

Research article

Traditional ethnomedicinal plants used by tribal communities in Godhra forest, Gujarat, India

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Abstract: Panchmahal district is one of the tribal districts in Gujarat. Mostly in the rural area of district, the abundant community is tribal. There are 7 taluka in Panchmahal, in which the largest taluka is Godhra, 69% of population reside in villages. There is a total-116 villages in Godhra, and three forest range. Samali forest range, Chhariya-achhala forest range, and Bandheli forest range. Mostly people work as agriculture and animal keeper. Present study deal with ethnomedicinal plants and its uses by local people. Plant diversity included plants like *Bosswellia serrata*, *Woodfordia fruticosa*, *Anogesus sericea*, *Acacia catechu*, *Mytenus emargenetus*, *Borasus flabellife*. The local people use plants for curing disease by taking help of traditional healers.

Keywords: Traditional ethnomedicinal plant - Tribals - Godhra - Maldhari.

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INTRODUCTION

Traditional herbal practitioners are important custodians of indigenous knowledge on the utilization of medicinal plants (Bajpai *et al.* 2016). Moreover, as a result of their experience they are skilled 'botanists' and have a great talent for locating the correct plant among the many plant species found around them. But, many are less cooperative to show their knowledge and skill on traditional medicine to others. The knowledge on medicinal plants and methods of use circulated mainly among practitioners and the beneficiaries of such practices (Punjani 2010). This has made the knowledge and skill on traditional medicinal plants and traditional medicine more hidden and less available to the public (Abbinck 1995). Central Gujarat covers district Panchmahal, Dahod, Mahisagar, Chhotaudepur and Vadodara. In one of study of GEER Foundation in this zone has recorded the highest numbers of plant species (1048) in the state which is about 80% of the entire medicinal species diversity of the state (Pandey *et al.* 2005).

METHODOLOGY

Study area

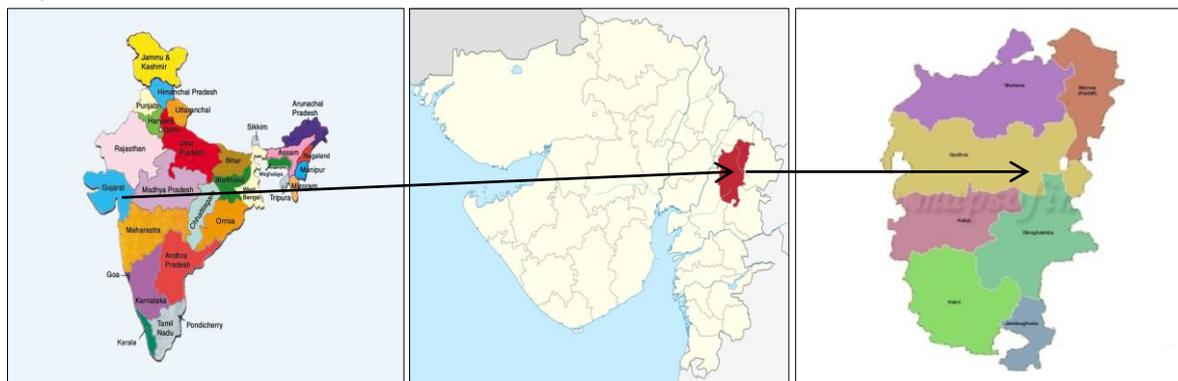


Figure 1. Study area: Godhra (Panchmahal district), Gujarat, India.

Godhra taluka is located between 22.7788° N and 73.614° E longitudes at 73 meters above the sea level (Fig. 1). The average annual rainfall is 332 mm and temperature is 27.0°C. The area comes under dry deciduous forest type (Yadaiah *et al.* 2011).

The objective of this study was to document and analysis of the wild plants and its parts used for medicinal purposes by the local communities of tribal in their traditional health treatment system, and to assess the status of ethno-medicinal plants species Godhra taluka. Ethno-medical important plant visits were arranged around the ethnical area of Godhra taluka (ethical means tribal covering area).

The main population residing is tribal community and animal keeper. The predominant scheduled tribe in the area is Nayka, Rathva, Damor, Tadvi, Sangada etc. Mostly, people work in agriculture and animal keeper (Maldhari).

