International Journal of Herbal Medicine
Available online at www.florajournal.com

E-ISSN: 2321-2187
P-ISSN: 2394-0514
www.florajournal.com
IJHM 2020; 8(2): 67-75
Received: 01-01-2020
Accepted: 03-02-2020

Sulaiman Shah
Department of Botany, University of Malakand, Chakdara Dir lower, 18800 Khyber Pakhtoonkhwa, Pakistan

Shariatullah
Department of Botany, University of Malakand, Chakdara Dir lower, 18800 Khyber Pakhtoonkhwa, Pakistan

Tabassum Yaseen
Department of Botany, Bacha Khan University, Charsadda 24420 Khyber Pakhtoonkhwa, Pakistan

Mia Fazli Basit
Department of Botany, Bacha Khan University, Charsadda 24420 Khyber Pakhtoonkhwa, Pakistan

Yaseen Khan
Institute of Grassland Science, School of Life science, Northeast Normal University, Key Laboratory of Vegetation Ecology, Ministry of Education, Changchun 130024, China

Tao Zhang
Institute of Grassland Science, School of Life science, Northeast Normal University, Key Laboratory of Vegetation Ecology, Ministry of Education, Changchun 130024, China

Corresponding Author:
Yaseen Khan
Institute of Grassland Science, School of Life science, Northeast Normal University, Key Laboratory of Vegetation Ecology, Ministry of Education, Changchun 130024, China

Ethno botanical study of medicinal plants of district Charsadda, Khyber Pakhtoonkhwa, Pakistan

Sulaiman Shah, Shariatullah, Tabassum Yaseen, Mia Fazli Basit, Yaseen Khan and Tao Zhang

Abstract
The ethnomedicinal study play a key role in the control of various disorders and provide a base for further study on scientific lines. This survey, observed traditionally medicinal plants uses their therapeutic uses for the various common ailments in District Charsadda KP. The regular 7 trips were arranged in each season from January, 2018 to April, 2019 and collect the data from the local inhabitants through questionnaires interviewed regarding the available medicinal plants. The total of 105 respondents (90 males, 15 females) were distributed. Family importance value (FIV), Relative Frequency of Citation (RFC) and conservative status help to find the most common used plants. The total 81 plants are recorded as medicinal belonging to 45 families and 75 genera. The life form showed that 48 species were herb, 24 Tress and 9 were a shrub, the common parts were Leaf, fruit, and whole plant which were used in greater numbers. The inhabitants used them for pain relief, fever, rheumatism, spasmodic, inflammation, respiratory, digestive, and cordial disorders. The conservation status shows that some species of the area is going to be extinct due to high biotic and abiotic factors. The study aims to bring awareness among the people, to save this precious knowledge and protect these plants, for the next generation.

Keywords: Medicinal plants, family importance value, family citation, conservative status, district Charsadda

1. Introduction
The ethno botanical study is as old as human civilization but the term ethno botany was first coined by an American botanist, John Hershberger in 1896. It is the science, which studies the relationship between a given society and its environment, particularly the plant world [1]. These studies have become increasingly valuable in the development of health care and conservation programs in different parts of the world [2] amongthe world population about 80% of people depend on medicinal plants use, which purely comes from medicinal plants [3]. More than 5000 plant species belonging to angiosperms are used worldwide for medicinal purposes [4]. Epidemiological studies have shown that many of the phytochemicals from medicinal plants possess anti-inflammatory, ant atherosclerotic, antitumor, ant mutagenic, ant carcinogenic, antibacterial, or antiviral activities, they are also associated with reduced risks of cancer, cardiovascular disease, diabetes and lower mortality rates of several human diseases [5]. Over 422,000 plant species worldwide possess the medicinal value of which 52,885 species are traded globally [6]. According to the International Union for Conservation of Nature and the World Wildlife Fund, there are between 50,000 and 80,000 flowering plant species used for medicinal purposes worldwide. Among these, about 15,000 species are threatened with extinction from overharvesting and habitat destruction [7], however, the use of these plants by locals is decreasing with time to time. During the last few years, the habitat of medicinal plants across this region has been under pressure due to urbanization and exploitation of raw materials by pharmaceutical companies [8]. The attention must be given to these plants before the lost forever. The present research aims to bring awareness among the people, therapeutic uses, control the diseases, and store the knowledge and medicinal uses of plants present in district Charsadda Khyber Pakhtonkhwa Pakistan. The study aimed were, to provide awareness among the people about the use of the plants for medicinal purposes and to record ethnomedicinal profile and conservation status

2. Material and Methods
2.1 Study area
District Charsadda is the district of KP, Pakistan. It is located in the west of Khyber Pakhtonkhwa and is bordered with Malakand District on the north, Peshawar and Nowshehra districts on the south, district Mardan on the east, and Mohmand Agency on the west. District

Charsadda divided into 2 tehsils and 46 Union Councils. Tehsil Charsadda comprises 34 while Tehsil Tangy comprises 12 union councils. The area is about 996 square kilometers and 282 meters above from sea level in elevation.

2.2 Information and selection

The data were made in four different seasons (summer, winter, and spring, autumn) of the year. The collection was made from January 2018 to April 2019. The plant specimen was collected with the help of a notebook, digger, and clippers, Hand lens, collection bottles, mercuric chloride, collection bags, insecticides, ethanol maps, camera, pencil, cutter, GPS, and field presser. A total of 28 trips were arranged, in which 7 trips were for each season following [9, 10]. The total 105 local respondents were selected, 90 were male and 15 were females, the old people were 87 from 51-70 years old (male =70, females=8). The 18 respondents were from 40-50 years old (males=11, females=7). The local respondents were formers, Hakeem housewives, and local inhabitants of the area.

2.3 Data collection, organizing, and analysis

The information was obtained from the local informants through questionnaires and oral interviews. The questionnaire included the Whole status of the plant, Parts use, Local name, Method of collection and consumption. The interview was conducted in the local languages (Pashto, Urdu). The part of the plant was classified into different categories like seeds, fruits, leaves and whole plant etc. The uses of the plant were divided into different groups.

