conservation and possible ways for their sustainable use and long-term management in the urban area of Dhaka city.

### **Materials and Methods**

The study area is Dhaka city, located along the Buriganga River, between 23.58°N & 23.90°N, 90.33°E & 90.50°E, on the lower reaches of Ganges Delta and bounded by the Buriganga, Turag, Dhaleshwari and Shitalakshya Rivers. 20 spots were selected randomly from Dhaka City, collecting data mainly from slums, marketplaces, parks, rickshaw stands and educational institutions.

Data sheet and questionnaire for ethnobotanical surveys were used and inhabitants around the selected areas were interviewed through open-ended, semi-structured interviews along with a few closed questions (Alexiades, 1996). Overall 300 local informants were interviewed during the ethnobotanical survey running from July 2023 and July 2024. The gender distribution was nearly balanced, comprising 51% males and 49% females. Informants represented a broad age range,

with the majority belonging to the 31–45 years age group (34%), followed by 16–30 years (33%) and 46–60 years (24%). Elderly participants represent a comparatively smaller proportion, including 61–75 years (5%), 76–90 years (3%), and 91–105 years (1%). The respondents were drawn from diverse occupational backgrounds, predominantly housewives (54) and farmers (51), followed by rickshaw-pullers (43), service holders (38), and private job holders (32). Additional professions included teachers (12), shopkeepers (18), laborers (16), businessmen (9), cobblers (7), boatmen (6), and a small number of unemployed individuals (3). This diverse socio-economic representation strengthened the comprehensiveness and reliability of the recorded traditional medicinal knowledge across the study area.

Voucher specimens for each medicinal plant were collected and processed using standard herbarium techniques (Hyland, 1972; Alexiades, 1996). The plant species were identified with the help of experts. The ones which couldn't be identified on spot were collected as samples to bring to the laboratory and identify with the help of literatures and articles (Prain, 1903; Uddin & Hassan, 2004; Siddiqui *et al.*, 2007; Ahmed *et al.* 2008-09, 2008a).

To quantify the ethnomedicinal significance of plant species and the level of agreement among informants, several ethnobotanical indices were calculated. The Factor of Informant Consensus (FIC) was determined using the formula,  $FIC = (N_{ur} - N_{taxa}) / (N_{ur} - 1)$ ; where  $N_{ur}$  represents the number of use reports for a particular disease category and  $N_{taxa}$  denotes the number of species used for that category (Heinrich *et al.*, 1998). FIC values range from 0 to 1 where the higher values indicate the greater agreement among informants regarding the use of specific plants for treating particular ailments (Ragupathy *et al.*, 2008). The Citation Frequency (CF%) was calculated as  $CF\% = (N_p / N_t) \times 100$ ; where  $N_p$  denotes the number of citations of a given species and  $N_t$  is the total number of citations recorded for all species. This index reflects the relative prominence of each species within the study area (Friedman *et al.*, 1986). The Fidelity Level (FL%) was estimated using  $FL\% = (I_p / I_u) \times 100$ ; where  $I_p$  is the number of informants who independently reported the use of a species for the same specific ailment and  $I_u$  indicates the total number of informants who mentioned the species for any medicinal use.

Additionally, a nursery-based market survey was conducted to assess the commercial availability and demand for medicinal plants. The Sale through Rate was calculated using  $\text{Sale Rate} = (\text{The number of units sold} / \text{the number of units received}) \times 100$  (Greene *et al.*, 2020). The Demand Rate (R) was determined using  $R = Q / T$ ; where Q represents the quantity of plant products demanded and T denotes the time period (Mishra, 2014). These indices were used to evaluate the market demand and trade dynamics of medicinal plants in local nurseries.

## Result and Discussion

The present study has recorded a total of 127 medicinal plant species, belonging to 55 families, with 376 formularies from in and around the Dhaka City. The local people use these medicinal plants for the treatment of around 82 different ailments. About 13% of the total informants have acknowledged that they rely only on modern medicines for their problems. It was a bit difficult to judge whether educational qualification had any effect on their perception, because mixed reactions were obtained from both highly educated and less educated people. Still, around 6% of the inhabitants used the full plants in their recipes, and this is threatening their number decline. This could be due to a lack of knowledge or awareness. However, a clear impact of social standing was observed on their perception, as the poor or middle-class group preferred herbal medicine rather than modern ones, whereas the higher-class people felt more at comfort with modern medicines. Some novel modes of treatment, previously not documented in the nearby areas, were unravelled through this investigation such as - the use of *U. dioica* L. in treatment of wounds; the combined consumption of *B. vulgaris* L., *D. carota* L., *C. moschata* and *L. siceraria*

against folliculitis; use of *N. arbor-tristis* L. in fever; use of *C. cyminum* L. in insomnia. (Uddin *et al.*, 2023; Uddin *et al.*, 2019; Ahmed *et al.*, 2017; Khan *et al.*, 2014; Uddin *et al.*, 2001; Hassan *et al.*, 1996). Scientific name, local name, family, habit, parts used, ailments and treatment mode for each species have been provided in the ethnomedicinal data table (Table 1)

**Table 1. Ethnomedicinal data on medicinal plants in Dhaka city, Bangladesh.** (L=Leaf, B=Bark, F=Fruit, R=Root, W=Whole Plant, Sm=Stem, Fl=Flower, Sd=Seed, St=Stigma of flower, Bb=Bulb, Tu=Tuber, Rh=Rhizome, Lx=Latex)

Scientific Name	Local Name	Family	Ailment	Parts Used	Mode of Treatment
<i>Abelmoschus esculentus</i> (L.) Moench (F-113)	Vendi, Dherosh	Malvaceae	Fragile bones	F	Cooked and consumed
<i>Abroma augustum</i> (L.) L.f. (F-109)	Ulat kambal	Malvaceae	Constipation	B, Sm	Latex consumed after soaking in water
<i>Abrus precatorius</i> L. (F-99)	Kuch	Fabaceae	Sores and Boils	B, Sm	Extract consumed
			Cough and Cold	L	Extract consumed
<i>Aegle marmelos</i> (L.) Corrêa (F-79)	Bel	Rutaceae	Skin problems	L	Paste applied on affected areas
			Dysentery	F	Decoction of Half ripen fruit consumed
<i>Allium cepa</i> (Burm.f.) Nees (F-64)	Piyaj	Amaryllidaceae	Gastric	F	Juice consumed
			Hair problems	Bb	Extract applied on hair
<i>Allium sativum</i> L. (F-59)	Rosun	Amaryllidaceae	Head ache	Bb	Extract consumed
			Cough & Cold	Bb	Massaging with extract
			Dental infection	Bb	Bulb is consumed
			Old sores or wounds	Bb	Paste applied on wound
			Cough & Cold	Bb	Consumed raw or with food
			Osteoporosis	Bb	Paste Consumed with milk
			Ear ache	Bb	A piece kept in ear cavity for a few minutes
				Bb	Decoction with mustard is applied
Arthritis pain	Bb	Paste consumed with Sajne paste			
<i>Aloe vera</i> (L.) Burm. f. (F-43)	Ghritokumari	Asphodelaceae	Dental cavities	L	Gurgling with leaf extract
			Roughness of skin	L	Skin washed with leaf extract
			Constipation	L	Juice consumed
			Gastric	L	Juice consumed
			Indigestion	L	Juice consumed
			Hair problems	L	Hair massaged with gel extract
			Head ache	L	Head massaged with gel extract
			Insomnia	L	Juice consumed
			Allergy or itching	L	Extract applied externally
			Inflammation	L	Extract applied externally
Minor cuts and Burns	L	Extract applied externally			

