



Ethnobotanic knowledge of some indigenous medicinal plants used by traditional healers (*Vaidus*) in Nandurbar district of Maharashtra State, India

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Abstract

An ethnobotanic survey was undertaken to collect information from “Vaidu” or tribal traditional healers on use of native and indigenous medicinal plants during June 2019 to June 2020 in the Nandurbar district of Maharashtra state, India. The indigenous ethno botanic knowledge and information related to native plants used for medicinal purposes were collected through direct personal interview of local traditional healers during field visits. Our study revealed that 51 species belonging to 48 genera and 34 families are used by these “vaidu” to treat various common diseases. The documented medicinal plants are mostly used to treat cough, dysentery, jaundice, abdominal pain, malaria, omitting and snake bite. In this study the most dominant family use was to be *Menispermaceae* and stem bark is the plant part most commonly used for treatment of diseases. The study showed that till today many tribal people of Nandurbar district are dependent on medicinal plants of native forest for treatment of various diseases. However, this traditional ethno botanic knowledge is in danger of disappearance as these local healers are not passing their knowledge to next generation and young educated generation is also not interested to carry forward this traditional knowledge.

Keywords: ethnobotany, indigenous medicinal plants, *Menispermaceae*

Introduction

Jalgaon, Dhule and Nandurbar these three district comprises the North Maharashtra region of Maharashtra, which is commonly known as “Khandesh”. Out of these three districts Nandurbar is tribal dominated district. The main rational behind undertaking this study in Nandurbar district is that this district is very much rich in flora and fauna. Historically plants of native forest are used by tribal peoples for treatment of various diseases by tribal communities. However systematic studies and documentation of their knowledge is still lacking. The objective of this study was to interact with local traditional healers and document their knowledge on medicinal plants, their usage and the type of diseases treated. Anthropogenic pressure is steadily increasing on account of demand for agricultural land, agricultural practices, and in general population pressure, in some pockets of Nandurbar^[13]

Indigenous healthcare system had always played a vital role in the discovery of novel products from plants as chemotherapeutic agents, e.g. quinine from *Cinchona species*, morphine from *Papaver somniferum*, cocaine from *Erythroxylum coca* and picroliv from *Picrorhiza kurrooa*. Non-availability of satisfactory drugs in modern system of medicine for the treatment of various diseases has prompted scientists to study Ethnobotanic claims. (Ref D A patil). Satpura mountain extends in the north- eastern direction. The forests, in general are dry deciduous type. The area is predominantly rural tribal communities such as Bhill, Pawara, Tadawi, Kokani, Mawachi etc. inhabit the rugged hilly forest, whereas other rural people and Vanjari tribe are the residents of the plain area. (Ref S pawar). In India there are about 54 million indigenous people of different groups inhabiting various terrains. These indigenous groups possess their own distinct culture, religious rites, food habit and

have a rich knowledge of traditional medicine (ref). Today according to the World Health Organization, as many as 80 % of the world's people depend on traditional medicine for their primary healthcare needs. There are considerable economic benefits in the use of medicinal plants for the treatment of various diseases. (Ref)

The study was carried out in different villages of Nandurbar district. Nandurbar district is located in North Western side of Maharashtra state. Nandurbar district is bounded to the south and south east by Dhule district; to the west and north the state of Gujarat to the North and north east is the state of Madhya Pradesh. It is full of steep hill ranges covered with forests interspersed with hamlets and tillage. The westerly aspect below the Sahyadrian scarps accounts for the higher rainfall of this area as compared to the rest of district. The soil is varying from dark brown to dark reddish brown in color. The drainage is fairly good. Soil is mostly loamy in texture.

