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## Medicinal plants used by a Traditional Ayurvedic Practitioner at Asadnagar Village in Narsingdi District, Bangladesh

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### Abstract

Ethnobotany is the local traditional knowledge of utilizing indigenous plants, such as for food, medicine and tools, that local people have been practicing for a long time. The utilization of plant species found in nature varies in each region. Local folk wisdom on botanical uses has been applied in nature to the advantage of ethnic groups for a long time. Bangladesh has tremendous wealth of medicinal plants. Some plants were also used for the treatment of cancer, hypertension, nerve disorders, helmenthiasis, urinary tract infections, tuberculosis, leucorrhea, edema and chicken pox. Folk medicine forms the primary tier of health-care practices in Bangladesh. Narsingdi is one of early human settlements in Bangladesh. Thus we attempted to document the medicinal plant use of Monohardi area with a view to preserve the ethnobotanical knowledge and in order to protect the biodiversity of this area. The objective of this study was to document the medicinal uses of plants by a folk medicinal practitioner (Kaviraj) at Monohardi Upazila in Narsingdi district, Bangladesh. A total of 50 informants between the age group 20–86 years were interviewed with a questionnaire. The Kaviraj used 10 plants distributed into 7 families in his formulations. The study suggests that the medicinal plants used by the Kaviraj of Narsingdi district have good probability of new drug discoveries.

**Keywords:** Ethnobotany, Medicinal plants, Folk medicine, Narsingdi, Traditional practitioner, Questionnaire, Bangladesh.

### 1. Introduction

Traditional medicine based on herbal remedies has always played a key role in the health care systems of many countries. Ethnomedicine refers to the study of ayurvedic plants by traditional practitioners for the treatment of various ailments and throughout the world and still continue their traditional medicinal practices. Medicinal plants are always playing a beneficial function in health care. In a strategy, it is estimated that worldwide 70-80% of people meet their primary healthcare needs mostly by using herbal medicine. It is reported that 80% of the peoples in the developing countries strongly depend on ayurvedic practitioners used. In the new era of Biological science, modern medicinal treatment is so advanced but still now, some of the common diseases are successfully treated with the ayurvedic or herbal medicinal treatment by folk traditional practitioners. Traditional medicinal Plants have been used for thousands of years to flavor and conserve food, to treat health disorders and to prevent diseases [6-15]. Ethnobotanical studies have shown great variation in traditional uses of herbal medicines among different cultural and social groups [1]. The study of medicinal plant is one of the methods of examining the interaction and relationships between biological and cultural components of the environment [2]. Since ancient times; people have resorted primarily to nature for food and medicine. The ethnic groups of world rely mostly on plants for subsistence and medical cures [3]. Ethnobotany also attracts interest from different industries, thus it is predominantly linked to economic botany [4]. Traditional knowledge can be useful for establishing priorities, planning effective use of resources and conservation of biodiversity and cultural knowledge [5].

### 2. Material and methods

#### 2.1. Study area

The present survey was conducted in the village of Asadnagar in the sub-district of Monohardi in Narsingdi district. The main occupation of the people of this sub-district is agriculture. However, to a certain extent the area is also noted for its local handicrafts. Monohardi Upazila is art of Narsingdi district, which falls in the central part of Bangladesh (Figure 1).