**Table 1 contd.**

Scientific Name	Local Name	Family	Ailment	Parts Used	Mode of Treatment
<i>Amaranthus cruentus</i> L. (F-39)	Lal shak	Amaranthaceae	Reduced eyesight	L	Cooked and consumed
			Anaemia	L	Cooked and consumed
<i>Andrographis paniculata</i> (Burm.f.) Nees. (F-37)	Kalomegh, Chirota	Acanthaceae	Cough and Cold	L	Leaf extract consumed
			Hairfall	W	Extract applied on hair
			Stomach disorders	L	Infusion consumed
			Liver dysfunction	L	Extract consumed
			Diabetes	L	Powdered and consumed with water
			Allergy or Itching	B	Extract consumed
<i>Annona squamosa</i> L. (F-104)	Ata, sharifa	Annonaceae	Fever	R	Infusion consumed
			Indigestion	F	Eaten raw
			Asthma	F	Eaten raw
			Blood purification	F	Eaten raw
<i>Areca catechu</i> L. (F-73)	Supari	Arecaceae	Cancer	L	Extract consumed
			Lice eradication	Sd	Extract applied on hair
			Abdominal pain	L	Paste used for Massaging abdomen with betel leaf paste
<i>Artemisia vulgaris</i> L. (F-52)	Dona	Asteraceae	Indigestion	W	Extract consumed
			Acne	W	Extract mixed with Thankuni extract & tea is consumed
			Skin irritation	W	Extract mixed with Thankuni extract & tea is consumed
<i>Artocarpus heterophyllus</i> Lam. (F-80)	Kathal	Moraceae	Constipation	Sd	Mashed or cooked and consumed
			Indigestion	Sd	Mashed or cooked and consumed
<i>Asparagus racemosus</i> Willd. (F-88)	Shotomuli	Asparagaceae	Constipation	W	Consumed as vegetable
				R	Extract consumed
			Dysentery	R	Powdered and consumed
			Urinary infection	R	Raw root extract consumed 2× a day
			Impotence	R	Extract consumed with sugar and milk
<i>Averrhoa bilimbi</i> L. (F-16)	Bilimbi	Oxalidaceae	Diabetes	F	Fruit is Consumed
<i>Averrhoa carambola</i> L. (F-01)	Kamranga	Oxalidaceae	Itching	F	Fruit is Consumed
			High Blood pressure	F	Eaten raw or as Salad

**Table 1 contd.**

Scientific Name	Local Name	Family	Ailment	Parts Used	Mode of Treatment
<i>Azadirachta indica</i> A. Juss. (F-78)	Neem	Meliaceae	Cough and Cold	L	Leaf extract consumed
			Skin problems	L	Decoction for bathing
				L	Paste applied on affected areas
				L	Paste consumed as pills
			Hair problems	L	Oil extract applied on hair
			Insect bites	L	Extract mixed with turmeric paste is applied on the affected area
			Weak teeth and bad odour	Sm	Chewed raw
			Minor cuts and Burns	L	Paste applied on affected areas
			Stomach disorders	L	Extract consumed
			<i>Baccaurea motleyana</i> (Müll.Arg.) Müll.Arg. (F-71)	Lotkon	Phyllanthaceae
High Blood pressure	F	Fruit Consumed			
<i>Bacopa monnieri</i> (L.) Wettst. (F-73)	Brahmishak, Maloncho	Plantaginaceae	Diabetes	F	Eaten raw
			Reduced Memory	L	Cooked and consumed
			Cancer	L	Cooked and consumed
<i>Bambusa balcooa</i> Roxb. (F-85)	Balkua Bash	Poaceae	Epilepsy	L	Cooked and consumed
<i>Bambusa balcooa</i> Roxb. (F-85)	Balkua Bash	Poaceae	Impotence	R	Extract consumed
<i>Basella alba</i> L.	Pui Shak	Basellaceae	High Blood pressure	L, Sm	Cooked and consumed
<i>Bauhinia acuminata</i> L.	Shwet Kanchon	Fabaceae	Asthma	B	Decoction Consumed 2× a day
			Leprosy	L	Paste applied on affected areas
			Stomach Pain	L, B	Decoction consumed with honey
<i>Benincasa hispida</i> (Thunb.) Cogn.	Chalkumra	Cucurbitaceae	Constipation	F	Cooked and consumed
<i>Beta vulgaris</i> L. (F-	Beet	Amaranthaceae	Brain tonic	F	Cooked and consumed
			Folliculitis	R	Cooked combined with Carrot, pumpkin, & bottle gourd to consume
<i>Boerhavia diffusa</i> L.	Punarnava, Punorvoba, Punair shak	Nyctaginaceae	Jaundice	L	Extract consumed
			Edema	W	Fresh plant extract consumed
			Dry cough	W	Extract consumed

**Table 1 contd.**

Scientific Name	Local Name	Family	Ailment	Parts Used	Mode of Treatment
<i>Bombax ceiba</i> L.	Shimul	Malvaceae	Menorrhagia	R	Powdered root consumed with sugar
			Impotence	R	Powdered root consumed with sugar
<i>Borassus flabellifer</i> L.	Tal	Arecaceae	High Cholesterol	Sd	Oil consumed
<i>Brassica rapa</i> L.	Sorisha	Brassicaceae	Itching	Sd	Oil extract mixed with lemon juice applied on skin
			Cough and Cold	Sd	Steam of oil extract inhaled
			Cracked heels	Sd	Massaging with oil extract
<i>Calophyllum inophyllum</i> L.	Tamanu	Calophyllaceae	Ulcer	R	Decoction consumed
			Leprosy	Sd, Lx	Latex of seed is applied on the affected areas
<i>Calotropis gigantea</i> (L.) W.T.Aiton	Akondo/ Akon pata	Apocynaceae	Toothache	Lx	Latex smeared on cotton and applied on the affected area
<i>Calotropis procera</i> (Ait.) R. Br.	Choto Akondo	Apocynaceae	Arthritis pain	L	Paste used for Massaging
			Asthma	R, Lx	Soaked in latex, powdered and steamed for inhaling
<i>Camellia sinensis</i> (L.) Kuntze	Cha	Theaceae	Acne	L	Extract mixed with Thankuni & Dona extract is consumed
			Skin irritation	L	Extract mixed with Thankuni & Dona extract is consumed
<i>Capsicum annum</i> L.	Capsicum	Solanaceae	Fatigue	L	Decoction consumed
			Back pain	F	Consumed as Salad or cooked
<i>Carica papaya</i> L. (F-02)	Pepe	Caricaceae	Acne	F	Slices are rubbed on the affected area
			Jaundice	F	Juice consumed
			Gastric	F	Ripe fruit or Juice consumed
			Indigestion	F	Ripe fruit or Juice consumed
<i>Carissa carandas</i> L.	Karamcha	Apocynaceae	Loss of appetite	F	Eaten raw
<i>Cassia fistula</i> L.	Sonalu, Badorlathi	Fabaceae	Arthritis pain	B	Paste used for massaging
			Goitre	L	Decoction
<i>Centella asiatica</i> (L.) Urb. (F-03)	Thankuni, Adamoni	Apiaceae	Constipation	R, B	Decoction
			Indigestion	W	Mashed and consumed
			Stomach Pain	W	Mashed and consumed
				L	Chewed raw or extract consumed
			Gastric	L	Extract consumed
			Diarrhoea	L	Extract consumed
			Dysentery	W	Cooked and consumed
			Ulcer	W	Cooked and consumed
Arthritis pain	W	Cooked and consumed			