Methodology and Data collection

Local traditional healers or commonly known as “vaidus” having knowledge of plants in medicine were interviewed in different villages of Nandurbar district. The study has been carried out during June 2019 to June 2020. During study extensive field visits had been carried out in different parts of Nandurbar district. Name and address of informants had been collected from common tribal peoples in rural areas of Nandurbar district. However some of the informant selected was the seller of medicinal plants or drugs prepared from medicinal plants available in native forest. Repeated enquiries were carried out in different grids of district and in different seasons. General conversation was carried out with these “vaidus” in their local languages to obtain the information related to medicinal plants. Information related

to local names of plants, plant parts used for curing diseases, their mode of preparation and mode of administration had been collected and documented. From collected data a list of plants of different families with their taxonomic names, their traditional uses, plant parts used, mode of drug preparation, mode of administration is prepared in alphabetical order.

Result and discussion

The information on botanical name, vernacular name, family name, habit, occurrence, and Phenology period of plants have been given in Table No: 1. The botanical names of medicinal plants are arranged in alphabetical order in table. In Table No: 2. Botanical name of medicinal plant, Ailment treated, plant parts used, mode of drug preparation and route of administration is given. The study reveals that "Vaidus" or local healers in Nandurbar district commonly used 51 medicinal plant species belonging to 48 genera and 34 families. According to habit of plant 14 were herb(27%), 18 were trees(35%), 8 were climbers(16%), and 11 were shrub(22%). The common use of herbs and trees as medicine preparation was also reported in other parts of world (Ref).

In our study the most common family with highest number of utilized medicinal plants in the Nandurbar district was *Menispermaceae* (4 plants) followed by *Papilionaceae* (3 plants), *Solanaceae* (3 plants), *Liliaceae* (2 plants), *Caesalpiniaceae* (2 plants), *Zingiberaceae* (2 plants), *Moraceae* (2 plants), *Labiatae* (2 plants), *Verbinaceae* (2 plants), *Amaranthaceae* (1 plant), *Rutaceae* (1 plant), *Meliaceae* (1 plant), *Euphorbiaceae* (1 plant), *Nyctanginaceae* (1 plant), *Mombacaceae* (1 plant), *Curicaceae* (1 plant), *Celastraceae* (1 plant), *Cucurbitaceae* (1 plant), *Poaceae* (1 plant), *Larantaceae* (1 plant), *Ebenaceae* (1 plant), *Hydrocharitaceae* (1 plant), *Oleaceae* (1 plant), *Crassulaceae* (1 plant), *Scrophulariaceae* (1 plant), *Sapotaceae* (1 plant), *Anacardiaceae* (1 plant),

Moringaceae (1 plant), *Bignoneaceae* (1 plant), *Myrtaceae* (1 plant), *Combretaceae* (1 plant), *Malvaceae* (1 plant), *Zygophyllaceae* (1 plant), *Rhamnaceae*(1 plant).

Traditional healers or "vaidus" are mainly using these plants to cure diseases like skin disorders, kidney stone, toothache, liver problems, cough, dysentery, omitting, fever, jaundice, abdominal pain, malaria tumor, joint pain, snakebite, body pain, sex disorders, burn, headache, acidity, mouth ulcer, paralysis, earache, indigestion etc. the study also revealed that for many disorders more than remedies are available e.g. five different medicinal plants namely *Aloe vera L.*, *Boerhavia Diffusa L.*, *Cassia auriculata L.*, *Tinospora cordifolia (Wild) Miers.*, *Ficus bengalensis L.* are used to treat jaundice similarly *Adhatoda vasica Nees*, *Cocculus pendulus (J. R. & G. Forst)*, *Cocculus Hirsutus L.*, *Dhatura metal L.*, *Ocimum teniflorum L.* are used to treat cough. *Azardirecta indica A. Juss*, *Oroxylum indicum (L) Vent*, *Tectona grandis L. F* are used to treat abdominal pain. Dysentery is treated by using plants *Terminalia bellirica (Gaerth) Roxb.*, *Mucuna pruriens (L). DC.*, *Bombax ceiba L.*, *Aegle marmelos(L) Corr* while *Achyranthus aspera L.*, *Carica papaya L.*, *Coccinia grandis L.*, *Solanum verginianum L.* are used to treat toothache.