For the ethnobotanical, data collection a search of traditional healers or ‘Bhagats’ in all forest ranges was conducted with the permission of forest officers and villages ‘Sarpanchs’. Then started interaction with each traditional healers “Bhagats” by first explaining the aims and objectives of the documentation in order to solicit their consent and co-operation before any ethnobotanical data were gathered (Fig. 2). All interviews and discussions were conducted in the local language. The ethno-botanical data for this documentation and analysis were gathered from altogether 11 traditional healers, 10 male and 1 female. The ethnobotanical data was collected in preset data sheet. All data capture questionnaires and interviews. The questionnaire was designed specially to focus on local name, useful part, which disease, and preparation method. Few traditional healers having a register for own uses and detail of patients. It also helps in documentation and analysis of data.



Figure 2. Interaction: **A**, Traditional healer; **B**, Maldhari.

Profile of respondent

A total of 10 Males and 1 Female were interviewed. The age of respondent from 30 to 75 years of age. This is an agreement with previous studies that found that ethnobotanical knowledge increased with age. The source of indigenous knowledge of medicinal plants is an important factor for the difference in knowledge among informers (Depani *et al.* 2019). Inheritance of traditional knowledge of medicinal plants was the major source (15%) knowledge through training, 10% acquired from House wife. The study indicates that 60% of informers were subsistence farmers and shepherd people (Singh & Kumar 2017). Although these informers use medicinal plants to ailments, they are not necessarily herbal medicine practitioners. Only 15% confirmed that they are traditional practitioners.

RESULT & DISCUSSION

During the study, a total of 105 ethnomedicinal plants belonging to 51 families, 94 genus and 105 species were documented from the study area (Table 1). The most utilized plant families were Fabaceae with different species, followed by Lamiaceae and Malvaceae, similar studies were recorded in Rutaceae, Asteraceae, Moraceae, Apiaceae, Mimosaceae, Euphorbiaceae, Apocynaceae, Vitaceae and Acanthaceae. The common disease in the study areas includes dermatological disorders (wound, swelling, cuts and skin diseases), gastrointestinal disorders (deworming, stomachache and constipation), skeletal muscular pain & inflammation (headache, arthritis, backache and joint pains), poisonous animal bites (scorpion bites).

Total of 105 medicinal plants were reported, total 3 families, 3 genus and 3 species in Monocotyledonous while, 48 families, 93 genus and 102 species occurs in dicotyledonous were observed. Different plants forms *viz.* Climber (17), Herb (35), Shrub (14) and Tree (39) were reported in the area studied (Fig. 3). The reported use value (per plant part) in number of plant part is leaf 42, Fruit 19, root 12, seed 11, stem 11, flower 7, bark 7 and latex 6.

Table1. List of plants used in traditional medicinal practices and useful parts.