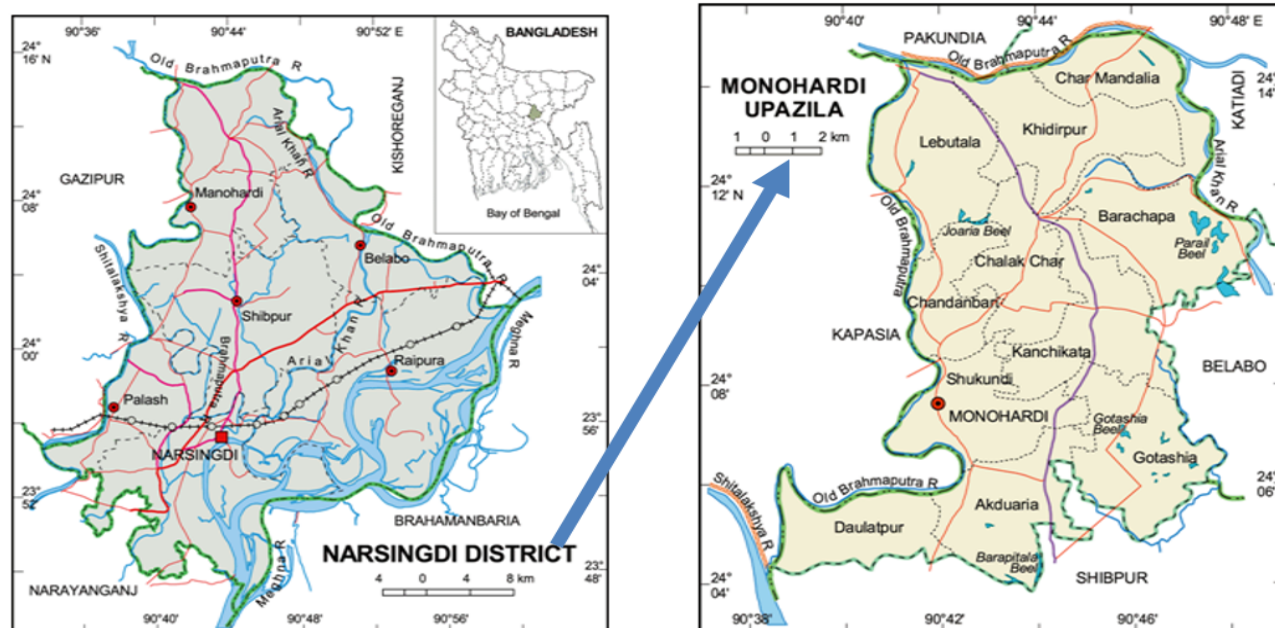


Fig 1: Survey area in Narsingdi District

## 2.2. Medicinal plant survey and data collection

A systematic and extensive ethnobotanical survey was carried out in Asadnagar village of the Narsingdi district during Jan 2015 to June 2015 for collection of information on ethnomedicinal plant species being used by the locals in the study area. Information was gathered by conducting interviews and group discussions on the indigenous uses of plant species as medicine. After selecting the people, knowledge about their interests and skills in identification and utilization were obtained through formal interviews and discussion was made with the informants in their local language for their ease. The objectives of study were elaborated to the informants. A total of 50 informants between the age group 20–86 years were interviewed with a questionnaire.

Prior Informed Consent was first obtained from the Kaviraj, Gias Uddin, age 55 years, practicing in Asadnagar village of Monohardi Upazila in Narsingdi district, Bangladesh. The Kaviraj was apprised as to the nature of our visit and consent obtained to disseminate any information both nationally and internationally. Actual interviews were conducted in the Bengali language, which was spoken fluently by the Kaviraj as well as the interviewers. The interviews were conducted with the help of a semi-structured questionnaire and the guided field-walk method of Martin [16] and Maundu [17]. In this method the Kaviraj took the interviewers on guided field-walks through areas from where he collected his medicinal plants, pointed out the plants, and described their uses. All plant specimens were photographed and collected on the spot, pressed, dried and brought back to Bangladesh National Herbarium at Dhaka for identification.

## 3. Data analysis

### 3.1 Use value (UV)

The relative importance was calculated employing the use-value, a quantitative measure for the relative importance of species known locally:

$$UV = \sum U/n$$

Where U is the number of use reports cited by each informant for a given species and n refers to the total number of informants. Use values are high when there are many use-reports for a plant, implying that the plant is important, and approach zero (0) when there are few reports related to its use (figure 2). The use value, however, does not distinguish whether a plant is used for single or multiple purposes [18, 19].

## 4. Results

A total of 10 plant species distributed into 7 families were found to be used by the Kaviraj for treatment of various ailments (table 1 & 2). All parts of the plant were used by the Kaviraj. These included whole plants, leaves, stems, barks, roots, flowers, fruits, seeds, gum, and rhizomes. Leaves constituted the major plant part used (41%), where roots part used (12%), fruits part used (25%). The results are shown in pie chart.

