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Ethnomedicinal profile of medicinal flora of Doog dara, Dir upper, Khyber Pakhtunkhwa, Pakistan

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The article is a product of the research work conducted on floristic diversity, vegetation patterns and ethno medicinal studies of plant resources of Doog Dara, Dir Upper, Pakistan. One of the three main objectives of the research was to explore the ethno medicinal potential of plant resources of the valley. A total of 62 species were documented that belonged to 49 genera spread over 33 families. These plants were mainly used by the local population for different treatments. Out of these 62 species, 62 % were herbs, 22 % shrubs and 14 % trees. Rosacea was the leading medicinal family of the valley with a percentage of 32 % by contributing 11 in a total of 62 species. Rosaceae was followed by Lamiaceae (14%) by the contribution of 05 species.

Keywords: Ethnomedicine, Rosaceae, Lamiaceae, Doog Dara, Dir Upper

INTRODUCTION

Doog dara is located between 71° 57' 4" to 71°59' 8" longitude E and 35° 24' 31" to 35° 19' 07" latitude N in District Dir Upper. It has been a scenic valley and forms a natural tourist resort. It is encircled by Lawari hills in the West, Kohistan in East, Chitral in North and Sheringal in South. The valley has a mountainous terrain with altitude of 1600 meters at Doog Paeen- a village at the start of valley. The ultimate end of the valley is Babozo village with an altitude of 3000 meters. Population of the area according to the census of 2017 was 32,291 (Census, 2017).

Humans have been using plants since the start of human life on the planet. The term "ethnobotany" was coined by John W. Harshburger, a botanist from in 1896. It was defined as the traditional knowledge of local people about the plants in their environment and their use indigenously (Schultes and Reis, 1995). Ethnobotany is the relation between indigenous people and local plants. Ethnobotanists aim to relationships of plants with local culture of the people (Acharyya et al. 2009). Plants play a pivotal role in economy, food, medicine, and construction. Other plant uses include dyes fire wood and as ornamentals. The aim of ethno medicinal studies is to have a better knowledge of plant biomedicine (Kufer et al. 2005). Traditionally, forests and rangelands provide huge amounts of medicinal plants and are the main areas of its production for commercial purposes (Beg and Khan, 1984).

MATERIALS AND METHODS

Regular trips were made from 2016 to 2019 to find out the ethno medicinal potential of plant resources of Doog Dara, Dir Upper, Pakistan. The research site was thoroughly investigated for collection and preservation of plant specimens. Plant collection and preservation was followed by plant identification with the assistance of flora of Pakistan (Ali and Qaisar, 1995-2013 and Nasir and Ali, 1970-1989) and the Plant List.