S.N.	Local name	Botanical name	Family	Useful part	Disease	Preparation method
1	Vevadi	<i>Cocculus hirsutus</i> (L.) Diels.	Menispermaceae	Leaf	Eye Infection	Crush leaf with water and apply on cotton bolls, then put on eye
2	Jethimadh	<i>Maerua oblongifolia</i> (Forsk.) A.Rich	Capparaceae	Root	Cough	Crush root with water and take orally
3	Chanothi	<i>Abrus prectorius</i> L.	Fabaceae	Leaf	Mouth ulcer	Take 10–15 young leaf orally one time in day
4	Kalokado	<i>Holarhena antidysenterica</i> Wall	Apocynaceae	Seed	Fever	Crush seed and take with water 2 to 3 time
5	Nagala dudhi	<i>Pergularia damia</i> (Forsk.) Chiov.	Asclepiadaceae	Fruit, Leaf latex	Ring worm	Latex direct use on infected part two time in day
6	Ingoro	<i>Balanites egyptica</i> (L.) Del.	Balanitaceae	Fruit, Seed	Abdominal diseases	Crush seed and take with milk two time
7	Galka	<i>Lufa sylendrica</i> (L.) M.J.Roem.	Cucurbitaceae	fruit	Jaundice	Boil fruit and take a smell
8	Aekhro	<i>Hygrophila auriculata</i> Heine	Acanthaceae	seed	Immunity power	Crush seed and take orally with milk 1 spoon in day (8 day dose)
9	Pathar chati	<i>Tridax procumbens</i> L.	Asteraceae	leaf	Wound	Crush leaf with water and apply on wounded part
10	Jalbhagri	<i>Grangea maderaspatana</i> (L.) Poir.	Asteraceae	leaf	Boil, ulcer	Crush leaf with water and use on boil
11	Ratan jyott	<i>Jatropha curcas</i> L.	Euphorbiaceae	leaf	Gynecological disorder	Crush root and take with milk
12	Bhangro	<i>Eclipta prostrate</i> L.	Asteraceae	Flower, leaf	Hair problem	Crush flower and leaf apply on hair
13	Bhair	<i>Mucuna prurita</i> (L) DC.	Fabaceae	Seed	scorpion bite	Robe seed and put on bite portion
14	Takamariya	<i>Ocimum gratissimum</i> L.	Lemiaceae	Seed	Typhoid	Seed mix with milk and take orally twice in day
15	Mindhol	<i>Meyna spinosa</i> Roxb.	Rubiaceae	Fruit	Pimples	Crush fruit and apply on pimple infected part, two time in day
16	Harmo, Ranjiyo	<i>Acacia leucophloea</i> Willd.	Mimosaceae	Fruit, Root	Diarrhea	Crush root with water and take two time in day
17	Khair	<i>Acacia catechu</i> (L.f) Willd.	Mimosaceae	Gum	Body pain	Take gum with sugar 10–15 day
18	Anduri	<i>Anona squamosal</i> L.	Annonaceae	Seed	Hair disease	Crush seed with water use on head 2 hour.
19	Bili	<i>Aegel marmelos</i> (L.) Corr.	Rutaceae	Leaf Fruit	Abdominal diseases, immunity power	Take Mature fruits juice one time in morning
20	Baval	<i>Acacia nilotica</i> (L.) Del.	Mimosaceae	Leaf, stem	Mouth ulcer, strong teeth	Eaten leaf twice In day
21	Dudheli	<i>Wrightia tinktoria</i> R. Br.	Apocynaceae	Bark	Swelling	Crush dry bark and boil in water, then apply on swelling
22	Kharo Kharkhodo	<i>Wattakaka volubilis</i> (L.f.) Stapf.	Ascliapidiaceae	Root	Cough	Crush root with water and make pest, apply On chest and head
23	Anarak Dhavado	<i>Anogeissus sericea</i> Brandis.	Combretaceae	Bark, leaf	Fever	Boil leaf and apply on chest
24	Ankado	<i>Calotropis procera</i> (Ait.) R. Br.	Asclepiadaceae	Leaf, Latex	Intestine swelling	2 to 4 leaf take boil it and put on stomach
25	Mamejavo	<i>Enicostema hyssopifolium</i> Verdoon	Gentianaceae	Leaf	Fever	5 to 6 leaf take orally two to four days

