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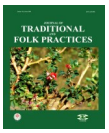

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Ethnomedicinal plants used to cure epilepsy and insomnia in the Jaunpur region of Garhwal Himalaya, India

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Abstract

Epilepsy and insomnia are abnormal conditions of the brain that causes recurring seizures and sleep problems in developing nations, worldwide and neighboring countries. Epilepsy is ranked fifth among all neurological disorders and it causes an estimated 1,25,000 deaths each year around the world. Many rural residents in India continue to rely on medicinal plants for the treatment of insomnia and epilepsy. The current investigation aims to record and document the use of ethnomedicinal plants, various herbal preparations and treatments for curing epilepsy and insomnia in unexplored areas in the Jaunpur region of Garhwal Himalaya. Informant's consensus factor (ICF) are commonly involved in the examination of use value (UV) and fidelity index (FI%). The present study pertains to 31 plant species (28 genera and 22 families) for treating epilepsy and insomnia. The treatment of a particular disease estimated was 73.3% for epilepsy and 46.6% for insomnia. Different plant parts are used by the locals for ethnomedical purposes: roots (20% spp.), rhizomes (3%), seeds (10%), leaves (40%), whole plants (14%), barks (3%), bulbs (3%) and fruits (7%). Decoction (40 spp.), powder (20%), infusion (20%), juice (3%), paste (7%) and other (10%) are the herbal preparations used. This study offers insightful information about how ethnomedicinal plants are utilized by indigenous people to treat insomnia and epilepsy and used forthcoming studies to conserve the traditional knowledge.

Keywords: Herbal remedies, Mortality, Neurological illness, Tehri Garhwal

1. Introduction

Epilepsy is a condition of getting over, seized, or attacked (Baloyannis, 2013). Epilepsy (*Aari*) is known as a seizure disorder and insomnia (*Neend Ni Aune*) is known as a common sleep disorder, trouble falling asleep. Therefore, these are common chronic conditions with an incidence of 61.4/100,000 person's years. Approximately, 13 million people experience disability related year lost and 0.5% of the total diseases, burden is attributed to epilepsy (Chen *et al.,* 2023). Epilepsy is known as ubiquitous neurological disorder that results in abnormal neuronal electrical signal activity i.e. unusual sensations, movements, emotions, behavior changes, loss of consciousness and the current psychological belief about epilepsy (McLin, 1992; Kobau and Prince, 2003; Dugbartey and Barimah, 2013).

The 50 million people across the world suffer from epilepsy (neurological disorder/chronic non-communicable diseases), due to recurrent seizures, sudden changes in electrical activity of the brain such as convulsions, loss of consciousness and altered awareness (WHO, 2023). The death rate of the general population is increasing twice or thrice and unexpected death is twenty-four times higher due to epilepsy (Ficker, 2000). In India, it effects about seven million peoples approximately 40% of them are women (WHO, 2003; Kumar *et al.,* 2012).

Among the easily available drugs in developed countries out of which 75% of people do not attain proper treatment for epilepsy (Sridharan and Murthy, 1999; Kumar *et al.,* 2012). The financially rich patients in big

cities of a country acquired well and advanced medical treatment facilities around the globe, yet they still behind a huge number of patients in the rural population who endure epilepsy is without recognition and proper treatment through medical personnel. The folk remedies are easily available, time tested, not so much expensive and provide cheap alternatives to rural populations (Bharucha, 2003).

India is enriched in ethnic community and knowledge of herbal plants utilized for medicinal purposes is well-practiced (Jain, 1991; Negi *et al.,* 1993). Uttarakhand is richer in varieties of medicinal plants and home to significant indigenous communities. These local inhabitants are fully dependent on natural resources to fulfill their basic requirements. Adequate knowledge of medicinal plants that are often present in surroundings (Kala, 2004; Pande *et al.,* 2006; Kumar *et al.,* 2011). Documentation of traditional knowledge provides a valuation of plant diversity and sustainable use (Wondimu *et al.,* 2007). Therefore, there is a need for time to record the priceless traditional knowledge. It provides inexpensive healthcare facilities for the poor people of remote areas and helps in novel drug discovery in future. The usage of ethnomedicinal plants by indigenous people is less documented in the sub-Himalayan region (Gaur and Sharma, 2011; Sharma *et al.,* 2011; Dangwal and Lal, 2020; 2021; 2023; Kumar *et al.,* 2021; Dangwal *et al.,* 2021; Gairola *et al.,* 2022; Dangwal *et al.,* 2022; Balkrishna *et al.,* 2023; Bhatt *et al.,* 2024; Lal *et al.,* 2024). Based on all the gathered information, the current research aimed to document the traditional herbal preparations and various remedies utilized by local inhabitants of the Jaunpur region of Garhwal Himalaya (Uttarakhand, India) to treat epilepsy and insomnia.