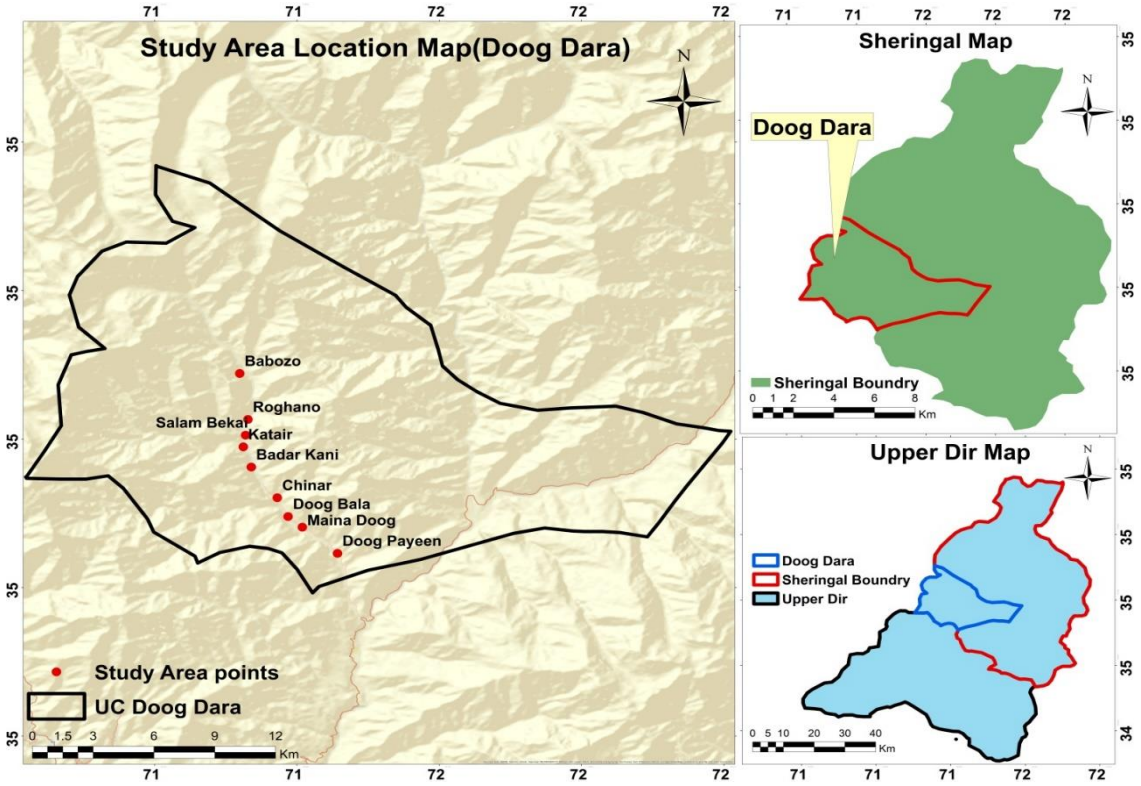

Figure 1: Map of Doog Dara showing the research area.

Data for this purpose was obtained through semi-structured questionnaires and interviews with residents of the area who possessed inherited knowledge about the local medicinal uses of plants (Badshah, 2011).

RESULTS

The study was conducted to find local knowledge about medicinal plants at the study site. A total of 62 species were documented that belonged to 49 genera spread over 33 families. These plants were mainly used by the local population for different treatments. Out of these 62 species, 62 % were herbs, 22 % shrubs and 14 % trees (Figure 2). Rosacea was the leading medicinal family of the valley with a percentage of 32 % by contributing 11 in a total of 62 species. Rosaceae was followed by Lamiaceae (14%) by the contribution of 05 species. Ethno medicinal information particularly for dysentery, diarrhea, constipation, stomachache, cough, pneumonia, asthma, hypotensive, diuretic, eye disease, colic pain, psychological disorders and fever etc. was registered from residents of the valley. It was concluded from the study that most of the medicinal plants had more than a single use. Most of the plants were used as body tonic (22%), followed by diuretic (16%), fever and refrigerant with 14.51% each. Other medicinal uses of these included asthma, diabetes, aphrodisiac, analgesic, anthelmintic, vermifuge, anticancer, skin diseases, psychological disorders etc. (Figure 3). After analysis of the ethno medicinal study, it was known the 62 medicinal reported had medicinal value for 76 different ailments. The reported medicinal plants in the current work have also been separately reported by other workers including Khan et al. (2011), Shinwari et al. (2011), Barkatullah et al. (2009) and Amjad and Arshad (2014). Haq (1993) also reported similar findings from Allai valley, Pakistan. Sardar and Khan (2009) reported plants having medicinal importance as painkiller, blood purifier and laxative from the halophytic vegetation of Narowal, Pakistan. Parts used for different diseases in Doog Dara valley were leaves (24%), followed by whole plant (16%), root (15%), fruit (15%), rhizome (11%), stem (06 %), bark (06%), seed (05%) and tuber (02%) (Figure 4). Leaves as major Part used from medicinal plants has also been reported by Mahmood et al. (2011) and Muhammad et al. (2014).

