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Indigenous Knowledge of Medicinal Plants of Hai Valley, Adjoining Border of District Buner and District Shangla, Pakistan

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Abstract
Indigenous knowledge of medicinal plants was gathered during March-August 2017, in Hai valley, District Buner Pakistan. The study comprises 98 plants distributed in 82 genera and 50 families. The aim of this study was to enlist information's about the interaction of various communities of the vicinity with plant wealth. It was found that local communities have ridiculous tradition of using natural plant resources for their common day ailments. Local inhabitants both men and women believe that these plants based medicines are easily available, cheap and with no side effects. It was found that common disorders such as fever, cold, cough and diarrhea could be treated by simple herbal teas. The reason for using medicinal plants by the local people of the area was that they are poor and cannot effort to pay for expensive synthetic drugs. It is suggested that plants based industries and markets should be encouraged in the area to alleviate the poverty problems of local communities.

Keywords: Indigenous knowledge, Medicinal plants, Hai valley, District Buner, Pakistan

1. Introduction

1.1 Area introduction

Hai valley is situated in District Buner, North West Pakistan. It lies between 34^0- 9̀ and 34^0- 43̀ N–latitude and 72^0 - 10́, 72^0 - 47́ E-longitude. The valley is situated at distance of 60 km from tehsil head quarter Buner. It is surround by Shal Bandai in North, Pir baba in the West, Swat in South and Shangla in East. Hai is hilly and mountainous terrain. Annually, four distinct seasons remain the feature of the valley. Winter is harsh while summer is pleasant and short.

1.2 Indigenous knowledge

Indigenous knowledge may be defined as knowledge that is unique to a given culture which provide baseline for agriculture, health care facility, food preparation, and other life processes on native level [36]. Native communities of different localities of the world have established their own traditional knowledge on plant assets, uses and natural resource management [12]. Develop countries desires to access biodiversity resources and developing countries seek to confirm that access is regulated and to ensure fair and reasonable sharing of benefits through transfer of technology and finance [26]. This indigenous knowledge of plants has been transferred through oral communication and personal experience [35]. They use native medicinal plants for primary health care [11]. In early 1950 upto 84% of Pakistani populations were dependent on indigenous medicines for traditional health practices [20]. Many Reasechers have been conducted studies on the indigenous uses of medicinal plants in various regions of Pakistan such as; [16] describe indigenous knowledge of medicinal plants from Northern areas of Pakistan. [5] Reported 83 taxa that were used locally in Chitral district of Hindukush range. Based on the present study we may recommend that the plant may be biologically tested for confirmation of results, for example antimicrobial activities, proximate and micronutrient analysis [22].

1.3 Medicinal Plants

Medicinal plants possess active chemical constituent in any of its part like roots, stems, leaves, barks and seeds. These produce a definite curing physiological reaction in the treatment of various disorders in human and other animals.. The elder people of the area, even in these days, use local plant resources to cure many common diseases of children especially. The knowledge and experience of these elderly people (Men and Women) is a valuable wealth of the area. Not only, the old Ayurvedic and Unani system of medicinal treatment depend herbal drugs but the other systems including allopathic and homeopathic directly or indirectly depend upon the herbal drug plants for the preparation of certain synthetic drugs [32].

Moreover, medicinal plants have an ancient history of manhood itself; therefore, human beings are involved in utilization of plants resources since time immemorial. Studies at global level conducted from time to time i.e. [9], [24], [29] have emphasized on the importance of medicinal plants in various medicine systems. The current study will also attempt to explore the nature and importance of medicinal plants in the locality.

2. Materials and Methods

2.1 Ethnomedicinal Survey

A series of field surveys were conducted in order to collect informations about the indigenous knowledge of plants during March-August 2017. An effort was also made to confirm the ethnomedicinal uses from local farmers, plant collectors and healers (Hakeems) and herbal dealers (Pansars) in Swari bazar.

2.2 Interviews and Questionnaires with Locals
About 187 individuals were interviewed through employing questionnaires. Interviewees were selected among the local inhabitants who had knowledge about the plants. Information was collected on different aspects of ethno-botanical usage, e.g. common name; parts used and use categories of individual species.

2.3 Preservation of Plant Specimens
The collected speciemens and their parts were dried, preserved by (1% $CuSO_4$**)** as 1g $CuSO_4$ dissolved in 99 ml distilled water and then mounted on herbarium sheets. A voucher number was assigning to each plant. The plant speciemens were identified with the help of flora of Pakistan [28].