2. Materials and methods

2.1. Study Area

The investigation was carried out in the Jaunpur region of Tehri Garhwal, Uttarakhand (Fig. 1). It encircles an area of about 592.17 square kilometers, the study site is 41 km away from district headquarters and surroundings by the borders of Sahaspur block in the east (Dehradun), Jaunpur block comprises 261 villages (Dangwal and Lal, 2023). The altitude spans from 300 to 3,022 m.a.s.l. covering a variety of mountain ranges within this elevation range. The commonly spoken local dialect Jaunpuri. In urban areas, Hindi is the predominant language, whereas eco-tourism spots such as Kempty Fall, Dhanaulti and Nag Tibba experience a fusion of Hindi and English owing to the influx of tourists. The Hindu populace here identifies with the Jaunpuriya sub-cultural group and Garhwali culture. The climatic conditions of the Jaunpur region is varied from subtropical (1000 m) to temperate zone (1800 m) at the elevation range. *Pinus roxburghii* Sarg, is an evergreen coniferous forest in the area followed by *Rhododendron arboreum* Sm., and *Quercus leucotrichophora* A. Camus.

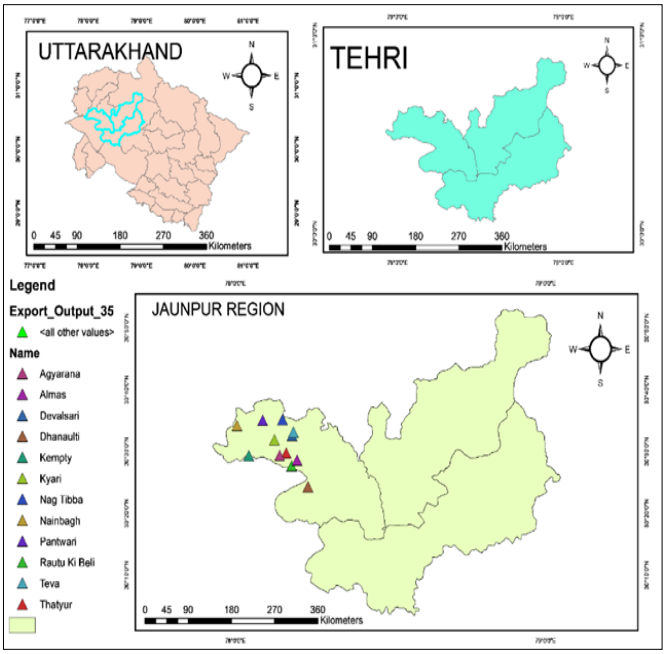

Fig. 1. Map of the study area

2.2. Sample of data

A thorough and systematic ethnobotanical study was conducted from September 2021 to August 2023 and collected data on the traditional ethnomedicinal plant and indigenous plants are being used by local inhabitants across in the surrounding areas of the region. The study aimed to pinpoint villages where traditional medicinal plant practices were prevalent. The selection of some important villages was such as Devalsari, Naag Tibba and Thatyur, etc. (Fig. 1). Throughout the specified timeframe, consistent field visits were conducted to engage in group discussions, meetings and interviews with a diverse range of individuals including residents, farmers, traditional healers like vaidyas, shepherds, priests and laborers. The selection of participants, informal interviews were carried out to ascertain their level of interest and expertise in identifying and using plants, as well as their knowledge of dosage patterns for treating epilepsy and insomnia, all conducted in the local dialect. Information was gathered from a total of 112 local residents (72 males and 42 females) through a variety of methods including group discussions, meetings and questionnaires, aimed at acquiring ethnomedicinal knowledge regarding herbal remedies to cure epilepsy and insomnia. The lower representation of female informants in the study was attributed to the social norms prevalent in the region, which restricted their interaction with outsiders. Additionally, male informants below the age of 25-30 were not interviewed as they often leave their villages to pursue higher education or seek employment opportunities in urban areas (Bhatia *et al.,* 2014). The obtained information from natives includes insights into common human ailments, as well as a particular focus

on epilepsy and insomnia. Notably, no adverse side effects were observed with the use of herbal medicine for treating these conditions. The data encompass botanical names, family, local names, growth habits, parts of plants utilized and ethnomedicinal applications (Table 1). The plant specimens of ethnomedicinal plants were identified and confirmed from the authentic herbarium, Botanical Survey of India, Northern Circle Dehradun (BSD), Forest Research Institute Herbarium (DD, Dehradun) and Garhwal University Herbarium (GUH) Srinagar, Garhwal. The collected plant species also preserved and maintained in the herbarium of Department of Botany, S.R.T. Campus in Badshahi Thaul. The final list of the plants is prepare following the 'Plants of the World Online (POWO, https:// powo.science.kew.org/) for the botanical nomenclature of the species (POWO, 2023).