26	Vikalo	<i>Maytenus emarginata</i> (Willd.) D.Hou.	Celastraceae	Leaf	Jaundice	Leaf eaten orally 2 times in day
27	Kanji	<i>Holoptelea integrifolia</i> Planch.	Ulmaceae	Leaf	Wisdom teeth pain	Crush young leaf and put in wisdom teeth
28	Timaru	<i>Diospyros melanoxylon</i> Roxb.	Ebenaceae	Leaf, fruit	Infection leg, hand	Crush in-mature fruit and pest on infected part
29	Khakharo	<i>Butea monosperma</i> (Lam.) Taub.	Fabaceae	flower	Urinary problems	Crush flower and make a juice, take a juice 20 day one time in day.
30	Bhotingdi	<i>Solanum surattense</i> Burm.f.	Solanaceae	Root	Bronchitis	Crush root with water take one time in a day
31	Vad	<i>Ficus benghalensis</i> L.	Moraceae	Latex, twig	Coldness	Crush dry fruit and make juice with milk take one time in day
32	Limado	<i>Azadirachta indica</i> A. Juss.	Meliaceae	Whole Plant	Chicken pox	Young twig used as antioxidant
33	Bhutadi	<i>Capparis trifoliata</i> Roxb.	Capparaceae	Leaf	Migraine	Crush leaf and make pest, apply on head
34	Gundo	<i>Cordia dichotaoma</i> Forst.	Boraginaceae	Fruit	Worms	Eaten fruit in morning
35	Limbu	<i>Citrus limon</i> (L.) Burm. F.	Rutaceae	Fruit, leaf	Pimples	Fruit juice mix with honey and apply on pimples.
36	Guggal	<i>Boswellia serrata</i> Roxb.	Burseraceae	Gum	Body pain	Take gum orally in one time in day
37	Vans	<i>Bambusa arundinacea</i> (Rets.) Willd.	Poaceae	Root	T.B., throat tuber	Make powder of root nodes and apply on tuber
38	Sag	<i>Tectona grandis</i> L.f.	Verbenaceae	Leaf, Seed	Cracked heels	Burn dry leaf and make pest with oil apply on crack
39	Fafada thor	<i>Opuntia elatior</i> Mill.	Cactaceae	Stem	Wound	Stem latex apply on wound
40	Kadayo	<i>Sterculia urens</i> Roxb.	Sterculiaceae	Gum, leaf	Throats boil	Take gum and mix with water then apply on throat
41	Karamda	<i>Carissa carandas</i> L.	Apocynaceae	Fruit	Stomach	Eaten fruit in morning
42	Pilo bhangro	<i>Blumia eriantha</i> DC.	Asteraceae	flower	Headache	Crush flower and take smell
43	Ambo	<i>Mangifera indica</i> L.	Anacardiaceae	Seed	Sun stroke	To rub seed on foot arch
44	Jambu	<i>Syzygium cumini</i> (L.) Skeels	Myrtaceae	Fruit, Seed	Urinary pain	Crush dry seed, mix with water take orally once a day
45	Umario	<i>Ficus racemosa</i> L.	Moraceae	Latex	Mumps	Latex apply on directly mumps
46	Khathi ambli	<i>Tamarindus indica</i> L.	Caesalpinaceae	Leaf, Root	Scorpion bite	Crush leaf and make pest apply on bite portion
47	Dhavado	<i>Anogeissus latifolia</i> Wall. ex Bedd.	Combretaceae	Bark	Swelling	Crush bark with turmeric powder apply on swelling part
48	Aledi	<i>Morinda tomentosa</i> Hook. f.	Rubiaceae	Leaf	Skin diseases	Crush leaf with water and apply on skin
49	Rayan	<i>Manilkara hexandra</i> (Roxb.) Dub.	Sapotaceae	seed	Antidote	Crush seed and taken orally
50	Kuvar pathu	<i>Aloe barbadense</i> Mill.	Liliaceae	Leaf	Healing on burns	Leaf gel apply on burn part
51	Kalo dhaturu	<i>Datura innoxia</i> Mill.	Solanaceae	Seed	Asthma	Crush seed and burn than take smell
52	Kalo dhaturu	<i>Datura metel</i> L.	Solanaceae	Leaf	Skin disease	Crush leaf with sugar and apply on infected part

