

A Survey of Traditional Health Remedies of the Chakma Indigenous Community of Rangamati District, Bangladesh

Research Article

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Abstract

Investigation and documentation of the status of medicinal plants and associated knowledge was conducted in Rangamati district of Bangladesh. Data was collected and evaluated with a questionnaire survey following semi-structured interviews, field interview, plant interview and group interview techniques. 50 medicinal plant species in 49 genera under 34 families were recorded which are used to treat 28 different ailments. Most frequently used family in context to the number of species used is Araceae. Mostly leaves are used for the preparation of herbal medicine. All the voucher specimen have been collected and preserved at the herbarium of Chittagong University (CTGUH).

Key words: Chakma; Traditional knowledge; Healthcare; Rangamati and Bangladesh

Introduction

Evolution of human life and culture has directly or indirectly been related and influenced by surrounding environment. In the ancient period human being live closely associated with nature and depended on it for their survival especially indigenous communities. This dependency made them to acquire the knowledge of economic and medicinal properties of many plants. They gather knowledge from the nature, accumulated and enriched by selection and rejection and passed them from one generation to another, without any written documents. Many drugs that are on the market have come to us through folk use of plants by indigenous cultures [1].

In Bangladesh, 35 indigenous communities are living in different hilly areas and as well as in plain lands [2]. of them 12 indigenous communities are living in the Chittagong Hill Tracts [Rangamati, Khagrachari and Bandarban districts] viz: Bawm, Chak, Chakma, Khumi, Khyang, Lushai, Marma, Mro, Pangkhao, Rakhaine, Tanchangya and Tripura [2]. In the present study ethnobotanical survey was conducted on Chakma indigenous community of

Rangamati district. Chakma are the largest ethnic group in Bangladesh. They call themselves Chagmas or Changma. The Burmese and the Arkanies called them 'Sak', 'Thak' or Thek. They are short saturated with mongoloid features in their appearance. Chakma community has its own traditional system of herbal medicine for their primary healthcare and they are continuing. But lack of proper documentation, these traditional knowledge and the cultures of indigenous communities are rapidly changing and disappearing. So it is essential to document the information or many ethnobotanical knowledge of the area will be lost forever [2].

Documentation of the indigenous knowledge through ethnobotanical studies is important for the conservation and utilization of biological resources [3]. Therefore, establishment of the local names and indigenous uses of plants has significant potential societal benefits [4]. If a plant is used to treat the same disease in different places across the world then its pharmacological effect could be accepted and represents a vital source for new drug development. Therefore, it is suggested that such studies may

contribute to indigenous ethnobotanical knowledge as well as studies of the sourcing of raw materials for development of commercial pharmaceuticals [5]. In the present study, data has been collected from different areas of Rangamati district through repeated field trips. Therefore, the aim of the present study is to document the information of plant use for various purposes especially for medicine from the Chakma community of Rangamati district, Bangladesh and to gain knowledge and develop appropriate scientific base for their economic development without disturbing their natural habitat and culture. Notable contributors were made by different workers in the field of ethnobotany from different parts of Bangladesh. Viz: [6-28].

Methods of Study

Successful ethno botanical documentation depends on the cooperative venture between the researcher and local informants. It is very important to locate knowledgeable informants for the study of ethnobotany [29]. For the selection of study sites, initial contacts are very important to obtain an idea about the area and the people. An important group of people are those who can be helpful at the initial stages, Such people include Forest department staff, headman of the area, agricultural scientists, local public, teachers and students of the School and college.

There are various sampling methods recommended for ethnobotanical study, such as- i) Direct or participant observation, ii) Checklist interview, iii) Group interview iv) Field interview, v) Plant interview, vi) Market survey [30-32].

In present study, data have been collected in the field following group interview, field interview and plant interview techniques. During the interview, the information has been noted in the documentation data sheet along with their scientific name, local name, Chakma name, family, plant parts used, illness treated and using information. Audio recording has been done with a digital voice recorder.

1. Group interview

In group interviews the ethnobotanist conducts interviews with several informants at a time. Apart from being very difficult to organize a group of practicing herbalists ('Baidhya') from several different areas of CHT due to the poor communication system.

2. Field interview

This is also referred to as a 'bagging interview' [30]. The field interview consists of walking in one or more vegetation zones with an informant, collecting and taking notes on plants and their uses. The plants are shown to the researcher by the informants who described its use. The advantages of the field interviews include the facts that informants get to see the plants in their natural state, thus minimizing the risk of misidentification, and that the context of the interview itself can lead to the discovery and discussion of new important questions [31].

