Ethnobotanical Study of the Local Inhabitants of Arumanai village, Kanyakumari District, Tamil Nadu, India: a Quantitative Approach

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Abstract

Quantitative ethnobotanical studies are one of the methods used to document and compare the knowledge of plants held by different native and nonnative groups. Herbs are generally valued for virtues as food as well as medicine through a long process of trial and error; our four fathers were able to select hundreds of wild plant in their various localities for a specific use. The study focused on the documentation of medicinal plants used to treat various human diseases and to quantitatively analyze the data to identify some useful leads for further studies. Ethnobotanical data were collected by oral communication to local inhabitants of Arumanai village. A total of 108 taxa, distributed in 96 genera and 52 families were used as a source of medicine.Ethnomedicine data were analyzed using Use value (UV), Informant consensus factor (Fic), and Family use value (FUV). The information documented may be used as a base-line for further studies on semi-arid and airid pharmacologically important medicinal plants and fpr phytochemical investigations.

Key words: Ailments, medicinal plants, quantitative ethnobotany and use value

Introduction

Disease is the impairment of health, a condition of irregular functioning and conditions that affect the body of an organism. It is often construed as a medical state associated with specific symptoms and signs [1]. It may be caused by factors originating from an external source, such as infectious disease, or it might be caused by internal dysfunctions, such as autoimmune disease[2]. People are exploiting a variety of herbals for effective curing of various ailments. The plant parts used for preparation and administration of drugs varies from one place to other[3].

Ethnobotanical investigation have emphasized the need for quantitative studies to support the maintenance of biodiversity and the traditional knowledge associated within it[4-6]. Most of the herbs used by the rural communities have biologically active compounds that have been shown by generations to be

effective against specific ailments[7,8]. Globally 4,160 to 10,000 plants are endangered by habitat losses due to intensive agricultural practices or overexploitation in areas where rural families traditionally collected them[9]. The increasing scarcity of such herbals may also enhance the loss of traditional knowledge about phytotherapeuticuses[10]. Living nearer to natural and managed ecosystems, farming communities have acquired unique knowledge concerning the utilization of wild and weedy flora because of day to day's sheltered relationship between land, vegetation and associated traditional knowledge[11]. The present study is an attempt to record the quantitative data which was calculated to understand the preferences and consensus existing among the informants regarding the medicinal plants used by the local inhabitants of Arumanai village.

Materials and Methods

Study Area

The study area Arumanai comes under Vilavancode taluk and is very close to the foothills of the Western Ghats. It is now a first grade panchayat town. The entire area is with latitude of 8, 3662'N and a longitude of 77.2434'E. It covers an area of about 2513 hectares.The largest river of Kanyakumari district, the Kodayar, flows along the town's North-eastern and Eastern boundary. Besides, two small brooks, the Kandasankadavu brook and Poovampara brook, (small tributaries of the Kodayar) flow through the town. Nedunkulam pond is another landmark near Arumanai.

Data analysis

Data associated with collected ethnobotanical plants were sorted in MS Excel 2010 and analysed for descriptive statistical patterns such as Use value (UV), Family Use value (FUV), Informant consensus factor (Fic). The knowledge on medicinal plants used for the treatment of different types of ailments among the informants of the study area was analyzed using the following formula.

Use value (UV)

Use value (UV) was computed to provide a quantitative measure for the relative importance of species. UV is used to indicate the species that are considered most important by a given population. UV is calculated using the following formula,

$$UV = \Sigma U/n$$

Where, U is the number of use-reports cited by each informant for a given species and n is the total number of informants[4].

Family Use value(FUV)

Family use value (FUV) was calculated to identify the essential medicinal plants families in the study area. FUV is calculated using the following formula,

$$FUV = UV_s/N_s$$

Where, UV_s is the sum of use value of the species within a given family and N_s is the total number of species within a given family[12].

Informant Consensus Factor (**F$_{ic}$**)

Informant Consensus Factor (ICF) was used to analyze the agreement degree of the informants' medicinal plant knowledge about each category. ICF is computed using the following formula,

$$F_{ic}=N_{ur}-N_t/N_{ur}-1$$

Where, N_{ur} is the number of use report of informants in each category, and N_t is the number of taxa used for a particular category [13].

