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AWARENESS AMONG UNIVERSITY STUDENTS ON FORESTS AND TRADITIONAL USE OF MEDICINAL PLANTS IN KASHMIR VALLEY: A SAMPLE SURVEY

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ABSTRACT

Forests of the Jammu and Kashmir state are spread over three broad geo-climatic zones covering Jammu, Kashmir and Ladakh regions of the State. The state is covered by lofty mountains, which receive heavy rainfall and snow. Dense forests are found everywhere in the state particularly in outer and inner Himalayan ranges. High mountains of Ladakh and Kargil receive a very little rainfall; therefore, these areas are devoid of forest cover. However, vast grass lands and abundant medicinal and aromatic plants grow there. Forest resources are indispensable for human beings and have played the most significant role in the economy of the Jammu and Kashmir state. Plants have been traditionally used for hundreds of years throughout world as a source of medicine by indigenous people of different ethnic groups inhabiting various terrains for the control of various ailments afflicting humans and their domestic animals. Today not only the medicinal plants but also their associated traditional knowledge is threatened due to a range of both natural and anthropogenic factors. In this backdrop, present study was conducted to know the awareness among university students of Kashmir valley on the role of forests and medicinal plants. In this paper, a well designed and validated questionnaire based on the literature available on the topic was used to collect the information from a sample of 400 students selected randomly from different Universities of Kashmir valley. The data collected was analyzed using appropriate statistical tools. The results obtained from this study reveal that both student boys as well as girls are aware about importance of forests but are not well aware of the importance of medicinal plants. The lack of governance, unplanned urban settlement, encroachment and management are the major problems for the efficient use of forest resources and protection. It is concluded that there is an urgent need of giving mass awareness on importance of forests and medicinal plants.

Keywords: Awareness, Environment, Medicinal plants, Forests, Kashmir

INTRODUCTION

Jammu and Kashmir Forest Department are in agreement with the Forest Survey of India that total geographical area of Jammu and Kashmir state is 2,22,236 sq km and 1,20,849 sq km (54.4 %) of this area is under the occupation of Pakistan and China. Total forest area of unbroken Jammu and Kashmir is 20,430 sq km. Since 10% of total geographical area is under recorded forests, 12,085 sq km of these forests should be under PAK. This part of Jammu and Kashmir cannot, therefore, have more than 8,151 Sq km of recorded Forests. Increase in forest area of this part of Kashmir from 8,151 sq km (i.e. 9.20 % of geographical area) to 20,230 sq km (19.95 %) during last 50 years seems nothing more than a myth, when population has increased from 32.5 lakh in 1951 to 100.69 lakh in 2001. It is clear that out of 22,230 sq km of forest area in undivided state, 9,413 sq km (more than 40 %) have been declared as open forests,

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3080 sq km have been classified as scrubs by Forest survey of India. Even State Forest Department of Jammu and Kashmir has identified, degraded forest 1,793 sq km, 925 sq km engulfed by barren rocks and forest blanks, and more than 1,630 sq km (20 percent) diverted for non forest use in this part of J&K. Illegal encroachment of forest land is spectacular from every angle of visibility, and tree cover is generally missing on western and south western aspects of existing forests. It is relevant to mention, that records of the forest area are not under the revenue department of Jammu and Kashmir. Forest cover or existing forest area indicated by various agencies is again conflicting and being a hilly state, 66% of our geographical area should be under complete forest cover. While Jammu and Kashmir forest department envisages that forest cover is 19.95 percent, Indian Remote Sensing Institute Hyderabad has estimated that actual forest cover of Jammu and Kashmir is only 13.68 percent (13,870 sq km). Forest Survey of India has reported forest cover of 9.20 percent only. Average productivity of these forests has been documented to be 2.34 cubic meter per ha per year. Taking these figures into consideration annual timber yield from our forests should be 47.3 cubic meters (39.10 crore cft) per year. In Kashmir division forests cover 54 percent and in Jammu division 45 percent of the geographical area, even then we import timber to construct our houses, face acute shortage of fuel wood, industrial wood, water and heavy pollution of environment. It is believed that if un-commercial forests, degraded forests and open forests are managed by plantation forestry, the productivity of these forests can be increased to more than 5 -10 cubic meters per ha per year against present rate of 2.34 cubic meters.

The protected area in different regions of the world are considered very important for the conservation of biological diversity (Rudd, 2011) and the provision of benefits and services to surrounding communities (Vedeld *et al.*, 2012). According to Weaver and Lawton (2008) populations surrounding to protected areas need special attention and as per Vodouche peoples perception can also aid in identifying solutions for problems in nature parks that reflect their education and geographical origin. The studies based on socio-economic, cultural, environmental (Allendorf *et al.*, 2014) and the Ethnobiological studies (Sirivongs & Tsuchiya, 2012) influence the community's perception of protected areas.

Medicinal plants have been used by humans since pre-historic times. Exploitation of medicinal and aromatic plants as pharmaceuticals, herbal remedies, flavorings, perfumes and cosmetics, and other natural products has greatly increased globally. It is observed that the people living in urban areas have almost no knowledge about medicinal properties of plants. In rural areas however, the people especially elders have a sufficient knowledge about this prosperous natural treasure, which is gifted to mankind by God. The majority of the rural people in Asian countries use plant-based traditional medicines for healthcare. Medicinal plants were used in Kashmir valley since centuries through different modes of preparation for curing various ailments, ranging from simple to highly complicated. Environment includes all living and non-living objects. We live in the environment and use the environmental resources like air, land and water to meet our needs.

Therefore, there is a need to create 'knowledge' about Environmental protection. Holy Prophet (SAW) considered all of God's creations to be equal before God and he believed animals, land, forests and water resources have rights. According to Holy Quran (4:126), "To God belongs all that is in the heavens and in the earth, for God encompasses everything". We live in the environment and use the environmental resources like air, land and water to meet our needs. Therefore, there is a need to create 'knowledge' about Environmental protection. According to great saint of Kashmir Sheikh-ul-Alam (R.A) on importance of forests, he quoted 'An Posh Teli Yeli Wan Posh' (Food is subservient to forests). He used to aware people about the importance of forests and their protection. Kashmir is a treasure of forest herbs. The present study based on sample survey was designed with the purpose of eliciting the precious wealth of information on the role of forests and awareness among students towards use of herbal medicine by the people of Kashmir valley. In the literature we come across a number of good research papers related to the use of traditional herbal plants for treatment of various diseases. Some medicinal plants as reported by various researchers are listed below. To create interest among students few medicinal plants were shown to students, elders and experienced persons were also consulted during field work to identify the medicinal plants available in our forests.