2.4 Preservation of plants

The collected specimen was dried in a shady place, kept for a while in sunlight to secure from fungal attacks. Dried posted kept on herbarium sheets and deposited to the herbarium hall, University of Malakand KP, Pakistan. Specimens were identified with the help of available literature [11- 14]. And deposited to the herbarium, at the Department of the Botany University of Malakand.

2.5 Statistical analysis

2.5.1 Relative Frequency citation (RFC)

RFC stands for the relative frequency of citation, the total data was quantitatively analyzed, the number of informants who cited the plant species (FC), divided by the total number of respondents in the survey (N)[15]. The RFC was calculated as follows:

RFC = FC/N

2.5.2 Family Importance Value

FIV stands for the frequency of citation of the plant family, frequency of citation of the plant family (FC) divided by is the total number of respondents (N) multiply by hundred Conservation status of the medicinal plants was enumerated according to the IUCN standard. Family importance value (FIV) was calculated as per the following formula.

FIV = FC/N x 100

2.5.3 Conservation status

The ethnomedicinal data were collected from the informants, plant status, Parts use, plant regrowth, plant Local name, and collection Method were noted and counted their numbers. The numbers have the following meaning: 2-5=Endangered, 6-9=Vulnerable, 9-12=Rare, 12-14= infrequent, and 14-18= dominant. Conservation status of medicinal plants was enumerated according to their parts used, their life cycles and their demand in the local and international markets [16].

2.5.4 Data analysis

The data is analyzed with Microsoft excel 2019.

3. Result

3.1 Demographic data

The total 28 trips with 7 in each season were made from January 2018 to April 2019. The trips were arranged, from time to time in day night. The plants were collected from different areas, growing regions due to four different seasons (summer, autumn, winter, spring) of the years. The information was collected about medicinal plants its uses, status, growth etc from the local inhabitants by oral interview, especially from formers, Hakeem, and housewives, cited more species than other informants. Mostly elder people of the area have much information about the medicinal uses of the plant species as compared to the young generation. The total informants were 105, 90 were male and 15 were females, 87 were the old people from 51- 70 years old (79 male, 8 females). The remaining 18 respondents were from 40-50 years old in which males were 11 and 7 were females.

3.2 Medicinal plant diversity

A total 81 species belonging to 45 families in which the family Asteraceae is the dominant family having (7spp, 8.64%), followed by Apiaceae, Moraceae (5spp, 6.17%) and Poaceae, Solanaceae (4spp, 4.93%), Cucurbitaceae, Lamiaceae, Mimosaceae,Rosaceae (3spps, 3.70%), while 8 families having 2 species (2.46%) in the remaining 36 families. Our result showed similarities with other ethno botanical studies concerning the predominance of family Asteraceae and Apiaceae [15].

3.3 Life form and part use

The habit of the recorded medicinal plants shows that Herb (48 spp, 59.25%) followed by Trees (24 spp, 29.62%) and shrub (9spp, 11.11%). The part use of the plant shows leaves (31 spp, 26.05 %), followed by fruit (30 spp, 25.21%), whole plant (15spp, 12.60%), stem, seed (12spp, 10.08%), Root (6spp. 5.04%), Flower, Bark (5spp,4.20%), Bulb and Bulb juice have 1 species with 0.84% the dominance leaves and fruit shows similar result with [17, 18] (Fig 1)

3.4 Forms and mode of utilization

Medicinal plants were used locally for various types of common disorders which were divided into 21 groups into 21 therapeutic classes (as shown in table no 2) in which 8 as carminative, 8 for treatment of fever, 4 as sedatives, 11 for treating Dysentery, 9 was anti-diabetic, 4 for hypertension, 9 for the treating constipation, 6 for antidiuretic, 7 as asthma, 13 for treating diarrhea, 5 as expectorant, 11 for coughs, 5 for treating Rheumatism, 5 as Antispasmodic, 5 for malaria, 4 as anthelmintic, 3 for treating toothaches, 1 as astringent, 3 as demulcent, 3 for vomitingand 7 for the treating cancer.

3.5 Quantitative study

3.5.1 Relative frequency citation (RFC)

Relative Frequency citation (RFC) indicates the local importance of a species which is using by the local inhabitants. The highest RFC values were recorded for (0.44) followed by *Mentha arvensis* (0.39), *Mentha logifolia* (0.37),

Papaver somniferum (0.35), *Momordica charantia* (0.32), *Allium cepa*, *Foeniculum vulgare* (0.30 each), *Punica granatum* (0.29), *Capsicum fruitescens* (0.26), *Ammi vesnaga* (0.25), *Spinach oleraceae* (0,23) and *Eriobotrya japonica* (0.20).The highest RFC value is shown by the Allium Sativa (0.44) while the lowest RFC value is shown by Cuscuta reflex and *Solanum nigram* (0.009).[Fig 2]

3.5.2 Family Importance Value (FIV)

Family importance value (FIV) indicated that Apiaceae (92.38) was the leading family, followed by Lamiaceae (80.95), Alliaceae (75.23), Asteraceae (55.23), Cucurbitaceae (50.47), Moraceae (49.52), and Rosaceae (40). The least value of FIV was observed for Cactaceae (0.90) followed by Convolvulaceae, Meliaceae (1.90 each), Verbenaceae, Zygophyllaceae (2.85 each), Caryophyllaceae (3.85), and Sapotaceae, Ranunculaceae (3.80 each) (Fig.7) result was similar with. [Fig 3]

3.5.3 Conservation status

Conservation status showed that most of the medicinal plants were rare (34 spp, 41.97%), followed by vulnerable (32 spp, 39.50%), infrequent (12 spp. 14.81%) and the endangered were (3spp, 3.70%), *Mangifera indica*, *Capsicum fruitescens*, and *Vitis vinifera* [19]. [Fig 4]