Result and Discussion

Medicinal plant Diversity

The ethnobotanical information gathered from the study site showed a diversity of native plants with high medicinal utility. The present investigation comprises 108 taxa belonging to 96 genera and 52 families were recorded to be medicinal by the people of the study area. Herbs were the primary source of medicine was found to be the mostly used plants followed by shrubs, trees and climbers (Fig.1). Herbs grow very fast and therefore they provide a continuous supply of medicinal products[12]. Scientific investigations have proved that the use of the herbs shows the maximum therapeutic effects and minimum side effects[13].
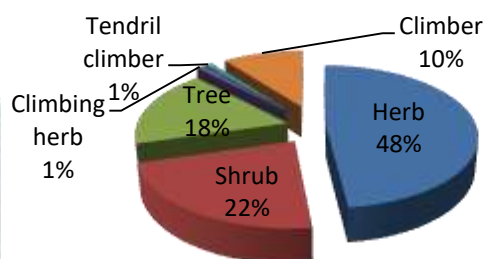

Fig. 1 Habit-wise distribution of medicinal plants recorded in the study area

Family wise distribution of the medicinal plants shows that Leguminosae and Lamiaceae were the dominant families with 7 species each, the co-dominant position was occupied by Acanthaceae and Apocynaceae (6 species each), Euphorbiaceae and Malvaceae (5 species each), Compositae, Cucurbitace, Piperaceae and Solanaceae (4 species each), Amaranthaceae, and Moraceae (3 species each), Amaryllidaceae, Anacardiaceae, Convolvulaceae, Lythraceae, Nyctaginaceae, Phyllanthaceae, Poaceae, Rubiaceae, Rutaceae and Zingiberaceae (2 species each). Thirty families were monospecific.Leguminosae members has rich medicinal value most of the phytochemical analysis, antioxidant potential and antibacterial properties are done in a few plants of Leguminosae[14].
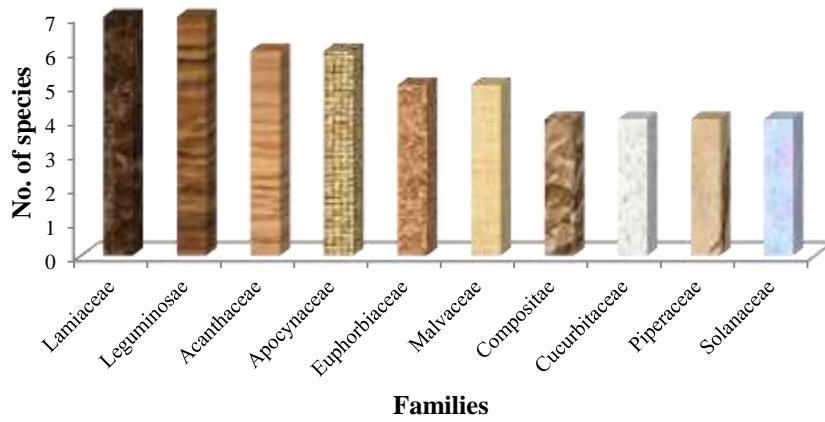
Fig.2. Top 10 families recorded in the study area

