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The Ethno-medicinal Study of Plants locally utilized in District Karak Khyber Pakhtunkhwa Pakistan

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ABSTRACT

In this work, 47 plants having medicinal importance of 24 families were collected during summer and winter season. The detail about their scientific, local and family name, parts utilized and medicinal importance are discussed. These plants are not only used in specified area of district Karak but are also used throughout Khyber Pakhtunkhwa (KP) and Pakistan .The knowledge of their usage and importance is transferred to coming generations. The utilization of different medicinal plants by various age groups is tabulated and summarized. It showed that use and significance of herbal medicines by various age groups is more than 70%, as it is clear from the figure given in text. Whereas over all usage of medicinal plants is more than 50%, this showed the importance and primary health care of medicinal plants. Medicinal plants are often focused for ethno-medicinal studies as well as for primary first aid. The earlier study is the pathway towards the discovery of new medicines. Further, it is also a valuable heritage of the local population of the area which may be conserved and recognized, as they are playing a vital function for primary health safety and care.

Keywords: *Ethno-medicinal study, Medicinal Plants, Primary health care, First aid and Herbal medicine*

INTRODUCTION

The word medicinal plants are used for those plants which are used for the treatment of some particular disease. Medicinal plants play an important role for the cure of various ailments [1]. It is claimed that around 4,22,000 flower plants noted worldwide, among them 50,000 show medicinal importance [2]. These herbal assists give cultural based valuable and relevant source for initial health care for the most of people [3]. Now these indigenous medicinally important plants are known across the world for healthcare. WHO reported that conventional medicinal plants are significant sources for health care [4].Pakistan Forest Institute surveyed and according to their report about 75 unfinished herbal medicines are exported expansively and 200 plus are traded inside Pakistan. These crude herbal plants material costs round about 150 million rupees annually inside Pakistan, including majority of such plants are acquired from natural and rural areas of the country [5].

There are 6,000 plus species of privileged plants in Pakistan, including 600-700 medicinal species [6]. These herbal plants provide a greater source of structural based biodiversity in the shape of a mixture of natural bioactive products, playing an important role in drug discovery [7]. Since many plants are also utilized as food besides their medicinal worth, whereas the metal content of such plants is helpful for understanding of their suitability [8].

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Most of the research in Pakistan is limited up to documentary level. However nowadays the research activities is carried out mostly in universities and some institutes based on ethno-botanical importance of medicinal plants. The local people of various areas of Pakistan have years old expertise about conventional usage of herbal plants of their regions. This native and old awareness of herbal plants is transferred to newly coming generation from their parents. Such herbal plants are utilized for the treatment of different diseases from simple headache to stomachic pain and from simple cuts to chronic infections etc. [9].

The important aim of this work is recording the significance and application of medicinal plants. Mostly for initial health care, 80% of the world people are dependent on conventional medicines [10].The local community of any area have sound awareness about the utilization of medicinal herbs and other plants. As compared to costly pharmaceutical drugs, local population usually gives preference to medicinal plants for the treatment of ailment due to its low cost and availability [11]. Modern pharmacopoeia has 25% of the drugs that come from plant origin, while more than 121 active compounds of synthetic analogue are obtained from natural precursors.

However, importance of herbal plants may not be under estimated as they have significance without major side effects [12].These herbs have significant components and the knowhow about their usage is considered as a part of cultural heritage [14]. These plants are also good source of income for the local people as well as for the business purposes however unfortunately there is no gardening of such plants in our country [15]. Medicinal plants are often focused for ethno-botanical studies while the past work has given very promising guidelines for the discovery of new medicines [16].The purpose of this work is exploration, identification and application of these natural assists, for the benefit of mankind.

Introduction about area &habitat for the accessibility of Medicinal plants

The present project of our research is based on medicinal plants in District Karak Khyber Pakhtunkhwa (KP). The Karak district is situated on west of district Bannu and Lakki Marwat and western side of Kohat. This area is 123 km from Peshawar on the main highway to Karachi. It is situated at 33.1277^{o}N and 71.0973^{o} E, comprising of total area of 3,372 square kilometer containing population of 536000 persons approximately. The climate of the area is semi-arid with very cold winter and hot summer. The rainfall in this area is insufficient and mostly uncertain.