4. Discussion

The traditional uses of medicinal plants been used by the local community for various illnesses. This study reported that people used various traditional medicines for the treatment of different ailments. Medicinal plants have been used for centuries for the treatment of various ailments [18]. In Pakistan, approximately 6,000 species of higher plants are present in which 12% is used to ailments diseases, [20]. In this survey *Allium sativum*, L. *Mentha arvensis* L, *Mentha logifolia* L, *Papaver somniferum* L. *Momordica charantia* L, *Allium cepa*, *Foeniculum vulgare*, *Punica granatum* were the most common species using as ant diabetic, expectorant, anti-diuretic, antiasthmatic, antispasmodic, carminative, stomachic for constipation, fever, diarrhea etc the plant was also used in more than one type disorders for their medicinal properties. The findings of our research show corroboration with [21, 22] stated that the fruit of *Punica granatum* is taken as cardiac and stomachic; rind of the fruit is useful in diarrhea, dysentery, and itching. Some species, *Amaranthus viridus*, *Catharanthus roseus*, *Convolvulus arvensis*, *Solanum nigram* were infrequent their local uses very less in the area and used for one type of disorders, inflammation, snake bite, antipyretic, cancer treatment [23, 24]. Reported that *Solanum nigrum* is used as antipyretic. Local people were mostly dependent on indigenous plants for the treatment of diseases as *Mangifera indica*, are frequently used for asthma, Heat stock and as astringent, *Capsicum fruitescens* for stomach burning, Diarrheae , intestinal gas remover, and *Vitis vinifera* were used for cholera, eye inflammation, wound treatment, etc. These species were found to be at high risk, and going to be extinct promptly due to certain abiotic and biotic factors. As per an estimate, about 60,000 out of 2, 87, 655 species of plants known in the world are facing the threat of extinction. 11,824 species were evaluated for their threat status as per the revised 1994, IUCN Red List Categories; of these 8321 species are now on the IUCN Red List 2004 (Martain GJ. 1995, IUCN. 2001[25-26]. The population of medicinal plants decreases with the increase of Population, marketing pressure on medicinal plants, harvesting, burning, lack of knowledge, grazing etc. In Pakistan little attention has been paid to the ethno botanical values of medicinal plants [27-28]. So the most important thing is that to protect the medicinal plants and promote awareness among the local inhabitants. We hope this study will encourage the local people to protect, care and preserve these plants for the coming generation.

Table 1: Ethno botanicaluse of Plant species in the local area

	Botanical name	Family	Local name	Habit	Part use	Application	*FC	**RFC	FIV	1	2	3	4	5	Conservation status
1 2	*Allium sativum* L. *Allium cepa* L	Alliaceae	Ooga Pyaaz	H H	Leaves/ Bulb Leaves / Bulb Juice	Effective in blood pressure, Anti-Diabetic, hypertension, and ear disease Effective in Expectorant, Diuretic, Anti-Diabetic and cough	47 32	0.44 0.30	75.23	3 3	1 1	4 4	0 0	8 8	Vulnerable Vulnerable
3	*Mangifera indica* L	Anacardiaceous	Aam	T	Fruit /seed	The seed is using for asthma and as astringent and fruit is for heatstroke	20	0.19	19.04	2	0	0	2	4	Endangered
4 5	*Achyranthus aspera* L. *Amaranthus viridus* L.	Amaranthaceous	Spaebotay Ghanhar	H H	Stem /Root Leaves /stem	Used for, toothaches, headache problems, and stomach pain and troubles Mostly effective in inflammation and snake bite	3 4	0.02 0.03	6.66	3 3	3 1	4 4	0 4	10 12	Rare Infrequent
6 7 8 9 10	*Coriandrum sativum* L *Foeniculum vulgare* mill *Daucuscarrota* L *Capsicum fruitescens* L *Ammi vesnaga* (L.) Lam	Apiaceae	Danya Kagga Ghajar Tour march Sperkaye	H H H T S	Leaves/ seeds Seed Root Fruit Fruit	Anti-Diabitic,Carminative and Digestive It increase the milk production in women,It also used as a carminative Used for the increase of vision, anthelmintic and carminative Used For Stomach burning and digestion,intestinal gas,diarrhea,and stomach pain Especially used for abdomen pain, kidney stone,and digestive problems.	14 30 5 21 27	0.13 0.28 0.04 0.20 0.25	92.38	3 0 3 0 2	1 2 2 2 1	4 4 4 0 4	0 2 0 2 2	8 8 9 4 9	Vulnerable Vulnerable Rare Endangered Rare
11 12	*Calotropis procera* (Aiton W.T *Carollumatuberculata* N.E.Brown	Asclepiadaceous	Spulmay Pamankay	S H	Leaves/ Stem Leaves	Used for the stomach ulcers,toothaches,join pain and constipation For diabetes, Rheumatism, paralysis, fever and malaria	16 14	0.15 0.13	28.57	2 2	3 3	2 2	4 Ra 4	11 11	Rare Rare
13 14 15 16 17 18 19	*Partheniumhysteroporus* L *Xanthium strumarium* L *Sonchusasper* L *Taraxcum officinale* webber *Calendula officianale* L *Silybum marianum* (L.) Gactn *Catharanthus roseus* (L)G.Don	Asteraceae	Kerbotta Gheshkay shodapay Boodabooda Ziargullay Wrijakaye Spen/zyarGul	H H H H H H H	Whole plant Leaves /Root /Seed Flower Whole plant Flower Fruit Flower/leaves	Used for plasmodium disease and skininflammation Used for Urinary diseases, anti-malaria Demulcent Used for Diuretic problems ,anti-tumor ,sedative ant-malarial ,ant-cancer Effective in liver, heart disorder and Diuretic problems For the prevention of fever, musclespasms, ulcersand cancer. Using for Tuberculosis, cough, Expectorant For the cancer treatment and childhood leukemia ,dermatitis and skin disease	7 15 5 13 6 10 2	0.06 0.14 0.04 0.12 0.05 0.09 0.01	55.23	3 3 3 3 3 3 3	3 3 3 3 3 3 3	4 4 4 4 4 4 4	0 4 3 0 3 2 3	10 14 13 10 13 12 13	Rare Infrequent Infrequent Rare Infrequent Rare Infrequent
20	*Brassica compestris* L	Brassicaceae	Sharsham	H	Leaves /seed	For the increase milk production in cattle, hairsstrength, and skin inflammation and musclespasms	19	0.18	18.09	3	1	4	4	12	Rare
21	*Opuntia littoralis* (Engelm.)	Cactaceae	Zoqam	S	Fruit /Stem	Using for wound, burns, diabetes andhypertension	20	0.19	19.04	2	3	1	2	8	Vulnerable
22	*Cannabis sativa* L.	Cannabaceae	Bung	H	Leaves	They are sedative, anti-cancer, reduceanxiety, depression, vomiting, epilepsy andnausea	15	0.14	14.28	3	3	4	4	14	infrequent
23	*Stellaria media* (L.)Cry	Caryophyllaceae	Speen stargay	H	Whole plant	For the relief of pain in the digestive system andconstipation	3	0.02	3.85	2	3	4	0	9	Rare
24 25	*Chenopodium album* L *Spinacae oleraceae* L	Chenopodiaceae	Sagge Palak	H H	Leaves /stem Whole plant	Especially using for bones, and cardiac disorders, laxative, digestive Used for Rheumatism, heart disease, Anti-oxidant	9 25	0.08 0.23	32.38	3 3	1 1	4 4	4 0	12 8	Rare Vulnerable
26	*Convolvulus arvensis* L	Convolvulaceae	Prewataye	H	Leaves /stem	Purgative, effective for skin inflammation	2	0.01	1.90	3	3	4	4	14	Infrequent
27 28 29	*Momordica charantia* L Luffa cylindrica (L.) Roem Cucurbita maxima Duchesne	Cucurbitaceae	Karela Tori Kado	H H H	Fruit /leaves Fruit/leaves Fruit/leaves	Using for Suger ,and blood pressure,Anti-cancer ,anti-virus ,and anti-inflammation For cardiac diseases and expectorant, cold, chest pain muscle pain	34 5 14	0.32 0.04 0.13	50.47	3 3 3	1 1 1	4 4 4	2 2 2	10 10 10	Infrequent Vulnerable Vulnerable