3. Plant interview

In a variation of the field interview technique, plants can be collected in the field, brought back to the village, and presented to informants [30]. Data about the plant uses can then be obtained. This

method is known as the 'Plant Interview' technique.

The first step was to contact the headman (as Chairman) and karbari who were considered as the best informant and most influential person of the tribal communities in his area and to ask their help to find the herbalists who have knowledge of medicinal plant uses and regarded as professional practitioners in the area. Before selecting the herbalist's local people of that area were also consulted. With satisfactory information about the informants seven herbalists have been selected. Some students from indigenous communities who are studying at Chittagong University were also helped to select and make the initial contacts with the informants. Several sites from the study area have been randomly selected according to informants' consensus and visited to collect the voucher specimens and information of plant.

The plant interview technique has been also used to obtain medicinal plant use information. Where informants were too busy or too old to accompany the author to the field, that technique has been used and freshly collected plants have been brought to the informants. From these collections the informants identified some of the plants by their local name and described their use. These conversations have also been documented and recorded with the help of a voice recorder. This method is less time consuming than field interviews and the plant interview allows more informants to be included in a given period of time [31]. One disadvantage of the technique is that small sections of large shrubs and trees may not be readily identifiable by informants, who often rely on such morphological, architectural, or ecological characters as plant height, crown shape, branching pattern and habitat for positive identification. One technique adopted to overcome the problem was to present colour photographs of the plants when available.

The group interviews techniques have also been used to collected information from several informants at a time. One disadvantage that the herbalists are secretive in the presence of other herbalists. They believe that if they share knowledge with other herbalists, they may lose economically in their profession.

The interview is a dynamic process involving spoken interactions between two or more people. Its value as a tool of inquiry depends on the context in which it takes place and on the interviewer's skills [31]. Ethnobotanical information was obtained through informal interviews conducted during the same period with knowledgeable individual's particularly elderly man and women. All of the people that were interviewed belong to the lower income group and do not have particular jobs, but carry out different kinds of work throughout the year: cattle ranching, laying bricks, selling plants, etc. Several techniques have been used for interviewing to gather ethnobotanical data: Mostly Semi structured and Open- ended interview techniques have been adopted. A documentation data sheet has been prepared based on Alam [32], Alcorn [30], Cotton [33] and Martin [34] (Figure 1).

All voucher specimens have been collected during documentation and preserved at the Chittagong University Herbarium (CTGUH). Voucher number has attributed at the end of each species name within the bracket (Table 1). The specimens have been identified consulting with the experts, through several herbarium studies by

ETHNOBOTANICAL DOCUMENTATION DATA SHEET	
Serial No.	Date
Informants	
Name	Age
Occupation	Sex : M / F
Address	
Social Information	
Name of Tribe	Population size
Economy / Mode of living... ..	
Language	
Plant use information	
Scientific name	
Local name	Tribal Name
Family	
Habitat	
Illness/Disease treated	Parts used
Using Information	
Mode of uses	
Doses	Duration of treatment
Frequency of the speciesStatus : Wild / cultivated
Note	

Figure 1: Sample of documentation data sheet.

comparing herbarium specimens and studying available literatures. The description and the current nomenclature have been compared with recent book-“Dictionary of Plant Names of Bangladesh [20].

Results and Discussion

The investigation and documentation of the knowledge of herbal practice was conducted from the Chakma indigenous community of Rangamati district of Bangladesh. A total of 50 plant species in 49 genera under 34 families were documented. Most frequently used family in context to the number of species is Araceae followed by Euphorbiaceae, Acanthaceae, Verbenaceae, Liliaceae, Amaranthaceae, Convolvulaceae, Fabaceae and Apocynaceae respectively.

Among the 50 plants species, the most utilized plant parts for the preparation of herbal medicine is leaf, which is, 73% followed by fruit 6%, Root 7%, bark 6%, stem 4% and flower 4% respectively (Figure

2). When root and the whole plant are used for the preparation of herbal medicine, are considered as the destructive way of using plants because it needs to destroy/uproot the whole plant. But leaf, fruit, flower or other aerial parts can be used without destroying the whole plant. So, using the plant parts without destroying the whole plant is a significant way to conserve them.