The winter raining is usually of low concentration and long duration. The average soil temperature remains in the range of 21.87^{o}C to 26.37^{o}C in summer and low down in winter. There are three tehsils (major administrative areas) in this district including Karak, Banda Daud Shah and Takht-i- Nasrati.

The income source of the people is based on rain fed agriculture as canal system is not present in this area. The hills are dry and containing sources of valuable minerals like uranium, coal, salt, oil and natural gas etc. Oil and gas reservoirs are also found in Gorgerin, Nashpa Banda and Makori town. Besides these, irrigation resources are little, which is a constant problem; however wells (tube wells, dug wells) and manual pumps are utilized for irrigation purposes in some places, whereas most of the area is rain dependent. There is constant problem of drinking water which is brought by people from far-flung distances. The available water is salty and unhygienic as in Tarkhaal Ganda. Small storage dams are constructed at Sarki Lawagar and Zibe dam for storing rain and stream water.

The aim of this study was to identify medicinal plants and explore their uses, to enlist the indigenous medicinal plants used by local people for common ailments and to raise the plant conversation issue of the study area.

METHODOLOGY

Collection of medicinal plants

Some trips were arranged to 8 different places of district Karak (KP), Pakistan for collection of significant medicinal plants during Academic Year 2015. Almost about 40 medicinal plants were collected from different areas.

Identification and Drying

In this work various samples of medicinal plants were collected from different areas of district Karak (KP). In the second step, these plants were pressed by wooden blocks. Later on, these plants were kept inside a newspaper and pressed for dryness. After about 5-8 days they were pressed on herbarium sheet and dried.

Exploration of curative plants

The exploration of curative plants was not an easy task, for this purpose important guidance for collection of plants and location of area was gotten from related office in district Karak (KP). A performa was designed to explore the medicinal plants in particular area and different information like local and botanical name, family name of plant, portion used as medicine were tabulated as given below in results and discussion portion. These plants are not only used in specified area district Karak (KP) but these are used throughout Khyber Pakhtunkhwa and Pakistan, further knowledge of their utilization and importance is transferred from generation to generation.

DISCUSSION AND ANALYSIS

In this work, 47 plant species having medicinal significance of 24 families were collected during summer and winter season. The knowledge about their scientific, local and family name, part utilized and their medicinal importance are listed in tables 1-3.

Table1. Medicinally Important Flora (Leaves and Stem) of District (Karak)

Local Name	Botanical Name	Family	Medicinal Use for treatment
Ghaz	Tamarixarticulata	Tamaricaceae	Used for flu and tetanus and against smallpox
Spalmaka	CaltropisProcera	Asclepiadaceae	Headache, stomach ulcer, fever and cough while flower are used for throat infection
Ganderi	RhazyaStricta	Apocynaceae	Leaves & Roots used as blood purifier, A brush made from root known as **Miswak** used for the cleaning of teeth, Roots are used for treatment of snake bite and sugar disease.
Aspalagzia	Fogoniacretica	Zygophyllaceae	Blood purifier and for treatment of skin rashes during sugar disease
Velana	Menthapiperata	Lamiaceae	Dry leaves are used for treatment of diarrhea and vomiting
Bobarai	OcimumBasilicum	Lamiaceae	Flower used for ear pain and for opening of periods and for ornamental purposes

Green Tea	Comellia vulgare	Theaceae	Dry leaves are used for weight loss and for digestion
Makko	Solanum nigrum	Solanaceae	Leaves are cooked as sag type & used for treatment of sugar disease
Bhang	Cannabis Sativa	Cannabaceae	Cough & flu, the leaves of C-Staiva are mixed with green tea and used for coldness
Zergia	Aloe vera,Aloebarbadensis	Liliaceae	Leaves are used for beauty, burns cuts wound and skin care.