45 plants (90%) were categorized as wild plants and 6 plants (10%) as cultivated. The study of occurrence of plant data states that 4plant species (8%) are abundant, 20 plant species (39%) are common, 25 plant species (49%) are occasional and 2 plant species (4%) are rare.

We have reported that some of plants are used to treat more than one ailment. For example different parts such as Leaves, Stem, Root of *Achyranthus aspera L.* are used to treat kidney stone, toothache, liver problems. *Aegle marmelos(L) Corr* is used to treat Fever and Jaundice. *Azardirecta indica A. Juss* is used to treat abdominal pain, Fever and Malaria. *Madhuca longifolia (Koen) Machr* is used to treat paralysis, and headache. *Ocimum teniflorum L.* is used to treat Fever, Cough, Earache etc.

Table 1: characteristic of medicinal plants used by vaidu peoples in Nandurbar district

Sr no.	Botanical name	Vernacular name	Family	Habit	Status	Occurance	Phenology period
01	<i>Achyranthes aspera L.</i>	Aghada	Amaranthaceae	Herb	Wild	Common	Aug-Dec
02	<i>Adhatoda vasica Nees</i>	Adulsa	Acanthaceae	Shrub	Wild	Common	Aug-Dec
03	<i>Aegle marmelos(L.) Corr</i>	Bel	Rutaceae	Tree	Wild	Occasional	June-Sep
04	<i>Aloe vera (L). Burm. f.</i>	Koraphad	Liliaceae	Herb	Wild	Common	Feb-May
05	<i>Asparagus racemosus willd.</i>	Shatavari	Liliaceae	Shrub	Wild	Occasional	Dec-Jan
06	<i>Azadirachta indica A. Juss.</i>	Nimb	Meliaceae	Tree	Wild	Common	Dec-May
07	<i>Baliospermum raziana Keshav et.</i>	Dati	Euphorbiaceae	Shrub	Wild	Occasional	May-Oct
08	<i>Boerhavia diffusa L.</i>	Punarnava	Nyctanginaceae	Herb	Wild	Common	Whole year
09	<i>Bombax ceiba L.</i>	Katesavari	Bombacaceae	Tree	Wild	Occasional	April-June
10	<i>Carica papaya L.</i>	Popai	Caricaceae	Tree	Cultivated	Common	Whole Year
11	<i>Cassia auriculata L.</i>	Bhui Aavali	Caesalpiniaceae	Shrub	Wild	Common	Jan-July
12	<i>Celastrus paniculatus Willd.</i>	Kanguna	Celastraceae	Climber	Wild	Occasional	Nov-April
13	<i>Cissampelos pareira L.</i>	Banji	Menispermaceae	Climber	Wild	Occasional	June-Oct
14	<i>Clitoria ternatea L.</i>	Gokarna	Papilionaceae	Climber	Wild	Occasional	Jul-Oct
15	<i>Coccinia grandis (L.) Voigt</i>	Kadu tondali	Cucurbitaceae	Climber	Wild	Common	Sept-Nov
16	<i>Cocculus hirsutus (L.) Theob</i>	Vasanvel	Menispermaceae	Twiner	Wild	Occasional	Nov-April
17	<i>Cocculus pendulus (J. R. & G. Forst)</i>	Vasanya	Menispermaceae	Twiner	Wild	Occasional	Oct-Jan
18	<i>Costus speciosus (koen) J. E.Sm</i>	Peva, Piway, Kosht	Zingiberaceae	Shrub	Wild	Occasional	Aug- Oct
19	<i>Cynodon dactylon (L) pers</i>	Harali	Poaceae	Herb	Wild	Common	June-Oct
20	<i>Dendrophthoe falcata (L. f.) Etting</i>	Menda	Loranthaceae	Partial stem parasite	Wild	Occasional	Sept-March
21	<i>Datura inoxia Mill.</i>	Dhotra	Solanaceae	Herb	Wild	Common	Throughout Year
22	<i>Datura metal L.</i>	Kala dhotra	Solanaceae	Herb	Wild	Occasional	June-March
23	<i>Diospyros melanoxylon Roxb.</i>	Tembari	Ebenaceae	Tree	Wild	Common	July-Dec
24	<i>Drimia indica (Roxb.) Jessop.</i>	Jangali Kanda	Liliaceae	Climber	Wild	Occasional	April-May
25	<i>Eulophia herbacea Lindl.</i>	Kukkut kanda	Hydrocharitaceae	Herb	Wild	Rare	July- Sept
26	<i>Ficus bengalensis L.</i>	vad	Moraceae	Tree	Wild	Occasional	April-Aug
27	<i>Ficus racemosa L.</i>	Umbar	Moraceae	Tree	Wild	Occasional	Whole year
28	<i>Indigofera glandulosa Wendl.</i>	Zinzula	Papilionaceae	Herb	Wild	Occasional	Aug-Nov