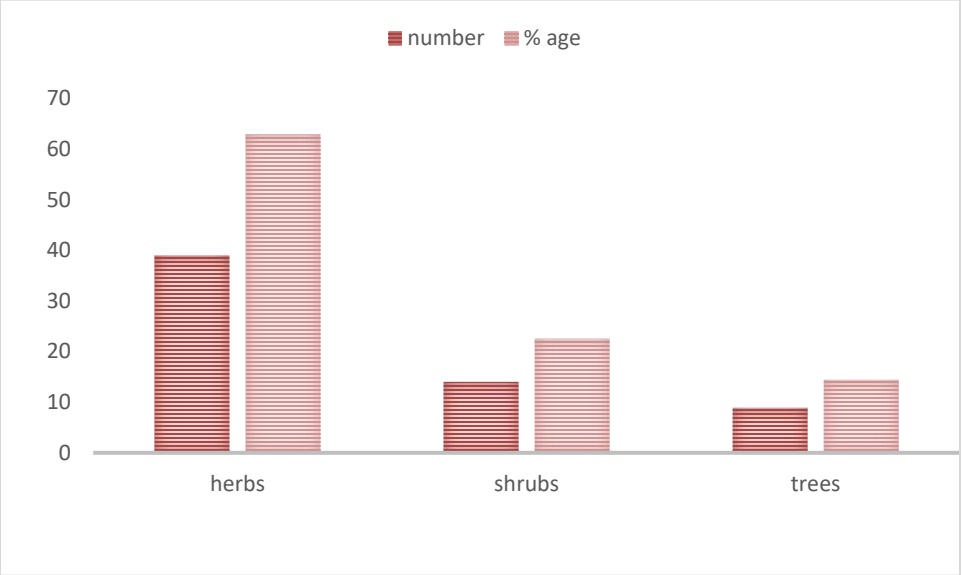

Figure 2: Habit of Medicinal plants

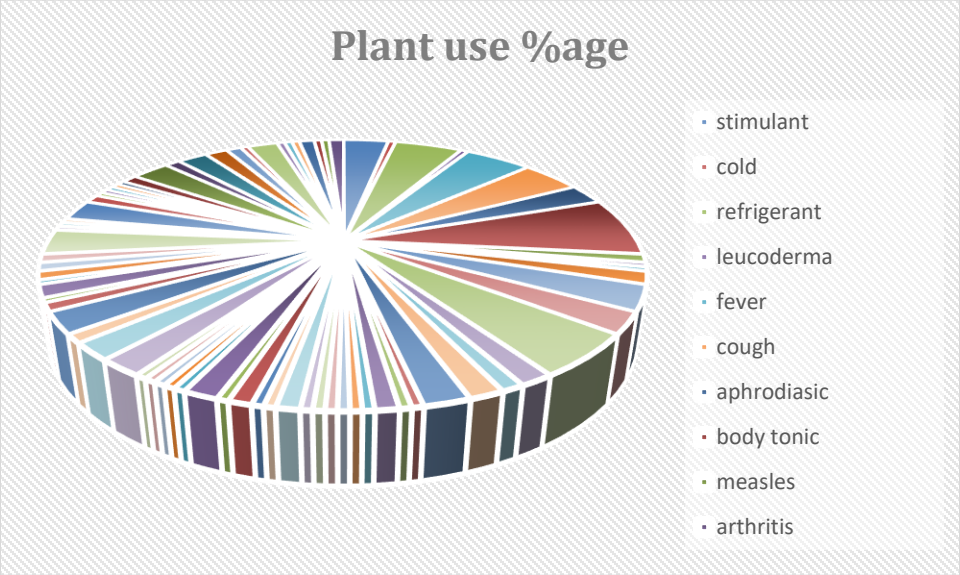

Figure 3: Plant Use Percentage

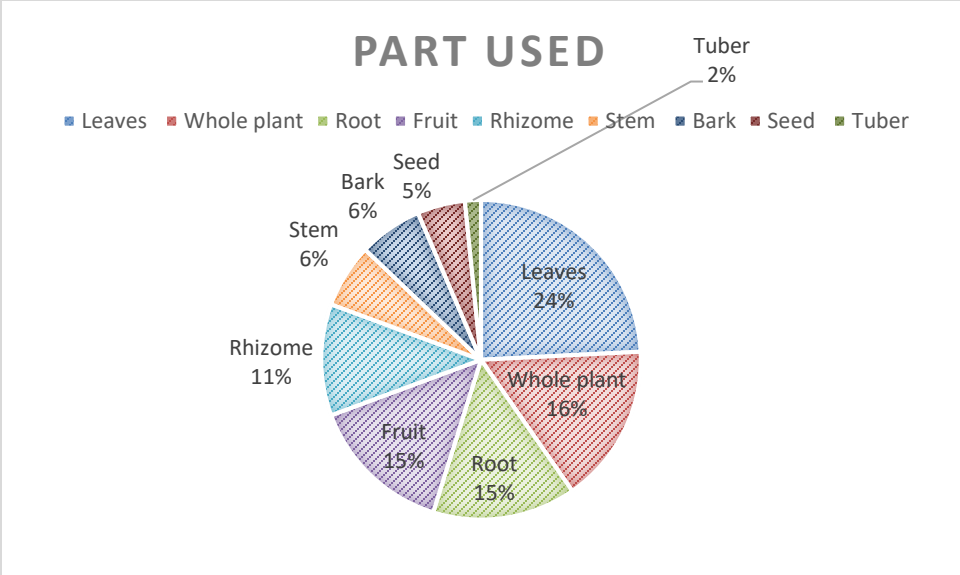

Figure 4: Percentage of Ethnomedicinal usage of plants parts

Ethnomedicinal Profile of the Plants of Doog Dara, Dir Upper
Ranunculaceae

1. *Aconitum heterophyllum* Wall.
Local Name: Sarbawaly
Habit: Herb
Habitat: wet places above 2000 meter
Part Used: Dried roots especially tuberous ones
Flowering Season: August-September
Ethnomedicinal Uses: The roots mixed with black pepper and ginger extracts are highly effective against measles and fever.