Table 2. Medicinally important Flora (**Fruits)**of District (Karak)

Local Name	**Botanical Name**	**Family**	**Medicinal Use for treatment**
Bare	ZizyphusJujuba	Rhamnaceeae	Used for constipation
Shopyanga	Withaniacoagulans	Solanaceae	Abdominal problem such as stomach & intestinal gas problem
Doda,Tobacco	Nicotinatobacum	Solanaceae	Cough and flue
korkaman	Curcummalong	Zingiberaceae	It is used for knee and back pain while also used for healing of wounds.
Toormrch	Piper nigrum	Piperaceae	It is used for digestion and for cough, flue during coldness
Lemon	citrus limonum	Rutaceae	Low blood pressure patient, beauty, facial care, herbal steam, herbal teas
Shoon, Zeeton	Oliaeuropia Olea cuspedata	Oleaceae	Fruit used for sugar disease and also as blood purifier, oil used for knee joint pain and for hair
Amrood	Psidium guajava	Myrtaceae	Used for constipation & diarrhea while its juice is also used for stomach problem
GadarhNali	Casia fistula	Fabaceae	Used for baby belly pan
Kareela	MomordicaChararntia	Cucurbitaceae	Juice used for sugar disease
Pamanka	Carolluma edulis	Apocynaceae	Whole plant is used for sugar disease
Palosa, Kanrh	Acacia modesta	Fabaceae	Its plant resin is used for back pain
Carrot	Daucus Carota	Umbelliferae	Used to improve eye sight also used for face care
Annar	PunicaGranata	Rosaceae	Peel is used for abdominal problem
Shawtala	Trifolium repens	Fabaceae	Seeds powder form used for vomiting
Lemon grass	Cymbopogoncitratus	Poaceae	Whole plant is used for digestion, and for Weight loss without sugar
Muli	Raphanus sativus	Brassicaceae	Seeds used for weight loss
Sponda/Syrian	Peganum	Zygophyllaceae	Its leaves and seeds are used for insecticidal effects & for tetanus
Sungara	Acacia senegal	Leguminoseae	Acacia gums are used for cough, throat problems

Table3. Medicinally Important Flora (**Seeds)** of District (Karak)

Local Name	**Botanical Name**	**Family**	**Medicinal Use**

Ispaghual	Planta Goovota	Plantaginaceae	Seeds are used for diarrhea, relieves constipation, reduce blood cholesterol, effective for acidity and stomach problem.
Sperkiye	Plectranthusrogosus	Lamiaceae	Used for Menstrual Problem and given to animal like goat after delivery.
Sonaf	Foeniculum vulgare	Umbelifers	It is used for digestion and also for baby belly pain
Kalvanjee	Nigella Sativa	Ranunculaceae	Used for weight loss
Shoon, Zeeton	Oliaeuropia Olea cuspedata	Oleaceae	Fruit are used for sugar disease and blood purifier, oil used for knee joint pain and for hair
Sharsham	Eruca Sativa Mill	Brassicaceae	Massage for body and hair and for baby massage
Ooza	Allium satium	Alliaceae	Its blub are used to reduce blood pressure
Piaz	Allium cepa	Alliaceae	Its blub is used for finger pimples
Kunzaly	Sesamum indicum	Pedaliacae	Used for urine problem
Elaichi	Elettaria Cardamomum	Zingiberaceae	Used for digestion, cough and flu
Tarkahamarabeej	Citrus Colocunthus	Cucurbitaceae	For abdominal problem or belly pain
Sharsham	Eruca Sativa Mill	Brassicaceae	Used for massage of body and hair
Elaichi	Elettaria Cardamomum	Zingiberaceae	Used for digestion, cough and flu
Tarkhamarabeej	Citrus Colocunthus	Cucurbitaceae	For abdominal problem or belly pain

In these tables 1-3 different medicinal plants were described along their local, botanical name, family, different parts of plant and their medicinal application. The usage and significance of various medicinal plants in different areas of district karak are shown in table 4 and 5.