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***Actaea spicata* Linn.** Local Name: Banparthi; Family: Ranunculaceae

Plant Part(s) Used: Roots and fruits.

Ailments in which Plant/Plant Part(s) Used: Sprains, wounds and paralysis.

Mode of Administration: Fresh roots are crushed and tied as poultice on sprains and wounds to give immediate relief from pains. Fruits and roots after complete drying are grinded into powder which is given to cattle with water against paralysis.

***Acorus calamus*.** Local Name: Vai; Family: Acoraceae

Plant Part(s) Used: Extract or decoction of root

Ailments in which Plant/Plant Part(s) Used: stomach troubles.

Mode of Administration: Crushed plant made into paste and applied externally for various skin diseases. Extract or decoction of root taken in small doses for stomach troubles.

***Adiantum cappilus Veneris*.** Local Name: Gautheer; Family: Adiantaceae

Plant part(s) Used: whole plant

Ailments in which Plant/Plant Part(s) Used: stomach pain and as expectorant.

Mode of Administration: Paste of whole plant made with ghee applied on hair as tonic. Extract of plant taken for stomach pain and as expectorant.

***Aesculus indica*.** Local Name: Handoon; Family: Sapindaceae

Plant Part(s) Used: For healthy hair and in treatment of headache.

Ailments in which Plant/Plant Part(s) Used: Extract of leaves, Seed

Mode of Administration: Extract of leaves given for fever. Seed oil used for healthy hair and in treatment of headache.

***Allium cepa*.** Local Name: Gande; Family: Alliaceae

Plant Part(s) Used: Crushed bulb

Ailments in which Plant/Plant Part(s) Used: For increasing appetite.

Mode of Administration: Crushed bulb applied externally for boils. Crushed bulb mixed with mint eaten for increasing appetite.

***Amaranthus caudatus*.** Local Name: Leesa; Family: Amaranthaceae

Plant Part(s) Used: Whole plant

Ailments in which Plant/Plant Part(s) Used: Expectorants and fever

Mode of Administration: Expectorant made of leaves and inflorescence is taken orally as febrifuge and diuretic

***Amaranthus retroflexus* Linn.** Local Name: Ganhaar; Family: Amaranthaceae

Plant Part(s) Used: Whole plant

Ailments in which Plant/Plant Part(s) Used: Measles and dandruff

Mode of Administration: Children suffering from measles are advised to inhale smell that emanates from roasting dried seeds. Seeds once roasted are mixed with gur (local sugar) and made into small balls. Balls are given to the same children to treat measles. Plant is burnt to get ash which is locally called “Suzz”. It is gently applied on scalp and then washed with water to clean the hair and check dandruff.

***Anagallis arvensis*.** Local Name: Chari Saben; Family: Primulaceae

Plant Part(s) Used: Crushed plant

Ailments in which Plant/Plant Part(s) Used: Ulcer and for sore throat

Mode of Administration: For ulcers crushed plant is applied on effected area. Extract of rhizome given for sore throat and as an expectorant.

***Arisaema jacquemontii*.** Local Name: Hapet Gogej; Family: Aracaceae

Plant Part(s) Used: Bulb/cloves

Ailments in which Plant/Plant Part(s) Used: For muscle strength

Mode of Administration: For muscle strength massage of grinded rhizome mixed with brassica oil is done. For boils and blisters dried root or tuber is powdered, mixed with oil and applied on the effected part.

***Artemisia absinthium*.** Local Name: Tethwan; Family: Astraceae

Plant Part(s) Used: Whole plant

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Ailments in which Plant/Plant Part(s) Used: Chronic fever and gout.

Mode of Administration: For abdominal pain extract of whole plant is taken in small doses. Extract of whole plant is also used for chronic fever and gout.

Asperagus recemosus. *Local Name:* Satavar; *Family:* Asparagaceae

Plant Part(s) Used: leaves and roots

Ailments in which Plant/Plant Part(s) Used: Burning

Mode of Administration: For burning sensation of skin, paste of fresh leaves is applied. For increasing libido, extract or powder of root with water is taken.

Atropa belladonna. *Local Name:* Sagangur; *Family:* Solanaceae

Plant Part(s) Used: Leaves, extract of roots

Ailments in which Plant/Plant Part(s) Used: Asthma, joint pain

Mode of Administration: For asthma, leaves are burnt and smoke is inhaled and for joint pain, paste of leaves is applied on the affected area. For blood circulation, Extract of root is taken.

Allium sativum Linn. *Local Name:* Rhoon; *Family:* Liliaceae

Plant Part(s) Used: Bulb/cloves

Ailments in which Plant/Plant Part(s) Used: Stomach problems, hypertension, asthma, respiratory disorders, greenish diarrhoea, rodent repellent and eye vision.

Mode of Administration: Roasted bulbs/cloves are taken to cure stomach problems, hypertension and asthma. A mixture of crushed cloves with a small amount of water is packed in bottles. It is then given to poultry as a remedy against respiratory disorders and greenish diarrhea. The same mixture is also sprayed around the poultry so as to check the rodent attack. Eye stick is first pierced through the clove and then applied in between the two eyelids to improve the eye vision.

Bergenia ligulata. *Local Name:* Pashanabheda; *Family:* Saxifragaceae

Plant Part(s) Used: Leaves, powder of dried root

Ailments in which Plant/Plant Part(s) Used: Stomach ache, internal injury

Mode of Administration: For wounds, paste of fresh leaves is applied, and for stomach ache and internal injury, powder of dried roots is taken with milk or water.

Brassica campestris Linn. *Local Name:* Telgogul; *Family:* Brassicaceae

Plant Part(s) Used: Seeds

Ailments in which Plant/Plant Part(s) Used: Hair fall, dandruff, rheumatic pains, thorns pricks and skin eruptions.

Mode of Administration: For abdominal pain, seed oil is applied and for healthy hair massage of seed oil is done regularly. For cold, warm seed oil is applied on chest and nose.