By analyzing the ethnobotanical data, it was observed that the Chakma are conservative in plant use and they have the knowledge of sustainable use of plants. Because most frequently utilized plant's part is leaf (73%) for the preparation of herbal medicine, which is a non-destructive way of use. Moreover, it refers that leaves in many species may store high concentration of bioactive compounds [35]. In addition it is easy to collect, store, transport, and help the species in conserving it without destroying the plants. The percentage of destructive and non-destructive way of plant use is shown in Figure 3.

Table 1: Plant species used by the Chakma indigenous community for traditional health remedies.

Scientific name	Local name	Chakma name	Family	Illness/ Disease treated	Parts used	Preparation
<i>Achyranthes aspera</i> L. (sc-53)	Apang	Upolengra	Amaranthaceae	Cough	Leaf	Juice of the leaves is taken twice daily.
<i>Acorus calamus</i> L. (sc-61)	Bach	Bach	Araceae	Hair problem	Leaf	Paste of leaves is applied to scalp.
<i>Albizia procera</i> (Roxb.) Benth. (sc-16)	Koroi	Silhoroi	Mimosaceae	Worms	Leaf	Paste of the twigs is mixed with water and taken twice daily (in the morning and evening).
<i>Aloe vera</i> (L.) Burm.f. (sc-21)	Ghritokumari	Ghritokumari	Aloeaceae	Burn and skin disease	Leaf	Paste of leaves is applied to burnt and affected areas to treat skin diseases.
<i>Andrographis paniculata</i> (Burm.f) Wall. Ex Nees (sc-01)	Kalomegh	Chirota	Acanthaceae	Worms	Leaf	Leaf juice mixed with turmeric and sugar is taken twice daily (in the morning and evening).
<i>Argyrea nervosa</i> (Burm.f.) Bojer (sc-06)	Bishtarak	Bubhtaring	Convolvulaceae	Snake bite	Leaf	Paste of leaves is applied to affected area in snakebite.
<i>Aristolochia tagala</i> Cham. (sc-18)	Bon chichinga	Horinhansak	Aristolochiaceae	Constipation	Leaf	Leaf juice is taken early in the morning.
<i>Averrhoa carambola</i> L. (sc-13)	Kamranga	Horenga	Oxalidaceae	Diarrhoea	Fruit	Fruit juice is taken thrice daily until cured.
<i>Azadirachta indica</i> A.Juss. (sc-11)	Nim	Nim	Meliaceae	Skin disease	Leaf and bark	Paste of leaves and bark is applied to whole body followed by taking bath after two hours for 3-5 days.
<i>Blumea lacera</i> (Burm.f.) DC. (sc-35)	Barakukshima	Monimujjekher	Asteraceae	Stomach pain	Leaf	Leaf juice is taken twice a day for 7 days.
<i>Bridelia stipularis</i> (L.) Blume (sc-49)	Harinhara	Baribhangagaas	Euphorbiaceae	Tumor and Cancer	Leaf	Paste of leaves is mixed with black pepper and taken thrice a day until cured.
<i>Celosia cristata</i> L. (sc-78)	Morogful	Radajochchuroful	Amaranthaceae	Diarrhoea	Flower	Paste of flower is mixed with water and taken two teaspoonfuls twice daily until cured.
<i>Cheilocostus speciosus</i> (J.König) C. Specht (sc-60)	Keu	kedogi	Costaceae	Diabetics	Leaf	Leaf juice is taken twice in a day as much as patient can until cured.
<i>Cissus quadrangularis</i> L. (sc-89)	Harjora	Harjora	Vitaceae	Fracture	Leaf	Paste of leaves is applied to affected areas to treat fracture.
<i>Clerodendrum indicum</i> (L.) (sc-03)	Bamunhatti	Noligach	Verbenaceae	Cough	Bark	Paste of bark is mixed with water and taken two teaspoonfuls thrice a day until cured.
<i>Crinum asiaticum</i> L. (sc-77)	Barakanur	Hobaron	Liliaceae	Rheumatism	Root	Paste of roots is applied for the treatment of rheumatism.
<i>Curculigo orchoides</i> Gaertn. (sc-92)	Talamuli	Dub milon	Liliaceae	Snake bite	Leaf	Paste of leaf is applied to affected area in snakebite for the removal of poison.
<i>Datura metel</i> L. (sc-95)	Dhutura	Dudurhul	Solanaceae	Leprosy	Leaf	Leaf juice is mixed with milk and applied to affected area.
<i>Desmodium gangeticum</i> (L.) DC. (sc-90)	Salpani	Nolimada kher gach	Fabaceae	Fracture	Leaf	Paste of leaf is applied to affected area for the treatment of fracture.
<i>Euphorbia neriifolia</i> L. (sc-32)	Kanta-manasa	Hadadabana	Euphorbiaceae	Fracture	Leaf	Paste of leaf is applied to affected area for the treatment of fracture.
<i>Flemingia macrophylla</i> (Willd.) Merr. (sc-15)	Bara-salphan	Harsanga	Fabaceae	Fracture	Leaf	Paste of leaf is applied to affected area twice daily for two days for the treatment of fracture.
<i>Heteropanax fragrans</i> (Roxb.) Seem. (sc-71)	Tarla	Den hatpo	Araliaceae	Throat cancer	Leaf	Paste of leaves is mixed with water and taken twice a day for one week to treat cancer.
<i>Hibiscus rosa-sinensis</i> L. (sc-52)	Joba	Joba	Malvaceae	Skin disease	Flower	Paste of flower is applied for the removal of dead skin from the hand.
<i>Hibiscus sabdariffa</i> L. var. <i>sabdariffa</i> (sc-64)	Lalmesta	Amile	Malvaceae	Jaundice	Leaf and Stem	Leaves and stems are boiled in water and the juice is taken one cupful thrice in a day until cured.
<i>Homalomena pendula</i> (Blume) Bakh.f. (sc-87)	Gondhodula-kochu	Shionsak	Araceae	Piles	Leaf	Juice of leaf is taken until cured.
<i>Ichnocarpus frutescens</i> (L.) R.Br. (sc-79)	Shamalota	Duttyeludi	Apocynaceae	Fracture	Leaf	Paste of leaf is applied to affected area for the treatment of fracture.