Table 4: Check Listof people using different medicinal plants in different areas of karakdistrict

Botanical names	Taabaikho in sabairabad	Mashereba nda	Session court	Lghriban da	Yaqobiba nda	Main karak city	Babal Khel
Tamarixarticulata	0	1	1	0	0	1	1
ZiZyphusJujuba	1	1	1	1	1	1	1
CaltropisProcera	0	0	0	1	1	0	1
RhazyaStricta	0	0	0	0	0	0	1
Withaniacoagulans	0	1	1	0	0	1	0
Fogoniacretica	1	1	1	1	1	1	1
Nicotinatobacum	1	1	1	1	1	1	1
Menthapiperata	1	1	1	1	1	1	1
OcimumBasilicum	0	1	1	0	0	1	0
Plantagoovota	1	1	1	1	1	1	1
plectranthusrogosus	1	1	1	1	1	1	1
comellia vulgare	1	1	1	1	1	1	1
Foeniculum vulgare	1	1	1	1	1	1	1

Curcummalong	1	1	1	1	1	1	1
solanum nigrum	1	0	0	0	0	0	0
Piper nigrum	1	1	1	1	1	1	1
Eruca Sativa Mill	1	1	1	1	1	1	1
Allium satium	1	1	1	1	1	1	1
Allium cepa	0	1	1	0	0	1	0
Aloe vera,Aloebarbadensis	0	1	1	0	0	1	1
citrus limonum	1	1	1	1	1	1	1
Nigella Sativa	1	1	1	1	1	1	1
Oliaeuropia Olea cuspedata	1	1	1	1	1	1	1
Psidium guajava	1	1	1	1	1	1	1
Sessamumindicum	0	1	1	0	0	1	0
Casia fistula	1	1	1	1	1	1	1
MomordicaCharantia	1	1	1	1	1	1	1
Carolluma edulis	1	1	1	1	1	1	1
Acacia modesta	0	1	1	0	0	1	0
Cannabis Sativa	0	1	0	0	0	1	0
ElettariaCardanomum	1	1	1	1	1	1	1
CitrullusColocynthus	0	0	0	1	1	0	0
Daucus Carota	1	1	1	1	1	1	1
PunicaGranata	0	0	0	0	1	0	0
Trifolium repens	0	0	0	0	1	0	0
Cymbopogoncitratus	0	1	1	0	0	1	0
Raphanus sativus	0	0	0	1	1	0	0
Acacia senegal	0	0	0	0	0	0	1
Peganum	1	1	1	1	1	1	1

Table 4 showed the usage of different medicinal plants by people in different areas of district Karak. It is concluded from above survey that most of the people prefer herbal medicine (medicinal plants) as first aid or primary health care. Our research showed that people of different ages use medicinal plants as primary health care or medicinal purposes. Table 5 showed various percentage ratios of different age groups and their use about some particular medicinal plants as given below.

Table.5: Percentage of people using medicinal plants

Botanical Name	Old Age People	Middle Age people	Young Age People
Tamarixarticulata	90%	80%	80%
ZiZyphusJujuba	80%	80%	60%
CaltropisProcera	80%	80%	50%
RhazyaStricta	80%	80%	80%

Withaniacoagulans	80%	80%	50%
Fogoniacretica	90%	80%	50%
Nicotinatobacum	90%	80%	50%
Menthapiperata	90%	80%	80%
OcimumBasilicum	80%	80%	80%
Plantagoovota	90%	90%	90%
Plectranthusrogosus	90%	90%	90%
Comellia vulgare	90%	90%	90%
Foeniculum vulgare	80%	80%	70%
Curcummalong	90%	90%	60%
solanum nigrum	80%	80%	70%
Piper nigrum	90%	90%	90%
Barassicacampestris	90%	90%	90%
Allium satium	80%	90%	90%
Allium cepa	90%	80%	80%
Aloe vera,Aloebarbadensis	90%	90%	70%
Citrus limonum	90%	90%	80%
Nigella Sativa	90%	90%	60%
Oliaeuropia Olea cuspedata	90%	90%	90%
Psidium guajava	90%	90%	90%
Sesamum indicum	90%	90%	90%
Casia fistula	90%	90%	80%
MomordicaChararntia	90%	90%	90%
Carolluma edulis	90%	90%	60%
Acacia modesta	80%	80%	80%
Cannabis Sativa	80%	80%	60%
Elettaria Cardamomum	70%	70%	50%
Citrus Colocunthus	80%	80%	50%
Daucus Carota	80%	80%	80%
PunicaGranata	80%	80%	80%
Trifolium repens	70%	60%	40%
Cymbopogoncitratus	80%	80%	60%
Raphanus sativus	80%	80%	80%
Peganum	90%	90%	90%
Acacia senegal	80%	60%	50%

In the table 4, use of different medicinal plants is given that is summarized in figure 1 below, which showed medicinal significance of various plants used by people in various areas as given below.