The various formulations were used to treat diseases like urinary disorders, oral lesions, diabetes, leucorrhoea, pain, gastrointestinal disorders, cuts and wounds, jaundice, helminthiasis, and coughs. The uses value of those plants in these various ailments including: *Terminalia bellirica* (0.06), *Scoparia dulcis* (0.02), *Blumea lacera* (0.04), *Phyllanthus urinaria* (0.02), *Croton bonplandianum* (0.02), *Euphorbia hirta* (0.04), *Momordica charantia* (0.06), *Solanum nigrum* (0.02), *Tridax procumbens* (0.02) and *Clitoria ternatea* (0.02). The Kaviraj mainly used simple formulations of plant parts in his treatment. The results are summarized in Table 2 and figure 2, 3, 4 and 5 respectively.

**Table 1:** Distribution of medicinal plant species of Asadnagar village according to their Family

Family	Number of species
Combretaceae	1
Scrophulariaceae	1
Asteraceae	2
Euphorbiaceae	3
Cucurbitaceae	1
Solanaceae	1
Fabaceae	1

**Table 2:** Medicinal plants and formulations of the Kaviraj from Narsingdi District of Asadnagar Village

Serial No.	Botanical name	Family	Local Name	Plant Type	Parts Used	Medicinal uses with possible formulation	No. of ailment reports	Uses value (UV)	Accession Number/voucher no.
1	<i>Terminalia bellirica</i>	Combretaceae	Bohera	W,T	Fruit	Bark for constipation orally taken, Seed oil for hair growth topically taken. Fruits are astringent and antipyretic; useful in bronchitis, asthma, dyspepsia, piles, diarrhea, coughs and eye diseases. Used as a hair tonic, green fruit is used for cough; pulp of the fruit is useful for leprosy and piles. Half ripe fruit is used as purgative; fruits are also used in menstrual disorders.	3	0.06	DACB-41724/2015
2	<i>Scoparia dulcis</i>	Scrophulariaceae	Chinigura	C,H	Leaf,	Leaf is taken orally on an empty stomach for fever	1	0.02	DACB-41721/2015
3	<i>Blumea lacera</i>	Asteraceae	shealmoti	W,H	Leaf, root	Useful for astringent, stomach pain, antispasmodic, antipyretic and diuretic. Leaf juice is so much effective for astringent, febrifuge, diuretic mixed with pepper. Also used in bleeding piles. Roots mixed with pepper are given in cholera and along with rhizomes of cyperus rotundus given in dysentery.	2	0.04	DACB-41720/2015
4	<i>Phyllanthus urinaria</i>	Euphorbiaceae	Hazarmani	W,H	Fruit	This plant is useful for diuretic, depurative, gonorrhoea, dysentery. Fruits are useful for thirst, cooling, bronchitis, leprosy, anaemia, anuria, asthma and hiccup.	1	0.02	DACB-41717/2015
5	<i>Croton bonplandianum</i>	Euphorbiaceae	Pai hiya	W,H	Leaf, seed	Leaf juice is used for cough; seed paste is	1	0.02	DACB-41709/2015