Brassica oleracea var. Haka Linn. *Local Name:* Hakh; *Family:* Brassicaceae

Plant Part(s) Used: Leaves

Ailments in which Plant/Plant Part(s) Used: Corns and constipation.

Mode of Administration: Leaves are taken as vegetable. Fresh leaf is gently placed in warm mustard oil with haldi and salt till it becomes soft then tightly tied with muslin cloth on painful corns of toes and fingers which helps them to ripe, burst and evacuate the pus and hence to alleviate the pain. The petiole of the leaf after peeling off the rind is placed in the rectum of the new born baby as a best home remedy to cure constipation.

Bunium persicum (Bioss.) Fedtsch. *Local Name:* Kala Zeera; *Family:* Apiaceae

Plant Part(s) Used: Fruits

Ailments in which Plant/Plant Part(s) Used: Digestive disorders, foul breath, joint pain, lumbago and weak memory.

Mode of Administration: Dried fruits are used as spice in case of digestive disorders. Fruits are chewed to remove foul breath. Roasted fruits are ground into powder which is mixed with banana to make paste. Paste is given orally for the treatment of joint pain, lumbago and as brain tonic to enhance memory.

Cannabis sativa. *Local Name:* Bhang; *Family:* Cannabaceae

Plant Part(s) Used: Extract of leaves

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Ailments in which Plant/Plant Part(s) Used: Diarrhea and weakness

Mode of Administration: For diarrhea extract of leaves is taken. For menstrual problems, fine powder of leaves mixed with eggs is made into an omelet and taken.

***Centaurea iberica Trevir. ex Spreng.* Local Name:** Krech, **Family:** Asteraceae

Plant Part(s) Used: Leaves and thorns

Ailments in which Plant/Plant Part(s) Used: Burns, skin rashes, eye vision and defective lactation.

Mode of Administration: Thorns are burnt to get ash which is mixed with cow butter to make paste. Paste is applied on burns and skin rashes for their treatment. Fresh leaves after crushing are mixed with egg and then cooked to prepare omelette. Latter is given to improve the eye vision. It is also given to enhance lactation in females.

***Citrullus colocynthis (Linn.) Schrad.* Local Name:** Hoon Haendwaend; **Family:** Cucurbitaceae

Plant Part(s) Used: Roots

Ailments in which Plant/Plant Part(s) Used: Toothache

Mode of Administration: Roots are collected and then sun dried. These dried roots are chewed to cure tooth ache.

***Colchicum leuteum Baker.* Local Name:** Virkim posh; **Family:** Lillaceae

Plant Part(s) Used: Seeds and Corms

Ailments in which Plant/Plant Part(s) Used: Body pains, fever

Mode of Administration: Extract of corms is used in delivery bath to cure body pains and powder along with butter is used to cure back pain, seed is used as laxative and sedative.

***Coriandrum sativum Linn.* Local Name:** Daniwaal; **Family:** Apiaceae

Plant Part(s) Used: Seeds

Ailments in which Plant/Plant Part(s) Used: Fever, palpitation of heart, jaundice, drying of mouth and headache.

Mode of Administration: Dried seeds are put in cold water at least for one hour. Cold sponging is done by dipping a clean cotton cloth in this cold water and applying it to the chest, head and feet to relieve fever and palpitation of heart. Seed decoction is given to cure jaundice, drying of mouth and headache.

***Cydonia oblonga Mill.* Local Name:** Bumchuont; **Family:** Rosaceae

Plant Part(s) Used: Seeds, fruits and flowers.

Ailments in which Plant/Plant Part(s) Used: Constipation, birth problems, jaundice, cough, cold, chronic constipation, fever, dysentery, blood purifier, asthma, chest problems, general body weakness and body muscular pains.

Mode of Administration: Seed infusion is given to pregnant women against constipation and to loosen body parts so as to facilitate the normal delivery. The seeds also form an important ingredient of a combination of different herbs such as seeds of *Cucumis sativa*, *Malva neglecta*, *Foeniculum vulgare*, fruits of *Zizyphus jujuba*, leaves and flowers of *Arnebia benthamii* and fronds of *Adiantum capillus-veneris*. This combination is locally called as “Sharbeth”. The composite decoction of “Sherbeth” is given to cure jaundice, cough, cold, chronic constipation, fever and as a good blood purifier. Fruit slices are sun dried, stored for winter season.

Slice decoction is administered orally in case of dysentery. Ripe fruits after being coated externally with a thin layer of mud are roasted and then eaten as a best home remedy against asthma, cold, chest problems and general body weakness. Sundried flowers and sugar after mixing are crushed. The same is then kept in air tight jar for about 10-15 days for fermentation. This fermented mixture is locally called “Khambir Bih”. It is given to cure cough, cold, asthma and body muscular pains.

***Cynodon dactylon (Linn.) Pers.* Local Name:** Dramun; **Family:** Poaceae

Plant Part(s) Used: Whole plant

Ailments in which Plant/Plant Part(s) Used: Body muscular pains, thirst, common cold, fever, kidney and gall stones, dysentery, general body weakness, burning of feet, eye disorders and weak vision.

Mode of Administration: Whole plant along with the seeds of *Malva neglecta* and *Cucumis sativa* is boiled to get a composite decoction which is given to cure body muscular pains, thirst, common cold,

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fever, kidney and gall stones, dysentery and general body weakness. Walking bare foot on dew drops spread over mats of this plant early in the morning is considered to alleviate burning of feet, eye disorders and weak vision.

Cypripedium cordigerum D. Don Local Name: Pholaan; Family: Orchidaceae

Plant Part(s) Used: Rhizome

Ailments in which Plant/Plant Part(s) Used: Joint pains, heart palpitations and weakness.

Mode of Administration: Fresh leaves are used as vegetable. Rhizomes are dried, ground into powder and then mixed with wheat flour and sugar. The mixture is then fried in ghee to prepare Halwa. Later is given in case of joint pains, heart palpitations and as tonic.

Datura stramonium. Local Name: Datur; Family: Solanaceae

Plant Part(s) Used: Leaves, seed

Ailments in which Plant/Plant Part(s) Used: Asthma, rheumatic pain

Ailments in which Plant/Plant Part(s) Used: For asthma, leaves are burnt and smoke inhaled. For dandruff extract of whole plant is applied on hair. For rheumatic pain, seed powder is mixed with ghee and applied on affected part.