Different parts of medicinal plants were used as medicine by a local people from the study area (Fig. 3). Among the different parts used, the leaves (28 species) were most frequently used for the treatment of diseases.Other plant parts likefruit, bark, stem, wood, seeds, roots, flower, rhizome, bulb, endosperm, tuber, latex, nut, grains, whole plant and pseudostemwere also used in the medicine preparation (Fig.3). Leaves are most used part as the removal of the whole plant or roots or excessive use of fruits or seeds as medicines has a destructive effect on plant population growth, possibly leading to a strong decline of many medicinal plant populations in nature[15,16] and also due to the fact that leaves are active in photosynthesis and production of secondary metabolities[17]. Most of the informants suggested taking herbal medicines orally as decoction, paste and juice form (57), rather than external use (43%) like paste and inhalation, as consistent with comparableinvestigations[18-20].
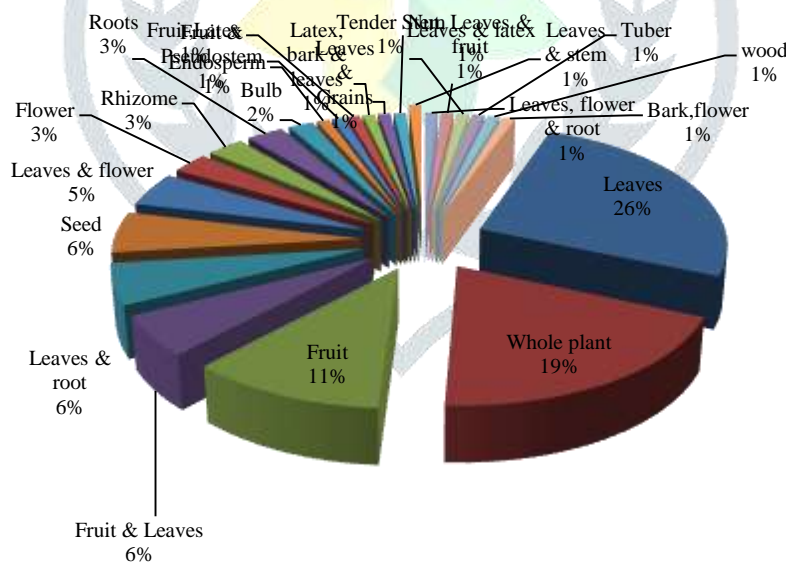
Fig.3. Mode of preparation of medicine in the study area
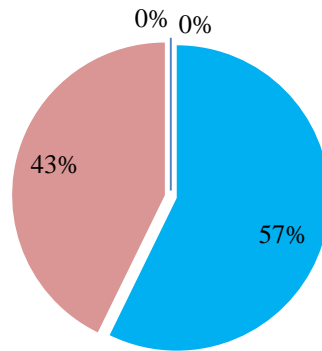
Fig. 4. Mode of administration of medicine in the study area

4.2 Quantitative data analysis

Use value (UV)

*Moringaoleifera*with 1.8 UV is recorded to be the most commonly used species followed by *Abelmoscusesculantus, Hibiscus rosa-sinensis, Trigonellafoenum-graecum* with 1.33 UV each (Table 1). Majorityof the people consume*Moringaoleifera*leaves decoction occassionally as a health drink due to the presence of large amount of nutrients present to boost the immunity power in the body. It is used in the treatment of various diseases and it is well recognized as an antidiabetic plant[21]. Most of these plants were frequently used by the local area to treatment of various ailments. The plant with very low use value was 0.07. Species with high and low UV is based on the availability of the specific species in the area[22]. Plants recorded least use value may be due to the lack of communication among the people or due to their less availability in the respective area.

Table 1. Use value (UV) of common medicinal plants in the study area

Sl. No.	BOTANICAL NAME	Disease treated	UV
1	*Moringaoleifera* Lam.	Snake bite,constipation,weightloss,bloodpressure,scorpionstings,diabetes, increase immunity	1.8
2	*Abelmoschus esculentus* (L.) Moench	Diabetes,constipation,bloodsugar,glowingskin,memory power	1.33
3	*Hibiscus rosa-sinensis* L.	Dandruff problem, dark hair,reduce body heat, hairfall problems	1.33
4	*Trigonellafoenum -graecum* L.	Stomach ache,strangury	1.33
5	*Solanumamericanum* Mill.	Asthma	1.27
6	*Ocimum tenuiflorum* L.	Cough,cold,asthma	1.2
7	*Piper longum* L.	Cough,cold,indigestion	1.13
8	*Psidiumguajava* L.	Blood pressure,anemia	1.13
9	*Tridaxprocumbens* (L.) L.	Dandruff,diabetes,stomach pain	1.13
10	*Allium sativum* L.	Indigestion,gastric problems, asthma	1
11	*Azadirachtaindica*A.Juss.	Diabetes,rheumatism,fungalinfections,eczema	1
12	*Cocosnucifera* L.	Reduce body heat,wrinkles	1
13	*Cucumissativus* L.	Bleeding in	1