						For Diuretic disorders, kidneydisease, ulcers, inflammation and diuretic									
30	*Cuscuta reflex* Roxb.	Cuscutaceae	Akash Bail	H	Whole plant	It is Anti-Rheumatic, carminative	1	0.009	0.95	2	3	4	0	9	Rare
31 32	*Diospyrus kaki* L. *Diospyrus lotus* L.	Ebinaceae	Soramlok Tour amlok	T T	Fruit Fruit	Used for the treatment of constipation, diarrhea, and dry cough Using for Dysentry, tumor, diarrhea, diabetes, and hypertension	8 8	0.07 0.07	15.23	2 2	1 1	0 0	2 2	5 5	Vulnerable Vulnerable
33 34	*Euphorbia helioscopia* L. *Ricinus communis* L.	Euphorbiaceae	Purporai Pomba	H S	Whole plant Root	Skin diseases such as irritation and swelling For the anti-inflammation, and antihistamine	14 2	0.13 0.01	15.23	2 2	3 3	4 0	0 0	9 5	Rare Vulnerable
35	*Fumaric indica* (Hausskn.)	Fumariacaea	Papra	H	Whole plant	For Diuretic, cooling effect, laxative, anthelmintic.	7	0.06	6.66	3	3	4	0	10	Rare
36	*Equisetum arvense* L.	Equisetaceae	Bandakay	H	Stem	For cold, tuberculosis, asthma Kidney stone and urinary tract infection Also used for intestine infection in animals	10	0.09	9.52	1	3	4	1	9	Rare
37	*Juglanregia* L.	Juglandaceae	Ghoz	T	Bark/ Fruit	Brain tonic and using for cleaning of teeth and gums	12	0.11	11.42	2	1	0	2	5	Vulnerable
38 39 40	*Mentha arvensis* L *Mentha longifolia* L *Ocimum bascillicum* L.	Lamiaceae	Podina Venaly Kashmaly	H H S	Whole plant Whole plant Leaves	For vomiting, Diarrheae, digestion asthma, fever, cold, headaches and influenza disease Used for Diarrheae Dysentryvomiting constipation, fever and headaches Carminative, anti-spasmodic and For oral disease treatment such as tongue and throat inflammation	41 39 5	0.39 0.37 0.04	80.95	3 3 3	1 1 3	4 4 4	0 0 4	8 8 14	Vulnerable Vulnerable Infrequent
41 42	*Abelmoschus esculentus* (L.) *Malva neglecta* wallr.	Malvaceae	Bendi Panderak	H H	Fruit /seed Root	Effective for irritation in urinary system. Demulcent , Gas remover and for Digestive problem such as constipation, Diarrheae	16 8	0.15 0.07	22.85	3 2	1 3	4 3	2 0	10 8	Rare Rare
43	*Melia azedarach* L.	Meliaceae	Tora shanday	T	Leaves /Fruit	For hair strength and growth, using also for the reduction cattle of fever.	2	0.01	1.90	3	3	0	4	10	Rare
44 45 46	*Acacia nilotica* L *Acacia modesta* wall. *Albizia lebbek* Beath	Mimosaceae	Kikar Palosa Benth siris	T T T	Bark Bark/Gum Seed /Bark	For the control of chest pain, cough, and fever, anti-helmenthic. For the smoothing purposes and Expectorant. Using as a tonic, hypertension, dysentery, anti-cough, andstomachaches	5 3 5	0.04 0.02 0.04	12.38	2 2 2	3 3 3	0 0 0	1 1 2	6 6 7	Vulnerable Vulnerable Vulnerable
47 48 49 50 51	*Morus negra* L *Ficus carica* L. *Morus alba* L *Ficus palmate* Forssk *Broussonetia papyrifera* (L.) Vent	Moraceae	Tour tot Ghat Inzar Speen tot Waroki inzar Shahtot	T T T T T	Fruit/leaves Fruit Fruit /leaves Fruit Fruit	Effective for cough, chestrelief, and for the increase of body temperature For the control of blood pressure, sugar and Digestive gas remover. Effective for cough ,chest relief and for the increase of body temperature For the control of blood pressure ,sugar and Digestive gas remover For the dysentery, diuretic, ophthalmic and tonic	11 10 11 10 10	0.10 0.09 0.10 0.09 0.09	49.52	3 3 3 3 3	2 3 2 2 3	0 0 0 0 0	2 2 2 2 2	7 8 7 7 8	Vulnerable Vulnerable Vulnerable Vulnerable Vulnerable
52 53	*Pasidium guajava* L *Eucalyptas lanceolatus* Honey	Myrtaceae	Amrod Lachi	T T	Fruit Fruit /seed/leaves	Using for stomach burning, Diarrheae, constipation, asthma and Dysentry For the throat infection ,vomiting ,Diarrheae and anti-malaria	13 19	0.12 0.18	30.47	3 2	1 2	0 0	2 2	6 6 6	Vulnerable Vulnerable
54	*Olea ferruginea* Royle	Oleaceae	Khona	T	Fruit	Effective in blood pressure, sugar and other cordial disorders	12	0.11	11.42	2	2	0	2	6	Vulnerable
55	*Oxalis carniculata* L	Oxalidaceae	Trewakay	H	Whole plant	for the injuries, fever,wounds , snake,dog bite, kidney and urine problems	16	0.15	15.23	3	3	4	0	10	Rare
56	*Papaver somniferum* L.	Papeveraceae	Apeem	H	seed	Using as stimulant of brain, analgesic, sedative, dysentery,			35.23						