**Table 1 contd.**

Scientific Name	Local Name	Family	Ailment	Parts Used	Mode of Treatment
			Acne	W	Extract mixed with Thankuni extract & tea is consumed
			Skin irritation	W	Extract mixed with Thankuni extract & tea is consumed
			Hairfall	L	Extract consumed
			Diabetes	L	Chop consumed
			Reduced Memory	W	Mashed or cooked and consumed
<i>Citrullus lanatus</i> (Thunb.) Matsum. & Nakai	Tormuz	Cucurbitaceae	High Cholesterol	F	Eaten raw
<i>Citrus limon</i> (L.) Burm. f. (F-04)	Lebu	Rutaceae	Seasonal cough and Cold	F	Extract consumed with food
			Cataract	F	Juice consumed
			Itching	F	Juice applied on skin with mustard extract
			Low Immunity	F	Extract consumed with food
			High Blood pressure	F	Juice consumed
			Constipation	F	Juice consumed
			Anaemia	F	Extract consumed with food
<i>Clerodendrum infortunatum</i> L.	Bhat	Lamiaceae	Skin problems	L	Extract used for massaging
<i>Coccinia grandis</i> (L.) Voigt	Telakucha, Telachora	Cucurbitaceae	Fever	L	Extract consumed
			Jaundice	R	Extract consumed
			Diabetes	W	Consumed as Vegetable or Mashed
				W	Extract consumed
<i>Cocos nucifera</i> L.	Dab	Areaceae	Diarrhoea	F, Sd	Liquid inside the fruit is consumed
			Fatigue	F, Sd	Liquid inside the fruit is consumed
<i>Colocasia esculenta</i> (L.) Schott	Kochu	Araceae	Anaemia	L	Cooked and consumed
			Blood purification	L	Cooked and consumed
			Wound	Sm	Gum applied
			Night blindness	L	Cooked and consumed
			Indigestion	R	Cooked and consumed
			Aging	W	Consumed as vegetable
<i>Coriandrum sativum</i> L.	Dhone, Dhoniya, Dhoinna	Apiaceae	Indigestion	W	Mashed or cooked and consumed
				W	Consumed as Chutney
			Skin infection	L	Paste applied on affected areas
			Diabetes	L	Eaten raw

**Table 1 contd.**

Scientific Name	Local Name	Family	Ailment	Parts Used	Mode of Treatment
<i>Cucumis sativus</i> L.	Shosha	Cucurbitaceae	Skin problems	F	Paste applied on skin
				F	Eaten raw
<i>Cucurbita moschata</i> Duch.	Misti kumra	Cucurbitaceae	Folliculitis	F	Cooked combined with Beetroot, Carrot, & bottle gourd & consumed
				F	Cooked and consumed
<i>Cuminum cyminum</i> L.	Jira	Apiaceae	Indigestion	Sd	Powdered and mixed with water to consume
				Sd	Consumed with food as spice
			Insomnia	Sd	Consumed with food as spice
			High Cholesterol	Sd	Consumed with food as spice
<i>Curcuma longa</i> L.	Holud	Zingiberaceae	Skin problems	Rh	Paste applied on affected areas
			Acne	Rh	Extract consumed with Neem extract & molasses
			Insect bites	Rh	Paste mixed with Neem extract applied on affected areas
			Wounds	Rh	Paste applied on affected areas
			High Cholesterol	Rh	Powdered and consumed with water
			Indigestion	Rh	Powdered and consumed with water or milk
			Diarrhoea	Rh	Paste mixed with Bon jui extract is consumed
			Gastric	Rh	Powdered and consumed with water or milk
<i>Cuscuta reflexa</i> Roxb.	Shornolota	Convolvulaceae	Jaundice	W	Decoction consumed
			Mouth Sore	W	Extract used for gurgling
<i>Cynodon dactylon</i> (L.) Pers.	Durba	Poaceae	Cuts and Wounds	W	Paste applied on wound
			Leucorrhoea	W	1/2 cup leaf extract consumed per day
<i>Datura metel</i> L.	Dhutura	Solanaceae	Mouth Sore	W	Chewed raw
			Asthma	L	Dried, powdered and consumed
<i>Daucus carota</i> L.	Gajor	Apiaceae	Skin tone darkening	R	Consumed raw or with Salad
			Reduced eyesight	R	Consumed raw or with Salad
			Folliculitis	R	Cooked combined with Beetroot, pumpkin, & bottle gourd to consume

**Table 1 contd.**

Scientific Name	Local Name	Family	Ailment	Parts Used	Mode of Treatment
<i>Eclipta prostrata</i> L.	Kalokeshi, Keshraj	Asteraceae	Hairfall	L	Applied on hair after boiling with Amlaki, Kari pata and Methi
				L	Extract applied on hair
			Fungal allergy	L	Extract consumed
			Minor cuts and wounds	L	Paste applied on wound
<i>Elaeis guineensis</i> Jacq.	Palm	Arecaceae	High Cholesterol	Sd	Oil extract used for cooking
<i>Elaeocarpus serratus</i> L.	Jolpai	Elaeocarpaceae	Osteoporosis	F	Fruit consumed
<i>Erythrina variegata</i> L.	Mandar	Fabaceae	Impotence	R	Powdered and consumed
			Stomach disorders	L	Leaf extract consumed
			Fever	R	Powdered & mixed with water to consume
<i>Euphorbia hirta</i> L.	Dudhiya	Euphorbiaceae	Reduced Milk production	R	Decoction consumed
<i>Ficus benghalensis</i> L.	Bot	Moraceae	Cough and Cold	L	Extract consumed
<i>Ficus racemosa</i> L.	Jog Dumur	Moraceae	Diarrhoea	F	Fruit is Consumed
<i>Ficus religiosa</i> L.	Ashwath	Moraceae	Diarrhoea	L	Extract consumed
<i>Ficus sycomorus</i> L.	Dumur	Moraceae	Overweight	F	Fruit is Consumed
			Acne	F	Paste applied on affected areas
<i>Foeniculum vulgare</i> Mill.	Mouri	Apiaceae	Indigestion	Sd	Infusion consumed on empty stomach
			Loss of eyesight	Sd	Infusion consumed on empty stomach
<i>Gossypium herbaceum</i> L.	Tula	Malvaceae	Urinary infection	L	Decoction consumed with milk after cooling
<i>Gynura procumbens</i> (Lour.) Merr.	Gynura	Asteraceae	Diabetes	L	Leaf is consumed
<i>Heliotropium indium</i> L.	Hatishur	Boraginaceae	insect bites	L	Paste applied on affected areas
<i>Hemidesmus indicus</i> (L.) R. Br.	Anantamul	Apocynaceae	Diarrhoea	R	Extract consumed
<i>Hibiscus rosa-sinensis</i> L.	Raktjoba, Joba	Malvaceae	Hairfall	L	Paste applied on hair
			Insomnia	L	Massaging with oil extract
			Jaundice	L	Extract consumed
			Skin infection	L	Paste applied on affected areas
			Menstrual pain	Fl	Paste consumed with Tamarind Chutney
			Menorrhagia	L	Consumed after frying in clarified butter
<i>Hibiscus sabdariffa</i> L.	Chukur, Chukai	Malvaceae	Nerve disorders	L & F	Consumed with other food
			High Blood pressure	L & F	Consumed with other food

Table 1 contd.

