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Medicinal plants used by the local peoples at sadar upazila of Sirajganj District, Bangladesh

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Abstract

The present research focused on medicinal uses of plants by the local peoples at Sadar upazila of Sirajganj district was carried out from October 2019 to December 2021. The information about medicinal uses of rural people was collected through interview. A total of 78 plant species under 73 genera and 46 families have been recorded which were used for the treatment of 85 categories of diseases. This medicinal plants were used by the rural people for the treatment of various disease like diabetes, bronchitis, weakness, leprosy, insect and snake bites, high blood pressure, asthma, passing of semen, gonorrhea, skin disease, jaundice, headache, acidity, diarrhea, dry cough, cancer, dysentery, scabies, menstrual disorder, fever, toothache, burning wounds, stomachache, epilepsy, gout, rheumatism, traumatic injury, tonsillitis, abortion, vomiting, bleeding, ulcer, anemia , ring worm, hiccup, pneumonia, tuberculosis, arthritis, heart disease, diuretic, hypertension, paralysis, constipation, nausea, sore, dyspepsia, chicken pox, pain, pyorrhea, eczema, cholera, scurvy, infection, measles, itches, whooping cough, digestive system disorder, liver disorder, heart disease, sexual disease, gastrointestinal problem, lung infection, wound healing, high cholesterol, urinary tract infection, hepatitis, kidney disease, eye inflammation, cough, catarrhal fever, malarial fever, hair treatment, dry skin, scrofulous sore, piles, sedative, swelling, tumor and other diseases. The result of the study revealed that the local people had rich knowledge of medicinal plants and were using the plants for their primary health care though people inside the study area are most often dependent on allopathic medicine. Now day's plants are used broadly in modern medication. Therefore, it would be important to document the traditional knowledge of medicinal plants for further healing purpose.

Keywords: Medicinal plants; Herbal drug development; Sirajganj sadar; Bangladesh

1. Introduction

The term "medicinal plant" refers to a variety of plants used in herbal medication ("herbology or herbal medicine"). A large number of definitions for medicinal plants have been offered. "A medicinal plant is that plant which contains chemicals that could be utilized for therapy, and were blueprints for cytotoxic drugs" according to the WHO. Traditional medicine is still the most common kind of treatment in poor lands, with over 80% of the people relying on this for their well-being. However, due to the influence of Western culture, knowledge of medicinal plant is fast declining, resulting in a reduction of the generations who carries the usage of plant in traditional medicine, which has sparked global interest. According to WHO 70 percent of people in several countries use traditional medicine to treat various disease [89]. The use of herbal medicine as one element of alternative medicine is increasing worldwide [86]. Even today, plants are not only indispensable in healthcare, but form the best hope of source for safe future medicines [87]. Most of the important drugs of the past 50 years, which have revolutionized modern medicinal practice, have been isolated from plants. These chemical ingredients exhibit therapeutic properties of plant and animal drugs [5]. This research is useful

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in documenting, analyzing and disseminating of knowledge on the interaction between medicinal plants and human society. Hence this investigation highlights on important medicinal plants in the study area.

Several medicinal plants studies in Bangladesh have been carried out by [2], [6], [7], [8], [9], [10], [11], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21-45], [46-62], [63-85], [95], [96], [97], [98], [99], [100], [106] and [107]. The objectives of the current research are to identify and uses traditional knowledge of medicinal plants in the sadar upazila of Sirajganj district of Bangladesh.

2. Material and methods

2.1. Study area

Sirajganj district is the gateway to the North Bengal. It is bounded by Bogura and Natore district on the North, on the West by Natore and Pabna district; on the south by Pabna and Manikganj district; on the East Manikganj, Tangail and Jamalpur district. Sirajganj Sadar upazila is located in between 24°01' and 24°47' North latitudes and in between 89°15' and 89°59' East longitudes [4].

2.2. Methodology

The present study was documented in the medicinal plants of the study area from October 2019 to December 2021. A total of 78 species belonging to 73 genera under 46 families were recorded. Medicinal information was obtained through semi-structured interviews with knowledgeable informants. A total of 76 informants (46 male and 30 female) between 21 and 74 years of age were interviewed [3]. Plant parts with either flowers or fruits were collected using traditional herbarium techniques to make voucher specimens for documentation and voucher specimens have been preserved at Herbarium of Rajshahi University.

2.3. Identification

Collected specimens have been examined, studied and identified. Identifications have been confirmed by consulting standard literature [1], [90] and [93]. Nomenclature has been updated following recent literature [1], [91] and [92].