						effective for eczema and ringworm to cure. Latex is used to heal cuts and wounds.			
6	<i>Euphorbia hirta</i>	Euphorbiaceae	Baradhudi	W,H	Leaf	Useful for haemostatic, astringent, ulcers cough and abscesses. Primarily used in affections of childhood, in worms, bowel complaints and tonic. The leaf juice is taken orally. The juice is considered tonic, nacroctic, antiasthmatic and febrifuge. So much effective against dysentery, colic, amoebiasis and diarrhea.	2	0.04	DACB-41696/2015
7	<i>Momordica charantia</i>	Cucurbitaceae	Usta	W, H	Leaf, fruit	Warmed leaf is applied to severe body pain; fruits are taken as curry which is useful in urinary disorder, fever and jaundice. Leafs with mustered oil use to relieve from chest pain. The young fruits are eaten as vegetables.	3	0.06	DACB-41692/2015
8	<i>Solanum nigrum</i>	Solanaceae	Kakmachi	W,H	Leaf, stem, fruits.	Effective in diuretic, chronic enlargement of liver, dysentery and piles. Also useful against skin disease and anthrax. Fruits are used in tonic, heart diseases, hiccup, asthma, fever, bronchitis and diarrhea. Pastes of green fruits are effective in ringworm. Fruit juice is useful for expectorant, cooling drink in fevers, thirst gonorrhea, giddiness and inflammations.	1	0.02	DACB-41688/2015
9	<i>Tridax procumbens</i>	Asteraceae	Tridhara	W,H	Leaf	Leaf juice is taken orally. Useful in insecticidal, parasiticidal properties and antiseptics. Paste leaves are effective in stop bleeding. Leafs are also beneficial for the treatment of bronchial catarrh,	1	0.02	DACB-41685

						diarrhea, dysentery and for the hair problems in head.			
10	<i>Clitoria tarnetea</i>	Fabaceae	Aparajita	W,H	Leaf, root, seeds, flower.	Flower juice is taken orally, mixed with mother's milk or honey is given for 3 days to recover cough of children. The seeds are useful for purgative and cathartic. The root is useful for ulcer, dysentery, bronchitis, fever, consumption and for abdominal enlargement. Paste of root bark is given as a demulcent in the irritation of the bladder and urethra.	2	0.02	DACB-41687/2015

\* W=Wild; T=Tree; H=Herb, C=Cultivated; DACB=Accession number; Dhaka Bangladesh

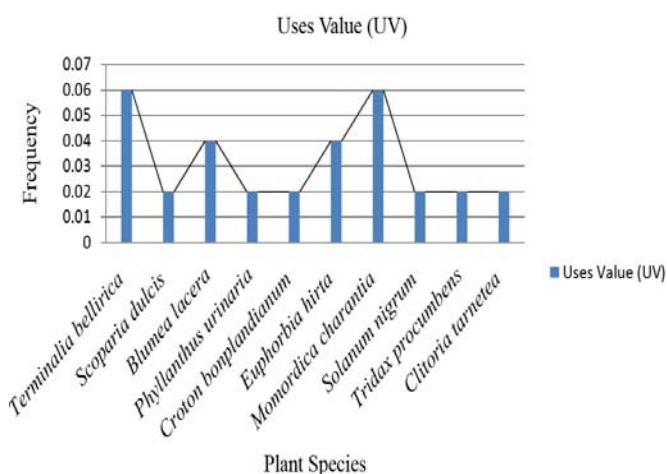


Fig 2: Uses value of Medicinal plants in Asadnagar village at Monohardi Upazila by kabiraj.

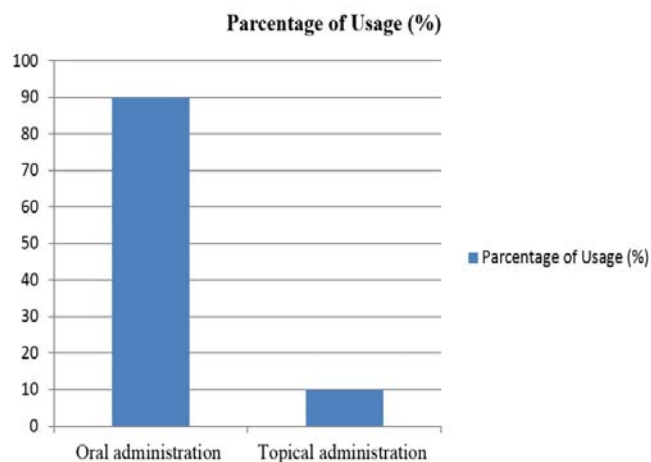


Fig 3: percentage of use in medicinal plants formulation by kabiraj in Asadnagar village.