Scientific Name	Local Name	Family	Ailment	Parts Used	Mode of Treatment
<i>Holarrhena antidysenterica</i> Wall. ex G.Don.	Kurchi	Apocynaceae	Kidney stone	Sd	Powdered and consumed
<i>Ipomoea aquatica</i> Fors.	Kolmi	Convolvulaceae	Dysentery	L	Extract consumed
			Indigestion	L	Cooked and consumed
<i>Ipomoea mauritiana</i> Jacq.	Vui Kumra, Vui Kumur	Convolvulaceae	Reduced eyesight	L	Cooked and consumed
			Reduced Milk production	F	Dried pulp powdered and consumed
			Constipation	F	Dried pulp powdered and consumed
<i>Justicia adhatoda</i> L.	Basak	Acanthaceae	Urinary infection	F	Dried pulp powdered and consumed
			Asthma	L	Extract consumed
			Fever	L	Extract mixed with Tulshi extract & honey consumed
			Convulsion	L	Extract consumed regularly
			Impotence	L	Powdered with Arjun bark & consumed
			Throat pain	L	Extract consumed
			Nettle Rash	L	Paste applied on affected areas
<i>Kalanchoe pinnata</i> (Lamk.) Pers.	Patharkuchi	Crassulaceae	Cough and Cold	L	Extract consumed with honey
			Allergy	L	Paste applied on affected areas
			Kidney stone	L	Extract consumed
			Cough and Cold	L	Extract consumed
<i>Lagenaria siceraria</i> (Mol.) Stan.	Lau, Kodu	Cucurbitaceae	Stomache pain	L	Paste is consumed
			Insomnia	L	Cooked and consumed
			Hairfall	F	Oil extract applied on hair
			Headache	F	Oil extract used for massaging
			Folliculitis	F	Cooked combined with Beetroot, pumpkin, & Carrot and consumed
<i>Lagerstroemia speciosa</i> (L.) Pers.	Jarul	Lythraceae	Fever	L	Extract consumed
<i>Lawsonia inermis</i> L.	Mehedi	Lythraceae	Hair problems	L	Paste applied on hair
			Allergy	L	Paste applied on affected areas
<i>Leucas aspera</i> (Willd.) Link	Shwetodron, Dondo kolosh, Dhurup Shak, Dulfi	Lamiaceae	Cough and Cold	L	Extract consumed
				L	Steamed and inhaled
				L	Cooked and consumed

**Table 1 contd.**

Scientific Name	Local Name	Family	Ailment	Parts Used	Mode of Treatment
<i>Litchi chinensis</i> Sonn.	Lichu	Sapindaceae	Intestinal worms	L	Extract consumed with a little salt
			Bone ache	R	Massaging with extract for a long period of time
			Ear pain	L	Extract consumed
			Ulcer	F	Eaten raw
			Diabetes	F	Eaten raw
<i>Litsea glutinosa</i> (Lour.) C.B.Rob.	Menda, Kharajura, Karjuki	Lauraceae	Flatulence	F	Eaten raw
			Chest pain	L	Paste used for massaging
<i>Mangifera indica</i> L.	Aam	Anacardiaceae	Leucorrhoea	L	Extract consumed
			Dysentery	L	Paste consumed
			Constipation	L	Paste consumed with water
			Diarrhoea	L	Extract consumed
			Stomach Pain	L	Latex of leaf is consumed
			Indigestion	F	Eaten raw or as juice
			Lack of Appetite	F	Eaten raw or as juice
			Dysentery	L	Powdered and consumed with water
			Constipation	F	Eaten raw or as juice
			Respiratory troubles	L	Decoction consumed with honey
<i>Mansoa alliacea</i> Gent.	Parul	Bignoniaceae	Stomach Pain	L	Infusion prepared in hot water overnight & consumed on empty stomach
<i>Mentha spicata</i> L.	Pudina	Lamiaceae	Arthritis pain	R	Infusion consumed
			Indigestion	L	Consumed as Chutney
				L	Juice Consumed
<i>Mesosphaerum suaveolens</i> (L.) Kuntze	Tokma, Tunka	Lamiaceae		L	Consumed with Salad or curry
			Dysentery	L	Juice Consumed
			Nausea	L	Extract consumed with tea
			Stomach Pain	Sd	Consumed after soaking in water
			Gastric	Sd	Infusion consumed with Aloevera and Black cumin juice
			Diabetes	Sd	Juice consumed
			Indigestion	Sd	Infusion consumed
			Constipation	Sd	Infusion consumed with Aloevera and Black cumin juice
<i>Mimosa pudica</i> L.	Lojjaboti	Fabaceae		Sd	Infusion Consumed with milk
			Bone ache	L	Paste used for massaging
			Diarrhoea	R	Powdered and consumed
<i>Mimusops elengi</i> L.	Bokul	Sapotaceae	Toothache	F	Eaten raw

**Table 1 contd.**

Scientific Name	Local Name	Family	Ailment	Parts Used	Mode of Treatment
<i>Momordica charantia</i> L.	Korola	Cucurbitaceae	Diabetes	F	Cooked and consumed
			Skin Problems	F	Extract Consumed on empty stomach
			Arthritis pain	F	Extract consumed
			Asthma	F	Extract consumed with honey and water
<i>Moringa oleifera</i> Lam.	Sajne, Sajna, Sajina	Moringaceae	Arthritis pain	L	Paste eaten with garlic paste
<i>Musa paradisiaca</i> L.	Kola	Musaceae	Anaemia	L	Cooked and consumed
			Loose motion/Diarrhoea	F	Fruit consumed raw
				F	Cooked with Shing fish
			Skin problems	F	Paste applied on skin
			Indigestion	F	Fruit consumed
<i>Nigella sativa</i> L.	Kalojira, Kalijira	Ranunculaceae	Potassium deficiency/ Electrolyte imbalance	F	Fruit consumed ripe
			Respiratory problem	Sd	Paste is consumed
			Diabetes	Sd	Oil extract mixed with tea is consumed
			Constipation	Sd	Juice made with Aloe vera and tokma
			Brain tonic	Sd	Oil extract mixed with tea is consumed
			Heart disease	Sd	Oil extract mixed with tea is consumed
			Fever	Sd	Oil extract consumed
			Low Immunity	Sd	Consumed with food
<i>Nyctanthes arbor-tristis</i> L.	Shiuli	Oleaceae	Fever	L	Extract consumed
<i>Ocimum tenuiflorum</i> L.	Tulshi	Lamiaceae	Cough and Cold	L	Leaf extract consumed with honey
				L	Extract consumed with tea
				L	Leaf chewed
			Brain tonic	L	Consumed after frying in clarified butter
			Stomach Pain	L	Extract consumed
			High Blood pressure	L	Extract consumed
			Allergy	L	Paste consumed with turmeric powder
				L	Extract consumed with honey
<i>Phoenix dactylifera</i> L.	Khejur	Areaceae	Fever	L	Extract consumed with honey
			High Blood pressure	F	Eaten raw
			Impotence	F	Eaten raw
			Physical weakness	F	Eaten raw
			Constipation	F	Consumed after soaking in water