						headaches andcalmness	37	0.35		1	3	4	2	10	Rare
57	*Delbergiasisso* Roxb. Ex Dc	Papilionaceae	shawa	T	Root /leaves	Expectorant, For the skin diseases, blooddiseases, dysentery and nausea problems	8	0.07	7.61	3	3	0	4	10	Rare
58	*Adiantum capillus –veneris* L	Ptridaceae	Not known	H	Whole plant	Using for cough ,throat infection,headaches and chest congestion	9	0.08	8.57	1	3	3	0	7	Vulnerable
59 60 61 62	*Cynodon dictylon* (L.) *Zea mays* L *Triticum estivum* L *Avena sativa* L.	Poaceae	kabal Jowar Ghanam Jaodar	H H H H	Whole plant Seed Seed/stem Seed /stem	Using for asthma, and have laxative properties For the blood pressure, kidneystone, diabetes and bladder inflammation. For the cancer, sorethroat, constipation, andcough Using for the insomnia, headaches, andepilepsy	3 9 15 4	0.02 0.08 0.14 0.03	29.52	3 3 3 3	3 0 0 3	4 4 4 4	0 2 2 2	10 9 9 12	Rare Rare Rare Rare
63	*Rumex dentatus* L	Polygonaceae	Shalkhay	H	Leaves	They are anti-diuretic,demulcent toothaches, nausea, pain and for liver diseases	9	0.08	8.57	3	2	4	4	13	Infrequent
64	*Punica granatum* L	Punicaceae	Anar	T	Fruit	For the treatment of dysentery and diarrhea ,urinary infections ,sore throats and cough and as cardiac	31	0.29	29.52	3	0	0	2	5	Vulnerable
65	*Ranunculus muricalus* L	Rananculaceae	Jaghagha	H	Whole plant	Effective in urinary tract infection and dysentery	4	0.03	3.80	3	3	4	0	10	Rare
66 67 68	*Prunus armeniaca* L *Rosa webbiana* wall.ex *Eriobotrya japonica* (thumb) Lindl	Rosaceae	Khubani Janghali ghulab Loacat	T S T	Fruit Flower Fruit	Using for constipation, dysentery ,and chest related disorders For the stomach pain,asthma, and pain reliever Using for anti-cancer, bloodpressure, anddysentery and Diarrheae	14 7 21	0.13 0.06 0.20	40	3 2 3	1 3 1	0 3 0	2 3 2	6 11 6	Vulnerable Rare Vulnerable
69	*Citrus indica* L	Rutaceae	Naraj	S	Leaves /Fruit	Leaves using during constipation, Diarrheae, cough, fever and the dried fruit is using for the tooth polishing and brightness	19	0.18	18.09	3	2	0	2	7	Vulnerable
70	*Dodona viscosa* (L.)Jacq	Sapindaceae	Ghoraskay	S	Stem /leaves	Effective in rheumatism, sorethroat and colds	6	0.05	5.71	3	3	0	4	10	Rare
71	*Manilkara zapota* (L.) P.Royen	Sapotaceae	Cheko	T	Fruit	For the fever ,wound ,ulcers ,gallstone, diarrhea and indigestion	4	0.03	3.80	2	2	0	2	6	Vulnerable
72	*Verbascum thapsus* L.	Scrophulariaceae	Harghwagh	H	Leaves	Emollient, effective in rheumatism, cancer and cough	13	0.12	12.38	3	3	3	4	13	Infrequent
73	*Ailanthus altissima* (mill) swingle	Simarubaceae	Spena shandye	T	Leaves /bark	They are anti- Anthelmintic, using for dysentery and diarrhea	8	0.07	7.61	3	3	0	4	10	Rare
74 75 76 77	*Lycopersicon esculentum* mill *Daturametel* L. *Solanum nigram* L *Cestrum nocturnum* L	Solanaceae	Tamatar Datora Kachmacho Rat ki rani	H S H H	Fruit Leaves/Fruit Leaves/Fruit Leaves /stem Flower	Locally using for insect bites and skin soften rheumatism and headaches Sedative, Analgesic For the insomnia, relaxation, anti-asthmatic and hypotonic They are antipyretic, pain killer, stimulant, and anti-Diabitic For the anti-oxidant, anti-bacterial, anti-fungal, anti-HIV, and Analgesic	14 7 1 5	0.13 0.06 0.009 0.04	25.71	3 2 3 2	0 3 3 3	4 3 4 0	2 2 4 3	9 10 14 8	Rare Rare Infrequent Vulnerable
78	*Verbena officinalis* Linn.	Verbenaceae	Shamakai	H	Whole plant	For the stomachaches, pain, increasing milk flow, spasms, and kidney disease	3	0.02	2.85	2	3	4	0	9	Rare
79	*Vitis vinifera* L	Vitaceae	Angor	T	Fruit/leaves	For the cholera, smallpox, eyes inflammation and, nauseadiseases	17	0.16	16.19	2	0	0	2	4	Endangered
80	*Aloe vera* (L.) Burm .f.,Fl.	Xanthorrhoeaceae	Kamalpanhra	H	Leaves /stem	For skin smoothing, healing and wound agent, anti-oxidant, and anti-bacterial	12	0.11	11.42	2	3	0	4	9	Rare
81	*Peganum harmala* L.	Zygophyllaceae	Spelanay	H	Whole plant	They kill lice, skin cancer, skininflammation, and anti-septic	3	0.02	2.85	2	3	4	0	9	Rare