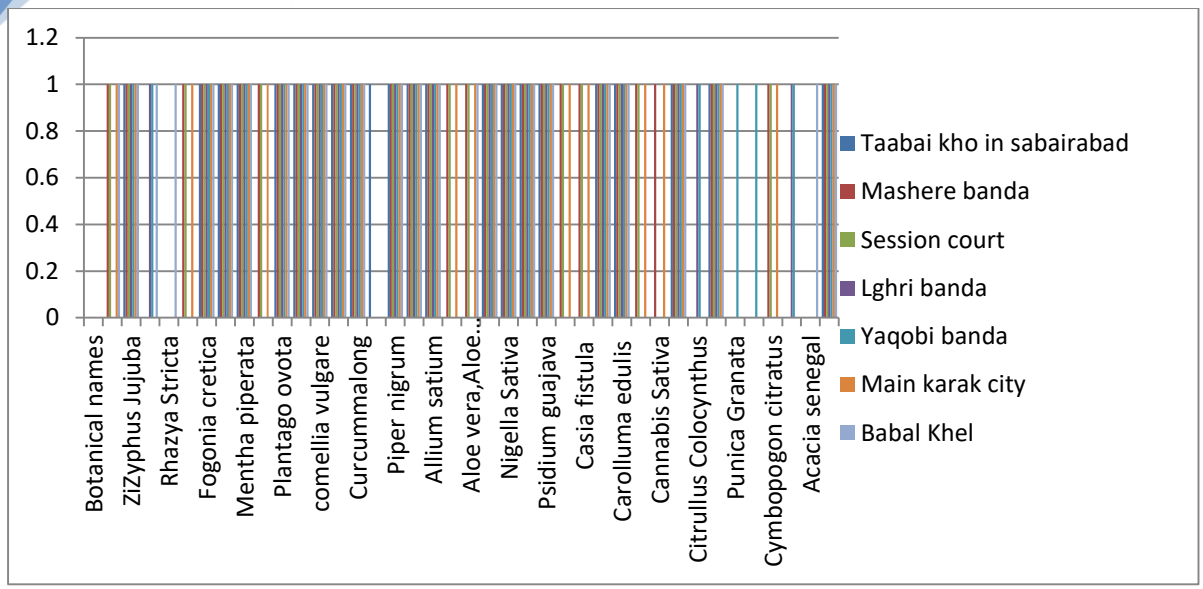

Figure 1: Ethno-medicinal significance of various plant species for seven different categories in the research area of District Karak

The use of different medicinal plants by various age groups in shown in table 5 above, which is summarized in figure 2 below. It showed that use and significance of herbal medicines and direct utilization of medicinal plants by various age groups is more than 70%, as it is clear from figure. Whereas over all usage of medicinal plants is more than 50%, this showed the importance and primary health care of medicinal plants.