2.3. Data analysis

The information was gathered from more than one interview with local informants and the data is analyzed through various methods *viz.,* informant's consensus factor (ICF), use value (UV) and fidelity index (FI%). It is utilized to determine the importance of different plant species in the region; and provide help to estimate the significance of UV, ICF and FI of plant usage within the community (Phillips *et al.,* 2002).

$$UV=\Sigma U/n$$

Use value (UV), is defined as the "number of local informants (n), frequency of use reports for a particular plant species (U). According to Musa *et al.* (2011), the use value does not distinguish between single and multiple uses of plants. Higher use value signifies greater importance; whereas a lower use value indicates lesser significance of the plants. Informant consensus factor is employed to assess the degree of consensus among informants regarding the use of ethnomedicinal plants, particularly when ailments are classified into different classes of disease groups (Heinrich *et al.,* 1998). It was calculated by using this formula

$$ICF = \frac{Nur - Nt}{Nur - 1}$$

The informant consensus factor (ICF) as "Nt" is the total number of used taxa "Nur" is the number of use reports utilized for specific diseases. A low ICF value, nearing 0, suggests random selection of plants or inadequate communication between informants about the usage of plants. Conversely, an ICF value nearing 1 indicates a clear selection criterion within the community or effective information exchange among informants (Sharma *et al.,* 2011).

Identifying the primary species used to treat a particular illness is compelling, given the potential use of multiple plant species within the same therapeutic category. The fidelity index (FI%) was calculated by using this mathematical formula introduced by (Friedman *et al.,* 1986).

$$FI = \frac{Np}{N} \times 100$$

The fidelity index value (FI%) is calculated as "N", entire number of use reports for plant species, "Np", use reports for several illnesses. A low FI% indicates the use of a plant for various reasons, whereas a high FI% (100%) suggests consistent use for the same purpose or unchanged utilization patterns (Musa *et al.,* 2011).

3. Results and discussion

3.1.Characteristics of informants

Information on herbal treatments for epilepsy and insomnia were gathered from 112 local inhabitants (72 males and 42 females) through diverse methods including group discussions, meetings and questionnaires to compile knowledge of ethnomedicinal plants used to cure epilepsy and insomnia.

3.2.Floristic characteristics of ethnomedicinal plants

Herbal preparations of plants largely used to cure the epilepsy and insomnia by the indigenous people of Jaunpur region, Tehri Garhwal, Uttarakhand. Present study pertains to 31 plant species (28 genera and 22 families) that were documented to cure epilepsy and insomnia (Table 1). Among these, herbs comprised 50% (15 species), shrubs 40% (12 species) and trees 10% (3 species) (Plate 1). The dominant families in terms of species count was Asteraceae with 5 species followed by Lamiaceae with 3 species. Following them were Amaryllidaceae, Apiaceae, Rosaceae and Verbenaceae with 2 species each. The least dominant families included Acoraceae, Amaranthaceae, Apocynaceae, Caesalpinaceae, Cannabaceae, Euphorbiaceae, Fabaceae, Flacourtiaceae, Oxalidaceae, Plantaginaceae, Poaceae, Punicaceae, Rhamnaceae and Solanaceae each with 1 species (Fig. 2). It indicates that utilization of medicinal plants and their traditional knowledge is diverse and unique to local inhabitants of the study region. Herbal preparations were orally administered in various forms: decoction (40%), powder (20%), infusion (20%), juice (3%), paste (7%) and other forms (10%). The parts used for herbal preparation were roots (20%), rhizomes (3%), seeds (10%), leaves (40%), whole plants (14%), barks (3%), bulbs (3%) and fruits (7%) (Plate 1 b).