		cuts,eczema,bedsore,swelling,fever,toothcare,throat infection	
14	*Zingiberofficinale* Roscoe	Indigestion,stomach pain	1
15	*Citrus limon* (L.) Osbeck	Acidity,blackheads,diarrhoea,whitflow	0.93
16	*Commelinabenghalensis* L.	Dry cough, intestinal ulcer	0.93
17	*Musa paradisiaca* L.	Black spot,kidneystone,leucorrhoea	0.93
18	*Santalum album* L.	Ringworm infection,kidneystone,rheumatism	0.93
19	*Aloe vera* (L.) Burm.f.	Black spot,scars,burns	0.8
20	*Hemidesmusindicus* (L.) R. Br. ex Schult.	Diabetes,rheumaticpain,diarrhoea,bloodpurification,burningsensation,whooping cough	0.8
21	*Mimosa pudica* L.	Rheumatic pain,diabetes,jaundice,stomachdisorder,wounds	0.8
22	*Piper betle* L.	Whooping cough,cold,headache	0.8
23	*Acalyphaindica*L.	Skin diseases,rheumaticpain,bronchitis,ringworm infection	0.73
24	*Curcuma longa* L.	Intestinal ulcer,darkness around eyes,reduce body heat	0.73
25	*Piper nigrum* L.	Indigestion, cough	0.73
26	*Thespesiapopulnea* (L.) Sol. ex Correa	Urinary infection	0.73
27	*Leucasaspera*(Wild.) Link	Eczema,headache,fever,ringworminfection,sinusitis	0.67
28	*Andrographispaniculata*(Burm.f.) Nees	Viral fever,eczema,vermifuge	0.6
29	*Clerodendruminfortunatum* L.	Diabetes, cuts,wounds	0.6
30	*Cocciniagrandis* (L.) Voigt	Constipation,mouthulcer,diabetes	0.6
31	*Evolvulusalsinoides*(L.) L.	Jaundice,couh and cold,fever,bronchitis,asthma	0.6
32	*Phyllanthusemblica* L.	Jaundice, increase blood count	0.6
33	*Sennaalata*(L.) Roxb.	Fever,diabetes	0.6
34	*Solanumtrilobatum*L.	Dermatitis,eye pain	0.6
35	*Achyranthesaspera* L.	Tooth bleeding,urinarydisorder,bleeding piles,cuts	0.53
36	*Allium cepa* L.	Dandruff problem, increase cell count	0.53
37	*Cardiospermumhalicacabum* L.	Rheumatism,reduce delivery pain,veneraldisease,cuts	0.53
38	*Carica papaya* L.	Toothache,glowing skin	0.53
39	*Cynodondactylon* (L.) Pers.	Blood purifier,skin diseases, weight loss	0.53
40	*Daturametel* L.	Swelling,rheumatidarthritis,asthma,boils,sores	0.53
41	*Rosa damascena*Herrm.	Skin allergy,heart diseases.	0.53
42	*Senna auriculata* (L.) Roxb.	Anemia,diarrhoea	0.53
43	*Sidacordifolia* L.	Night blindness,mouthulcer,wounds,apptizer	0.53
44	*Bambusabambos* (L.) Voss	Diabetes,Cough,blood pressure	0.47
45	*Biophytumsensitivum*(L.) DC.	Piles,migrain,boils,diabetes.	0.47
46	*Cassia fistula* L.	Earache,eczema,diabetes.	0.47