Dipsacus inermis Wall. Local Name: Wopal Hakh; Family: Dipsacaceae

Plant Part(s) Used: Leaves

Ailments in which Plant/Plant Part(s) Used: Cough, general body weakness, tightening of blood vessels, pain and swelling of body parts and defective milk production.

Mode of Administration: Fresh leaves are used as vegetable for the treatment of cough, general body weakness and tightening of blood vessels. Dried leaves are boiled in water to prepare decoction which is used to wash the swollen body parts to cure their swellings and pains. Decoction is also given to cows, sheep and goats immediately after delivery to keep them healthy and enhance their milk production.

Dryopteris barbigera (Moore) Kuntze Local Name: Dade/Kunji; Family: Pteridaceae

Plant Part(s) Used: Leaves and rhizome.

Ailments in which Plant/Plant Part(s) Used: Constipation, worms and dysentery. Mode of Administration: At juvenile stage leaves are cooked and used as vegetable for the treatment of constipation. Dried rhizome powder is given to children with water or milk against worms. Rhizome decoction is given against dysentery.

Euphorbia helioscopia. Local Name: Gursochal; Family: Euphorbiaceae

Plant Part(s) Used: Whole plant

Ailments in which Plant/Plant Part(s) Used: Boils, cancer, cholera

Mode of Administration: For boils, milk sap of whole plant is applied on affected parts. For cancer, decoction of plant is taken in small concentration for long periods. For cholera seed powder mixed with pepper is taken in small concentrations.

Foeniculum vulgare. Local Name: Badiyan; Family: Apiaceae

Plant Part(s) Used: seed

Ailments in which Plant/Plant Part(s) Used: blood purification, digestion

Mode of Administration: For blood purification, decoction or extract of seed is taken. For increasing digestion, seeds are eaten raw.

Glycyrrhiza glabra. Local Name: Shanger; Family: Fabaceae

Plant Part(s) Used: root

Ailments in which Plant/Plant Part(s) Used: Cough, hepatitis

Mode of Administration: For cough, decoction of root is taken. For hepatitis, fine powder of dried root is taken with water

Helianthus annuus Linn. Local Name: Gulaftab; Family: Asteraceae

Plant Part(s) Used: Seeds

Ailments in which Plant/Plant Part(s) Used: Whooping cough and joint pains.

Mode of Administration: Seeds are chewed and eaten to cure whooping cough. Seed oil is gently warmed and applied on painful joints.

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Iris nepalensis. Local Name: Sonzal; Family: Iridaceae

Plant Part(s) Used: Stem

Ailments in which Plant/Plant Part(s) Used: Joint pain, growth of teeth in children

Mode of Administration: For joint pain, fresh grinded stem is applied on affected area. For growth of teeth in children, rhizome of the plant is given to children for chewing.

Lagenaria siceraria (Molina) Standl. Local Name: Kashir Aull; Family: Cucurbitaceae

Plant Part(s) Used: Fruits

Ailments in which Plant/Plant Part(s) Used: Cough, cold, fever, chest pain, stomach ulcers, stomach heat up, kidney stones, urine problems and yoke gall.

Mode of Administration: Fresh fruits after peeling off the rind and removing seeds are cut into thin slices. Slices are sun dried and preserved in the form of garlands at home for winter season. In winter, decoction made from them is used in the treatment of cough, cold, fever, chest pain, stomach ulcers, stomach heat up, to dissolve kidney stones and promote urine flow. Dried fruit is burnt to get ash which is mixed with mustard oil to make paste. The paste is slightly warmed and the applied on the neck of bulls to cure yoke gall.

Lychnis coronaria (Linn.) Desr. Local Name: Shosh Ghasa/Angaarda; Family: Caryophyllaceae

Plant Part(s) Used: Roots

Ailments in which Plant/Plant Part(s) Used: Constipation and chronic cough.

Mode of Administration: Crushed roots are added to a glass of water which is then kept outside open to the environment for overnight. The same extract is administered orally in case of constipation and chronic cough.

Malus domestica Borkh. Local Name: Maharaji Treil; Family: Rosaceae

Plant Part(s) Used: Fruits

Ailments in which Plant/Plant Part(s) Used: Dyspepsia, diabetes, jaundice, urinary problems, loss of appetite, phlegm, thirst, body fats, cough and other chest ailments.

Mode of Administration: Fruits are harvested and stored at some warm place for 15-20 days so as to ripe completely. Ripe fruits are eaten to cure dyspepsia, diabetes, jaundice, urinary problems, loss of appetite and to remove phlegm from the chest, quench the thirst and dissolve the body fats. Fruit is cut into small circular slices which are sun dried and preserved in the form of garlands at home for winter. These are eaten and considered to be good for the treatment of cough and other chest ailments.

Marrubium vulgare Linn. Local Name: Troper; Family: Lamiaceae

Plant Part(s) Used: Whole plant

Ailments in which Plant/Plant Part(s) Used: Arthritic pains, swelling of eyelids, abdominal pain, dysentery, chilblain and muscular pains.

Mode of Administration: Fresh leaves are soaked in hot water for two minutes and then removed and crushed into poultice. Poultice is spread on a cloth, wrapped in it, and then tied on arthritic joints to alleviate pain. The same poultice is applied on eyelids to cure their swellings. Plant is crushed and paste is made from it by mixing with cow butter. The resultant paste is given orally to children against abdominal pain and to cattle against dysentery. Hot water extract is prepared by boiling the dried herb thoroughly in salt water. Extract is then used to wash feet and legs to cure chilblains and muscular pains respectively.

Matricaria chamomilla. Local Name: Fake Gasse; Family: Astraceae

Plant Part(s) Used: Flowers, extract of plants

Ailments in which Plant/Plant Part(s) Used: Stress, mouth infection

Mode of Administration: For stress, powdered flowers are taken with tea or water. For mouth infections, extract of whole plant is used as mouthwash.

Mentha longifolia (Linn.) Huds. Local Name: Veina/Jungli Pudnah; Family: Lamiaceae

Plant Part(s) Used: Leaves

Ailments in which Plant/Plant Part(s) Used: Fever, headache, flatulence and digestive disorders.