3. Results
3.1 Medicinal plants diversity and indigenous uses and threat
During the current study, inhabitants reported 98 plants and their uses for various ailments (table 1). These plants belonging to 82 genera and 50 families containing herbs 47 species (47.95%), shrubs 14 species (14.28%) and trees 37 species (37.75%) (fig 1). Family Lamiaceae included (9 species) followed by Rosaceae (7 species), Papalionaceae, Poaceae, and Moraceae had (5 species) each. While Polygonaceae, Solanaceae and Rutaceae each had (3 species), similarly Asteraceae, Plantaginaceae, Milaiceae, Fagaceae and Pinnaceae possess (2 species) each. The remaining 32 families had (2 species) each (table 2). Our results correlate with [2] who found Lamiaceae, Polygonaceae and Ranunculaceae the best represented families in Chail valley Swat. Our results are also in line with the previous study on ethno flora reported by [14], [15], [17] and [21] in different parts of the world. In the present observation overgrazing and deforestation were the two major causes of loss of biodiversity in the locality.

3.2 Plants Parts used in preparations of remedies
Parts of the plant that were reported to have medicinal effect were leaves (36.73%) and fruits (26.53%) being the most increasingly used followed by whole plants (23.46%), woods (18.36%), seeds (7.14%), bark (5.1%), flower and gum (4.08%), branches (3.06%), while stem and roots (1.02%) (fig 2). However, our findings are in agreements with [1] who documented the ethnobotanical uses of medicinal plants in Tribal areas. The increasing use of leaves and fruits in curing of different diseases is reflected to fact that they are collected easily and used directly [13]. The multiple parts of the same plant is also apparent that due to their availability and could be easily collected.

3.3 Indigenous knowledge based on the interviews of the local inhabitants
In the current attempt, 845 general information regarding the collection and native uses of plants and traditional practices gathered from 187 respondents of 15 villages. Data analysis shows that old aged people have more knowledge than middle and young aged people. On the average of total information collected, old aged people have knowledge 6.31 the middle people have 4.23 average knowledge and young have 2.12 average knowledge. Data analysis also shows that women have more indigenous knowledge (7.38) than men (3.41) (table 3).

Table 1: Medicinal plants diversity, voucher number, parts used and indigenous uses

S. No	Botanical name/Vouchers Number	Family	Common name	Habit	Parts used	Indigenous uses
1.	*Mentha longifolia* L. Ullah.101.UOM	Lamiaceae	Velanay	H	Leaves	Leaves are carminative used for diarrhea and gastric problems.
2.	*Mentha arvensis* L. Ullah.102.UOM	Lamiaceae	Podina	H	Leaves	Leaves are carminative used for diarrhea and gastric problems.
3	*Oxalis carniculata* L. Ullah.103.UOM	Oxiladaceae	Zmki tharoky	H	Leaves	Leaves used as fodder.
4.	*Canabis sativa* L. Ullah.104.UOM	Canabiaceae	Bhang	H	Leaves	Locally known as bhang used for curing headache, toothache, jaundice and falling hairs.
5.	*Phaseolus vulgaris* L. Ullah.105.UOM	Papalionaceae	Lobia	H	Fruit	As a food.
6.	*Mirabilis jalapa* L. Ullah.106.UOM	Nyctaginaceae	Guli badam	H	Whole plant	Flowers used for ornamental purposes.
7.	*Bergenia stracheyi* (Hook. f. & Thoms.) Engler Ullah.107.UOM	Sexifragaceae	Goknda	H	Whole plant	Used as atonic for animal, leaves heated placed on boil for getting pus from them.
8.	*Parthenium hysterophorus* L. Ullah.108.UOM	Asteraccae	Thrkha	H	Leaves	As a fodder.
9.	*Triticum aestivum* L. Ullah.109.UOM	Poaceae	Ghnum	H	Whole plant	As a fodder for animal.
10.	*Foeniculum valgare* L. Ullah.110.UOM	Lamiaceae	Kago	H	Fruit	Used as carminative and stomach problems.
11.	*Astragalus pyrhotrichus* Bioss. Ullah.111.UOM	Pipalionaceae	Spen boti	H	Whole plant	Used as a fodder.
12.	*Arisaema jacquemontii* Blume. Ullah.112.UOM	Araceae	Marjarae	H	Whole plant	Poison.
13.	*Origanum valgare* L. Ullah.113.UOM	Lamiaceae	Shamkai	H	Whole plant	Hepatitis, mixed with sperky dried and used for diabetes, also used as eczema.
14.	*Ajuga bracteosa* Wall. ex Bth. Ullah.114.UOM	Lamiaceae	Boti	H	Leaves	Used for gastric problem, abdominal pain and as a tonic for children.
15.	*Plantago lanceolate* L. Ullah.115.UOM	Plantaginaceae	Aspaghol	H	Leaves	As a food.