3.3. Use value

The use value of significant ethnomedicinal plants is comprised into three Classes A, B and C in the study region: In Class (A); UV= >0.81 were: *Centella asiatica* (L.) Urb. (UV=0.94), *Coriandrum sativum* L. (UV=0.91), *Bacopa monnieri* (L.) Wettst. (UV=0.85),

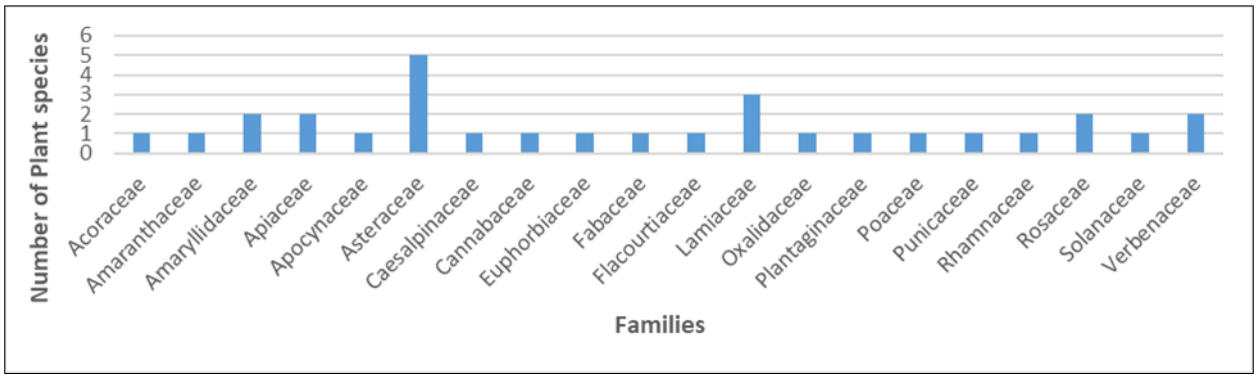

Fig. 2. Graph showing the number of plant species of distinct families

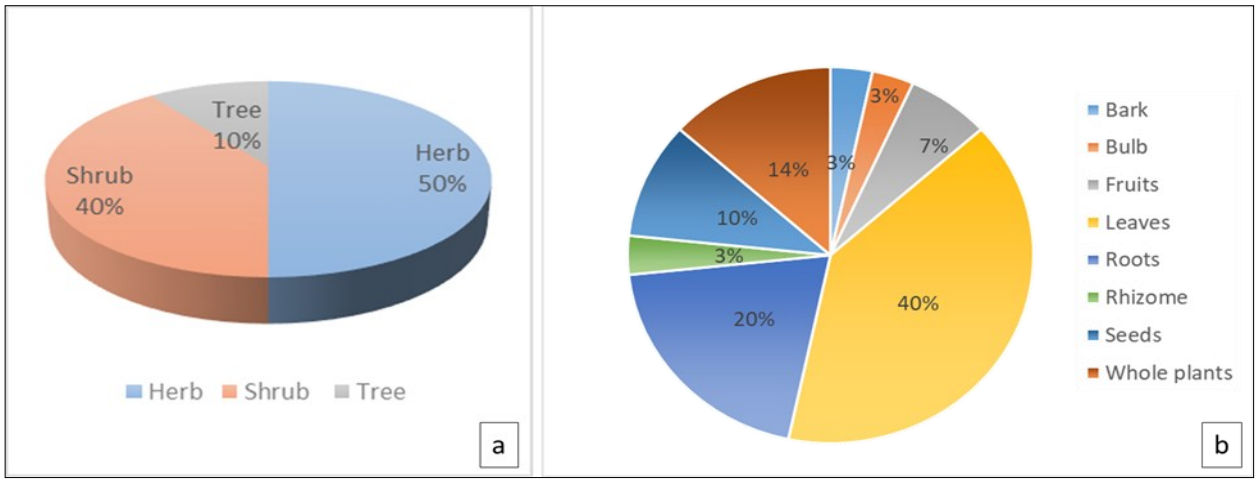

Plate 1. a. Percentage of habit; b. Percentage of parts used

Cynodon dactylon (L.) Pers. (UV=0.83). In Class (B); UV= 0.61 to 0.81 were: *Ocimum tenuiflorum* L. (UV=0.80), *Cannabis sativa* L. (UV=0.73), *Ziziphus mauritiana* Lam. (UV=0.72), *Colebrookea oppositifolia* Sm. (UV=0.67), *Ricinus communis* L. (UV=0.67), *Allium sativum* L. (UV=0.67). In Class (C); UV= <0.61 were: *Asparagus racemosus* Willd. (UV=0.50), *Punica granatum* L. (UV=0.41), *Datura stramonium* L. (UV=0.33), *Xanthium strumarium* L. (UV=0.31), *Artemisia vulgaris* L. (UV=0.30), *Flacourtia indica* (Burm. f.) Merr. (UV=0.28), *Artemisia nilagirica* (C.B. Clarke) Pamp. (UV=0.25), *Acorus calamus* L. (UV=0.23), *Clerodendrum viscosum* Vent. (UV=0.23), *Vitex negundo* L. (UV=0.22), *Cassia fistula* L. (UV=0.21), *Scutellaria repens* Buch. -Ham. ex D. Don (UV=0.18), *Carissa spinarum* L. (UV=0.14), *Indigofera tinctoria* L. (UV=0.14), *Inula cappa* DC. (UV=0.10) (Table 1).