**Table 1 contd.**

Scientific Name	Local Name	Family	Ailment	Parts Used	Mode of Treatment
<i>Phyllanthus emblica</i> L.	Amlaki	Phyllanthaceae	High Blood pressure	F	Eaten raw
			Hairfall	F	Applied on hair after boiling with Keshraj and Methi
			Headache	F	Oil extract applied on hair
			Indigestion	F	Powdered and consumed after mixing with water
			Piles	F	Extract consumed
			Conjunctivitis	F	extract applied on eyes 2 drops per day
<i>Phyllanthus niruri</i> L.	Vui Amla	Phyllanthaceae	Loss of appetite	F	Eaten raw
			Jaundice	L	Extract consumed
<i>Piper longum</i> L.	Pipul	Piperaceae	Cough and Cold	R	Paste consumed
<i>Piper nigrum</i> L.	Gol morich	Piperaceae	Indigestion	F	Dried and powdered to be used as spice
<i>Plantago ovata</i> Forssk.	Isubgul	Plantaginaceae	Constipation	Sd	Husk soaked in water is consumed with Sugar
<i>Plumbago zeylanica</i> L.	Sada Chita	Plumbaginaceae	Ulcer pain	R	Powder consumed with curd
			Edema	L	Extract consumed
<i>Polyalthia longifolia</i> Sonn.	Debdaru	Annonaceae	Skin problems	Sd	Oil extract applied
<i>Psidium guajava</i> L.	Peyara	Myrtaceae	Constipation	F	Eaten raw
			Indigestion	F	Eaten raw
			Reduced eyesight	F	Eaten raw
			Toothache	L	Extract consumed
<i>Punica granatum</i> L.	Dalim	Lythraceae	Blood deficiency	F	Eaten raw
<i>Rauvolfia serpentina</i> (L.) Benth. ex Kurz	Sharpagandha	Apocynaceae	Snake bites	R	Extract orally taken
			Stomach Pain	R	Extract consumed
			Cough and Cold	R	Extract consumed
<i>Rosa chinensis</i> Jacq.	Golap	Rosaceae	Insomnia	R	Powdered and consumed with water
			Skin problems	Fl	Petals soaked in water for bath
			Throat ache	Fl	Extract consumed
<i>Saccharum officinarum</i> L.	Akh, Ikkhu	Poaceae	Jaundice	Sm	Juice consumed
			Flatulence	Sm	Juice consumed
			Dizziness, low blood sugar	Sm	Juice consumed
<i>Scoparia dulcis</i> L.	Bon dhone, Bon Dhoniya	Plantaginaceae	Itching	L	Paste applied on affected areas
			Diarrhoea	L	Extract consumed
<i>Selenicereus undatus</i> (Haw.) D.R. Hunt	Dragon fol	Cactaceae	Diabetes	F	Eaten raw
<i>Senna alata</i> (L.) Roxb.	Daadmardan	Fabaceae	Skin problems	L	Paste applied on affected areas

**Table 1 contd.**

Scientific Name	Local Name	Family	Ailment	Parts Used	Mode of Treatment
<i>Senna alexandrina</i> var. <i>alexandrina</i> Mill.	Shonapata	Caesalpiniaceae	Constipation	L	Infusion consumed
<i>Smilax zeylanica</i> L.	Kumari kata, Kumarilata	Liliaceae	Testes pain	R	Decoction consumed
<i>Solanum tuberosum</i> L.	Alu	Solanaceae	Menstrual pain	R	Extract consumed
<i>Spinacia oleracea</i> L.	Palong Shak	Amaranthaceae	Minor burns	Tu	Paste applied on affected areas
			High Blood pressure	L	Cooked and consumed
				L	Juice consumed
			Physical weakness	L	Paste consumed
			Intestinal worms	Sd	Oil extract consumed
<i>Sterculia foetida</i> L.	Box Badam	Malvaceae	Diabetes	L	Cooked and consumed
<i>Swietenia mahagoni</i> (L.) Jacq.	Mahagoni	Meliaceae	Fever	L	Infusion consumed
			Diabetes	Sd	Powder consumed mixing with hot water
<i>Syzygium aromaticum</i> L.	Lobongo, long	Myrtaceae	Diarrhoea	L	Extract consumed
			Cough and Cold	St	Extract Consumed directly or with tea
			Toothache	St	Paste applied
			Acne	St	Paste applied on affected areas
			Throat ache	St	Decoction consumed
			Dental cavities	St	Gurgling with extract
<i>Tamarindus indica</i> L.	Jam, Kalojam	Myrtaceae	Dysentery	L	Decoction consumed with milk
			Diabetes	Sd	Consumed as paste
			Diarrhoea	Sd	Paste consumed
			Fever	L	Extract boiled with water and consumed
<i>Tagetes erecta</i> L.	Gada	Asteraceae	Cuts and Wounds	L	Paste applied on wound
	Tetul	Fabaceae	High Blood pressure	F	Eaten raw or as Chutney
			Dysmenorrhea/ Menstrual pain	F	Eaten raw or as Chutney
<i>Terminalia arjuna</i> (Roxb. ex DC.) Wight & Arn	Arjun	Combretaceae	Heart Disease	B	Powder consumed with sugar and milk
			Impotence	B	Powdered with Basak leaf and consumed
			Bone fracture	B	Paste consumed mixed with garlic paste
			High Blood pressure	F	Powdered fruit consumed by mixing with water
			Stomachache	F	Powdered and consumed mixing with honey
			Peptic ulcer	B	Extract consumed after soaking in water
			Asthma	F	Cut pieces used for smoking
			Low Blood pressure	B	Extract consumed

**Table 1 contd.**

Scientific Name	Local Name	Family	Ailment	Parts Used	Mode of Treatment
<i>Terminalia bellirica</i> Roxb.	Bohera	Combretaceae	Dysentery	F	Powdered fruit consumed by mixing with water
			Loss of Appetite	F	Powdered and consumed
			High Blood pressure	F	Powdered and consumed
<i>Terminalia chebula</i> Retz.	Haritaki	Combretaceae	High Blood pressure	F	Powdered and consumed
			Indigestion	F	Powdered and consumed
			Loss of appetite	F	Extract consumed
<i>Trigonella foenum-graecum</i> L.	Methi	Fabaceae	Indigestion	Sd	Consumed as spice with food
				Sd	Infusion consumed
			Hairfall	Sd	Applied on hair after Boiling with Keshraj and Amlaki
				Sd	Paste consumed with food
<i>Urtica dioica</i> L.	Engrezi Pata, Bihari Pata	Urticaceae	Anaemia	L	Chewed raw
			Wounds	L	Paste applied on wound
<i>Vitis vinifera</i> L.	Angur	Vitaceae	Constipation	F	Eaten raw
			Indigestion	F	Eaten raw
<i>Volkameria inermis</i> L.	Bon jui	Lamiaceae	Diarrhoea	L	Extract mixed with Turmeric paste is consumed
<i>Withania somnifera</i> (L.) Dunal	Ashwagandha	Solanaceae	Impotence	L	Decoction consumed
<i>Zingiber officinale</i> Rosc.	Ada	Zingiberaceae	Cough and Cold	Rh	Consumed with tea or water
			Cough and Cold	Rh	Chewed raw
			Indigestion	Rh	Paste consumed with food
			Lack of Appetite	Rh	Chewed raw
			Throat ache	Rh	Consumed with tea
			Gastric	Rh	Paste consumed with food
<i>Ziziphus mauritiana</i> Lam.	Boroi, Kul	Rhamnaceae	High Blood pressure	F	Eaten raw
				F	Eaten as Chutney
			Diarrhoea	F	Eaten raw
				F	Eaten raw
			Cold sores	F	Eaten raw