16.	*Avena sativa*. L. Ullah.116.UOM	Poaceae	Jownder	H	Whole plant	As a fodder.
17.	*Rumex dentatus* L. Ullah.117.UOM	Polygonaceae	Shalkhay	H	Leaves	As a food, also used to increase the metabolic activity of animals.
18.	*Vicia monantha* Retz. Ullah.118.UOM	Papalionaceae	Ghantol	H	Flower	Ornamental.
19.	*Endium cicutarium* L. Ullah.119.UOM	Liliaceae	Gngaye	H	Leaves	As a food.
20.	*Viola canescens* Wall.ex. Roxb. Ullah.120.UOM	Violaceae	Bnakhcha	H	Whole plant	Blood purifier, cooling agent, ornamental, also used for buying purposes.
21.	*Vitis vinifera* L. Ullah.121.UOM	Vitaceae	Kwar	HC	Fruit	Food
22.	*Anagalis arvensis* L. Ullah.122.UOM	Primulaceae	Shen mongotai	H	Whole plant	Used in cerebral infection, also have wormicidal, antifungal and antibacterial activities.
23.	*Stachys parviflora* Benth. Ullah.123.UOM	Lamiaceae.	Shora boti.	H	Whole plant	As a fodder.
24.	*Adiantum capillus-veneris* L. Ullah.124.UOM	Adiantaceae	Kwanjy	H	Leaves	As a vegetable.
25.	*Plantago majar* L. Ullah.125.UOM	Plantaginaceae.	Jabai	H	Leaves	As a vegetable.
26.	*Oxystelma esculentum* L.F. Ullah.126.UOM	Aslepiadaceae	Tendory	H	Whole plant.	As a food.
27.	*Calendula arvensis* L. Ullah.127.UOM	Asteraceae	Zyrguly	H	Leaves	As a food.
28.	*Silene conoidea* L. Ullah.128.UOM	Caryophyllaceae	Mongotai	H	Whole plant	Used as fodder.
29.	*Aloe vera* (L.) Burn. Ullah.129.UOM	Liliaceae	Mnzre panra	H	Leaves	Skin diseases.
30.	*Duchesnia indica* (Andr.) Fock. Ullah.130.UOM	Rosaceae	Zmaki toot	H	Fruit	Fruit edible, laxative.
31.	*Verbascum Thapsus* L. Ullah.131.UOM	Scrophulariaceae	Khar ghwag	H	Leaves	Antirheumatic, astringent, demulcent and emollient, leaves used for wound healing.
32.	*Andrachne cordifolia* (Wall. ex Dcne.) Muell. Avg. Ullah.132.UOM	Euphorbiaceae	Krachi	H	Whole plant	Poison for cattles.
33.	*Vicia sativa* L. Ullah.133.UOM	Papilionaceae	Chilow	H	Fruit	Fruits edible.
34.	*Geranium ocellatum* Camb. Ullah.134.UOM	Geraniaceae	Sorguly	H	Whole plant	Used as fodder for cattles.
35.	*Solanum nigrum* L. Ullah.135.UOM	Solanaceae	Karmacho	H	Fruit and leaves.	Food, used for infection of throat, dysentery.
36.	*Ocimum basilicum* L. Ullah.136.UOM	Lamiaceae	Kashmalai	H	Whole plant	The plant is locally grown as ornamental for incense, used as flavoring agent for confectionary baked goods, pickles and meats, medically used as insect repellent, carminative, stimulant and anthelmintic, leaves juice used for ringworms. Seed used as demulcent, diuretic and for piles.
37.	*Nasturtium officinale* R. BR. Ullah.137.UOM	Brassicaceae	Termira	H	Whole plant	Antipyretic and used in tuberculosis urinary disorder skin disease and obesity, also used as vegetable.
38.	*Teucrium stocksianum* Bioss. Ullah.138.UOM	Lamiaceae	Spen Azghay	H	Whole plant	Used as stimulant, diuretic and very useful in jaundice.
39.	*Euphorbia helioscopia* L. Ullah.139.UOM	Euphorbiaceae	Mandaro	H		Poisonous, wheat weed.
40.	*Lathyrus aphaca* L. Ullah.140.UOM	Papilionaceae	Zangli matar	H	Whole plant	Used as vegetable.
41.	*Datura stramonium* L. Ullah.141.UOM	Solanaceae	Daltora	H	Flower and leaves	The juice of flower is useful in earache; leaves are applied on boils for maturation.
42.	*Chenopodium album* L. Ullah.142.UOM	Chenopodiaceae	Sarmay	H	Whole plant	Laxative, liver disorder and pot herb.
43.	*Caralluma tuberculata* N. E. Brown. Ullah.143.UOM	Asclepiadaceae	Pamanky	H	Whole plant	Antidiabetic, bitter in taste and also used as vegetable.
44.	*Saccharum spantaneum* L. Ullah.144.UOM	Poaceae	Kahi wakha	H	Whole plant	Fresh and dry fodder, straw used to make baskets.
45.	*Polygonum aviculare* L. Ullah.145.UOM	Polygonaceae	Palpolak	H	Leaves, stem	Poisonous.
46.	*Sorghum helepense* L. Ullah.146.UOM	Poaceae	Dedum	H	Leaves, Stem	Poisonous, when young, used as fodder when mature.
47.	*Salvia moorcruftiana* Wall.ex.Bth. Ullah.147.UOM	Lamiaceae	Khardug	H	Whole plant	Antitumor, antiseptic, root used in cold and cough.