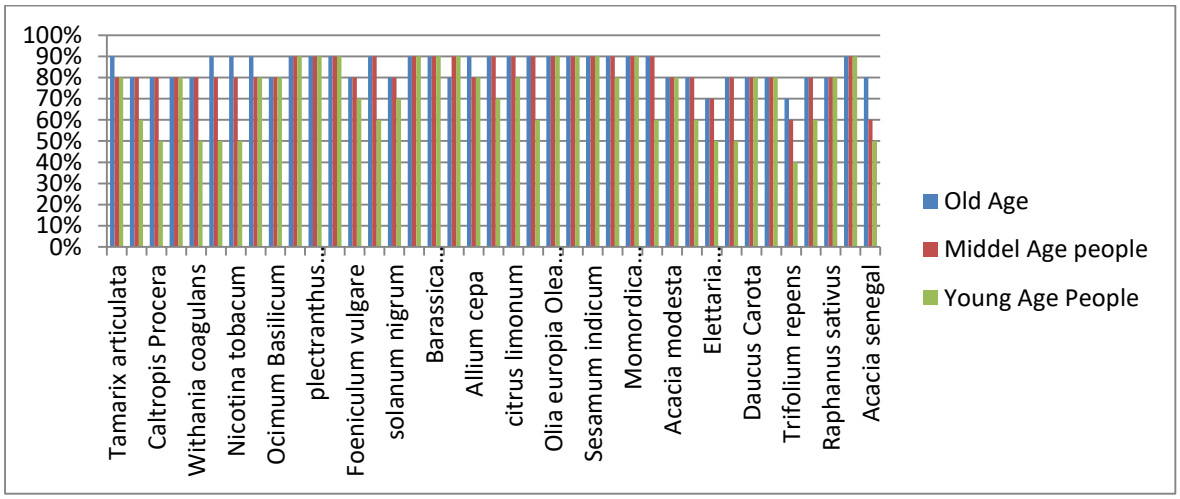

Figure 2: Ethno medicinal usage by different age groups of district Karak

This research exposed that 47 plants having medicinal importance of 24 families were known in the research area. These plants included in this work were both wild and cultivated. Medicinal plants are often focused for ethno-medicinal studies for medicinal purposes as well as for primary first aid. Past studies in this research has given very important results in discovery of new synthetic medicines. Further, it is also a valuable heritage of the local people which is recognized as well as conserved, further these herbs are important for initial health care purposes. In this study useful conventional applications of these medicinal plants are reported given in Table 1-3 and Figure 1. The conventional experts are local people who know the importance of plants and consider that any part of the plant beneficial. However,

pharmaceutical study and biochemistry based analysis is needed to verify information about the plant in local area of research. The utilization of definite parts of the desired plant recommended them as greater medicinal assets. This study is also linked that either this area have some causes for fever, respiratory infections, gastro-intestinal problems and some other health issues. The probable motive following such complaints in that specified area may be caused by presence of high pollutants in air and water, deficiency of suitable cleanliness measures, smoke habits inside houses due to fuel wood and poor quality of food.

S.NO	Family Name	No of genra	S.NO	Family Name	No of genra
1.	Tamaricacea	1	14.	Alliaceae	2
2.	Rhamnaceae	1	15.	Liliaceae	1
3.	Asclepiadace	1	16.	Rutaceae	1
4.	Apocynaceae	2	17.	Ranunculaceae	1
5.	Solanaceae	3	18.	Oleaceae	2
6.	Zygophyllaceae	2	19.	Myrtaceae	1
7.	Lamiaceae	3	20.	Pedaliacae	1
8.	Plantaginaceae	1	21.	Fabaceae	3
9.	Theaceae	1	22.	Cucurbitaceae	2
10.	Umbeliferae	2	23.	Cannabaceae	1
11.	Zingiberaceae	2	24.	Rosaceae	1
12.	Piperaceae	1	25.	Poaceae	1
13.	Brassicaceae	2	26.	Leguminoseae	1