So, basically the medicinal plant species in this present study ended up covering a fairly broad spectrum of taxonomic families. A large amount of these proportion about 51%, got placed within several small families where only one or two species showed up. From the survey, the most dominant families are Malvaceae, Cucurbitaceae, and Fabaceae each contributed 6% of the total species, followed by Apocynaceae and Lamiaceae (5% each), Moraceae, Apiaceae and Arecaceae accounted for 4% each. The stronger presence of these families might be linked to their diverse phytochemical profile, plus their very wide distribution across tropical areas. Similar patterns for family dominance have also been mentioned in different ethnomedicinal works, so it is a kind of hints at a key role in traditional healthcare practices. People in these families are generally well known for having bioactive substances like alkaloids, flavonoids, and terpenoids, and this could be exactly why they are often used in folk medicine (Ullah *et al.*, 2025).

The growth-form analysis showed quite a bit of variety among the recorded medicinal plants. Woody and herbaceous types are both important as sources for traditional treatments, and the current dataset indicated that Trees made up the biggest share (41%), after that came herbs (30%), vines (12%), and shrubs (11%). Meanwhile small trees (3%), grasses (2%), and under-shrubs (1%) were comparatively minor parts. This strong presence of trees could be connected to how they live as perennials, and because they stay available across the year, people can reach them without much hassle. Herbs, conversely, are frequently favored since they tend to grow quickly, and collection is usually straightforward. Similar growth-form distributions have been observed in several ethnobotanical investigations, highlighting the reliance of traditional medicinal practices on a diverse range of plant life forms (Bairwa *et al.*, 2022).

From Fidelity level values, it may be possible to identify the preferences of the local people in using a particular species for the treatment of a particular ailment (Friedman *et al.*, 1986). For this reason, to identify medicinally important plant species of the study area, Fidelity Level (FL) was calculated. In general, the high FL of a species indicates the prevalence of a specific disease in an area and the utilization of a specific plant species by the inhabitants to treat it (Bibi *et al.*, 2014; Srithi *et al.*, 2009). The fidelity level (FL) of the 30 most important plant species ranged from 55.31% to 100% (Table 2).

**Table 2. Fidelity level (FL) values of the frequently reported plants and their major.**

Scientific Name	Local Name	Disease Clusters	Ip	Iu	Fl%
<i>Lawsonia inermis</i>	Mehendi	Dermatological disorders	18	18	100
<i>Piper nigrum</i>	Golmorich	Gastrointestinal disorders	11	11	100
<i>Senna alata</i>	Daadmardan	Dermatological disorders	12	12	100
<i>Carissa carandas</i>	Karamcha	Metabolic disorders	10	10	100
<i>Withania somnifera</i>	Ashwagandha	Gynecological/Sexual disorders	9	9	100
<i>Aegle marmelos</i>	Bel	Gastrointestinal disorders	7	7	100
<i>Bacopa monnieri</i>	Brahmishak	Sensory or Neurological disorders	24	25	96
<i>Cynodon dactylon</i>	Durba	Muscle and skeletal disorders	36	38	94.74
<i>Mesosphaerum suaveolens</i>	Tokma	Gastrointestinal disorders	16	17	94.11
<i>Terminalia arjuna</i>	Arjun	Cardiovascular disorders	48	53	90.56
<i>Coccinia grandis</i>	Telakucha	Diabetes	27	30	90
<i>Mentha spicata</i>	Pudina	Gastrointestinal disorders	16	18	88.88
<i>Justicia adhatoda</i>	Basak	Respiratory disorder	23	27	85.18
<i>Averrhoa bilimbi</i>	Bilimbi	Diabetes	11	13	84.61
<i>Carica papaya</i>	Pepe	Gastrointestinal disorders	19	23	82.60
<i>Zingiber officinale</i>	Ada	Respiratory disorder	26	33	78.78
<i>Ocimum tenuiflorum</i>	Tulshi	Respiratory disorder	74	96	77.08
<i>Eclipta prostrata</i>	Kalokeshi	Dermatological disorders	10	13	76.92
<i>Musa paradisiaca</i>	Kola	Gastrointestinal disorders	10	14	71.42
<i>Abrus precatorius</i>	Kuch	Respiratory disorder	14	20	70
<i>Mangifera indica</i>	Aam	Gastrointestinal disorders	18	26	69.23
<i>Cuminum cyminum</i>	Jira	Gastrointestinal disorders	11	16	68.75
<i>Allium sativum</i>	Rosun	Respiratory disorder	19	31	61.29
<i>Phyllanthus emblica</i>	Amlaki	Cardiovascular disorders	22	36	61.11
<i>Aloe vera</i>	Aloevera	Gastrointestinal disorders	45	76	59.21
<i>Cocos nucifera</i>	Dab	Gastrointestinal disorders	7	12	58.33
<i>Syzygium aromaticum</i>	Lobongo	Dental Problems	21	36	58.33
<i>Centella asiatica</i>	Thankuni	Gastrointestinal disorders	29	52	55.76
<i>Azadirachta indica</i>	Neem	Dermatological disorders	52	94	55.31

The maximum FI for plants indicated 100% choice of informants for treating particular ailments. Analytical data showed that *L. inermis*, *C. carandas*, *P. nigrum*, *S. alata*, *W. somnifera* and *A. marmelos* are recorded as the 100% FI value containing plants (Table-2). In a recent study at Dinajpur (Rifat *et al.*, 2023), *L. inermis* also showed 100% FL value for Dermatological ailments. In Philippines (Galvez, 2024), among four different plants, *S. alata* is estimated for Ringworm treatment with having 100% FL value. For calculating Fic, the ailments were arranged under 12 different disease clusters based on their use reports (Table 3).

**Table 3. Consensus of agreement in the uses of medicinal plants among the informants.**

Disease Clusters	Most cited	Nur	Nt	fic
Neurological disorders	<i>Centella asiatica</i>	69	6	0.93
Diabetes	<i>Coccinia grandis</i>	81	8	0.91
Respiratory disorder	<i>Ocimum tenuiflorum</i>	263	26	0.9
Cardiovascular disorders	<i>Terminalia arjuna</i>	140	19	0.87
Dental Problems	<i>Azadirachta indica</i>	38	8	0.81
Dermatological disorders	<i>A. indica</i>	173	36	0.8
Gastrointestinal disorders	<i>Aloe vera</i>	257	54	0.79
Muscle and skeletal disorders	<i>Cynodon dactylon</i>	83	20	0.77
Gynecological or sexual disorders	<i>Withania somnifera</i>	56	15	0.74
Metabolic disorders	<i>Carissa carandas</i>	90	30	0.67
Anthelmintic disorders	<i>Leucas aspera</i>	11	5	0.6
Other Diseases	<i>Nigella sativa</i>	47	23	0.52