2. *Aconitum laeve* Royle
Local Name: Sarbawali
Habit: Herb
Habitat: Under forest cover usually above 2500 m
Part Used: Roots
Flowering Season: November-December
Ethnomedicinal Uses: The plant root mixed with milk is generally used as aphrodisiac and body tonic. It is also used by the patients suffering from arthritis.

3. *Aconitum chasmanthum*
Local Name: Mohrii
Habit: Herb
Habitat: Moist places
Part Used: Rhizome
Flowering Season: September
Ethnomedicinal Uses: Powdered rhizome is generally used for relieving body pain.
Lamiaceae

4. *Ajuga bracteosa* Wall.
Local Name: Guti
Habit: Herb
Habitat: Sandy soils
Part Used: The whole plant is used
Flowering Season: May-July
Ethnomedicinal Uses: The plant decoction is used against fever, sore throat and cough. The plant is used as refrigerant too.

5. *Origanum vulgare* L.
Local Name: Gharsanay zankay
Habit: Herb
Habitat: Moist and shaded rocks
Part Used: The whole plant
Flowering Season: July- September
Ethnomedicinal Uses: The plant is generally used as body tonic, carminative and stimulant.

6. *Micromeria biflora* Benth.
Local Name: Shamakay
Habit: Herb
Habitat: Rocky places
Part Used: The whole plant
Flowering Season: June-August
Ethnomedicinal Uses: The plant is generally used as body tonic and stimulant.

7. *Thymus linearis* Benth.
Local Name: Sperkay
Habit: Herb
Habitat: Moist places
Part Used: Fruits and Leaves
Flowering Season: June-July

Ethnomedicinal Uses: Decoction of leaves is used as refrigerant. It is also effective against common cold and cough. Powdered fruits are used against bronchial disturbances.

8. *Isodon rugosus* (Wall. ex Bth.) Codd.
Local Name: Sperkai
Habit: Tree
Habitat: Dry rocky slope
Part Used: Leaves
Flowering Season: July- September
Ethnomedicinal Uses: Fresh leaves boiled in water is used against sore throat and cough especially in children.
Fagaceae

9. *Quercus baloot* Griffth.
Local Name: Seray
Habit: Tree
Habitat: Mountain slopes usually above 1000 m
Part Used: Seeds
Flowering Season: March-April
Ethnomedicinal Uses: Seeds are locally used as diuretic and astringent.
Trilliaceae

10. *Trillium govanianum* Wall. ex Royle.
Local Name: Matarzela
Habit: Herb
Habitat: Rich soils under forest cover usually above 2500 m
Part Used: Roots
Flowering Season: October-December
Ethnomedicinal Uses: Roots mixed with sugar and milk is used by the women of the area to treat uterine complications. Besides, the plant is also used as sedative and aphrodisiac.
Primulaceae

11. *Primula denticulate* Sm.
Local Name: Mamira
Habit: Herb
Habitat: Wet places
Part Used: Rhizome
Flowering Season: April-May
Ethnomedicinal Uses: The rhizome is used to treat diseases of the eye. It is also used against leucoderma when mixed with vinegar.
Convalariaceae

12. *Polygonatum verticillatum* All.
Local Name: Noor Alam
Habit: Herb
Habitat: Wet places
Part Used: Rhizome
Flowering Season: June-July
Ethnomedicinal Uses: The rhizome is generally used as aphrodisiac and for rheumatism.

13. *Polygonatum multiflorum* (L.) All.
Local Name: Noory Alam
Habit: Perenial herb
Habitat: Moist places
Part Used: Root
Flowering Season: June-August
Ethnomedicinal Uses: The plant roots are used for sore throat, chest pain and cough. The plant is also used as antispasmodic and general body tonic.
Violaceae

14. *Viola canescens* Wall. ex Roxb.
Local Name: Banafshaa
Habit: Herb
Habitat: Forest floors, crevices and walking tracks above 1500 m
Part Used: Whole plant
Flowering Season: April-May
Ethnomedicinal Uses: It is locally used in the treatment of fever, cough and bronchospasm.