Table 6: List of Families having number of genre

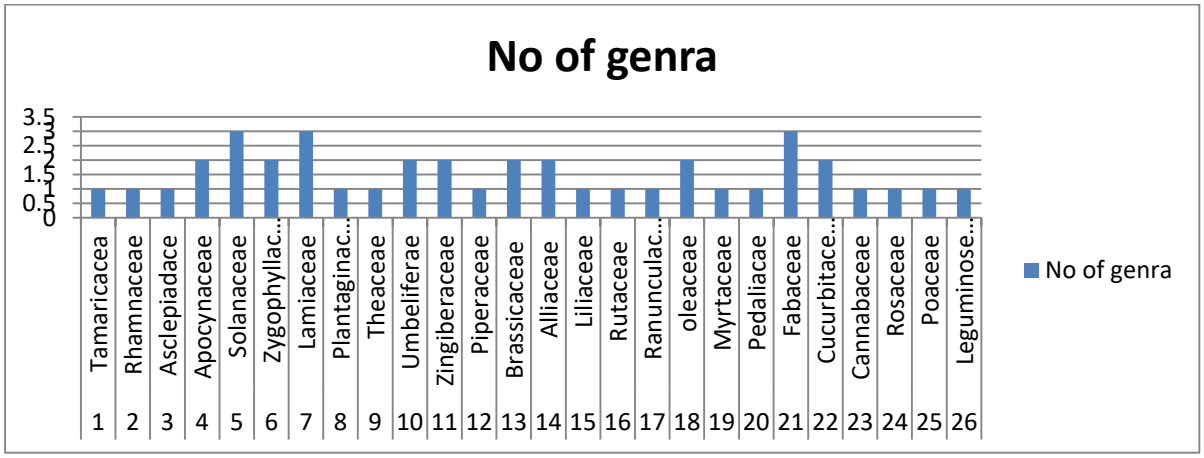

Fig 3: Ethno medicinal significance of various plant species for different genera

As, the concerned region is not developed therefore, people utilize such plants straight away for medicine. The plant species most frequently used for medicinal applications are, Fagoniacretica L., which is one the most used plants for medicinal purposes. The whole plant is used by one or another way for treatment of different illnesses. The local people believe that it is anti-diabetic due to its bitter taste and also helpful for treatment of stomach ulcer. The root and leaves extract of Solanum surattense Burm.f., is used for curing of stomach ulcer in cow

and other animals. The hunting activity is common in Karak area, therefore persons involved in hunting eat more food, which causes stomach pain, which is treated by using fruit of Withaniacoagulans (Stocks) Dunals.

Table 7: Different types (Habits) of the reported species:

S.No	Herbs	Shrubs	Trees
1	Nicotinatobacum	RhazyaStricta	Tamarix articulate
2	Menthapiperata	Withaniacoagulans	ZiZyphusJujuba
3	OcimumBasilicum	CaltropisProcera	CaltropisProcera
4	Plantagoovota	Fogoniacretica	Psidium guajava
5	Eruca Sativa	plectranthusrogosus	citrus limonum
6	Foeniculum vulgare	comellia vulgare	Oliaeuropia Olea cuspedata
7	Curcumma longa	solanum nigrum	Casia fistula
8	Piper nigrum		Acacia modesta
9	Allium satium	PunicaGranata	PunicaGranata
10	Allium cepa	Peganumharmala	Acacia Senegal
11	Aloe vera,Aloebarbadensis		
12	Nigella sativa		
13	Sesamum indicum		
14	MomordicaChararntia		
15	Carolluma edulis		
16	Cannabis Sativa		
17	Elettaria Cardamomum		
18	CitrullusColocunthus		
19	Daucus Carota		
20	Trifolium repens		
21	Cymbopogoncitratus		
22	Raphanus sativus		

The fruit portion of Ziziphusjujuba Mill, is utilized for laxative and constipation, and minor cuts by people of local region as this herbal plant is simply accessible and useful. During the interview, we saw people are talking about the medicinal uses of Aloe vera (L.) Burm. People told that, latex portion of Aloe vera (L) Burmis plant is utilized more often for cuts and burns, (skin treatment purpose) and it also possesses rapid healing characteristics. Another plant Nicotina tobacum is also used for cough and flue. Mentha piperata dry leaves are used for digestion, motion and vomiting.

CONCLUSION AND RECOMMNDATIONS

The research was completed in District Karak which exhibited that less number of plant species are present as compared to the total area of this district .There are different reasons for least number of plants such as scattered population, scanty rainfall throughout the year and lack of proper irrigation system. The unavailability of modern facilities in this area, people mostly utilize different plants for curing of various illnesses. The elder persons of this area knew the medicinal significance and knowledge about these plants and they transfer to

their young generation. In this research work, the medicinally important plants were collected, identified and classified on different basis. The results depicted that Karak district contains rich plant species for which proper management and conservation is mandatory. The use of different medicinal plants by various age groups is tabulated and summarized. It showed that use and significance of herbal medicines and direct use of these plants by various age groups is more than 70%, as it is clear from figure given in the text. Whereas over all usage of medicinal plants is more than 50%, this showed the significance and primary health care of medicinal plants.

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