<i>Ipomoea pes-tigridis</i> L. (sc-89)	Torulata	Borturing	Convolvulaceae	Gastritis	Leaf	Juice of leaf is taken one cupful twice daily until cured.
<i>Ixora undulate</i> Roxb. (sc-30)	Palkajuirangan	Vatjoraful	Rubiaceae	Stomach pain	Leaf	Juice of leaf is taken two teaspoonfuls twice daily for ten days.
<i>Justicia adhatoda</i> L. (sc-40)	Basak	Sadabasak	Acanthaceae	Cough and fever	Leaf and bark	Leaf juice(2-tablespoon) and Leaf juice of <i>Ocimum sanctum</i> (1-tablespoon) is mixed with 2-tablespoon of honey and taken twice a day for 7 days.
<i>Kalanchoe pinnata</i> (Lam.) Pers. (sc- 46)	Pathorkuchi	Rajmondol	Crassulaceae	Tumor	Leaf and stem	Leaf juice and stem are taken for the removal of tumor or stone.
<i>Lasia spinosa</i> (L.) Thwaites (sc-15)	Katakochu	Hattaldeng-e	Araceae	Fracture	Leaf	Paste of leaf is applied to affected area.
<i>Lawsonia inermis</i> L. (sc-12)	Mehedi	Mendipada	Lythraceae	Hair problem	Leaf	10-12gm leaves and one – two fruit of <i>Terminalia Chebula</i> (horitoki) is boiled in 250ml of water and the extract is applied (after cooling) to hair.
<i>Mirabilis jalapa</i> L. (sc-05)	Sondhamaloti	Morichful	Nyctaginaceae	Stomach pain	Leaf	Juice of leaf is taken one cupful thrice a day for seven days until cured.
<i>Momordica charantia</i> L. var. charantia (sc-62)	Titkorola	Tide gulo	Cucurbitaceae	Allergy	Leaf	Leaves are boiled in water is taken two teaspoonfuls twice daily until cured.
<i>Murraya paniculata</i> (L.) Jack (sc-67)	Kamini	Kamini	Rutaceae	Cancer	Leaf	Juice of leaves is taken one cupful thrice a day until cured.
<i>Nyctanthes arbor-tristis</i> L. (sc-42)	Sheuli	Shinguriful	Verbenaceae	Fever	Leaf	Juice of the leaves mixed with honey is taken for seven days.
<i>Ocimum basilicum</i> L. (sc-39)	Babui tulsi	Sabarang	Lamiaceae	Cough and asthma	Leaf	Leaf juice and juice of zinger mixed with honey is taken twice-thrice in a day.
<i>Oroxylum indicum</i> (L.) Kurz (sc-10)	Konok	Honagulo	Bignoniaceae	Diabetics	Fruit	Fruits are cooked and eaten.
<i>Pandanus amaryllifolius</i> Roxb. (sc-17)	Polaopata	Vat pada	Pandanaceae	Fragrance of rice	Leaf	Leaves are used to make a fragrance to boiled rice.
<i>Pedilanthus tithymaloides</i> L. (sc-73)	Berachita	Borokut	Euphorbiaceae	Cough and asthma	Leaf	Leaf juice is taken two teaspoonfuls twice a day for ten days.
<i>Plumbago indica</i> L. (sc-51)	Raktachita	Awonitide	Plumbaginaceae	Tumor	Leaf	Paste of leaves is taken.
<i>Rauvolfia serpentina</i> (L.) Benth.ex Kurz (sc-65)	Sorpogondha	Surchan	Apocynaceae	Insomnia and high blood pressure	Root	Paste of root is mixed with water is taken twice daily for a month for the treatment of insomnia and high blood pressure.
<i>Stephania glabra</i> (Roxb.) Miers (sc-12)	Thandamanik	Khabukka	Menispermaceae	Snakebite	Leaf	Paste of leaf is applied to affected area.
<i>Sterculia villosa</i> Roxb. (sc-07)	Udal	Udol gach	Sterculiaceae	Leucorrhoea	Leaf	Paste of leaves is mixed with water and taken.
<i>Tacca integrifolia</i> Ker Gawl. (sc-09)	Matimunda	Hengpette	Taccaceae	Cancer	Leaf	Juice of leaf is taken one spoonfuls once daily until cured.
<i>Tagetes erecta</i> L. (sc-14)	Gadaphul	Sotrong	Asteraceae	Piles	Leaf	Juice of leaf is taken one – two teaspoonfuls twice daily for five days.
<i>Terminalia belerica</i> (Gaertn.) Roxb. (sc-70)	Bohera	Boragulo	Combretaceae	Ulcer	Fruit	Fruit is ground into powder and taken twice a day until cured after launch and dinner.
<i>Trevesia palmate</i> (Roxb. Ex Lindl) Vis (sc-72)	Argoja	Jharbohogyie	Araliaceae	Harnia	Leaf	Juice of leaf is taken as much as patient can.
<i>Trichosanthes tricuspidata</i> Lour. (sc-60)	Makal	Hedafof	Cucurbitaceae	Jaundice	Root	Juice of roots is taken once in a day (in the morning) until cured.
<i>Typhonium trilobatum</i> (L.) Schottvar. (sc-63) trilobatum	Ghetkochu	Harvaj	Araceae	Tumor and Cancer	Root	Paste of root is taken two teaspoonfuls thrice a day until cured.