Note: H= Herb, s=shrub, T= Tress, FC = FrequencyCitation, RFC = Relative FrequencyCitation, FIV =Family importance value.

Table 2: Disorder showed by Plant species

Disorders	Plant species	Disorders	Plant species	Disorders	Plant species	Disorders	Plant species
Carminative	8 species	Anti-diabitic	9	Malaria	5	Asthma	7
Sedative	4	Rheumatism	5	Demulcent	3	Expectorant	5
Hypertension	4	Constipation	9	Anthelmintic	4	Fever	8
Cough	11	Diuretic	6	Toothaches	2	Spasmodic	5
Dysentery	11	Diarrhea	13	Cancer	7	Vomiting	3

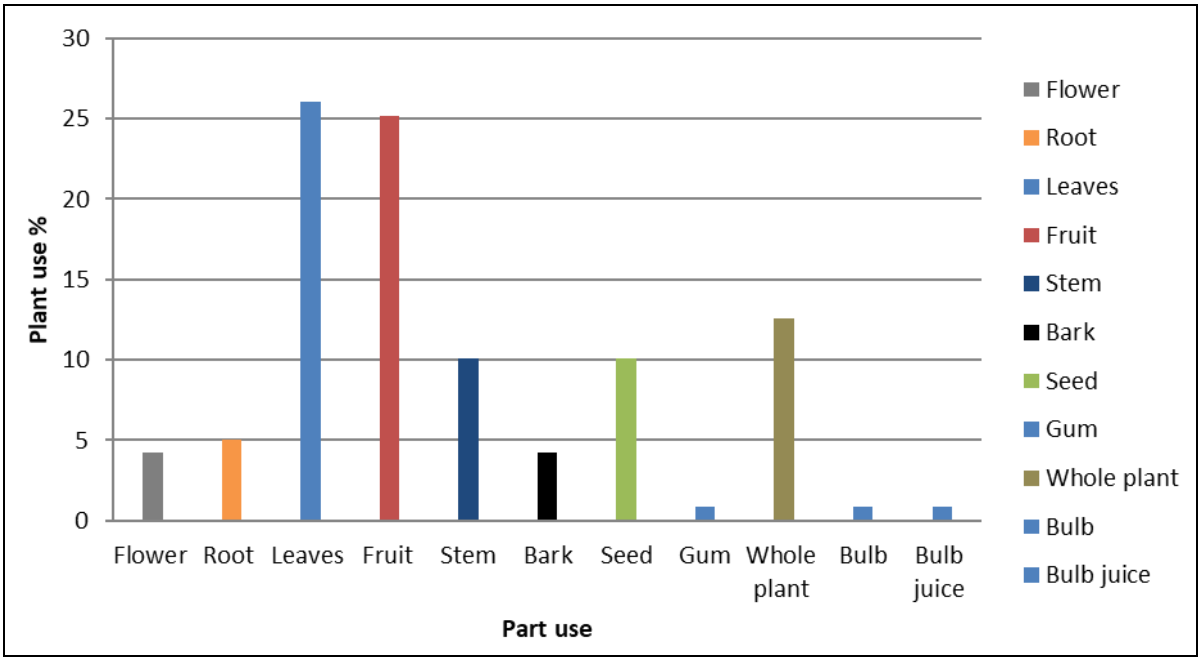

Fig 1: Part use in the area

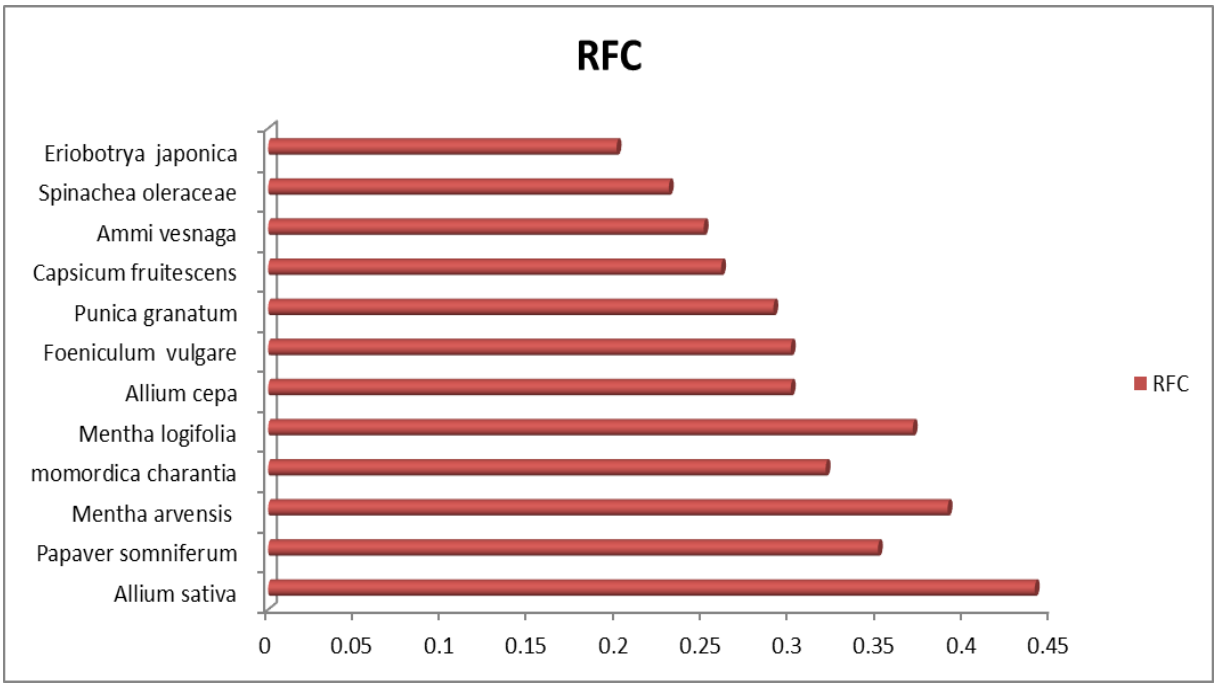

Fig 2: High Relative frequency citation of species

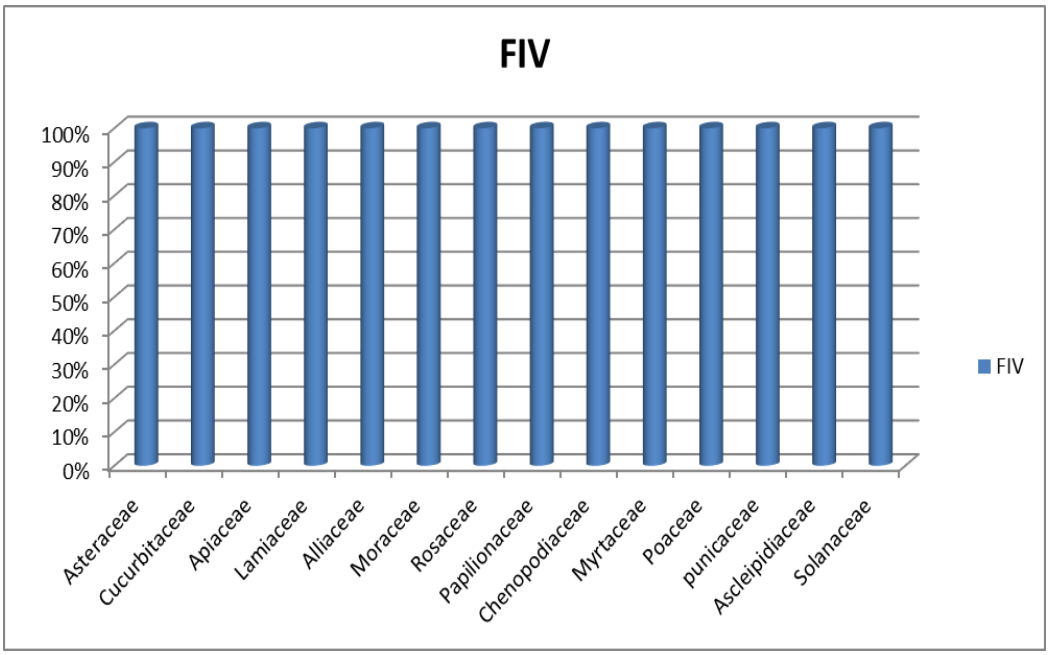

Fig 3: Family importance Value of most cited species

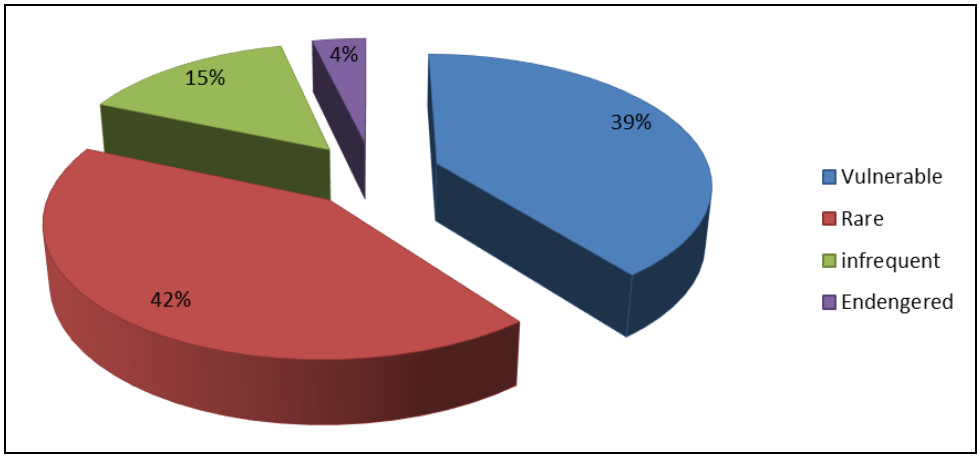

Fig 4: Conservation status of medicinal plants

5. Conclusion

The study showed that the area has a great diversity of plants using for different ailments. The plants utilization and cutting increase day by day for different purposes. The diseases are increasing day by day, it may cause a great threat to the flora of district Charsadda. The survey aims to aware about valuable plants and to protect them from extinction. The old people are aware of the accurate knowledge of medicinal plants, it is needed to preserve this knowledge for the next generation.

6. Author's contributions

Conceived and designed the experiments: Sulaiman Shah and Shariatullah, Performed the experiments: Sulaiman Shah, Analyzed the data: Sulaiman Shah and Tabassum Yaseen, Contributed reagents/ materials/ analysis tools: Mia Fazli Basit and Shariatullah, Wrote the paper by Yaseen Khan and Tao Zhang.