29	<i>Jasminum sambac</i> (L.) Ait.	Mogara	Oleaceae	Shrub	Cultivated	Occasional	July-Nov
30	<i>Kalanchoe pinnata</i> (Lam.) Pres.	Panfuti	Crassulaceae	Herb	Wild	Occasional	Jan-April
31	<i>Lindenbergia macrostachya</i> (Benth.) Benth.	Madura	Scrophulariaceae	Herb	Wild	Common	Oct-Dec
32	<i>Madhuca longifolia</i> (Koen) Mac Bride	Mahuva	Sapotaceae	Tree	Wild	Common	March-June
33	<i>Mangifera indica</i> Lam.	Aamba	Anacardiaceae	Tree	Wild	Common	Dec-July
34	<i>Mentha spicata</i> L.	Pudina	Lamiaceae	Herb	Cultivated	Occasional	Sep-Nov
35	<i>Moringa oleifera</i> Lambk	Shevaga	Moringaceae	Tree	Wild	Common	Whole year
36	<i>Mucuna pruriens</i> (L.) DC.	Kavach beej	Papilionaceae	Climber	Wild	Common	Dec-Feb
37	<i>Ocimum tenuiflorum</i> L.	Tulshi	Lamiaceae	Shrub	Wild	Common	Whole year
38	<i>Oroxylum indicum</i> (L.) Vent	Tetu	Bignoniaceae	Tree	Wild	Occasional	May-July
39	<i>Phyllanthus emblica</i> L.	Aavala	Euphorbiaceae	Tree	Wild	Occasional	Feb-Aug
40	<i>Plumbago zeylanica</i> L.	Chitrak	Plumbaginaceae	Shrub	Wild	Occasional	Sep- March
41	<i>Solanum virginianum</i> L.	Bhuiringani	Solanaceae	Herb	Wild	Common	Whole year
42	<i>Syzygium cumini</i> (L.) Skeels	Jambhal	Myrtaceae	Tree	Wild	Common	April-July
43	<i>Tamarindus indica</i> L.	Chinch	Caesalpinaceae	Tree	Cultivated	Occasional	June-Sep
44	<i>Tectona grandis</i> L.f.	saag	Verbenaceae	Tree	Wild	Abundant	June-Dec
45	<i>Terminalia bellirica</i> (Gaerth.) Roxb.	Behda	Combretaceae	Tree	Wild	Occasional	Feb-Aug
46	<i>Thespesia lampas</i> (Cav.) Dalz. & Gibbs.	Ran bhendi	Malvaceae	Shrub	Wild	Rare	Aug- Jan
47	<i>Tinospora cordifolia</i> (Willd.) Miers.	Gulvel	Menispermaceae	Twiner	Wild	Abundant	Oct-Dec
48	<i>Tribulus terrestris</i> L.	Gokhru	Zygophyllaceae	Herb	Wild	Abundant	June-Dec
49	<i>Vitex negundo</i> L.	Nirgudi	Verberaceae	Shrub	Wild	Abundant	Whole year
50	<i>Zingiber officinale</i> Rosc.	Ale	Zingiberaceae	Herb	Cultivated	Occasional	April-Oct
51	<i>Ziziphus jujuba</i> Mill	Bor	Rhamnaceae	Tree	Wild	Common	Sept-Dec