53	Bordi	<i>Zizyphus mauritiana</i> Lam.	Rhamnaceae	Bud	Scorpion bite	Bud pest apply on bite portion
54	Pipal	<i>Ficus religiosa</i> L.	Moraceae	Bark	Skin disease	Crush bark with water and apply on boils, pimples
55	Gando baval	<i>Prosopis julifera</i> (Sw.) DC.	Mimosaceae	Leaf	As a healing process of wound	Crush young leaf and make pest apply on wound
56	Venivel	<i>Cissampelos pareira</i> L.	Menispermaceae	Root	Asthma	Crush root and take with water orally in morning time
57	Saragvo	<i>Moringa oleifera</i> Lam.	Moringaceae	Fruit	Ear pain	Dry fruit powder apply in ear
58	Dadam	<i>Punica grantum</i> L.	Punicaceae	Fruit, leaf	Abdominal disease	Seed juice take twice in day
59	Tripankhi	<i>Cayratia carnosia</i> (Lam.) Gagnep.	Vitaceae	Root nodes	Pimples	Take root nodes and crush it pest apply on pimples
60	Sevan	<i>Gmelina arborea</i> L.	Verbenaceae	Leaf	Joint pains	Oil apply on joint
61	Tulsi	<i>Ocimum sanctum</i> L.	Lamiaceae	Leaf	Fever	Take 10 leaf and boil in 500 ml water take one time in day
62	Nag charo	<i>Asparagus racemosus</i> Willd.	Liliaceae	Leaf, root	Diabetes	Crush root and make juice take twice in day
63	Dhamas	<i>Combretum ovalifolium</i> Roxb.	Combretaceae	Stem	Bone fracture	Crush stem and make pest apply on fracture part
64	Nagod	<i>Vitex negundo</i> L.	Verbenaceae	Leaf	Cholera	Dry flower juice take orally in morning
65	Tuver	<i>Cajanus cajan</i> (L.) Millsp.	Fabaceae	Stem	Bone fracture	Node of stem crush and apply on fracture
66	Tad	<i>Borassus flabellifer</i> L.	Arecaceae	Fruit stalk	Blood vomit	Fruit stalk crush with water and take orally, one time in day
67	Divelo	<i>Ricinus communis</i> L.	Euphorbiaceae	Seed	Abdominal disease	Seed oil take orally one spoon
68	Thikari	<i>Launaea sarmentosa</i> (Willd.) Alst.	Asteraceae	Leaf	Piles	Take 4 to 6 leaf orally, one time in day
69	Shimalo	<i>Bombax ceiba</i> L.	Bombacaceae	Bark, flower	Pimples	Take thorn and crush with water and apply on pimples
70	Piludi	<i>Salvadora persica</i> L.	Salvadoraceae	Bark	Skin disease	Crush bark and apply on skin
71	Haldar	<i>Curcuma longa</i> L.	Zingiberaceae	Rhizome	Skin disease	Crush rhizome with bark of neem and apply on infected part
72	Agaru Papaya	<i>Papaya carica</i> L.	Caricaceae	Latex, leaf	Swelling of throat	Latex apply on direct swelling part
73	Kanski	<i>Caesalpinia crista</i> L.	Caesalpinaceae	Seed	Fever, worms	Crush dry seed and mix in milk take orally one time in day
74	Anghedi	<i>Achyranthes aspera</i> L. var. aspera	Amaranthaceae	Whole plant	Strong gums	Twig used as teeth brush
75	Ardusi	<i>Justicia adhatoda</i> L.	Acanthaceae	Leaf	Asthma	Crush young leaf and mix in water take orally one time in day
76	Bhoy ambli	<i>Phyllanthus frateruns</i> Webst.	Euphorbiaceae	Whole plant	Jaundice	Crush Young leaf and fruit with water and take orally, take one time in morning
77	Aval	<i>Cassia auriculata</i> L.	Caesalpinaceae	Leaf, flower	Sprain	Crush leaf, flower with haldar (turmeric) and salt powder than boil in water, apply on sprain part
78	Dodi	<i>Leptadenia reticulate</i> W. & A.	Asclepiadaceae	Leaf	Eye disease	Crush leaf with water and take orally