A total of 28 diseases/ illness were documented, which resulted Fracture 25%, Tumor or cancer 20%, cough 15%, skin disease 10%, snake bite 10%, piles 8%, jaundice 8%, Harnia 4% (Figure 4).

The most frequent cited modes of preparation were extract, paste, juice and infusion respectively. As far as the techniques of preparation of medicine are concerned, these do not resemble those specified in present day organized pharmaceuticals practices. In some preparations, households, utensils (cup, knife, pot) and naturally

available materials (sticks, pieces of stone etc.) have been used.

The dose and duration of application of these medicinal preparations are varied from informant to informant. Most of the cases they were took one to three teaspoonfuls extract, occasionally they were took a glass or one cupful. Time and duration is also varied, most frequently extract was took for one to three days. In case of some complicated diseases/illness, the duration may be longer.

The informants in the present study are within 25 to 75 years old

(Table 2). During the survey, most of the information documented from the male informants. The percentage of male is 71% and the female is 29%. The present study revealed that only one healer was below 50 years (Table 2). The present generation lost the interest to continue their parental profession because it does not provide them proper financial support to their livelihood (Uddin, 2010) and the older practitioners die without passing their specialist knowledge. This knowledge, however, is dwindling rapidly due to movement towards a more modern lifestyle, agricultural practices, cultural changes within the community, housing colonies, and education system. These changes are leading to not only the destruction of habitats of medicinal plants but also the declining of traditional knowledge and medicinal plant species in the area. Similarly, the threat to traditional knowledge observed in other parts of the world [36] is also due to a lack of interest of the younger generation.