15. *Viola betonicifolia* Sm.
Local Name: Banafsha
Habit: Herb
Habitat: Wet and moist places usually above 2200 m
Part Used: Whole plant
Flowering Season: April-July
Ethnomedicinal Uses: The plant decoction is effective against fever, wounds, neurological disorders and cough. The plant is also locally used as laxative, demulcent and expectorant.
Dioscoraceae

16. *Dioscorea deltoidea* Wall. ex Kunth
Local Name: Kunal
Habit: Herb
Habitat: Moist places
Part Used: Tubers
Flowering Season: May-June
Ethnomedicinal Uses: Tubers are used for balancing blood sugar level and expulsion of tapeworms from the body. The tubers are also used as expectorant, diuretic and heamostatic.
Fumariaceae

17. *Fumaria indica* H.N. Pugsley
Local Name: Shatara
Habit: Herb
Habitat: Crop fields

Part Used: Shoot
Flowering Season: April-May
Ethnomedicinal Uses: The shoot extracts are generally used as refrigerant, antipyretic and blood purifier. The plant is also used in the treatment of cough and sore throats.

18. *Corydalis govaniana* Wall.
Local Name: Chiripao
Habit: Herb
Habitat: Moist and shady places
Part Used: Whole plant
Flowering Season: July- august
Ethnomedicinal Uses: The plant is locally used as anti-pyretic, diuretic and general body tonic.
Hypericaceae

19. *Hypericum perforatum* L.
Local Name: Vermag Butay
Habit: Herb
Habitat: Mountain slopes
Part Used: Shoots
Flowering Season: June-July
Ethnomedicinal Uses: The plant shoots are locally used as analgesic, diuretic and Expectorant.

20. *Hypericum oblongifolium*
Local Name: Chaamba
Habit: Shrub
Habitat: Moist and shady places
Part Used: Whole Plant
Flowering Season: March-August
Ethnomedicinal Uses: The plant is used to cure depression, treat viral infections and stimulate bile production. The plant is a body tonic too.
Apiaceae

21. *Prangos pabularia* Lindl.
Local Name: Zangali Kaaga
Habit: Herb
Habitat: Dry hills up to 2000 m
Part Used: Fruits and Leaves
Flowering Season: June- July
Ethnomedicinal Uses: Fruits mixed in milk in is used as aphrodisiac. Powdered fruits is effective against heat burns, nausea and stomach pain. The leaves of the plant are chewed for refreshing the mouth and removing bad mouth odor.

22. *Foeniculum vulgare* Mill.
Local Name: Kaagah
Habit: Herb
Habitat: Usually found in crop fields
Part Used: Leaves, seeds and fruits
Flowering Season: May-June
Ethnomedicinal Uses: The leaves of the plant are used as stimulant and carminative, seeds as aphrodisiac and laxative and the fruits are taken to improve eyesight and as vermicide.

23. *Ferula jaeshkeana* Vatke
Local Name: Sup
Habit: Herb
Habitat: Rocky places
Part Used: Leaves
Flowering Season: April-May
Ethnomedicinal Uses: Powdered leaves are usually used for pulmonary diseases like cough, whooping cough, asthma, pneumonia and bronchitis.
Valerianaceae

24. *Valeriana jatamansi* Jones.
Local Name: Mushky Bala
Habit: Herb
Habitat: Under forest cover above 1500 m
Part Used: Roots and Leaves
Flowering Season: August-September
Ethnomedicinal Uses: Powdered roots with water or milk is used against colic pain, flatulence, stomachache and constipation. The concoction of the plant is used sedative and anti-spasmodic. Leaves paste is highly effective against skin problems like eczema, skin burns, dermatitis and other minor injuries.
Polygonaceae

25. *Rumex dentatus* L.
Local Name: Shalkhay
Habit: Herb
Habitat: Wet places
Part Used: Roots and Leaves
Flowering Season: April-June
Ethnomedicinal Uses: The leaves of the plants have a soothing effect on the irritation caused by touching of *Urtica dioca.* The plant is used as demulcent and diuretic too.

26. *Rumex hastatus* D. Don
Local Name: Torakay
Habit: Under Shrub
Habitat: Dry rocks
Part Used: Young shoots
Flowering Season: May-June
Ethnomedicinal Uses: The shoots are used as anti-septic and purgative.