79	Ghaa-bajari	<i>Typha angustata</i> Bory & Chaub.	Typhaceae	Leaf, root	Wound	Take dry leaf and crush it and apply on wound
80	Madhit	<i>Dichrostachys cinerea</i> (L.) W.&A.	Mimosaceae	Gum	Cough	Take gum orally one time in day
81	Anatmuli	<i>Hemidesmus indicus</i> (L.) Schult.	Periplocaceae	Leaf, Root	Leucoderma	Crush leaf with water and take orally, one time in day
82	Madhu-Nashini	<i>Gymnema sylvestre</i> (Retz.) Schult.	Asclepiadaceae	Leaf	Diabetes	Take two leaf in morning orally, one time in day
83	Aritha	<i>Sapindus laurifolius</i> Vahl.	Sapindaceae	Fruit	Hair disease	Make a mature fruit pest and apply on hair
84	Sadad	<i>Terminalia crenulata</i> Roth.	Combretaceae	Bark	Astringent	Crush bark and take orally with water
85	Pani sadad	<i>Terminalia arjuna</i> (Roxb.) W. & A.	Combretaceae	Bark	Bronchitis	Crush dry bark and boil with water take orally
86	Nala vel	<i>Ipomoea mauritiana</i> Jacq.	Convolvulaceae	Leaf	Healing process	Make a young leaf pest and apply on wound
87	Panphutti	<i>Bryophyllum pinnatum</i> (Lam.) Oken	Crassulaceae	Leaf	Stone	Crush leaf and take orally
88	Lambadi	<i>Celosia argentea</i> L.	Amaranthaceae	Leaf	Stone	Take dry leaf and make a juice with water one time orally in day
89	Ambla	<i>Emblica officinalis</i> Gaertn.	Euphorbiaceae	Fruit	Body weakness	Fruit juice take twice in day
90	Galo	<i>Tinospora cordifolia</i> (Willd.) Miers.	Menispermaceae	Whole plant	As cooling agent	Crush whole plant and take orally one time in day.
91	Mahudo	<i>Madhuca indica</i> J. F. Gmel.	Sapotaceae	Fruit, seed	Joint pains	Seed oil is apply on joint
92	Jungali Dungali	<i>Urginea indica</i> L.	Liliaceae	Tuber	Boils	Boil tuber and apply on boils
93	Bramhi	<i>Centella asiatica</i> (L.) Urb.	Apiaceae	Leaf	Leparcy	Eaten 2–4 leaf, one time in day
94	Jasud	<i>Hibiscus rosa-sinensis</i> L.	Malvaceae	Flower, leaf	Dandruff ,hair color	Dry flower powder apply on head bath time
95	Gando sargavo	<i>Moringa concanensis</i> Nimmo	Moringaceae	Gum	Arthritis	Take a 10 gm gum orally in one time in day
96	Karanj	<i>Derris indica</i> (Lam.) Bennet	Fabaceae	Twig	Strong teeth	Twig used as teeth brush
97	Ankh phodiya	<i>Diplocylos palmatus</i> (L.) C. Jeffrey	Cucurbitaceae	Seed	Immunity power	Crush 2–4 seed and mix with milk take orally
98	Nani dudhi	<i>Euphorbia hirta</i> L.	Euphorbiaceae	Latex	Ringworm	Latex direct apply on ringworm
99	Nala vel	<i>Ipomoea aquatica</i> Forsk.	Convolvulaceae	Leaf	Healing process	Crush leaf and make pest then apply on wounded part
100	Pipali	<i>Ficus rumphii</i> Blume.	Moraceae	Bark ,fruit	As cooling agent	Crush dry fruit and mix with milk take orally in morning
101	Tamaku	<i>Nicotiana tabacum</i> L.	Solanaceae	Leaves	Hand sprain	Take dry leaf and boil with water, apply on swelling
102	Vinchi kanto	<i>Acalypha indica</i> L.	Euphorbiaceae	Leaf	Stomach disease	Crush dry leaf and take orally
103	Setur	<i>Morus alba</i> L.	Moraceae	Leaf	Leparcy	Take young leaf and boil it, take orally
104	Desi thor	<i>Euphorbia nivulia</i> Buch.-Ham.	Cactaceae	Latex	Healing boils	Latex apply on boils
105	Jal dudhi	<i>Oxystelma secamone</i> (L.) Karst.	Asclepiadaceae	Root	Abdominal disease	Take root and boil it then take orally one time in day

The most utilized plant families were Fabaceae, Asclepiadaceae, Asteraceae, Moraceae, Euphorbiaceae, Solenaceae and Combretaceae with 05 species, followed by Mimosaceae 4 species, similar studies recorded Rutaceae, Apiaceae, Ulmaceae, Apocynaceae, Vitaceae and Acanthaceae. The common sickness in the study areas include dermatological disorders (wound, swelling, cuts and skin diseases), gastrointestinal disorders (stomachache and constipation), skeletal muscular pain & inflammation (headache, arthritis, backache and joint pains), poisonous animal bites (scorpion bite) (Fig. 4).