47	*Cissusquadrangularis* L.	Healing bone,piles,rheumatitis	0.47
48	*Clitoriaternatea* L.	Poisonous bites,ulcer, menorrhagia,snake bite	0.47
49	*Ecliptaprostrata* (L.) L.	Wounds,jaundice,cough,cold,reduce body heat	0.47
50	*Euphorbia heterophylla* L.	Constipation,dermatitis,stomach ache	0.47
51	*Ficusreligiosa* L.	Swelling,burns,eczema,dysmenorrhoea	0.47
52	*Hygrophilaauriculata* (Schumach.) Heine	Swellings,leucorrhoea,oliguria,diarrhoea,increase immunity	0.47
53	*Jatrophacurcas* L.	Muscular pain,diabetes,ringworminfection,mouth ulcer	0.47
54	*Momordicacharantia* L.	Diabetes, indigestion	0.47
55	*Phyllanthusniruri* L.	Jaundice,dysmenorrhoea,paronchya	0.47
56	*Ricinuscommunis* L.	Hairfall problems, heel cracks	0.47
57	*Scopariadulcis* L.	Ringworm infection, fungal infection	0.47
58	*Abutilon indicum*(L.) Sweet	Constipation,Bleeding piles, body heat	0.4
59	*Anacardiumoccidentale* L.	Toothache,diarrhoea,diabetes,bloodpressure,increse immunity	0.4
60	*Annonasquamosa* L.	Cold, constipation,dandruff	0.4
61	*Asparagus racemosus*Willd.	Stomach ulcer, lactation of milk	0.4
62	*Centellaasiatica* (L.) Urb.	Ulcer,dysentry,leucorrhoea	0.4
63	*Euphorbia hirta* L.	Dysentry,asthma,pimples,whoopingcough,piles	0.4
64	*Lawsoniainermis* L.	Glowing hair,reduce body heat	0.4
65	*Rhinacanthusnasutus* (L.) Kurz	Ringworm infection,wounds.	0.4
66	*Sesamumindicum* L.	Leucorrhea,fever	0.4
67	*Tabernaemontanadivaricata* (L.) r.Br.exRoem. &Schult.	Swelling	0.4
68	*Lantana camara* L.	Asthma,dandruff,snake bite	0.33
69	*Menthaarvensis* L.	Vomiting,pimples,rashes	0.33
70	*Mukiamaderaspatana* (L.) M.Roem.	Ringworm infection,toothache,stomach disorder	0.33
71	*Murrayakoenigii* (L.) Spreng.	Hairfall, increase immunity	0.33
72	*Punicagranatum* L.	Whooping cough	0.33
73	*Amaranthusviridis* L.	Dysentry,constipation	0.27
74	*Andrographisechioides* (L.) Nees	Reduce body heat, eczema	0.27
75	*Brassica juncea* (L.) Czern.	Rashes, body pain,dark hair	0.27
76	*Calotropisgigantea* (L.) Dryand.	Inflammation,swelling,asthma,bronchitis	0.27
77	*Passifloraedulis* Sims	Indigestion,constipation	0.27
78	*Calophylluminophyllum* L.	Rashes,eczema.	0.2
79	*Carissa spinarum* L.	Stomach ulcer,increase immune power, vermifuge	0.2
80	*Catharanthusroseus* (L.) G.Don	Diabetes,leucorrhoea,menstrual complaints	0.2
81	*Hybanthusenneaspermus* (L.) F.Muell.	Diabetes,increase male fertility	0.2
82	*Hyptissuaveolens* (L.) Poit.	Fungal infections,sores	0.2
83	*Nelumbonucifera*Gaertn.	Dermatitis, heart strength	0.2
84	*Plectranthus amboinicus* (Lour.)	Cholestrol	0.2

	Spreng.		
85	*Vitexnegundo* L.	Body pain	0.2
86	*Artocarpusheterophyllus*Lam.	Anaemia	0.13
87	*Boerhaviadiffusa* L.	Cough,asthma	0.13
88	*Cleome viscosa* L.	Wounds, earache	0.13
89	*Cyanthilliumcinereum* (L.) H.Rob.	Eczema,fungalinfection,wounds,paronychia	0.13
90	*Elephantopusscaber* L.	Intestinal ulcer,eczema	0.13
91	*Gloriosasuperba* L.	Dermatitis	0.13
92	*Heliotropiumindicum* L.	Wounds,scorpion stings	0.13
93	*Ipomoea obscura*(L.) Ker Gawl.	Eczema	0.13
94	*Manilkarazapota* (L.) P.Royen	Kidney stone	0.13
95	*Mirabilis jalapa* L.	Boils	0.13
96	*Nerium oleander* L.	Wounds	0.13
97	*Peperomiapellucida* (L.) Kunth	Pimples, leukoderma	0.13
98	*Portulacaoleracea* L.	Diabetes,toothcaries,dysentry,constipation, abdominal pain	0.13
99	*Tamarindusindica* L.	Fungal infections,wounds,eczema	0.13
100	*Amaranthusspinosus* L.	Laxative	0.07
101	*Ixoracoccinea* L.	Eczema	0.07
102	*Justiciaadhatoda* L.	Bronchitis	0.07
103	*Mangiferaindica* L.	Dysentry	0.07
104	*Morus alba* L.	Hypertension	0.07
105	*Oldenlandiaumbellata* L.	Bronchitis	0.07
106	*Ruelliatuberosa* L.	Dermatitis,boils, wounds,eczema	0.07
107	*Solanumtorvum*Sw.	Rheumatism,fever,asthma	0.07
108	*Tribulusterrestris* L.	Cuts,ulcer,cough	0.07