48.	*Debregeasia salicifolia* (D. Don) Rendle. Ullah.148.UOM	Urticaceae	Ajlai	S	Whole plant	Leaves are used as teeth cleaning and washing dishes. Fresh fodder for goat and cattle and also used as fuel wood.
49.	*Rubus ellipticus* Smith. Ullah.149.UOM	Rosaceae	Gorach	S	Leaves and fruits	Leaves used as fodder, fruits used as astringent in the form of decoction and for diarrhea.
50.	*Justicia adhatoda* L. Ullah.150.UOM	Acanthaceae	Biakar	S	Whole plant	Leaves are used for ripening of banana fruit, and also pain killer, and honey bees visit flower, and also used for fire wood.
51	*Rumex hastatus* D.Don. Ullah.151.UOM	Polygonaceae	Threwkay	S	Whole plant	Fresh plant is used as sour taste.
52.	*Dodonea vicosa* L. Ullah.152.UOM	Sepindaceae	Ghwraskay	S	Whole plant	Leaves used as a fodder.it also used as a fuel.
53	*Rubus fruiticosus* L. Ullah.153.UOM	Rosaceae	Karwra	S	Whole plant	Fruit edible, leaves as fodder for goats, fences and hedges.
54.	*Robdosia rugosa* (wallich. ex Benth). Ullah.154.UOM	Lamiaceae	Sperkay	S	Whole plant	It used for diabetes, best for honeybees visit flower.
55.	*Daphne mucronata* Royle. Ullah.155.UOM	Thymeleaceae	Leghonay	S	Whole plant	Poisonous, fuel wood.
56.	*Phylanthus fraternus.* Ullah.156.UOM	Euphorbiaceae.	Kenti	S	Leaves	Fresh leaves used for abdominal pain or pain killer.
57.	*Barberis lycium* Royle. Ullah.157.UOM	Berberidaceae	Qwaray	S	Roots bark, Fruits	The grinded roots are used for healing of wound.
58.	*Ricinus communis* L. Ullah.158.UOM	Euphobiaceae	Krnda	S	Seeds	Seed used for infertility. Seed also used for numerical calculation.
59.	*Gymnosporia royleana* (wall.) Lawson. Ullah.159.UOM	Celastraceae	Sor azghe	S	Seeds	Seed used to relieve toothache.
60.	*Cotoneaster nummularia* Fisch. Mey. Ullah.160.UOM	Rosaceae	Mamanra	S	Fruit	Fruit used as a food.
61.	*Citrus aurantifolia* Christmann. Ullah.161.UOM	Rutaceae	Limbo	S	Fruit	Fruit is antiseptic and stomachic.
62.	*Olea ferruginea* Royle. Ullah.162.UOM	Oleaceae	Khuna	T	Leaves, Wood	Fresh leaves are used for mouth thrush and also used for cleaning of teeth. Woods are used for making agricultural tools, serve as fodder for cattles.
63.	*Pistacia itegrrima* J.L.Stew.ex. Brandis. Ullah.163.UOM	Anacardiaceae	Shnae	T	Fruits, Leaves, Wood	The grinded fruits are used for cough disorder. Woods are as fuel and leaves are used for fodder.