Table 2: Medicinal plants used by traditional healers of Nandurbar district

Sr. no.	Botanical Name	Vernacular Name	Plant Parts Used	Ailment	Mode Of Preparation, Route Of Administration & dose
01	<i>Achyranthus aspera</i> L.	Aghada	Whole plant	Kidney stone, toothache, liver problems	Burn the whole plant and make a fine powder, take this powder orally with water Oral with water
02	<i>Adhatoda vasica</i> Nees	Adulasa	flowers	cough	Make a syrup by using half kg flowers and half kg sugar, take this syrup orally twice a day without water
03	<i>Aegle marmelos</i> (L.) Corr	Bel	fruits	Dysentery and omitting	Dissolve the pulp of fruit into water and make a paste, take this paste orally with water Oral with water
04	<i>Aloe vera</i> L.	Koraphad	Pulp of leaves	Fever, jaundice,	Make a tablet by using pulp of leaves, take a tablet with water twice a day
05	<i>Asperagus racemosus</i> wild	Shatavari	Roots	For lactating mothers	Dry the roots of plant and make a fine powder, take this powder orally with water
06	<i>Azardirecta indica</i> A. Juss	Kadunimb	Bark	Abdominal pain, fever, malaria	Make a powder from bark of plant, and take that powder at morning and neight
07	<i>Baliospermum raziana</i> Keshav et.	Dati	Root	tumor	Dry the roots and make a powder, make a paste from powder and apply it on tumor
08	<i>Boerhavia Diffusa</i> L.	Punarnava	Root	jaundice	Dry the roots and make a powder, take a powder orally at morning
09	<i>Bombax ceiba</i> L.	Katesavar	Bark	dysentery	Make a syrup by grinding bark of plant in water, take syrup at morning
10	<i>Carica papaya</i> L.	Papai	Latex	toothache	Extract latex from fruit and Apply latex on tooth by cotton
11	<i>Cassia auriculata</i> L.	Bhui Aavali	Flowers	Jaundice	Prepare hot water extract of flowers, and take this extract thrice a day
12	<i>Celastrus paniculatus</i> wild	Kangana		Joint pain	Make a powder from fruits then make a paste of powder, Apply this paste on joints
13	<i>Cissampelos pareira</i> L.	Banji	Roots	Snakebite	Make a paste from roots, apply this paste on biting area of skin
14	<i>Clitorea ternacea</i>	Gokarna	Root	Blood purification	Make a syrup from root of climber, and take this syrup orally without water
15	<i>Coccinia grandis</i> L.	Kadu tondali	Leaves	Toothache	Extract juice from leaves, and add two drops of juice in ear
16	<i>Cocculus Hirsutus</i> L.	Vasanvel	Roots	Cough	Make a powder of roots, and take a tablespoon of powder with water at morning
17	<i>Cocculus pendulus</i> (J. R. & G. Forst)	Vasanya	stem	cough	Make a syrup from stem of climber, and take this syrup orally without water
18	<i>Costus speciosus</i> (Koen) J. E.	Peva	Stem	Body pain	Make a powder from stem of plant, and Apply this powder on body twice a day
19	<i>Cynodon dactylon</i> (L) pers	Harali	Stem	To regulate menstruation cycle in women	Make a powder from stem of plant, and take this powder orally with water
20	<i>Dendropathoe facata</i> (L. F.) Etting	Menda	Whole plant	Skin problems	Soak the plant in water at neight, filter the water at morning by cloth, and take this filtrate at morning
21	<i>Dhatura innoxia</i> Mill.	Dhotara	fruit	Burns	Make a powder of fruit by burning it, and apply this powder on burn surface
22	<i>Dhatura metal</i> L.	Kala dhotara	Leaves	Cough	Make a powder of leaves, and Take a tablespoon of powder with water at morning and neight
23	<i>Diospyrus melanoxylon</i> Roxb	Tembari	Roots	Headache	Make a paste by grinding roots on stone, and apply this paste on forehead twice a day
24	<i>Drimia indica</i> (Roxb) Jessop.	Jangali Kanda	Tuber	Abdominal pain	Extract a juice from tuber of plant, and take this juice with water twice a day
25	<i>Eulophia herbaceae</i>	Kukkut kanda	Tuber	Tumor	Make a powder from tuber, and apply this powder on tumor