**Table 4. Citation frequency of most cited medicinal plants.**

Scientific name	Local name	Disease cluster	Citation numbers	Citation frequency
<i>Ocimum tenuiflorum</i>	Tulshi	Respiratory disorder	74	7.8
<i>Azadirachta indica</i>	Neem	Dermatological disorders	52	5.5
<i>Terminalia arjuna</i>	Arjun	Cardiovascular disorders	48	5.1
<i>Aloe vera</i>	Aloevera	Gastrointestinal disorders	45	4.7
<i>Cynodon dactylon</i>	Durba	Muscle and skeletal disorders	36	3.8
<i>Azadirachta indica</i>	Neem	Respiratory disorder	36	3.8
<i>Centella asiatica</i>	Thankuni	Gastrointestinal disorders	29	3.1
<i>Coccinia grandis</i>	Telakucha	Diabetes	27	2.8
<i>Zingiber officinale</i>	Ada	Respiratory disorder	26	2.7
<i>Bacopa monnieri</i>	Brahmishak	Sensory or Neurological disorders	24	2.5
<i>Justicia adhatoda</i>	Basak	Respiratory disorder	23	2.4
<i>Phyllanthus emblica</i>	Amlaki	Cardiovascular disorders	22	2.3
<i>Syzygium aromaticum</i>	Lobongo	Dental Problems	21	2.2
<i>Allium sativum</i>	Rosun	Respiratory disorder	19	2
<i>Carica papaya</i>	Pepe	Gastrointestinal disorders	19	2
<i>Lawsonia inermis</i>	Mehendi	Dermatological disorders	18	1.9
<i>Mangifera indica</i>	Aam	Gastrointestinal disorders	18	1.9
<i>Centella asiatica</i>	Thankuni	Sensory or neurological disorders	18	1.9
<i>Mesosphaerum suaveolens</i>	Tokma	Gastrointestinal disorders	16	1.7
<i>Mentha spicata</i>	Pudina	Gastrointestinal disorders	16	1.7
<i>Nigella sativa</i>	Kalojira	Respiratory disorder	16	1.7
<i>Abrus precatorius</i>	Kuch	Respiratory disorder	14	1.5

Values range from 0 to 1. Species with higher Fic (close to 1) values may be viewed as desirable species for the discovery of substances that are biologically active. Analysis stated variation in the Fic values of primary ailment categories (Table 3). Among the major disease categories, neurological disorders (0.93) recorded as the highest Factor informant consensus (Fic) value (Table 3) which shows increased concerns related to neurological disorders. The most cited species for treating neurological problems are *C. asiatica* and *B. monnieri*. Recent research have discovered the consequences of air pollution on the nervous system (Zundel, 2022). According to table 3, Diabetes and Respiratory disorders with Fic values of 0.91 and 0.90 respectively considered as the second and third highest diseases categories. This data was adjacent to that of the study at Dinajpur where the second highest Fic was for Diabetes with a value of 0.905 and *C. grandis* as the most cited species for this purpose. (Rifat *et al.*, 2023). The most cited medicinal plant species were identified using the Citation Frequency (Cf) formula (Friedman *et al.*, 1986).

In this study, the most cited medicinal plants are *O. tenuiflorum* for respiratory disorders (7.8%), *A. indica* for dermatological disorders (5.5%), *T. arjuna* for cardiovascular diseases (5.1%), *A. vera* (4.7%), and *C. dactylon* (3.8%) (Table 4). All these species are common medicinal plants in all over the country. Some of these plants are photographed below (Plate 1).

Sale Rate at different nurseries were evaluated over a period of 7 days. In Rashmita Nursery at Dhanmondi, the species that showed 100% Sale Rate was *Terminalia arjuna*. *Terminalia arjuna* is also the most sold species in Bir Agro Nursery at Tejgaon, but the Sale Rate is 87.5%. *Azadirachta indica* was the most sold species in Lovely Nursery of Shahjahanpur with a rate of 100% as well. Though the nursery near Curzon Hall showed a lower sale rate of *Azadirachta indica* (66.67%), it's not due to the lack of demand, as the number of the product sold here is higher rather due to its abundant supply. The lowest sale rate is seen for *Coccinia grandis* (57.14) at Hit Collection Nursery at Mohammadpur, which also recorded as the lowest number of products sold.

The demand size of the highest sold species in the conventional nurseries that took part in the study was estimated over a 7-day period. The highest demand rate was found for *Azadirachta indica* (1.29) at Lovely Nursery, closely followed by *Terminalia arjuna* at Rashmita, *Azadirachta indica* at Curzon Hall Nursery and *Ocimum tenuiflorum* at Toma Nursery, each of which had a demand rate of 1.14. (Table 6).

Our method of nursery visitation, owner interviews and price recording extend beyond typical key-informant approaches. This justifies the originality and relevance of incorporating nursery-level sale metrics into ethnobotanical documentation. In details, Interviews revealed that exotic ornamental plants were more sold than the native medicinal ones in the nurseries. Also, in some of the nurseries, there seemed to be low availability of some medicinal plants which have high demand such as *Terminalia arjuna*, *Ocimum sanctum* and *Azadirachta indica*. The present nursery survey reveals that urban demand for medicinal plants is deeply focused on a limited number of well-known species, whereas a large proportion of native medicinal flora remains overlooked. Species such as *Terminalia arjuna*, *Azadirachta indica*, *Aloe vera*, and *Ocimum tenuiflorum* exhibits consistently high sale and demand rates, indicating that consumer preference is largely regulated by familiarity, perceived efficacy, and market visibility. In contrast, species with comparatively lower demand, including *Coccinia grandis*, highlights a gap between actual medicinal value and public awareness. From the survey, it could be assumed that many indigenous medicinal plants remained mysterious to urban populations due to diminished number in metropolitan regions, rapid industrialization, limited experience with ethnobotanical practices and declining transmission of traditional wisdom.