64.	*Platanus orientalis* L. Ullah.164.UOM	Plantanaceae	Chinar	T	Woods	Used as fire wood and also used for making timber and furniture.
65.	*Ailanthus altissima* (Mull) Swingle. Ullah.165.UOM	Simaroubaceae	Spena Bakanra	T	Leaves, woods	Leaves are used as fodder and woods are as fuel and timber, visited by honeybees.
66.	*Melia azedarach* L. Ullah.166.UOM	Meliaceae	Thora Bakanra	T	Leaves, fruits, Wood	Leaves are used as insecticide, and also as fodder. Woods are used as source of timber and fuel.
67.	*Xanthozylum armatum* DC. Ullah.167.UOM	Rutaceae	Dambra	T	Leaves, Seeds, woods	Seeds are used in chutneys, as a tonic for animals, woods used as fuel, leaves for fodder.
68.	*Populus nigra* L. Ullah.168.UOM		Sperdad	T	Woods	Furniture and game tools, leaves as fodder.
69.	*Morus alba* L. Ullah.169.UOM	Moraceae	Spen toot	T	Leaves, Woods, fruits	Leaves as fodder for cattles increases milk contents. Silk is also prepared from leaves. Fruits are laxative and purgative; woods are used as fuel and furniture.
70.	*Morus nigra* L. Ullah.170.UOM	Moraceae	Tor toot	T	Leaves, Woods, fruits	Leaves as fodder for cattles increases milk contents. Fruits are laxative and purgative; woods are used as fuel and furniture.
71.	*Capsicum fruiticens* L. Ullah.171.UOM	Solanaceae	Tor Mirch	T	Seeds	Seeds are used as expectorants.
72.	*Acacia arabica* L. Ullah.172.UOM	Mimosaceae	Kikar	T	Bark, Gum, Seeds, Woods	Bark is used in dysentery and as astrigents, branches are used to make tooth brushes, while seeds are expectorants.
73.	*Diospyrus lotus* L. Ullah.173.UOM	Ebenaceae	Tor Amlook	T	Fruits, Seeds	Seeds are considered as sedative, while fruits are edible and used for cough.
74.	*Mallotus philippensis* (Lam.) Muell. Ullah.174.UOM Arg.	Euphorbiaceae	Kambela	T	Fruits	Fruits are anthelmintic and cathartic.
75.	*Diospyrus kaki* L. Ullah.175.UOM	Ebenaceae	Ghat Amlook	T		fruits are edible and used for cough.
76.	*Prunus persica* (L.) Batsch. Ullah.176.UOM	Rosaceae	Shaltalu	T	Fruit, seed	Strep throat.
77.	*Juglans regia* L. Ullah.177.UOM	Juglandaceae	Ghuz	T	Wood, bark, leaves	It is used in standard furniture and for carving. Bark (*Dandasa*) is used for cleaning and