	Lindl.				
26	<i>Ficus bengalensis L.</i>	vad	Bark	Jaundice	Make a hot water infusion of bark of plant, and take this infusion twice a day
27	<i>Ficus racemosa L.</i>	Umbar	Bark	To regulate menstruation cycle in women	Make a hot water infusion of bark of plant, and take this infusion twice a day
28	<i>Indigophera glandulosa Wend.</i>	Zinzula	Root	Acidity	Make a hot water infusion of root of plant, and take one cup of extract twice a day
29	<i>Jasminum sambac (L) Ait</i>	Mogara	Leaves	Mouth ulcer	Make a powder of leaves by grinding leaves on stone, apply this paste on inner part of mouth
30	<i>Kalanchoe pinnata (Lamk) Pers</i>	Panfuti	Leaves	Skin disorders	extract a juice from leaves and apply this juice directly on infected skin
31	<i>Lindenbergia macrostachya (Benth) Benth.</i>	Madura	Root	Mouth ulcer	Soak the plant root in water at neight, filter the water at morning by cloth and take one cup of filtrate twice a day
32	<i>Madhuca longifolia (Koen) Machr</i>	Mahuva	Seeds	Paralysis, headache	Make a paste by grinding seeds on stone, Put two drops of paste in nose
33	<i>Mangifera indica L.</i>	Aamba	Leaves	Abdominal pain	Soak the plant leaves in water for neight, filter the water at morning by cloth and take one cup of filtrate twice a day
34	<i>Mentha spicata L.</i>	Pudina	Leaves	Vomiting	Soak the plant leaves in water for neight, filter the water at morning by cloth and take one cup of filtrate twice a day
35	<i>Moringa oleifera Lamk</i>	Shevaga	Bark	Pain	Soak the bark of plant in water then grind it and make a paste, apply this paste on swollen part
36	<i>Mucuna pruriens (L) DC.</i>	Kavach beej	Pods	Dysentery and vomiting	Pod hairs are mixed with jaggery to prepare a tablet, take the tablets twice a day
37	<i>Ocimum teniflorum L.</i>	Tulasi	Leaves	Fever, cough, earache	Juice is extracted from leaves of plant, Put two drops of juice in ear for earache and take juice directly with water twice a day in case of headache and fever
38	<i>Oroxylum indicum (L) Vent</i>	Tetava	Roots	Abdominal pain, indigestion	Make a powder from roots, take a tablespoon of powder twice a day after meal
39	<i>Phyllanthus Emblica L.</i>	Aavala	fruit	To increase the blood in pregnant women	Extract a juice from fruits of plant, take this fruit juice twice a daily
40	<i>Plumbago zeylanica L.</i>	Chitaval	Root	Body pain	Grind root on stone and make a paste, apply this paste on legs
41	<i>Solanum verginianum L.</i>	Bhuiringani	Seeds	toothache	Make a powder by grinding the seeds, apply this seed powder on tooth by cotton
42	<i>Syzygium cumini (L) Skeels.</i>	Jambhul	Bark	Kidney problems	Make a powder from bark of plant, take this powder twice a day with water
43	<i>Tamarindus indica L.</i>	Aambat chincha	Seeds	Snake bite	Grind the seeds in water and make a paste, apply this paste on bitted area
44	<i>Tectona grandis L. F</i>	saag	Bark	Abdominal pain	Soak bark of plant in water and then make a paste, take a paste with water twice a day
45	<i>Terminalia bellirica (Gaerth) Roxb.</i>	Behada	Bark	Dysentery in children	Soak the bark of plant in water, take this bark extract twice a day
46	<i>Thespesia lampas (Cav) Dalz & Gibbs.</i>	Jangali bhendi	Bark	To treat sex disorders in males	Make a powder from bark of plant, Take this powder twice a day with water
47	<i>Tinospora cordifolia (Wild) Miers.</i>	Gulavel	stem	Jaundice	Soak one inch of stem in water, take a extract twice a day
48	<i>Tribulus terrestris L.</i>	Gokharu	Whole plant	Kidney problems	Soak and boil whole plant in water, take this extract twice a day
49	<i>Vitex nigundo L.</i>	Nirgudi	leaves	Joint pain	Make a paste from leaves of plant, apply this paste on joints
50	<i>Zingiber officinale Rosc.</i>	Aala	Fruit	Blood purification.	Eat the ripen fruit daily up to the 15 Days.
51	<i>Ziziphus jujuba Lam.</i>	Bor	Leaves	Tumor	Eat the leaves of this Plant.