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Mode of Administration: Sun dried leaves are grinded to make powder which is mixed with lukewarm water to make an infusion. Infusion so prepared is widely used in the treatment of fever, headache, flatulence and digestive disorders.

Nelumbo nucifera Gaertn. Local Name: Nadroo; Family: Nelumbonaceae

Plant Part(s) Used: Rhizome and seeds.

Ailments in which Plant/Plant Part(s) Used: Stomach problems, dysentery, constipation, vomiting, urinary problems and semen deficiency.

Mode of Administration: Roasted rhizome is taken in case of stomach problems and dysentery. Fresh rhizome is either eaten raw or sliced, and cooked as vegetable against constipation. Fresh seeds are given in case of vomiting, urinary problems and semen deficiency.

Nymphaea maxicana Zucc. Local Name: Bumiposh/Gul-e-nelofar; Family: Nymphaeaceae

Plant Part(s) Used: Rhizome, stolons and flowers

Ailments in which Plant/Plant Part(s) Used: Hair fall, boils, diabetes, rheumatism, fever, heart palpitation, urinary problems and liver disorders.

Mode of Administration: Rhizome powder is mixed with oil to make paste which is applied on hair to check hair fall.

Paste is also applied on painful and pus filled boils of head for their treatment. Stolons are collected, dried, cooked and taken against diabetes and rheumatism. Dried stolons after boiling in salt water are tied over painful boils for 3-4 days for their complete removal. Flower decoction is given against fever, heart palpitation, urinary problems and liver disorders.

Oxalis corniculata Linn. Local Name: Khatti Gola; Family: Oxalidaceae

Plant Part(s) Used: Leaves

Ailments in which Plant/Plant Part(s) Used: Gum bleeding, jaundice and stomach disorders.

Mode of Administration: Fresh leaves are rubbed over teeth to keep them clean and stop bleeding of gums. Fresh leaves are also eaten against jaundice and stomach disorders.

Paeonia emodi. Local Name: Kuklipot; Family: Papaveraceae

Plant Part(s) Used: Whole plant

Ailments in which Plant/Plant Part(s) Used: Vomiting and Diarrhea

Mode of Administration: For vomiting and diarrhea, extract of root or flower is taken. As blood purifier, powder of whole plant mixed with water is taken.

Papaver dubium Linn. Local Name: Rut Gulala; Family: Papaveraceae

Plant Part(s) Used: Flower

Ailments in which Plant/Plant Part(s) Used: Skin problems and weak memory.

Mode of Administration: Flower petals are grinded to make powder which is mixed with cow butter to make paste. Paste is applied on hands and feet as a moisturizer. Flower powder is also administered orally with milk to enhance memory.

Pinus wallichiana A. B. Jacks. Local Name: Kayur; Family: Pinaceae

Plant Part(s) Used: Resin

Ailments in which Plant/Plant Part(s) Used: Boils, wounds, insect repellent, wormicide and intestinal infections.

Mode of Administration: Resin (locally called “Kilam”) is obtained from the young trees and applied on painful boils and wounds to stimulate their healing. It is also applied on the limbs to check the attack of water borne insects, particularly at the time of rice transplantation. Resin is applied at the tip of nose of children to stimulate the expulsion of round worms. To cure intestinal infections, resin is made into small pills which are administered orally with milk.

Papaver somniferum. Local Name: Khash-Khash; Family: Papaveraceae

Plant Part(s) Used: Whole plant, seed

Ailments in which Plant/Plant Part(s) Used: Pain, seed

Mode of Administration: For pain, dried milk of whole plant is taken. For cancer, grinded seed powder or oil of seeds is taken in small amounts.

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***Plantago lanceolata* Linn.** Local Name: Kashur Gulla/Chamchipeti; Family: Plantaginaceae

Plant Part(s) Used: Whole plant

Ailments in which Plant/Plant Part(s) Used: Stomach acidity, vision and hearing problems, body pains, urinary irritation, dysentery, constipation, fever and yoke gall.

Mode of Administration: Young leaves are used as vegetable. Whole plant decoction with sugar is given to cure stomach acidity, to improve eye vision and hearing capability. Dried seeds are added to warm water to make an infusion which is then kept outside open to the environment for overnight. The cool infusion so prepared is then given on an empty stomach to cure body pains, urinary irritation, dysentery, constipation and fever. The herb is crushed and juice is obtained which is applied topically to cure yoke gall of bulls.

***Podophyllum hexandrum*.** Local Name: Banwangun; Family: Berberidaceae

Plant Part(s) Used: Root

Ailments in which Plant/Plant Part(s) Used: Aacidity.diarrhea problems, Heart disease

Mode of Administration: For acidity and diarrhea juice of fruits or extract of roots is taken. For heart diseases, extract of root is taken.

***Polygonum hydropiper* Linn.** Local Name: Chock Chine; Family: Polygonaceae

Plant Part(s) Used: Leaves

Ailments in which Plant/Plant Part(s) Used: Abdominal pain, dysuria, high blood pressure, stomach heat up, and jaundice.

Mode of Administration: Leaves are used as vegetable. Leaf decoction is administered orally against abdominal pain, dysuria, high blood pressure, stomach heat up, and jaundice.

***Portulaca oleraceae*.** Local Name: Nuner; Family: Portulacaceae

Plant Part(s) Used: Whole plant

Ailments in which Plant/Plant Part(s) Used: Liver inflammation, cough, burns

Mode of Administration: For liver inflammation, it is eaten as vegetable. For cough, extract of whole plant is taken. For burns crushed plant is applied on affected area.

***Potentilla nepalensis*.** Local Name: Ratanjot; Family: Rosaceae

Plant Part(s) Used: Whole plant

Ailments in which Plant/Plant Part(s) Used: Burns, gastrointestinal disorders

Mode of Administration: Ash of burnt plant is applied on affected area affected by burns. For gastrointestinal disorders, extract of leaves or flowers is taken.