3.4. Informant consensus factor

Thirty species of plant were studied to treat two distinct diseases i.e., epilepsy (22 species) and insomnia (14 species). The ailments were categorized into two main categories (Musa *et al.,* 2011). The strong consensus factor is shown by the informants regarding the treatment of epilepsy (ICF=0.96) and insomnia (ICF=0.98) (Table 2).

3.5. Fidelity index

The values of the fidelity index range from 1.18% to 11.22%. To enhance the accuracy of reported plant species, responses from fewer than 5 participants were neglected in the final analysis of the study. The fidelity index percentage values were; (1). Epilepsy *viz., Achyranthes aspera* L. (FI=5.61%), *Allium sativum* L. (FI=11.22%), *Artemisia vulgaris* L. (FI=3.24%), *Asparagus racemosus* Willd. (FI=8.27%), *Carissa spinarum* L. (FI=2.36%), *Colebrookea oppositifolia* Sm. (FI=11.22%), *Cynodon dactylon* (L.) Pers. (FI=4.72%), *Datura stramonium* L. (FI=2.36%), *Flacourtia indica* (Burm. f.) Merr. (FI=4.72%), *Indigofera tinctoria* L. (FI=2.36%), *Inula cappa* DC. (FI=1.77%), *Scutellaria repens* Buch. -Ham. ex D. Don (FI=1.18%), *Ocimum tenuiflorum* L. (FI=3.84%), *Oxalis corniculata* L. (FI=4.87%), *Punica granatum* L. (FI=6.79%), *Vitex negundo* L. (FI=3.69%) and *Ziziphus mauritiana* Lam. (FI=2.51%). (2). Insomnia is mainly treated by *Allium cepa* L. (FI=8.87%), *Artemisia vulgaris* L. (FI=1.77%), *Bacopa monnieri* (L.) Wettst. (FI=7.18%), *Cannabis sativa* L. (FI=8.66%), *Centella asiatica* (L.) Urb. (FI=11.20%), *Coriandrum sativum* L. (FI=10.88%), *Cynodon dactylon* (L.) Pers. (FI=6.55%), *Datura stramonium* L. (FI=2.32%), *Ocimum tenuiflorum* L. (FI=6.76%),

Table 1. Ethnomedicinal plants used to treat epilepsy and insomnia

Sl. No.	Botanical name & family	Local name	Habit*	Part used*	Ethnomedicinal uses and number of citations	Total citation/Use value
1	*Achyranthes aspera* L. (Amaranthaceae) Plate 2.a	*Latjiri*	H	Rt	2 gm powder of dried roots added with sugar and administrated orally 2 times a day before meal for the next 2 weeks to cure epilepsy (38).	38/0.33
2	*Acorus calamus* L. (Acoraceae) Plate 2.b	*Vacha*	H	Rz	5 ml decoction of fresh rhizome is orally taken thrice a day after meal for the next 30 to cure epilepsy (26).	26/0.23
3	*Allium cepa* L. (Amaryllidaceae)	*Pyaaz*	H	Se	50 ml infusion of dried seeds is given orally 3 times a week for 2 months to cure insomnia (84).	84/0.75
4	*Allium sativum* L. (Amaryllidaceae)	*Lehsun*	H	Bu	100 ml infusion of bulbs once a day after a meal for 1 month to treat epilepsy (76).	76/0.67
5	*Artemisia vulgaris* L. (Asteraceae)	*Kudzu*	H	Le	5 ml decoction of fresh or dried leaves; orally given thrice a day before a meal to cure epilepsy (22) and insomnia (12).	34/0.30
6	*Artemisia nilagirica* (C.B. Clarke) Pamp. (Asteraceae)	*Chamri*	H	Wp	Infusion of entire plant; consumed orally, 1-2 teaspoonfuls 2 times a day up to 12 days to cure epilepsy (28).	28/0.25
7	*Asparagus racemosus* Willd. (Asparagaceae) Plate 2.c	*Satawar*	S	Rt	2 gm powder of dried roots mixed with 100 ml cow's milk and consumed orally twice a day before meals up to 15 days to cure epilepsy (56).	56/0.50
8	*Bacopa monnieri* (L.) Wettst. (Plantaginaceae)	*Brahmi*	H	Wp	2 ml decoction of whole plants thrice a day after meal upto one week to treat the epilepsy (26) and insomnia (68).	94/0.85
9	*Cannabis sativa* L. (Cannabaceae)	*Bhang*	H	Le	Grind the fresh leaves and add to cow's milk; orally consumed one time a day for a week to induce sleep (82).	82/0.73
10	*Carissa spinarum* L. (Apocynaceae)	*Karaunda*	S	Le	Fresh fruits and leaves are grounded and mixed with curd and orally administrated 2 times a day after meal for a week to treat epilepsy (16).	16/0.14
11	*Cassia fistula* L. (Caesalpinaceae)	*Amaltas*	T	Se	20 ml decoction of seeds, consumed orally once a day before breakfast upto 2 weeks to cure epilepsy (24).	24/0.21
12	*Centella asiatica* (L.) Urb. (Apiaceae) Plate 2.d	*Mandu Kaparni*	H	Le	15 ml decoction of fresh or dried leaves; consumed orally thrice a day for three weeks to cure insomnia (106).	106/0.94
13	*Coriandrum sativum* L. (Apiaceae)	*Dhaniya*	H	Le	120 ml decoction of leaves is orally taken thrice a day for up to three weeks to cure insomnia (103).	103/0.91
14	*Clerodendrum viscosum* Vent. (Verbenaceae)	*Bhanua*	S	Rt	2 gm powder of dried root added with 100 ml cow's milk; Orally taken before breakfast up to 3 weeks once a day to cure the epilepsy (26).	26/0.23