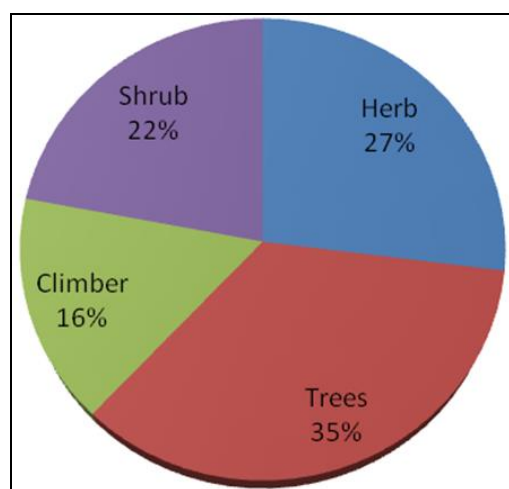


Fig 1: Habit

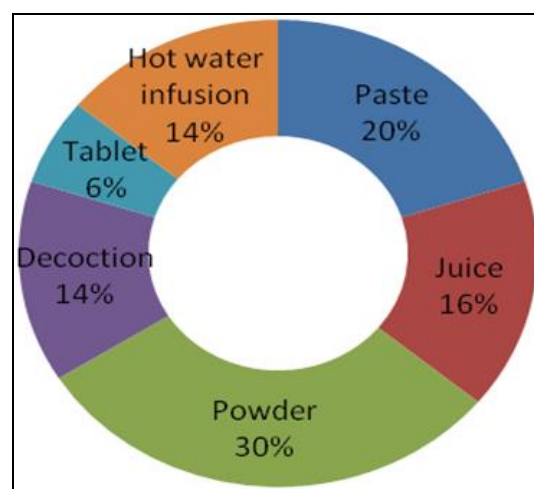


Fig 2: Method of preparation

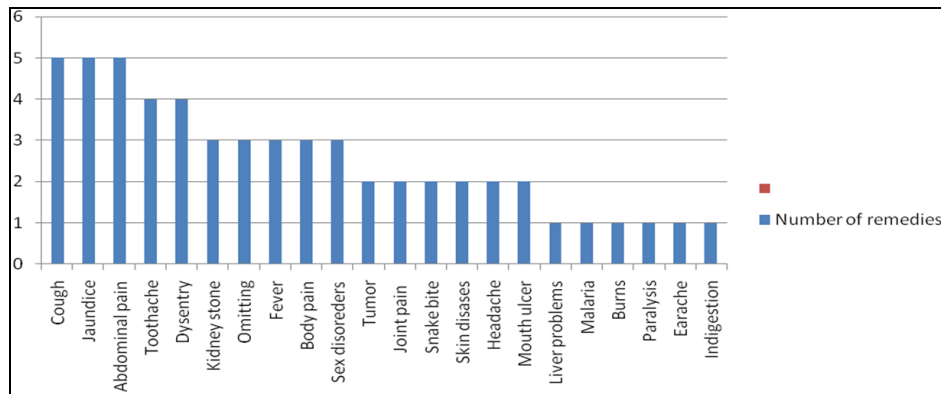


Fig 3: Number of remedies used for various ailments

Plant Parts Used and Mode of Remedy Preparation

In most of drug formulations (27%) stem bark were used for preparation of medicines followed by Root (20%), Leaves (17%), Fruits (8%), Seed (7%), Whole plant (6%), Latex (4%), Flower (4%), Flower (4%), Tuber (4%), pod (2%). The common use of plant stem bark in preparation of remedies may be due to the relative ease of finding this plant part. Apart from stem bark, Leaves are also commonly used in remedy preparation. Leaves remain green and available in plenty of for most months of year (Ref). The use of Leaves in the preparation of remedies is also common in different parts of world (Ref).

Route of Administration and Dosage

62% of healer remedies were applied through oral tract while 25% are applied on skin. 6% remedies are administered through eyes, ear or nasal tract and 7% remedies are applied in mouth or on tooth. Most treatments were reported to complete in three to five days. Majority of drugs are recommended for twice a day and along with water. The method of drug preparation fall in to six different categories (fig) viz plant parts are applied as paste (20%), juice extracted from fresh plant parts (16%), powder made from fresh or dried plant parts (30%), decoction (14%), tablets (6%), hot water infusion (14%).