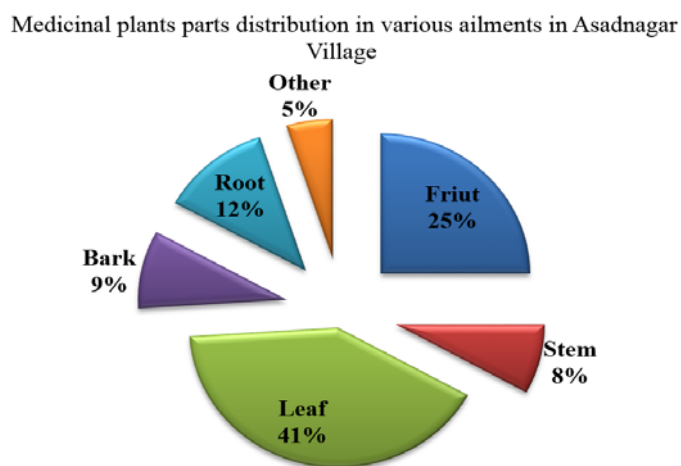


Fig 4: pie chart of medicinal plants parts distribution in disease treatment and formulation by kabiraj

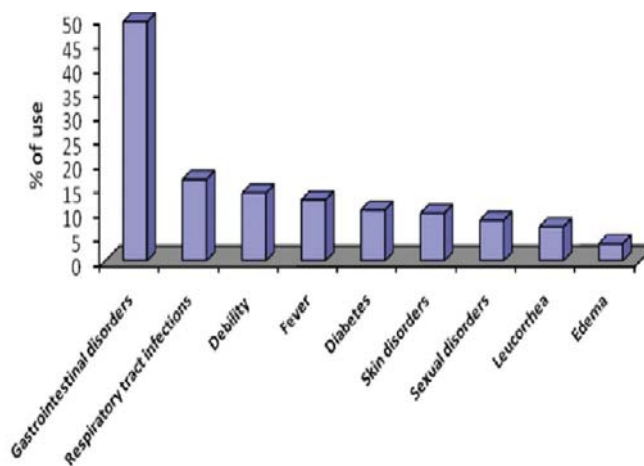


Fig 5: Percentage of use of ethnomedicine in various diseases.

## 5. Discussion

Recently doctors look down on traditional medicinal practitioners (Kavirajes) and describe their treatment as useless and fraud but interestingly recent relevant scientific literature points out to the validity of the uses of many plants by the Kavirajes. It has been reported that medicinal plants are now used for new drug formulations. The treatment of the various ailments by kaviraj is quite similar with other reported ethnomedicinal uses of the plants in various districts in Bangladesh like as: *Anthocephalus chinensis* is used for snake bite by FMPs of Sylhet Division, Bangladesh <sup>[20]</sup>. *Averrhoa carambola* is used for Diarrhea, vomiting, influenza by the Garo tribe living in Netrakona district Bangladesh <sup>[21]</sup>. *Cinnamomum verum* is used for diabetes by FMPs of Station Purbo Para village, Jamalpur district <sup>[22]</sup>. Overall, it can be said that the use of some plants by the Kaviraj have scientific rationale behind their uses even though the Kaviraj is unaware of the scientific rationale. Other plants used by the Kaviraj needs to be scientifically assessed regarding their relevancy of use and which may open up ways to discover new drugs.

## 6. Conclusion

It is to be concluded that modern scientific studies to be done on these medicinal plants, so that the plants may be used as remedies in a more rational and scientific manner. The results of this study revealed a rich diversity of medicinal plants used to treat various disease conditions and ethnomedicinal knowledge, amongst the residents at the various upazila in Narsingdi which may through proper scientific investigations may yield novel compounds to treat both old and emerging diseases. The study should be extended to other parts of the country to discover any unknown potential use of any medicinal plants that have not been mentioned before, but is being used for the centuries to treat many difficult diseases. To improve the knowledge of medicinal plants and prevent the knowledge-loss, future work documenting medicinal plant identification, formulation and treatment preparation are needed.

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## 8. Competing interests

The authors declare that they have no competing interests.

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