15	*Colebrookea oppositifolia* Sm. (Lamiaceae) Plate 2.e	*Binda*	S	Rt	5 ml decoction of dried roots consumed orally once a day before breakfast for two weeks to cure epilepsy (76).	76/0.67
16	*Cynodon dactylon* (L.) Pers. (Poaceae) Plate 2.f	*Dhruv*	H	Wp	3 gm dried powder of whole plants added with 120 ml cow milk; orally consumed thrice a day after meal for 12 days to cure epilepsy (32) and improve memory (62).	94/0.83
17	*Datura stramonium* L. (Solanaceae)	*Dathura*	S	Le	Boil the tender leaves and make them into a paste with honey for the preparation of pills of 2gm each and administrated orally twice a day to treat epilepsy (16) and insomnia (22).	38/0.33
18	*Flacourtia indica* (Burm. f.) Merr. (Flacourtiaceae)	*Kangu*	S	Br	100 ml decoction of bark is orally administrated once a day for next 14 days to cure epilepsy (32).	32/0.28
19	*Indigofera tinctoria* L. (Fabaceae)	*Neel*	S	Le	Infusion of fresh leaves with cow's milk to treat epilepsy (16).	16/0.14
20	*Inula cappa* DC. (Asteraceae)	*Damiya*	S	Rt	5 ml decoction of roots is consumed orally once a day after lunch for two weeks to treat epilepsy (12).	12/0.10
21	*Scutellaria repens* Buch. -Ham. ex D. Don (Lamiaceae) Plate 2.e	*Karwi-Ghas*	H	Le	Infusion of leaves 3 times a day after meal to cure insomnia (13) and epilepsy (8).	21/0.18
22	*Ocimum tenuiflorum* L. (Lamiaceae)	*Tulsi*	H	Le	Infusion of leaves 3 times a day on empty stomach to get rid of insomnia (64) and epilepsy (26).	90/0.80
23	*Oxalis corniculata* L. (Oxalidaceae) Plate 2.g	*Khatti-bhuti*	H	Wp	15 ml decoction of whole plant is administered orally 2 times a day after meal to cure epilepsy (33).	33/0.29
24	*Prunus persica* (L.) Batsch (Rosaceae)	*Aadu*	T	Le	50 ml decoction of leaves is orally administrated once a day after lunch to cure insomnia (52).	52/0.46
25	*Punica granatum* L. (Punicaceae)	*Baroni*	S	Le	10 ml decoction of fresh leaves is consumed orally before breakfast for a week to cure epilepsy (46).	46/0.41
26	*Pyrus pashia* Buch. -Ham. ex D. Don (Rosaceae)	*Melu*	T	Fr	100 ml juice of ripened fruit orally administrated twice a day for up to two weeks to treat the insomnia (103).	103/0.91
27	*Scutellaria repens* Buch. -Ham. ex D. Don (Lamiaceae) Plate 2.h	*Karwi-Ghas*	H	Le	Infusion of leaves 3 times a day after meal to cure insomnia (13) and epilepsy (8).	21/0.18
28	*Ricinus communis* L. (Euphorbiaceae)	*Arand*	S	Se	Oil from the fresh seeds is externally applied on the forehead to get rid of insomnia (76).	76/0.67
29	*Xanthium strumarium* L. (Asteraceae)	*Bhangra*	H	Le	Apply a paste made from leaves externally onto the head to get relief from insomnia (35).	35/0.31
30	*Vitex negundo* L. (Verbenaceae) Plate 2.i	*Nirgundi*	S	Rt	2 gm powder of dried root added with hot cow's milk; Orally administrated twice a day to cure epilepsy (25).	25/0.22
31	*Ziziphus mauritiana* Lam. (Rhamnaceae)	*Ber*	S	Fr	The powder of dried fruit with cow's milk is consumed orally twice a day for three weeks to cure insomnia (64) and epilepsy (17).	81/0.72