***Prunus persica* Linn.** Local Name: Chenun; Family: Rosaceae

Plant Part(s) Used: Fruits and leaves

Ailments in which Plant/Plant Part(s) Used: Indigestion, cough, worms, joints pain, wounds, chilblain, burns

Mode of Administration: Fruits are edible and are used to cure indigestion. Fresh leaves are crushed to obtain juice which is taken orally against cough and worms. Fresh leaves after soaking in hot water are tied on pain full joints as poultice to alleviate pain. Fresh leaves are crushed to form poultice which is applied on non-healing wounds to stimulate quick healing both in humans and domestic livestock. Dried leaves and salt are vigorously boiled in water to prepare hot water extract which is used to wash the feet during severe cold in winter to treat Chilblain. Paste is made by mixing the ash produced by burning of fruits with mustard oil. This paste is then applied on fresh burns to avoid blister formation and stimulate quick healing.

***Pyrus communis* Linn.** Local Name: Faraish Tung; Family: Rosaceae

Plant Part(s) Used: Fruits

Ailments in which Plant/Plant Part(s) Used: Chronic constipation, kidney stones, heart palpitation and urinary problems.

Mode of Administration: Ripe fruits are eaten as best home remedy against chronic constipation, kidney stones, palpitation of heart and also as diuretic.

***Raphanus sativus* Linn.** Local Name: Mujh; Family: Brassicaceae

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Plant Part(s) Used: Roots

Ailments in which Plant/Plant Part(s) Used: Indigestion, loss of appetite, jaundice, urinary problems and chronic constipation.

Mode of Administration: Roots are crushed to obtain juice which is used to cure indigestion, loss of appetite, jaundice, urinary problems and to stimulate stool evacuation during chronic constipation.

Rheum emodi. *Local Name:* Pumba-chalan; *Family:* Polygonaceae

Plant Part(s) Used: Roots and leaves

Ailment in which Plant/Plant Part(s) Used: Rheumatic, pain and wound healings.

Mode of Administration: The root is powdered and sometimes paste is also prepared and used in rheumatic, pain and wound healings.

Rumex acetosa. *Local Name:* Obej; *Family:* Fabaceae

Plant Part(s) Used: Whole plant

Ailments in which Plant/Plant Part(s) Used: Stomach problem, sting of nettles

Mode of Administration: For stomach problems, whole plant is eaten as vegetable. For sting of nettles, leaves are rubbed on affected part to get relief.

Saussurea costus, *Local Name:* Kouth; *Family:* Astraceae

Plant Part(s) Used: Root

Ailments in which Plant/Plant Part(s) Used: Asthma, joint pain

Mode of Administration: For asthma and cough extract or powder of root is taken. For joint pain, crushed root is applied on affected area.

Sisymbrium irio Linn. *Local Name:* Cheri Laschij; *Family:* Brassicaceae

Plant Part(s) Used: Seeds

Ailments in which Plant/Plant Part(s) Used: Fever, body muscular pains, headache, cough, cold, measles.

Mode of Administration: Seed decoction is given to combat fever and body muscular pains. Seeds are dried, ground into a powder then mixed with water to make paste which is applied externally on forehead to cure headache. A mixture of seed powder, common salt and water is made into semi-solid balls which are given to cattle (especially horses) in winter against cough, cold and to keep them healthy. Seeds are spread on the bed and children suffering from measles are advised to sleep on the same bed. This is bleaved to facilitate the complete appearance of measles over the whole body and its subsequent disappearance.

Solanum nigrum Linn. *Local Name:* Kambai; *Family:* Solanaceae

Plant Part(s) Used: Fruits

Ailments in which Plant/Plant Part(s) Used: Stomach problems, jaundice, constipation, palpitation of heart and defective eye vision.

Mode of Administration: Ripe fruits (berries) are considered to be highly nutritive and are eaten fondly to cure stomach problems, jaundice, constipation, palpitation of heart and to enhance the eye vision.

Sonchus arvensis Linn. *Local Name:* Dudh Kandij; *Family:* Asteraceae

Plant Part(s) Used: Latex

Ailments in which Plant/Plant Part(s) Used: Boils, wounds and defective milk production.

Mode of Administration: Plant yields milky latex which is used for the treatment of boils and wounds by applying it externally. Fresh plants are fed to cows and goats to enhance their milk production.

Thymus linearis Benth. *Local Name:* Jangli Javind; *Family:* Lamiaceae

Plant Part(s) Used: Whole plant

Ailments in which Plant/Plant Part(s) Used: Cough, cold, fever, dropsy, pneumonia, indigestion, loss of appetite, asthma, chest infections and wounds.

Mode of Administration: Aerial portion is boiled and decoction is made which is given to domestic livestock to cure cough, cold and fever. In case of humans the same decoction is given against dropsy. Seed powder is mixed with oil to make paste and the resultant paste is gently warmed and finally applied externally on chest in children to cure pneumonia. In case of adults, powder is mixed with sugar and taken orally with water against cough, cold, fever, indigestion, loss of appetite, asthma, chest infections by

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removing phlegm. Dried root powder is applied directly on wounds to remove pus and stimulate the quick healing.

***Trapa natans* Linn.** Local Name: Gaer Kul; Family: Trapaceae

Plant Part(s) Used: Fruits

Ailments in which Plant/Plant Part(s) Used: Chronic constipation, diabetes, leucorrhoea and cancer.

Mode of Administration: Fresh fruit kernels eaten raw in case of chronic constipation. Dried kernels are grinded to make powder which mixed with hot water to make a lotion locally called as “Aertz”. “Aertz” is taken against diabetes and leucorrhoea in females. It is also taken along with curd against cancer.

***Trigonella foenum-graecum* Linn.** Local Name: Meth; Family: Fabaceae

Plant Part(s) Used: Seeds

Ailments in which Plant/Plant Part(s) Used: Diabetes, body pains, cold, itching of eyes, constipation, heart and liver problems, menstrual irregularities, stomach problems (ulcers, pain, acidity), intestinal infection and lumbago.

Mode of Administration: Dried seeds are chewed and swallowed to cure diabetes, body pains, cold and itching of eyes. Seed decoction is given to cure constipation, heart and liver problems. Seed decoction with turmeric and common salt is also given to ladies to check menstrual irregularities. Seed powder after mixing with honey is given to cure stomach problems (ulcers, pain and acidity) and intestinal infection. Dried seeds are cooked with rice to prepare a dish locally called as “Braith Bath” which is taken to cure lumbago.

***Urtica dioica*.** Local Name: Soi; Family: Urticaceae

Plant Part(s) Used: Whole plant

Ailments in which Plant/Plant Part(s) Used: Fracture, dandruff

Mode of Administration: For fractures, crushed plant is applied on fractured bones. For dandruff, extract of whole plant is used for washing hair. For stomach pain, filtered extract of whole plant is taken.