						sparkling teeth. Leaves are used as lips make-up. Nuts can infect throat due to its oily nature.
78.	*Punica granatum* L. Ullah.178.UOM	Puniaceae	Ananggoray	T	Fruit and leaves	Anthelmintic, diuretic, expectorant and blood purifier. Wood is used as fuel and leaves as a fodder.
79.	*Ficus carica* L. Ullah.179.UOM	Moraceae	Inzar	T	Fruit and latex	The fruits are edible and used for constipation, also used as fuel and fencing.
80.	*Quercus baloot* Grifft. Ullah.180.UOM	Fagaceae	Spin Benj	T	Woods, leaves	Woods used for handles of plough, axes and diggers etc. fire wood, timber wood. Leaves used as fodder for cattles.
81.	*Quercus dilatata* Grifft. Ullah.181.UOM	Fagaceae	Toor Benj	T	Woods, leaves	Hard woods used for handles of plough, axes and digger's etc. fire wood, timber wood. Leaves used as fodder for cattles.
82.	*Pyrus pashia* Buch-ham ex D.Don. Ullah.182.UOM	Rosaceae	Tangai	T	Fruits	Fruits are used as food.
83.	*Morus lavaegata* Wallich. Ullah.183.UOM	Moraceae	Shah Toot	T	Fruits, Woods, Leaves	Fruits are edible; woods are used for burning and also making agricultural tools, leaves used as fodder.
84.	*Pinus roxburgii* Sargent. Ullah.184.UOM	Pinaceae	Nukhtar	T	Woods, Leaves, Fruits, Seeds	Timber wood, furniture wood, fuel wood, cones and needles as fuel burning, source of resins. Leaves used sheltering and for fruits packing in crates, seeds edible.
85.	*Pinus willichiana* Jackson. Ullah.185.UOM	Pinaceae	Peuch	T	Woods, Leaves, Fruits, Seeds	The wood is durable and costly and beautiful than *P. roxburgii*, other uses similar to *P. roxburgii.*
86.	*Rhododendron arboreum* Smith. Ullah.186.UOM	Ericaceae	Namair	T	Flower, Woods	Flowers are used for ornamental purposes, woods for furniture.
87.	*Celuis caucasica* Wild. Ullah.187.UOM	Ulmaceae	Tagha	T	Wood, leaves, seeds	Timber wood, fuel wood, fresh leaves used as fodder, seeds are edible.
88.	*Citrus sinensis* L. Ullah.188.UOM	Rutaceae	Malta	T	Fruits, woods	Fruits are in digestive disorders and dysentery, wood a source of fuel.
89.	*Bauhinia variegata* L. Ullah.189.UOM	Caesalpinaceae	Kulyraar	T	Flower, bark	Bark used as for skin diseases and bleeding piles, flower used as vegetable.
90.	*Dendrocalamus strictus* (Roxb.)Ness. Ullah.190.UOM	poaceae	Banc	T	Leaves	Tonic and astringent.
91.	*Rhus semialata* Murray. Ullah.191.UOM	Anacardiaceae	Titri	T		Fire wood, sheltering in mud made houses.
92.	*Acacia modesta* Wall. Ullah.192.UOM	Mimosaceae	Palosa	T	Gum, wood, flower	Gum used as a tonic for backache, timber and fuel wood and also visited by honybees.
93.	*Zizyphus sativa* Gaertn. Ullah.193.UOM	Rhamnaceae	Mukhrnay	T	Fruit, bark, leaves.	Fruit is edible, anti diabetic, used for cough and fever, honeybees visit flowers. Leaves used as fodder for goats.
94.	*Azadirach indica* (L.) Juss. Ullah.194.UOM	Meliceae	Mem	T	Bark, leaves, berries.	The bark is bitter, tonic, altrative and antiperiodic. Leaves is antiseptic, used in alcer and aczema. leaves also used for skin disease.
95.	*Ficus religiosa* L. Ullah.195.UOM	Moraceae	Orml	T	Fruit	The bark used for cracked feet. fruit used as food and powdered fruit is used to treat asthma.
96.	*Cupressus sempervirens* L. Ullah.196.UOM	Cupressaceae	Sarwa	T	Wood & fruit	The fruit and wood are anthelmintics and astringent.
97.	*Pyrus communis* L. Ullah.197.UOM	Rosaceae	Prawoo	T	Fruit	As a food.
98.	*Salix denticulate* Anderson. Ullah.198.UOM	Salicaceae	Walla	T	Leaves wood.	Fuel wood, leaves fodder, healing of warts.