Common diseases in Nandurbar district were the cough, Dysentery, Jaundice, Abdominal pain., Snakebite and fever therefore largest number of remedies was used to treat these diseases common ailments such as headache and cough are considered to be disease with natural causes and hence their symptoms are treated at the house hold level without resource to magical practices are allopathic treatments (Ref) *Ficus racemosa L.* has been used by traditional healers to treat sex disorders, similarly *Ficus bengalensis L.*, *Pedaliium murex* and *Tribulus terrestris L.* were used used to cure sexual disorders by tribal healers of Southern Rajasthan. (Ref19). Ethnomedical uses of Bel i.e. *Aegle marmelos (L.)* Corr in similar region of Maharashtra had been reported by Shubhangi Pawar. Root bark of *Aegle marmelos (L.)* is used along with leaves of *Ocimum tenuiflorum L.* to cure typhoid fever. Stem bark extract of *Aegle marmelos (L.)* is used with equal quantity of honey to prevent vomiting. Juice obtained from 10 leaves of *Aegle marmelos (L.)* and a pinch of powder of Black Pepper is administered regularly to check diabetes.

Snake bite is a common problem in rural areas, in Nandurbar district *Cissampelos pareira L* and *Tamarindus indica L.* is commonly used by local healers to treat snake bite. Use of some other medicinal plants like *Eclipta*

prostrate, Achyranthus aspera L. are reported in southern part of Tamil Nadu. (Ref).

Cynodon dactylon (L) pers, Ficus racemosa L., are used by tribal healers to regulate menstruation cycle in womens. Some other plants like *Celosia argentea L. (Amaranthaceae)*, *Cordia dichotoma Forst. F. (Cordiaceae)* *Opuntia dillenii Haw. (Cactaceae)*, *Oroxylum indicum (L.) Vent (Bignoniaceae)*, *Pterocarpus marsupium Roxb. (Fabaceae)*, *Rungia repens (L.) Nees (Acanthaceae)* are also reported to be used by tribals to regulate menstruation cycle in womens. (ref Patil M V % one).

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