7. References

1. Qureshi S, Khan M, Ahmad A. A Survey of useful medicinal plants of Abbottabad in northern Pakistan. Trakia Journal of Sciences. 2008; 6(4):39-51.
2. Ahmad S, Husain S. Ethno Medicinal Survey of Plants from Salt Range (Kallar Kahar) of Pakistan. Pakistan Journal of Botany. 2008; 40(3):1005-1011.
3. Zaman S, Hazrat A, Ullah S. Ethno botanical Survey of Medicinal Plants from Tehsil Dargai, District Malakand, Pakistan. Fuuast Journal of biology, 2013, 109-113.
4. Ahmad I, Ibrar M, Barkatullah, Ali N. Ethno botanical study of tehsil kabal, Swat district, KP, Pakistan, Journal of Botany; 2011, 9-12.
5. Gulay O, Senem K, Tugba O, Dilek B, Esra C. Potential Use of Turkish Medicinal Plants in the Treatment of Various Diseases. Molecules, 2016, 21-257.
6. Lakey, Dorji K. Ecological status of high altitude medicinal plants and their sustainability, Lingshi, Bhutan. BMC Ecology, 2016, 16-45.
7. Shilin C, Hua Y, Hong M, Qiong W, Chun F, André S. Conservation and sustainable use of medicinal plants. Chinese medicine; 2016, 11-37.
8. Adnan M, Begum S, Khan A, Tareen A, Jung L. Medicinal Plants and Their Uses in Selected Temperate Zones of Pakistani Hindu Kush-Himalaya, Journal of

Medicinal Plants Research; 2012; 6(24):4113-4127.
9. Nazim H, Mohy UD, Faiz UH, Iram A, Yu Z, Wang J *et al.* Identification and quantitative analyses of medicinal plants in Shahgram valley, district swat, Pakistan. Acta Ecologica Sinica; 2020; 40(1):44-51.
10. Nazim H, Mohy UD, Faiz UH, Mohammad N, Aimal K, Syed SS *et al.* Medicinal plants consumption in Darmai Valley, Swat District, Pakistan. Journal of Biodiversity and Environmental Sciences. 2018; 12(5):120-129.
11. Nasir E, Ali S. Flora of Pakistan. Islamabad, Karachi, 1970-1989,
12. Ali S, Nasir Y. Flora of Pakistan. Department of Botany, Karachi University, Karachi Pakistan. 1991-1993, 191-193.
13. Ali S, Qaiser M. Flora of Pakistan. Department of Botany, Karachi University, Karachi Pakistan. 1993-2012, 194-221.
14. Qureshi M, Khan S. Flora of Peshawar District and Khyber Agency. Pakistan journal of forestry. 1967: 364-393, 203-244.
15. Shuaib M. Ethno botanical and ecological assessment of plant resources at District Dir, Tehsil Timergara, Khyber Pakhtonkhwa, Pakistan. Acta Ecologica Sinica. 2018: doi.org/10.1016/j.chnaes.2018.04.006.
16. Ali A, Badshah L, Hussain F. Ethnobotanical Appraisal and Conservation. Status of Medicinal Plants in Hindukush Range, District Swat, Pakistan, 2018. DOI:10.1080/10496475.2018.1510456.
17. Hayat S, Shah S. An ethnobotanical study of important medicinal plants practiced by the local community at Rabat valley (district Dir), Pakistan. Journal of Biodiversity and Environmental Sciences (JBES); 2017; 2(10):241-247.
18. Dolatkhahi M, Dolatkhahi A, Bagher N. Ethnobotanically Study of Medicinal Plants Used in Arjan Parishan Protected Area in Fars Province of Iran. Avicenna Journal of Phytomedicine. 2014; 4(6):402-412.
19. Aziz M, Adnan M, Khan A, Rehman A, Jan R, Khan J. Ethno-medicinal survey of important plants practiced by the indigenous community at Ladha subdivision, South Waziristan agency, Pakistan, Journal of Ethno biology and Ethnomedicine. 2016; 12:53 DOI 10.1186/s13002-016-0126-7.
20. Ullah B, Ibrar M. Plants profile of Malakand Pass Hills, District Malakand, Pakistan. African Journal of Biotechnology. 2011; 10(73):16521-16535.
21. Ali M, Begum R, Ali K, Nisar M, Khan W, Hassan N *et al.*Ethnobotanical survey of wild medicinal plants of Tirat Valley district Swat, Khyber-Pakhtunkhwa. Journal of Biodiversity and Environmental Sciences. 2017; 3(11): 91-101.
22. Haidar A, Qaiser M. The Ethnobotany of Chitral valley, Pakistan. 2009, 21-24.
23. Habib M, Waheed I. Evaluation of ant nociceptive, anti-inflammatory and antipyretic activities of Artemisia scoparia hydroethanolic extract. Journal of Ethnopharmacolology, 2012, 18-24. http://dx.doi.org/10.1016/j.jep.2012.10.022.
24. IUCN, IUCN, Red List Categories and Criteria: Version 3.1. IUCN Species Survival Commission. IUCN. Gland. Switzerland and Cambridge, UK. 2001; 2:30.
25. Martain G. Ethnobotany: A People and Plants Conservation. Manual Chapman & Hall, London, New York, Tokyo, 1995.
26. Mahmood A, Qureshi R, Mahmood A, Sangi Y, Shaheen H, Ahmad I *et al*. An ethnobotanical survey of common medicinal plants used by people of a district, Mirpur, AJK. Pakistan Journal of medicinal plant. 2011, 493-4498.
27. Mahmood A, Malik RN, Shinwari ZK, Mahmood A. Ethnobotanical survey of plants from Nelum, Azad Jammu and Kashmir, Pakistan. Pakistan Journal of Botany. 2016; 43:105-110.
28. Taj S, Wazir SM, Subhan M, Hassan M, Khan SU, Kamal M. Some of the ethnobotanically important plants of Godi Khel and its outskirts hilly areas, District Karak, Pakistan. Pakistan Journal of Plant Science. 2009; 15(1):39-43.