Key: H = Herb, T = Tree, S = Shrub, HC = Herbaceous climber

Table 2: Division of plants according to families

S. No	Name of Families	No. of plants
1.	Lamiaceae	9
2.	Oxiladaceae	1
3.	Canabiaceae	1
4.	Papalionaceae	5
5.	Nyctaginaceae	1
6.	Sexifragaceae	1
7.	Asteraceae	2
8.	Poaceae	5
9.	Araceae	1
10.	Plantaginaceae	2
11.	Polygonaceae	3
12.	Liliaceae	2

13.	Violaceae	1
14.	Vitaceae	1
15.	Primulaceae	1
16.	Adiantaceae	1
17.	Asclepiadaceae	2
18.	Caryophyllaceae	1
19.	Rosaceae	7
20.	Scrophulariaceae	1
21.	Euphorbiaceae	5
22.	Geraniaceae	1
23.	Solanaceae	3
24.	Brassicaceae	1
25.	Chenopodiaceae	1
26.	Urticaceae	1
27.	Acanthaceae	1
28.	Sepindaceae	1
29.	Thymeleaceae	1
30.	Berberidaceae	1
31.	Celastraceae	1
32.	Rutaceae	3
33.	Oleaceae	1
34.	Anacardiaceae	2
35.	Plantanaceae	1
36.	Simuroubceae	1
37.	Meliaceae	2
38.	Moraceae	5
39.	Mimosaceae	2
40.	Ebenaceae	2
41.	Juglandaceae	1
42.	Puniaceae	1
43.	Fagaceae	2
44.	Pinaceae	2
45.	Ericeae	1
46.	Ulnmaceae	1
47.	Rhamnaceae	1
48.	Cupressaceae	1
49.	Silacaceae	1
50.	Caesalpinaceae	1
Total	50	98

Table 3: Average indigenous knowledge of the respondents.

S.No	Age Group	Male	Plant Information	Average	Female	Plant Information	Average	Total Male & Female	Total Information	Total Average
1.	Youngs 24 & below	30	43	1.43	10	42	4.2	40	85	2.12
2.	Middle age 24-50	60	197	3.28	21	146	6.95	81	343	4.23
3.	Old age 51 and above	45	221	4.91	21	196	9.33	66	417	6.31
Total		135	461	3.41	52	384	7.38	187	845	4.51

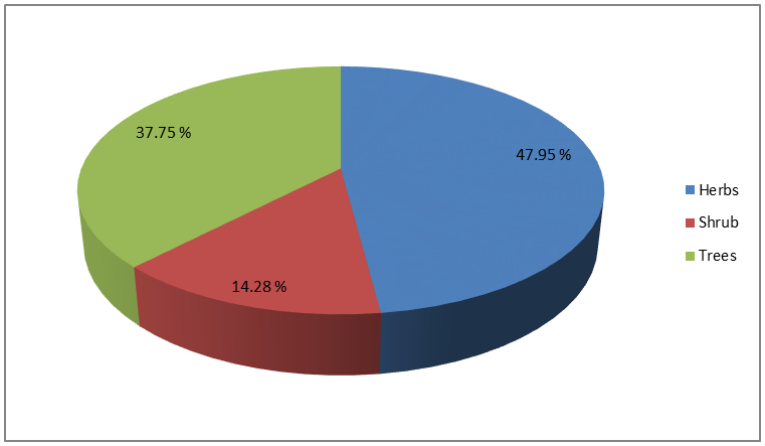

Fig 1: Percentage of Plants according to habit.

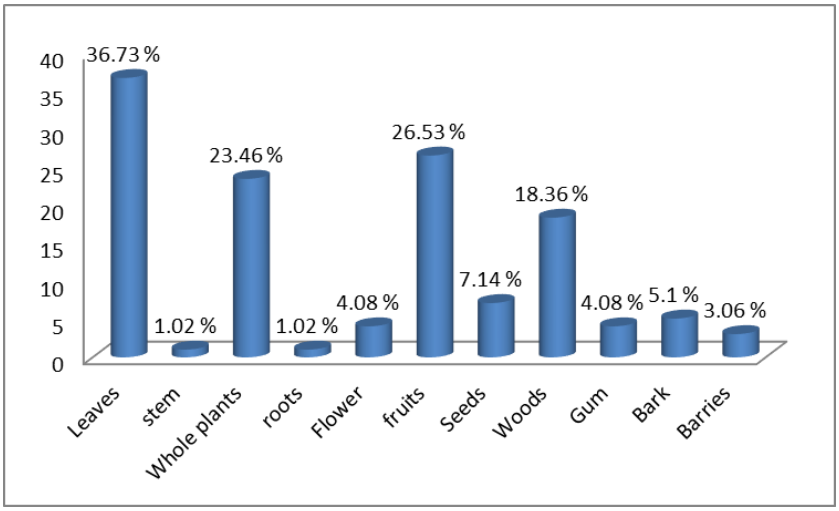

Fig 2: Parts of plants used to cure different diseases.