Family use value (FUV)

Family use value (FUV) is used to distinguish the plant families that have more uses than would be expected by random chance[23]. FUV ranged from 1.80 to 0.07 (Table 2). The most frequently used family of the study area is Moringaceae with highest FUV of 1.44 followed by Arecaceae, Commelinaceae, Meliaceae (1 FUV each), Musaceae, Plantaginaceae (0.93 FUV each), Xanthorrhoeaceae (0.80), Amaryllidaceae, Lythraceae (0.77), Zygophyllaceae (0.73), Malvaceae (0.72), Piperaceae (0.70) etc. Lowest FUV was seen in Santalaceae and Rubiaceae with 0.07 FUV each.

Table 2. Family use values (FUV) of medicinal plants in the study area

S. No	Family	Uvs	No. of Species (Ns)	FUV
1	Moringaceae	1.8	1	1.80
2	Arecaceae	1	1	1.00
3	Commelinaceae	1	1	1.00
4	Meliaceae	1	1	1.00
5	Musaceae	0.93	1	0.93
6	Plantaginaceae	0.93	1	0.93
7	Xanthorrhoeaceae	0.8	1	0.80
8	Amaryllidaceae	1.53	2	0.77

S. No	Family	Uvs	No. of Species (Ns)	FUV
9	Lythraceae	1.53	2	0.77
10	Zygophyllaceae	0.73	1	0.73
11	Malvaceae	3.59	5	0.72
12	Piperaceae	2.79	4	0.70
13	Rutaceae	1.26	2	0.63
14	Leguminosae	4.34	7	0.62
15	Solanaceae	2.33	4	0.58
16	Zingiberaceae	1.13	2	0.57
17	Phyllanthaceae	1.07	2	0.54
18	Cucurbitaceae	2.13	4	0.53
19	Caricaceae	0.53	1	0.53
20	Pedaliaceae	0.53	1	0.53
21	Rosaceae	0.53	1	0.53
22	Sapindaceae	0.53	1	0.53
23	Euphorbiaceae	2.54	5	0.51
24	Compositae	2	4	0.50
25	Poaceae	1	2	0.50
26	Lamiaceae	3.4	7	0.49
27	Oxalidaceae	0.47	1	0.47
28	Vitaceae	0.47	1	0.47
29	Annonaceae	0.4	1	0.40
30	Apiaceae	0.4	1	0.40
31	Asparagaceae	0.4	1	0.40
32	Apocynaceae	2.2	6	0.37
33	Convolvulaceae	0.73	2	0.37
34	Acanthaceae	2.14	6	0.36
35	Verbenaceae	0.33	1	0.33
36	Amaranthaceae	0.87	3	0.29
37	Brassicaceae	0.27	1	0.27
38	Passifloraceae	0.27	1	0.27
39	Moraceae	0.67	3	0.22
40	Anacardiaceae	0.4	2	0.20
41	Clusiaceae	0.2	1	0.20
42	Nelumbonaceae	0.2	1	0.20
43	Portulacaceae	0.2	1	0.20
44	Violaceae	0.2	1	0.20
45	Boraginaceae	0.13	1	0.13
46	Cleomaceae	0.13	1	0.13
47	Colchicaceae	0.13	1	0.13
48	Myrtaceae	0.13	1	0.13
49	Nyctaginaceae	0.26	2	0.13
50	Sapotaceae	0.13	1	0.13
51	Rubiaceae	0.14	2	0.07
52	Santalaceae	0.07	1	0.07
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1	Moringaceae	1.8	1	1.80
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3	Commelinaceae	1	1	1.00
4	Meliaceae	1	1	1.00
5	Musaceae	0.93	1	0.93
6	Plantaginaceae	0.93	1	0.93
7	Xanthorrhoeaceae	0.8	1	0.80
8	Amaryllidaceae	1.53	2	0.77
9	Lythraceae	1.53	2	0.77
10	Zygophyllaceae	0.73	1	0.73
11	Malvaceae	3.59	5	0.72
12	Piperaceae	2.79	4	0.70
13	Rutaceae	1.26	2	0.63
14	Leguminosae	4.34	7	0.62
15	Solanaceae	2.33	4	0.58
16	Zingiberaceae	1.13	2	0.57
17	Phyllanthaceae	1.07	2	0.54
18	Cucurbitaceae	2.13	4	0.53
19	Caricaceae	0.53	1	0.53
20	Pedaliaceae	0.53	1	0.53
21	Rosaceae	0.53	1	0.53
22	Sapindaceae	0.53	1	0.53
23	Euphorbiaceae	2.54	5	0.51
24	Compositae	2	4	0.50
25	Poaceae	1	2	0.50
26	Lamiaceae	3.4	7	0.49
27	Oxalidaceae	0.47	1	0.47
28	Vitaceae	0.47	1	0.47
29	Annonaceae	0.4	1	0.40
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44	Violaceae	0.2	1	0.20
45	Boraginaceae	0.13	1	0.13
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47	Colchicaceae	0.13	1	0.13
48	Myrtaceae	0.13	1	0.13
49	Nyctaginaceae	0.26	2	0.13
50	Sapotaceae	0.13	1	0.13
51	Rubiaceae	0.14	2	0.07
52	Santalaceae	0.07	1	0.07