27. *Bistorta amplexicaulis* (D.Don) Green
Local Name: Tarwa panrha

Habit: Herb
Habitat: Rock crevices and under forests above 2400 m
Part Used: Leaves and rhizome
Flowering Season: July-September
Ethnomedicinal Uses: The leaves are locally used for rheumatism. Fresh rhizome is effective in the treatment of urinary problems, diabetes, peptic ulcers, diarrhea, small wounds and burns. Dried rhizome decoction is used against fever.
Geraniaceae

28. *Geranium wallichianum* D. Don ex Sweet
Local Name: Sargarry
Habit: Herb
Habitat: Moist places
Part Used: Rhizome
Flowering Season: May- July
Ethnomedicinal Uses: The plant is generally used as body tonic especially during night.
Saxifragaceae

29. *Bergenia ciliata* (Haw.) Sternb.
Local Name: Parharwaly
Habit: Herbs
Habitat: Rock crevices
Part Used: Rhizome
Flowering Season: April- May
Ethnomedicinal Uses: Dry and powdered rhizome is applied on external wounds before sleep. Crushed and powdered rhizome is also used as refrigerant.
Solanaceae

30. *Atropa acuminata* Royle
Local Name: Gargarr
Habit: Herb
Habitat: Moist and shady places
Part Used: Roots, leaves
Flowering Season: July-August
Ethnomedicinal Uses: Crushed and powdered roots are externally applied to treat rheumatism. Leaves are usually smoked as anti-asthmatic drug. The plant is also used as anti-spasmodic and sedative.

31. *Solanum nigrum* L
Local Name: Kachmaachoo
Habit: Herb
Habitat: Cultivated crop fruits
Part Used: Whole plant
Flowering Season: May-June
Ethnomedicinal Uses: The plant is locally used for eye disease, fever, piles and diarrhea.
32. *Hyoscyamus niger L.*
Local Name: Ajwain
Habit: Herb
Habitat: Waste places
Part Used: Leaves and seeds
Flowering Season: August-September
Ethnomedicinal Uses: Leaves and seeds are used for dilation of pupils, body tonic and sleep induction.
Colchicaceae

33. *Colchicum luteum* Baker
Local Name: Qeematgulay
Habit: Herb
Habitat: Hillsides and meadows above 1200 m
Part Used: Corm
Flowering Season: April-May
Ethnomedicinal Uses: The scales of the corm are used as general body tonic. Its decoction as alterative and blood purifier.
Cannabaceae

34. *Cannabis sativa* L.
Local Name: Bhang
Habit: Herb
Habitat: Open places and moist slopes
Part Used: Whole plant
Flowering Season: April-September
Ethnomedicinal Uses: Decoction of the plant with milk is taken as body tonic, narcotic and refrigerant.
Ebenaceae

35. *Diospyrus lotus* L.
Local Name: Toar amlok
Habit: Tree
Habitat: Hillsides
Part Used: Fruits and bark
Flowering Season: July-August
Ethnomedicinal Uses: Fruits are purgative, carminative and blood purifier. Its juice is also used to cure diarrhea and dysentery. Bark is usually applied to external wounds and tumors.
Juglandaceae

36. *Juglans regia* L.
Local Name: Ghwaz
Habit: Tree
Habitat: Sunny hills usually above 1000 m
Part Used: Nuts, bark and leaves
Flowering Season: May-June
Ethnomedicinal Uses: Leaves and bark are used for mouth cleansing and sore throat. Leaves decoction is also effective against abdominal worms. The fruits are used as sweetener, thermogenic and carminative.

Rutaceae

37. *Zanthoxylum armatum* DC.
Local Name: Dambara
Habit: Tree
Habitat: Field margins
Part Used: Fruits
Flowering Season: April-May
Ethnomedicinal Uses: Fruits are generally used as refrigerant and for stomach troubles.