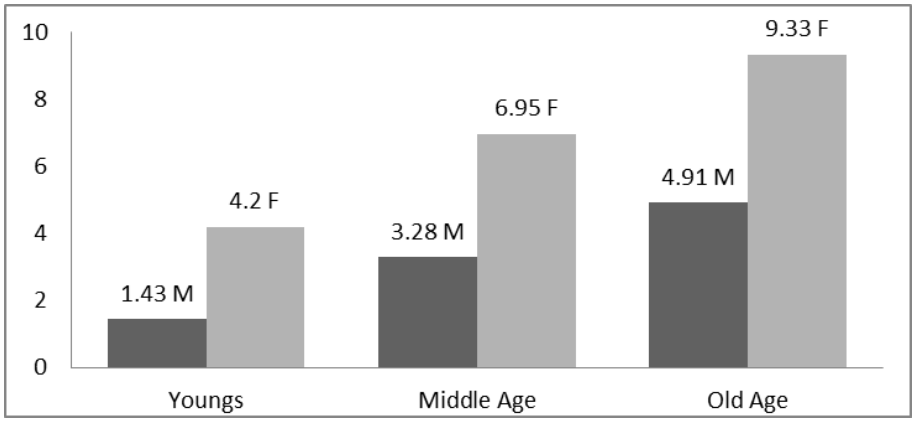

Fig 3: Average knowledge among different aged males and females

4. Discussion

Indigenous knowledge is as old as human civilization, it has been defined as the traditional knowledge on indigenous communities, about surrounding plant diversity and as the study of how the people of particular culture. Many of today's drugs have been derived from plant resources [31]. Use of plants as a source of medicine has been inherited and is an important component of the health care system in different countries of the world [25]. This precious knowledge of plants has been transferred from generation to generation. These plants are used to cure almost any type of disease [30].

In the current explorative survey different parts of the fourty seven herbs, fourteen shrubs and thirty seven trees of Hai valley are used for curing various ailments. Among the herbs, *Cannabis sativa*, locally known as bhang is used for curing headache, toothache jaundice and falling hairs, leaves of *Ajuga bracteosa* is used for blood purification, as a cooling agent and in curing itches, leaves of *Verbiscum thapsus* is antirheumatics, astringent, demulcent and emollient and antiseptic, fruits and leaves of *Solanum nigrum* is used for dysentery and throat infection, *Ocimum basilicum*, locally grown as ornamental for incense, used as flavoring agent for confectionary baked goods, *Datura stramonium*, the juice of flower is useful in earache, leaves are applied on boils for maturation (Table. 3.1). The outcomes agree with those of, [37], [3], [30], [19] in this regard.

The result depicted that shrubs are also used for the treatment of a variety of diseases; whole plant of *Dodonia viscosa*, the leaves are warmed and kept on joint to relieve pain, used for thatching, leaves used as a fodder and also as fuel, *Rubus fruticosus*, is aphrodisiac and carminative, its leaves are used for dysentery, diarrhea, leaves are edible also used as fodder for goats, fences and hedges, *Justicia adhatoda* leaves are used for ripening of banana fruit, and also pain killer, and honey bees visit flower, and also used for fire wood, *Robdosia rugosa*, used for diabetes, best for honeybees visit flower, (Table. 3.1) The findings agree with those of, [37] who reported the same plants from other parts of Malakand division and Lakki Marwat.

Thirty seven trees species are used for multiple purposes, shown in (Table 3.1) as; *Ailanthus altissima*, is anthelmintic, wood as used as a fuel and leaves as a fodder, *Melia azedarach* fruits and leaves are used in curing of fever and cough of cattle, leaves are used as a fodder, wood for fuel and furniture, *Olea ferrugineae* is antiseptic, diuretic and astringent, oil extract is used for pain and joints problems, leaves are used as a fodder and wood as a fuel, *Punica granatum* is anthelmintic, diuretic, expectorant and blood purifier, woods are used as fuel and leaves as a fodder, *Juglans regia* is used in standard furniture and for carving, bark (dandasa) is used for cleaning and sparkling teeth, leaves are used as lips make-up, nuts can infect throat due to its oily nature. The result agrees with the findings of [37] and [23], who reported plants that are traditionally used for multiple purposes.

Conclusion

The survey indicated that all plants have medicinal importance but there is a dire need to explore their important properties and develop awareness among the local community who are unaware of importance of these plants.

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