***Viola odorata* Linn.** Local Name: Nunposh/Bunfsha; Family: Violaceae

Plant Part(s) Used: Flowers

Ailments in which Plant/Plant Part(s) Used: Cough, cold, throat infection and swelling, chest congestion, hoarseness of voice, body muscular pains, headache and bronchitis.

Mode of Administration: For sore throat and cough, paste or juice of flower is taken. For constipation and fever, crushed root is eaten raw.



MATERIALS AND METHODS

A well-designed questionnaire was given to 400 students selected randomly from different Universities of Kashmir valley. The present study was conducted at SKUAST-Kashmir, Kashmir University and Central University Kashmir, in Kashmir valley of J & K state. Purpose and method of the study undertaken was explained to the respondents to get their consent. The instrument of research was a validated self administered questionnaire based on literature available on the topic. The questionnaire was designed to assess students' knowledge and attitude on forests and their role. The data collected from the study population was tabulated and analyzed using appropriate statistical tools, p value less than 0.05 is considered as significant at 5% level of significance.

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RESULTS AND DISCUSSION

The sample represented 200 (50%) boys and 200 (50%) girl students between the age group of 20-26 years. The data presented in Table 1 shows the distribution of study population as per the characteristics Habitat, Family status, Family type and Family size. It is observed that majority of the respondents both boys as well as girls were from urban areas, from middle class families, nuclear type family and having family size 5-6 members. Statistically, non-significant difference was observed between the boys and girls respondents ($p>0.05$).

Table 1: Characteristics of the Studied Population

Characteristics		Boys (n1=200)		Girls (n2=200)		Chisquare	P-Value
		No.	%	No.	%		
Habitat	Urban	123	61.5	131	67	0.690	>0.05
	Rural	77	38.5	69	33		
Family Status	Low	19	9.5	17	8.5	0.122	>0.05
	Middle	181	90.5	183	91.5		
	High	0	0	0	0		
Family Type	Joint	53	26.5	64	33	1.462	>0.05
	Nuclear	147	73.5	136	67		
Family Size	Upto 4	19	9.5	11	5.5	5.669	>0.05
	5-6	145	72.5	136	68		
	Above 6	36	18.0	53	26.5		

The data presented in Table 2, shows that in response to question (i) i.e., the main social problem in the society as reported by boys (54%) is security, followed by job (29%), health (8.5%), sanitation (5.5) then, by (2%) others and housing.

Further, in response to question (i) i.e., the main social problem in the society as reported by girls (69.5%) is security, followed by health (11.5%), job (10.5%), sanitation (3%), housing (2.5%) and others (2%). Statistically, it is observed that there is a significant difference in the opinion of boys and girls. In response to question (ii) asked both boys and girls agreed that the main environmental problems are overpopulation, followed by water, noise, lack of trees and sewage. Statistically, it is observed that there is a nonsignificant difference in the opinion of boys and girls.

Further, in response to question(s) (iii) asked i.e., forests and quality of life is related, (iv) awareness of the environmental protection areas and their importance, (v) awareness of the medicinal plants available in forests (vi) does forests need maintenance action (vii) anyone in family encouraging to use local medicinal plants and (viii) does Government is taking adequate steps to protect forests and medicinal plants, statistically, it is observed that there is a nonsignificant difference in the sample distribution of boys and girls ($P>0.05$).

The data presented in Table 3, reveals that majority of the respondents 66% boys and 53% girl students strongly agree, followed by 22.5% boys and 31% girl students agree that environmental education is very important for every individual. Statistically, it is observed that there is a significant difference in the opinion of boys and girls ($P>0.05$). The results obtained are in agreement with the earlier study (Bilal *et al.*, 2016).

The data presented in Table 4, shows that majority of the respondents both boys (86.5%) and girls (80.5%) agree that tourism and forested are related. Further, statistically there is a non significant difference between the opinion of the two groups ($P>0.05$).

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Table 2: Awareness among Students towards Environment, Forests and Medicinal Plants

Question Asked	Gender	Job (%)	Housing (%)	Security (%)	Sanitation (%)	Health (%)	Others (%)	
i). What is the main social problem in your community?	Boys	56 (29)	4 (2)	108 (54)	11 (5.5)	17 (8.5)	4 (2)	
	Girls	21 (10.5)	05 (2.5)	139 (69.5)	06 (3)	23 (11.5)	04 (2)	
Chisquare = 22.272, P<0.01								
Question asked	Gender	Water (%)	Sewage (%)	Noise (%)	Pollution	Lack of Trees in the Streets and Parks (%)	Over Population of Humans (%)	Others (%)
ii). What is the main Environmental Problem?	Boys	29 (14.5)	19 (9.5)	24 (12)		22 (11)	106 (53)	0 (0)
	Girls	31 (15.5)	17 (8.5)	21 (10.5)		19 (9.5)	112 (56)	0 (0)
Chisquare = 0.762, P>0.05								
Question asked	Gender	Yes	(%)	No	(%)	Chisquare	P-Value	
iii). Do you feel forests and quality of life is related?	Boys	146	73.0	54	27	3.614	>0.05	
	Girls	162	81.0	38	19.0			
iv). Are you aware of the environmental protection areas and their importance?	Boys	166	83.0	34	17.0	2.476	>0.05	
	Girls	177	88.5	23	11.5			
v). Are you aware of the medicinal plants available in our forests?	Boys	73	36.5	127	63.5	0.676	>0.05	
	Girls	81	40.5	119	59.5			
vi). Do you feel forests need maintenance action?	Boys	174	87.0	26	13.0	1.227	>0.05	
	Girls	181	90.5	19	9.5			
vii). Is anyone in your family encouraging you to use local medicinal plants?	Boys	57	28.5	143	71.5	0.299	>0.05	
	Girls	62	31.0	138	64.0			
viii). Do you feel Government is taking adequate steps to protect forests and medicinal plants?	Boys	57	28.5	43	71.5	2.422	>0.05	
	Girls	46	23.0	54	77.0			

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Table 3: Importance of Environmental Education

Gender	Response					Don't Know (%)
	Agree (%)	Strongly (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)	
Boys	45 (22.5)	132 (66)		4 (2)	6 (3)	13 (6.5)
Girls	62 (31)	106 (53)		10 (5)	8 (4)	14 (7)

Chisquare = 8.435, P-value>0.05

Table 4: Relation between Tourism and Forests

Statement Asked	Gender	Response		Chisquare	P-Value
		Yes (%)	No (%)		
Do you agree that tourism and forests are related	Boys	173(86.5)	27 (13.5)	2.613	>0.05
	Girls	161(80.5)	39 (19.5)		

The data presented in Figure 1, shows the distribution of students as per their knowledge regarding medicinal plants. Majority of the students have heard or used upto four medicinal plants so far in their life.