Informant consensus factor (Fic)

Generally, ICF values were calculated to know the agreement among the informants for consumption of plants to treat certain disorder categories[24]. In order to use the informants consensus factor classified the illness into broad disease categories. The F_{ic} values in our study are ranged from 0.40 to 0.86. The use categories with more than 50 use reports were Dermatological diseases (189 use reports, 52 species), Respiratory system diseases (72 use reports, 21 species), Gastrointestinal ailments (123 use reports, 38 species), General health(132 use report, 31 species) Endocrinal disorder (68 use reports, 18 species)etc. The highest F_{ic} value of the study 0.86 respectively. The least agreement between the informants was observed in the Dental care with a F_{ic} of 0.40 followed by Genito urinary ailments a F_{ic} 0.48 and Ear, nose, throat problems with a F_{ic} of 0.58 each. This study indicated the degree of knowledge shared by the users in the study area regarding the use of medicinal plants in the treatment of ailments is high (Table 3).

Table 3. Fic values of ailments treated in the study area

Ailment Categories	Nur	Nt	Nur-Nt	Nur-1	Fic
1. Kidney Problem (KP)	15	3	12	14	0.86
2. Hair care (HC)	43	9	34	42	0.81
3. Cardiovascular diseases (CSCD)	20	5	15	19	0.79
4. General health (GH)	132	31	101	131	0.77
5. Endocrinal disorder (ED)	68	18	50	67	0.75
6. Fever (FVr)	24	7	17	23	0.74
7. Dermatological diseases (DID)	189	52	137	188	0.73
8. Respiratory system diseases (RSD)	72	21	51	71	0.72
9. poisonous bites (PB)	11	4	7	10	0.70
10. Gastro intestinal ailments (GIA)	123	38	85	122	0.70
11. Liver problems(LP)	12	5	7	11	0.64
12. Skeleto muscular system disorders(SMSD)	37	15	22	36	0.61
13. Ear, nose & throat problems (ENT)	13	6	7	12	0.58
14. Genito urinary ailments(GUA)	26	14	12	25	0.48
15. Dental care (DC)	11	7	4	10	0.40

Conclusion:

The survey indicated that the traditional medicine has great potentiality to cure different diseases. The traditional knowledge with its holistic approach supported by experimental base can serve as an innovative and powerful discovery for newer, safer and affordable medicines. Findings of the present investigation revealed that Arumanai village has a very rich diversity of medicinal plants. Active compounds extracted from these plants may lead for Pharmacological and Biochemical investigation

which may leads to discovery of novel drug. Therefore, Pharmacological values of these plants should be tested. Moreover, over exploitation of plants in the name of medicine will sometimes will leads to extinction of plant species. So, proper monitoring and conservation of these plants is very much needed.

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