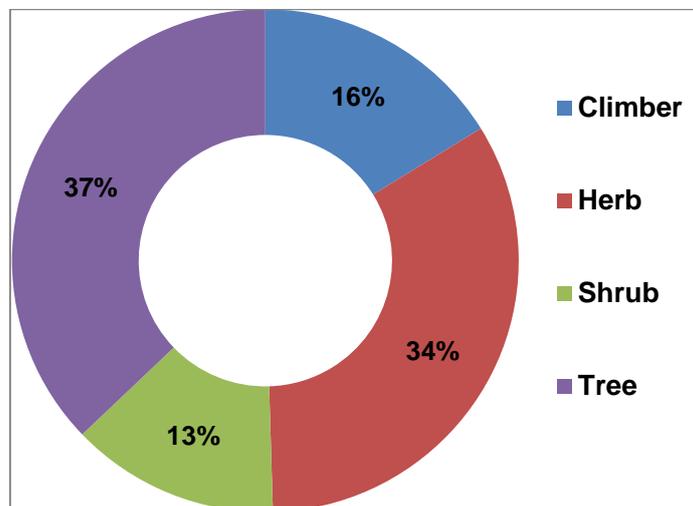


Figure 3. Percentage of plants forms used for medicinal practice.

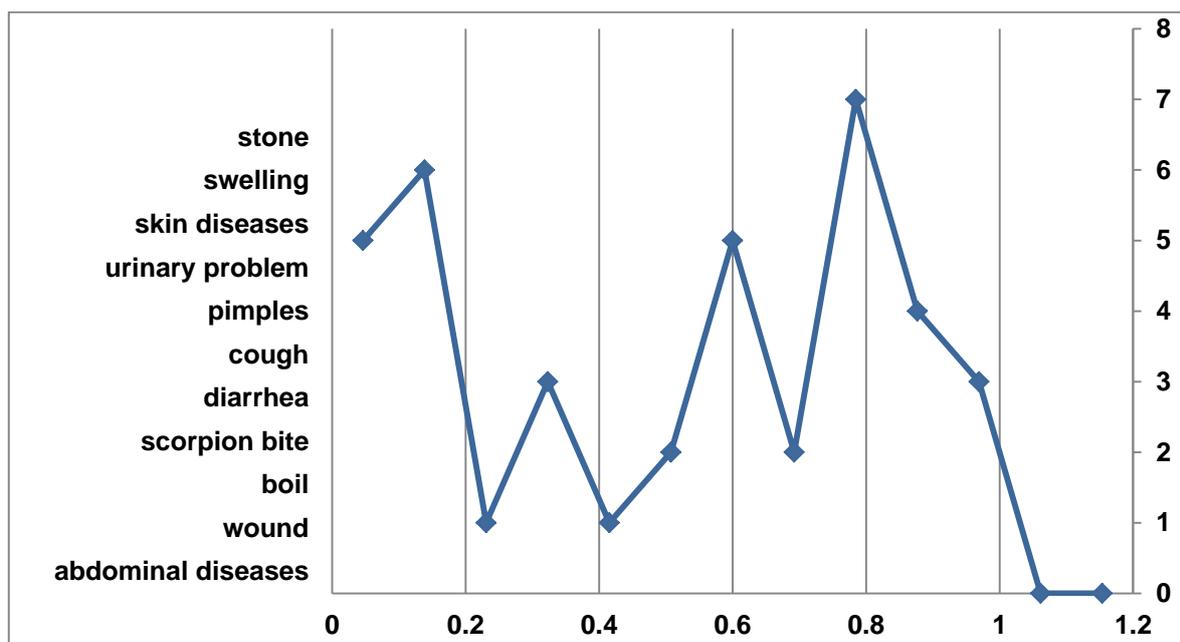


Figure 4. Number of plants used in different diseases.

CONCLUSION

This paper throws light on the characteristic of utilization of local plants as medicine in various diseases and ailments by the tribal people of Godhra. Mostly traditional healers says that mixture of different plant part is more stronger and effective than any individual plant or plant part. The efficiency and safety of all the reported ethnomedicinal plants needs to be evaluated for phytochemical and pharmacological studies (Vyas *et al.* 2014). This work can be further taken in pharmacological studies, for therapeutics and drug discovery.

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