38. *Skimmia laureola* (DC.) Sieb.
Local Name: Nazar panrha
Habit: Shrub
Habitat: Shady places usually at higher elevations
Part Used: Leaves
Flowering Season: July-August
Ethnomedicinal Uses: The leaves are generally utilised for pleasant fragrance while the dried leaves commonly used for evil repels.
Araliaceae

39. *Hedera nepalensis* K. Koch
Local Name: Parwatay
Habit: Herb
Habitat: Climber on pines
Part Used: Leaves
Flowering Season: September-October
Ethnomedicinal Uses: The fresh leaves decoction is used for troubles in abdomen especially uterine troubles and as diuretic. The leaves are also effective against ulcers.
Dennstaedtiaceae

40. *Pteridium aquilinum* (L) Kutin
Local Name: Babozay
Habit: Herb
Habitat: Under coniferous forest cover
Part Used: Rhizome
Flowering Season: June-July
Ethnomedicinal Uses: Rhizome of the plant is locally used for accelerated hair growth.
Rosaceae

41. *Duchesnea indica* (Andr.) Focke
Local Name: Mewah
Habit: Herb
Habitat: Wet and shady place
Part Used: Leaves and fruits
Flowering Season: April-May
Ethnomedicinal Uses: The fruits are generally used as refrigerant, astringent and diuretic. The leaves are locally used for psychological treatment.

42. *Fragaria nubicola* Lindl.
Local Name: Zmaki toot
Habit: Herb
Habitat: Shady place
Part Used: Fruits and leaves
Flowering Season: June-July
Ethnomedicinal Uses: The leaves are locally used as astringent and diuretic. Decoction of leaves is also effective against dysentery and massive diarrhea. The fruits being edible are taken as refrigerant and blood purifier.

43. *Prunus cornuta* (Wall. ex Royle) Stud
Local Name: Chaangah
Habit: Tree
Habitat: Coniferous forests usually above 2000 m
Part Used: Fruits and seeds
Flowering Season: July-August
Ethnomedicinal Uses: Fresh fruit juice is generally taken as heart stimulant. Seeds of Dry fruits is effective in the cure of asthma.

44. *Prunus domestica* L.
Local Name: Aloocha
Habit: Tree
Habitat: Cultivated up to 2000 m
Part Used: Fruits
Flowering Season: May-June
Ethnomedicinal Uses: Unripe fruits are taken for perspiration and saliva secretion. Dry fruits taken with green tea is used for stomach troubles and colic. Dry fruits are taken for the treatment of hepatitis and jaundice. Fresh fruit juice is used for quenching the thirst.

45. *Prunus persica* (L.) Batsch
Local Name: Shaltaloo
Habit: Tree
Habitat: Cultivated up to 1200 m
Part Used: Leaves and flowers
Flowering season**:** April-May
Ethnomedicinal Uses: Decoction of dry leaves is effective against whooping cough in children and vomiting in pregnant women. Decoction of petals is used as hypotensive and diuretic.

46. *Prunus cerasoides* D.Don
Local Name: Anmang
Habit: Tree
Habitat: Coniferous forests above 1500 m
Part Used: Bark
Flowering Season: April-May
Ethnomedicinal Uses: Decoction of the bark made in water is applied in bandage on lower back for the cure of lumbago.

47. *Rubus ellipticus* Sm.
Local Name: Guraaja
Habit: Shrub
Habitat: Scrubby vegetation above 1000 m
Part Used: Fruits and roots
Flowering Season: March-April
Ethnomedicinal Uses: Decoction of roots is used for the treatment of colic pain, stomach and gas troubles. Fruits being edible are taken for cough and sore throat.

48. *Rubus fruticosus* L.
Local Name: Karwarrah
Habit: Shrub
Habitat: Hillsides up to 1500 m
Part Used: Leaves and fruits
Flowering Season: July-August
Ethnomedicinal Uses: Fruit juice is generally taken as body tonic and coolant. Leaves decoction is effective in diarrhea, blood piles, dysentery, swollen gums and sore throat.

49. *Sorbaria tomentosa* (Lindl.) Rehder
Local Name: Jhalbhang
Habit: Shrub
Habitat: Hillside and Rain
Part Used: Inflorescence
Flowering Season: June-July
Ethnomedicinal Uses: Decoction of the inflorescence mixed is against the cure of asthma.

50. *Cotoneaster nummularius* Fisch. & C.A May
Local Name: Kharawa
Habit: Shrub
Habitat: Coniferous forest above 2200 m
Part Used: Shoots and leaves
Flowering Season: August-September
Ethnomedicinal Uses: Leaves extract is used to cure fever caused due to unknown reasons.