**Where, H= "Herb", S= "Shrub", T= "Tree" Rt = "Roots, Rz = "Rhizome", Bu= "Bulb", Se = "Seeds", Le = "Leaves", Wp = "Whole plants", Br = 'Bark", Fr = "Fruits", UV = "Use Value", n= "total number of informants" and U = "Total Citation"*

Table 2. Informant consensus factor and group of ailments

Sl. No.	Brain ailments	Number of species	Use citations	Informant consensus factor (%)
1	Epilepsy	22	677	0.96%
2	Insomnia	14	946	0.98%

Prunus persica (L.) Batsch (FI=5.49%), *Pyrus pashia* Buch. -Ham. ex D. Don (FI=10.88%), *Ricinus communis* L. (FI=8.03%), *Xanthium strumarium* L. (FI=3.69%) and *Ziziphus mauritiana* Lam. (FI=6.76%) (Table 3).

4. Conclusion

The current study thoroughly examines the traditional and ethnomedicinal use of plants for treating epilepsy and insomnia. Documentation of medicinal plants primarily focuses on addressing these specific health issues. In this region, economically disadvantaged local inhabitants tend to rely on traditional herbal remedies due to limited access to allopathic medicines. These herbal remedies are not only more cost-effective but also easily accessible. Despite a decline in the prevalence of epilepsy and insomnia in villages attributed to local traditional ethnomedicinal practices, there remains an urgent need for advanced interventions to prevent and control these diseases promptly, aiming to mitigate the substantial mortality rates in India and neighboring countries.

The causes of mortality associated with epilepsy and insomnia encompass a range of factors. These includes inadequate sleep quality, frequency of seizures and

Table 3. Fidelity index (FI%) of important plant species to cure various disease groups

Sl. No.	Brain ailments	Important species	Fidelity index percentage
1	Epilepsy	*Achyranthes aspera* L.	5.61%
		Allium sativum L.	11.22%
		Artemisia vulgaris L.	3.24%
		Asparagus racemosus Willd.	8.27%
		Carissa spinarum L.	2.36%
		Colebrookea oppositifolia Sm.	11.22%
		Cynodon dactylon (L.) Pers	4.72%
		Datura stramonium L.	2.36%
		Flacourtia indica (Burm. f.) Merr.	4.72%
		Indigofera tinctoria L.	2.36%
		Inula cappa DC.	1.77%
		Scutellaria repens Buch. -Ham. ex D. Don	1.18%
		Ocimum tenuiflorum L.	3.84%
		Oxalis corniculata L.	4.87%
		Punica granatum L.	6.79%
		Vitex negundo L.	3.69%
		Ziziphus mauritiana Lam.	2.51%
2	Insomnia	*Allium cepa* L.	8.87%
		Artemisia vulgaris L.	1.77%
		Bacopa monnieri (L.) Wettst.	7.18%
		Cannabis sativa L.	8.66%
		Centella asiatica (L.) Urb.	11.20%
		Coriandrum sativum L.	10.88%
		Cynodon dactylon (L.) Pers	6.55%
		Datura stramonium L.	2.32%
		Ocimum tenuiflorum L.	6.76%
		Prunus persica (L.) Batsch	5.49%
		Pyrus pashia Buch. -Ham. ex D. Don	10.88%
		Ricinus communis L.	8.03%
		Xanthium strumarium L.	3.69%
		Ziziphus mauritiana Lam.	6.76%