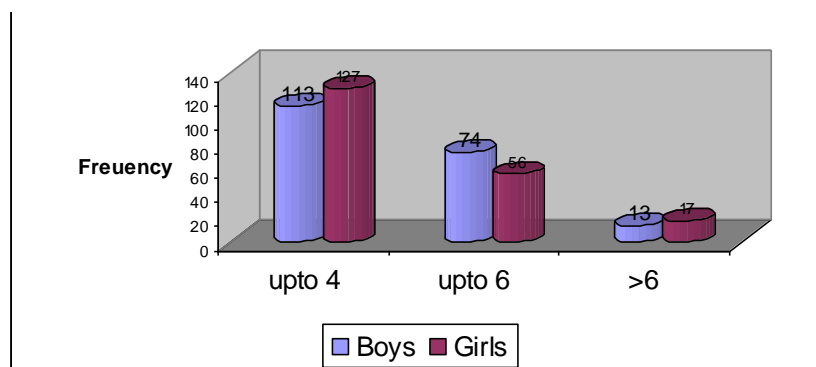


Figure 1: Knowledge of Medical Plants among Students

The data presented in Figure 2, reveals that 53% of boys respondents and 67% of girl respondents were encouraged by any family member to use the medicinal plants as they believe it is less costly and having very little side effects. The study further revealed that rural people are using medicinal plants for treatment more than urban people which is in agreement with the earlier studies.

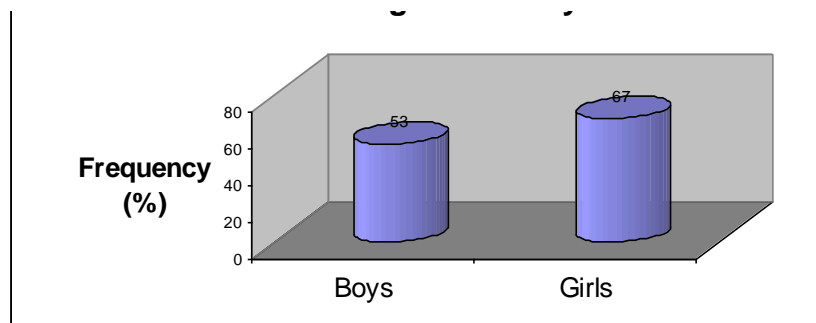


Figure 2: Use of Medicinal Plants Encouraged in Family

Conclusion

This study conducted in Kashmir valley tries to know the awareness among students of Kashmir valley on role of forests and use of medicinal plants. The importance of forests and medicinal plants is increasing

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day by day thus opening up a huge market at national and international level for plant based drugs. The agro-climatic conditions of Kashmir valley are ideal for growing different medicinal plants of international standard. The precious indigenous knowledge, when supplemented and validated by latest scientific insights, can offer a new holistic model of sustainable development that are economically viable, environmentally benign and socially acceptable (Shinwari and Gilani, 2003). In conclusion, forest awareness along with forest protection awareness may help in forest protection and increase use of medicinal plants. Awareness program of forests related is greatly needed for students as well as general public. This can be given in the schools/colleges during parent teacher meetings or in community based programs. For the protection of forests, education departments of the states/country can implement environmental education programs to the teachers at all levels of education. Whether students are from joint family or nuclear family there is no significant difference in their awareness ($p>0.05$) but in awareness there is a difference between urban and rural students. The findings of our present study have made it abundantly clear that deforestation is a serious environmental problem in Kashmir valley, and students are aware of it. Deforestation is a selfish attitude and an environmental abuse which need to be corrected. With collective efforts from the part of government, educational institutions and NGOs, proper guidance can be given in this area. It is the birth right of every citizen to live in a pollution free environment, to get good air to breathe and to have safe water to drink. As long as these basic rights are denied or a conducive atmosphere is not created, a nation cannot claim of its amazing and sustainable development. To conclude, the study throws a light on the existing knowledge of the University students in Kashmir valley. All these means that we have to look at our forest protection holistically and draw up an integrated plan for sustainable management of our pristine valley. Traditional uses of medicinal plants against different ailments plays a significant role in meeting the primary health care needs of the local people especially rural communities of the Kashmir valley. The information on traditional uses of plants could serve a useful source for pharmacologists, phytochemists, botanists and to those people interested in the development of alternative therapies. The most important returns of forest management are; improvement in health, promotion of hygiene, contribution to conservation of resources. It may require the foundation of a board based interagency committee included authorities to establish a mechanism for consensus on forest protection issues. This study indicates that there is an urgent need to train the people in general regarding the same. The world belongs to all of us. We must cooperate and work together for a better world, a better future, and a better environment. Finally, elders and students under study encourage the use of medicinal plants against different ailments in view of the high cost and side effect of allopathic medicine.

Suggestions

- a) The cultivation of medicinal plants should be encouraged more and more and steps should be taken to promote their vegetative propagation through modern techniques.
- b) Local people, teachers and religious leaders must be involved as leaders of activities towards environmental conservation awareness programmes.
- c) The medicinal plants should be harvested on priority, more and more attention should be paid by the concerned authorities to facilitate the sustainable use of medicinal plant resources. The goal of economic development could be achieved in parallel with the goal of ecosystem conservation.
- d) Short training courses should be organized for the collectors, farmers and traders on designed module.
- e) Reforestation activities must be encouraged to reduce pressure on fuel wood and fodder species and alternate sources like gas cylinders and energy-efficient cook stoves should be made available to local people especially those who are poor and needy.
- j) Traditional Healers using medicinal plants should be supported and encouraged which will definitely help in conservation of the fast eroding precious medicinal plants of the Kashmir valley.

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