51. *Cotoneaster racemiflorus* (Desf.) K.Koch
Local Name: Kharawa
Habit: Shrub
Habitat: Dry hill slopes above 1100 m
Part Used: Leaves and fruits
Flowering Season: April-May
Ethnomedicinal Uses: Fresh fruit juice is taken as general body tonic and for stomach pain. Dry fruits in water is used as cough expectorant.
Podophyllaceae

52. *Podophyllum emodi* Wall. ex Royle
Local Name: Kakorra
Habit: Herb
Habitat: Under forest cover above 2000 m
Part Used: Rhizome
Flowering Season: May-June
Ethnomedicinal Uses: Small amount of resin diluted in water is used for the cure the expulsion and killing of abdominal worms as it causes bowel evacuation. Decoction of roots in warm water is used against jaundice and for increased bile flow from the liver. Juice of roots and rhizome is effective against warts, allergic inflammations and external tumors.

53. *Podophyllum hexandrum* Wall.
Local Name: Benkukri
Habit: Herb
Habitat: Dry soils
Part Used: Roots
Flowering Season: May-June
Ethnomedicinal Uses: The plant is of high medicinal value to the locals. It is used as purgative and anti-cancer. Its usage also improves blood circulation. Besides, the plant is used in the treatment of various uterine, menstrual and gynaecological diseases.
Rhamnaceae

54. *Sageretia thea* (Osbeck) M.C. Jhonston
Local Name: Mamanrha
Habit: Shrub
Habitat: Dry rocks
Part Used: Fruits, leaves and roots
Flowering Season: July-August
Ethnomedicinal Uses: Root decoction is used for jaundice, leaves decoction as blood purifier and stimulant and fruits as diuretic and refrigerant.
Scrophulariaceae

55. *Verbascum thapsus* L.
Local Name: Khar Ghwag
Habit: Herb
Habitat: Dry places
Part Used: Whole plant
Flowering Season: April-May
Ethnomedicinal Uses: The plant is locally used as stimulant, vermifuge, demulcent and emollient.
Sambucaceae

56. *Sambucus wightiana* Wall ex Wight and Arn.
Local Name: Ganula
Habit: Shrub
Habitat: Moist places
Part Used: Bark and fruits
Flowering Season: July-August
Ethnomedicinal Uses: The plant is locally used

for many diseases. It acts anti- inflammatory. It also induces urine and sweating. Besides, it can also be used as a general tonic.
Caprifoliaceae

57. *Abelia triflora* R. Br.
Local Name: Pooth
Habit: Shrub
Habitat: Dry and rocky slope
Part Used: Leaves and young twigs
Flowering Season: June-July
Ethnomedicinal Uses: The plant is effective against fever, burns, dysentery and measles.
Berberidaceae

58. *Berberis lyceum* Royle.
Local Name: Kashmaly
Habit: Shrub
Habitat: Dry slope
Part Used: Bark and Root
Flowering Season: May-June
Ethnomedicinal Uses: The plant is generally used as anti-pyretic. It is also effective against diarrhea and dysentery. The plant also play its role in the treatment of eye diseases.

59. *Berberis orthobotrys* Bein ex Aitch.
Local Name: Sumbal
Habit: Shrub
Habitat: Forest steep, and mixed forest siol
Part Used: Leaves and bark
Flowering Season: May-June
Ethnomedicinal Uses: The plant is used to treat various skin and eye diseases.
Verbenaceae

60. *Verbena officinalis* Linn
Local Name: Shamakay
Habit: Herb
Habitat: Shady places
Part Used: Stem and leaves
Flowering Season: August-September
Ethnomedicinal Uses: The plant is highly anti-pyretic.
Acanthaceae

61. *Strobilanthes glutinosus* Nees
Local Name: Shen Gwalay
Habit: Herb
Habitat: Mountain slope
Part Used: Fruits
Flowering Season: November-March
Ethnomedicinal Uses: Crushed fruits mixed in water is effective against burns, warts and external wounds.

Myrsinaceae
62. *Myrsine Africana* L
Local Name: Marorang
Habit: Shrub
Habitat: Shady places
Part Used: Leaves and fruits
Flowering Season: March-April
Ethnomedicinal Uses: The plant is locally used as anthelmintic, digestive agent, carminative and appetizer.

CONCLUSION

Doog Dara valley has a rich ethno-medicinal potential. The plants that were used by the indigenous people of the valley for different ailments comprised of 62 species that belonged to 49 genera distributed among 33 families. Rosacea was the leading medicinal family of the valley. Majority of the plants were used as body tonic, diuretic, fever and refrigerant.

CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

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AUTHOR CONTRIBUTIONS

MA designed and performed the research work and also wrote the manuscript. SD read and approved the final version.

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