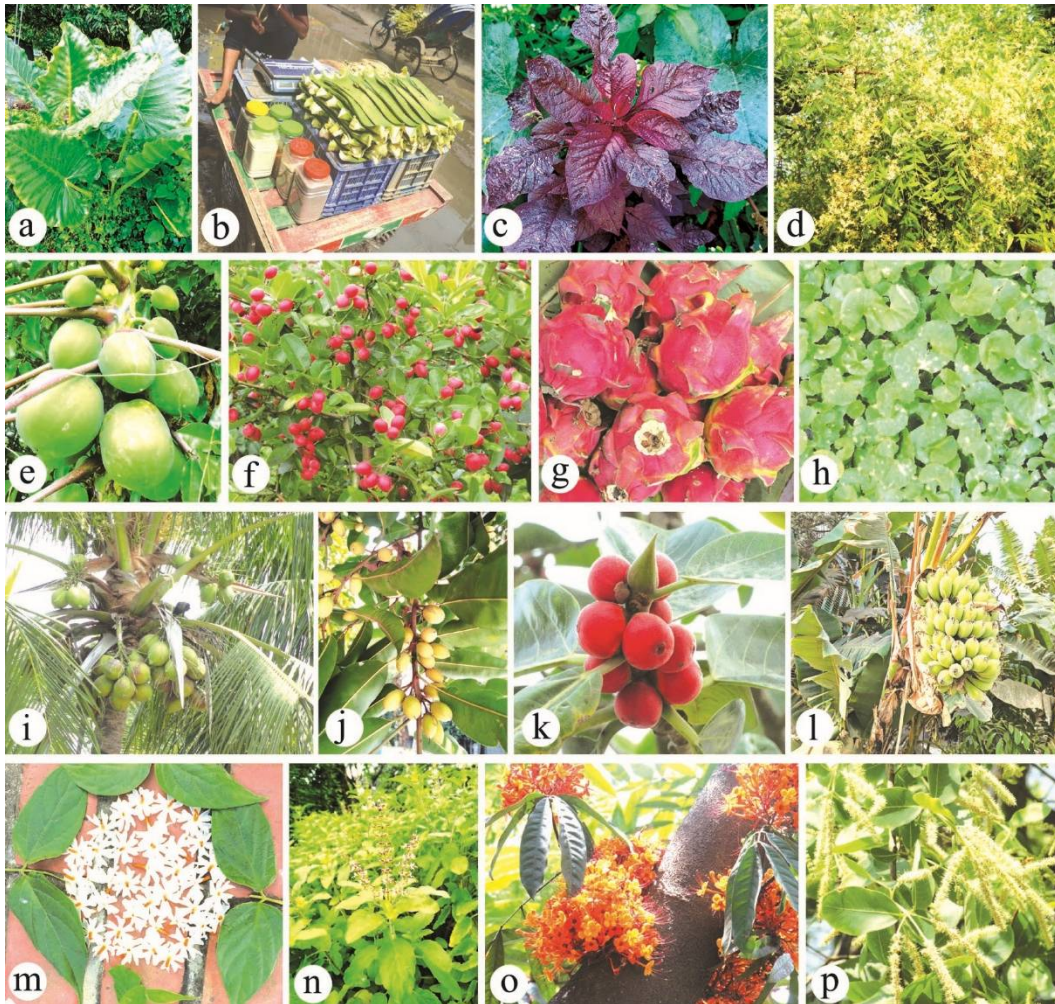


Plate 1. Photographs of some medicinal plants: a. *Ficus benghalensis* b. *Mimusops elengi* c. *Nyctanthes arbortris* d. *Celeneocereus undatus* e. *Alocasia macrorrhizos* f. *Centella asiatica* g. *Musa paradisiaca* h. *Amaranthus gangeticus* i. *Carisa caranda* j. *Terminalia arjuna* k. *Carica papaya* l. *Aloe vera* m. *Saraca asoca* n. *Azadirachta indica* o. *Cocos nucifera* p. *Ocimum sanctum*

This selectiveness may have meaningful consequences for conservation and knowledge sustainability, since the overuse of a few commercially exploited taxa may cause rarely exploited species to become obsolete and more exposed to local extinction and loss of associated knowledge. Nurseries can also serve other purposes, such as ex situ conservation and furthering the transfer of knowledge, by maintaining and propagating indigenous medicinal species that are not in common use or scarce in the wild, and increasing their production for conservation efforts. Incorporating scientific nomenclature, vernacular names, and abbreviated ethnomedicinal and therapeutic applications in appropriate labeling systems may help inform consumer decision-making.

**Table 5. Sale Rate of the most sold medicinal plants in different nurseries.**

Nursery name	Location	Most sold medicinal plants	No. of product sold	No. of product remaining	Sale Rate
Rashmita Nursery	Dhanmondi	<i>Terminalia arjuna</i>	8	0	100
Hit Collection Nursery	Mohammadpur	<i>Coccinia grandis</i>	4	3	57.14
Bir Agro Nursery	Tejgaon	<i>Terminalia arjuna</i>	7	1	87.5
Curzon Hall Nursery	DU campus	<i>Azadirachta indica</i>	8	4	66.67
Lovely Nursery	Shahjahanpur	<i>Azadirachta indica</i>	7	0	100
Kohinoor Nursery	Hazaribag	<i>Centella asiatica</i>	5	2	71.43
Pantho Nursery	Banasree	<i>Aloe vera</i>	6	1	85.71
Toma Nursery	Siddheshwari	<i>Ocimum tenuiflorum</i>	8	2	80
Shahi Nursery	Kamalapur	<i>Aloe vera</i>	6	2	75
Azimpur Nursery	Azimpur	<i>Aloe vera</i>	7	2	77.78

**Table 6. Demand rate for most sold species in different nurseries.**

Nursery name	Location	Most sold medicinal plants	Demand size	Time period	Demand rate
Rashmita Nursery	Dhanmondi	<i>Terminalia arjuna</i>	8	7	1.14
Hit Collection Nursery	Mohammadpur	<i>Coccinia grandis</i>	4	7	0.57
Bir Agro Nursery	Tejgaon	<i>Terminalia arjuna</i>	7	7	1
Curzon Hall Nursery	DU campus	<i>Azadirachta indica</i>	8	7	1.14
Lovely Nursery	Shahjahanpur	<i>Azadirachta indica</i>	9	7	1.29
Kohinoor Nursery	Hazaribag	<i>Centella asiatica</i>	5	7	0.71
Pantho Nursery	Banasree	<i>Aloe vera</i>	6	7	0.86
Toma Nursery	Siddheshwari	<i>Ocimum tenuiflorum</i>	8	7	1.14
Shahi Nursery	Kamalapur	<i>Aloe vera</i>	6	7	0.86
Azimpur Nursery	Azimpur	<i>Aloe vera</i>	7	7	1

Community-based, educational and collaborative projects with customary healers may help prevent the loss of ethnobotanical knowledge. Cultivation of native medicinal plants at households offers both conservation and access, but needs systematic development in the face of the growing global problem of antimicrobial resistance resulting from inappropriate use of antibiotics. Medicinal plants are still relatively underused as a source of bioactive compounds. Cultivation in nurseries combined with documentation, education and community involvement is needed to prevent the loss of unknown medicinal plants and to achieve the sustainable use of biological and cultural resources.

## Conclusion

Even with modern healthcare options available, local communities continue to rely on plant-based traditional medicine. The study shows that the perception of people regarding the use of therapeutic plants is still rich, giving hope that there is still scope for preserving, enriching, and utilizing this knowledge. This study also identified several medicinally important species (*O. tenuiflorum*, *A. indica*, *T. arjuna*, *Z. officinale*, *C. asiatica*, *B. monnieri*, *C. carandas*, etc.) and

those with such potential (*U. dioica*, *D. carota*, *N. arbor-tristis*, etc.) to be suggested for plantation, conservation & commercialization. Some threats have been observed during the study that endangered medicinal plants, their habitats, and distributions and local knowledge, including the introduction of exotic plants, unscrupulous developmental works, indiscriminate cutting down of trees and the lack of awareness among the local people who frequently pick or use whole plants or portions of therapeutic plants without taking any precautions to preserve them for later use. Besides, the nurseries seemed to sell exotic plants more than the local medicinal ones. To ensure sustainable conservation of medicinal plants, practical and methodical policies and measures, such as including plants like *A. indica*, *O. tenuiflorum*, *T. arjuna*, etc. in the plantation programs; extending financial support to the nurseries to cultivate medicinal plants such as *T. arjuna*, *C. asiatica* and *B. monnieri*; spreading awareness among the locals regarding sustainable use of medicinal plants should be taken without delay.

### Acknowledgement

The authors are greatly thankful to the Community Partnerships to Strengthen Sustainable Development (COMPASS) program of the US Forest Service International Program for the financial support to conduct research in Dhaka city.

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*(Manuscript received on 5 January 2026; revised on 20 May 2026)*