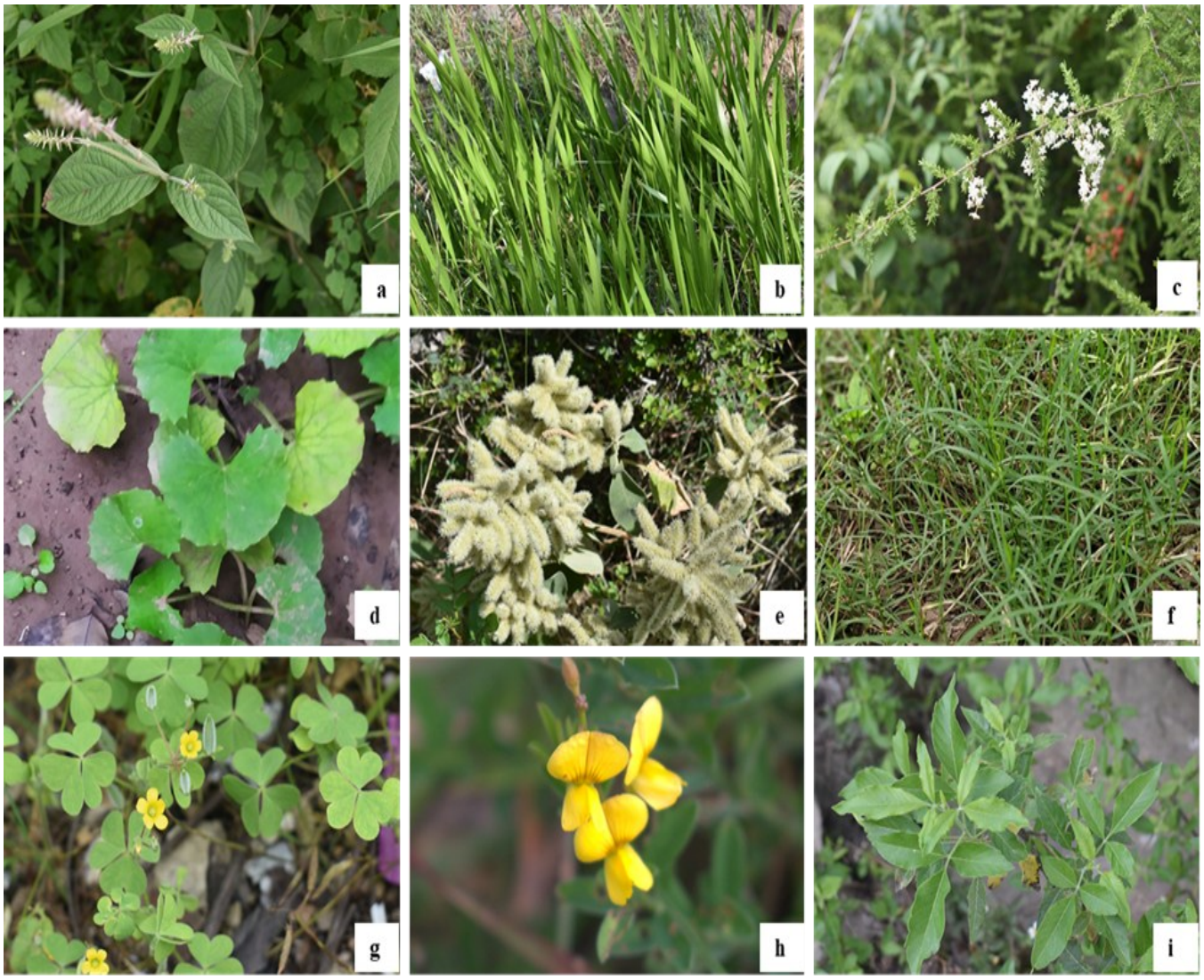

Plate 2. a. *Achyranthes aspera* L.; b. *Acorus calamus* L.; c. *Asparagus racemosus* Willd.; d. *Centella asiatica* (L.) Urb.; e. *Colebrookea oppositifolia* Sm.; f. *Cynodon dactylon* (L.) Pers.; g. *Oxalis corniculata* L. h. *Scutellaria repens* Buch. -Ham. ex D. Don.; i. *Vitex negundo* L.

additional symptoms such as loss of consciousness, disorientation, abnormal eye movements, frothing at the mouth, convulsions and involuntary movement of limbs. In some cases, the disease may manifest during the early stages of development, characterized by symptoms such as intense anxiety, tremors, difficulty breathing thirst, confusion and excessive sweating.

It is concluded that an enormous number of local people with financial support are migrating from the villages for their better health, employment and educational facilities and the remaining local people who have insufficient money are forced to depend on ethnomedicinal practices. However, the local inhabitants suffer from a lack of resources like hospitals, better education and transportation facilities, etc. Therefore, the required facilities should be provided to the local inhabitants of the interior villages to fulfill their basic needs and conserve their traditional knowledge for future generations.

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