The Rangamati district is rich in biodiversity, and to conserve this it is necessary to create public awareness about conservation of wild ethnobotanical plants. It is suggested that- 1) collection should be made by trained and experienced plant collectors who can identify the ethnobotanical plants properly and aware of preservation of plants and their plant parts. 2) During the collection of leaves, flowers and fruits, the whole plant should not be uprooted. 3) A complete ban by the proper authorities should be imposed on the collection of rare and endangered species and 4) Research institutes and university researchers should carry out research on these species to conserve and improve their genetic constitutions. 5) Local people's knowledge

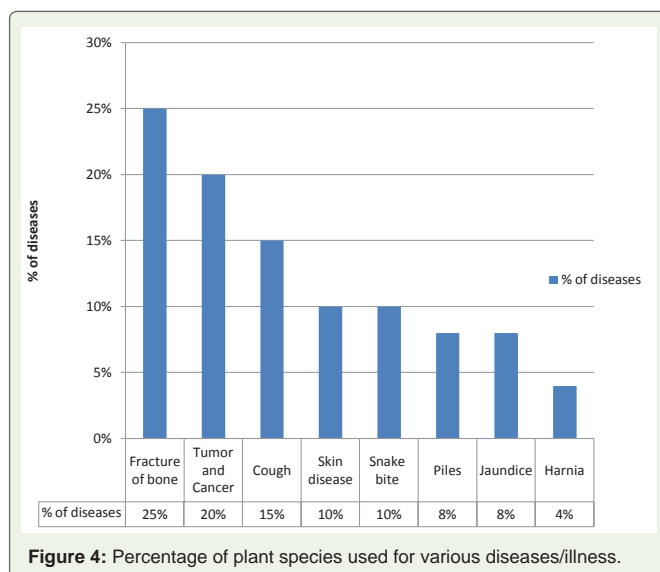
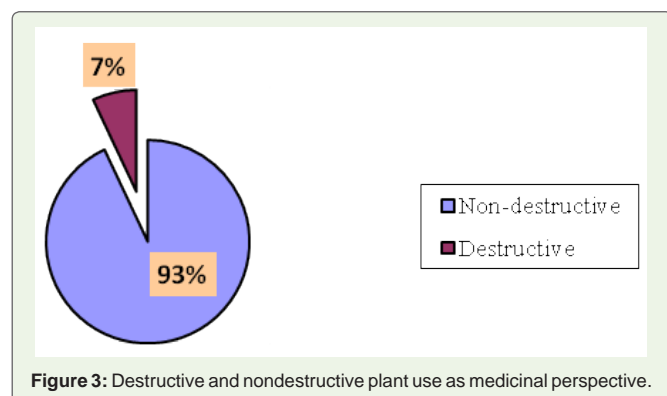
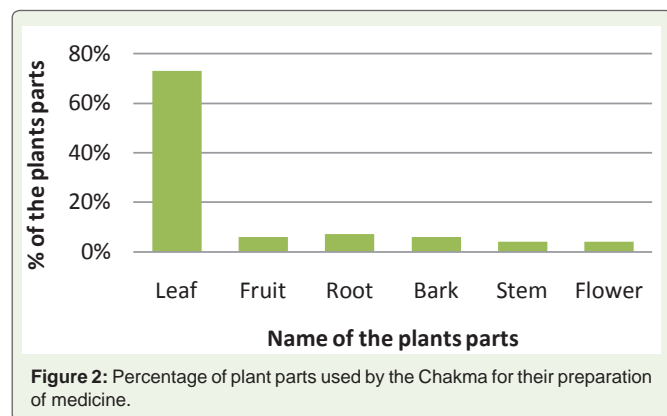


Table 2: Age and number of plant information collected from the informants.

Sl.No	Name of the informants	Sex	Age	No. of information recorded
1	Natunbihari Chakma	Male	68	25
2	Buddha joy khisa	Male	70	5
3	Sudhas smriti khisa	Male	50	5
4	Nirendro talukder	Male	75	5
5	Somesh talukder	Male	60	5
6	Namita Chakma	Female	50	3
7	Papri Chakma	Female	25	2

should be associated to prepare a conservation strategy. In addition, attempts must be made to encourage the documentation of plants so they are readily accessible to a larger number of the populace.

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