3. Results

From October 2019 to December 2021, a study of traditional medicinal plants utilized by the local people in Sadar Upazila, Sirajganj District, Bangladesh was conducted. A total of 78 plant species were discovered, divided into 73 genera and 46 families. Magnoliopsida (Dicotyledones) has 37 families, 61 genus, 65 species, while Liliopsida (Monocotyledones) has 9 families, 12 genuses, and 13 species. There are 40 herbs, 18 trees, 14 shrubs, and 6 climbers from 46 different families. The distribution of angiosperm species within the families differs. 4 species belong to the Fabaceae and Euphorbiaceae families. There are 6 species in Asteraceae and 5 species in Apocynaceae family (Figure 3). There are 3 species in each of the Amarantheceae, Combretaceae, Liliaceae and Verbenaceae families. 2 species are represented in each of the Acanthaceae, Apiaceae, Cucurbitaceae, Lamiaceae, Mimosaceae, Myrtaceae, Poaceae, Rutaceae and Zingiberaceae families. There are 1 species in each of the Araceae, Arecaceae, Asclepiadaceae, Bombacaceae, Boraginaceae, Brassicaceae, Bromeliaceae, Convolvulaceae, Costaceae, Crassulaceae, Cuscutaceae, Cyperaceae, Gentianaceae, Lythraceae, Malvaceae, Meliaceae, Menispermaceae, Moraceae, Moringaceae, Musaceae, Nyctaginaceae, Oxalidaceae, Papaviraceae, Piperaceae, Polygonaceae, Ranunculaceae, Solanaceae, Sterculaceae, Vitaceae families. A single species was found in each of the 29 families. Out of the recorded species, 10% were very common, 54% were common, 22% were frequent and 14% were rare in the study area (Figure 5). Herbs account for 40 (51.282%) of the 78 species found here, trees for 18 (23.076%), shrubs for 14 (17.948%), and climbers for 6 (7.692% percent) (Table 1; Figure 1).

The findings revealed that the people of Sadar upazila of Sirajganj district continue to rely on plant medicines for the treatment of abdominal pain, acidity, abortion, alopecia, antihelminthic, anti oxidant, blood pressure, balance diet, asthma, arthritis, anti-inflammatory, blood dysentery, blotch, broken limbs, bronchitis, burning wounds, cancer, cough, constipation, cooling or astringent, cold, cholera, chicken pox, diabetes, diarrhea, dysentery, dog bite, diuretic, digestive problem, dyspepsia, eczema, edema, eye inflammation, epilepsy, febrifuge, fever, gout, gonorrhea, catarrhal fever, malarial fever, hair treatment, headache, heart disease, hemorrhage, hiccup, leprosy, joint pain, jaundice, insomnia, insect bite, leucorrhoea, liver disorder, lung infection, male weakness, measles, menstrual problem, mother milk secretion, ring worm, rheumatism, pyorrhea, pneumonia, piles, paralysis, scurvy, sneezing, snake bite, sedative, sinuses, skin disease, stomach pain, stop bleeding, stop vomiting, swelling, tumor, tuberculosis, toothache, tonsilitis, throat pain,

traumatic injury, ulcer, urinary problem, weakness, wound healing and so many diseases. Out of the recorded diseases dysentery, fever, skin disease, cough, diabetes and hair treatment was dominant diseases in the study area (Figure 4).

Variation found in uses plant parts. Leaves (44.871%) are mostly used parts and the other is whole plant (23.076%), fruits (17.948%), root (16.666%), seed (14.102%), stem (6.410%), flowers (6.410%), leaf stalk (1.282%), rhizome (5.128%), gum (3.846%), petiole (3.846%), tuber (2.564%), bulb (2.564%), latex (1.282%) (Figure 2). This report has recorded 85 types of uses of 78 medicinal plants. Among those 18 species has been used in dysentery, 13 species on fever, 12 species for skin treatment 11 species for cough, 10 species for diabetes, and hair treatment. 9 species for jaundice, stomachache pain. 8 species for asthma, diarrhea, stop bleeding and antihelminthic, 7 for blood pressure. 6 species for rheumatism, snake bite, scurvy, bronchitis and burning sensation, 5 species for constipation and acidity, 4 for piles, 4 for headache 4 for vomiting, 3 for bites of insect, 2 for ringworms, 2 for weakness, 3 for gonorrhea, 2 for toothache, 3 for liver disease. Almost 31 types of disease were treated by 2-4 species and other 32 types of illness was healed by only one species.

Table 1 Investigated medicinal plants used by the local people in Sadar upazila of Sirajganj district, Bangladesh

Scientific name, Local name and Family	Used parts	Ailments and formulations
Abroma augusta, Ulotkambol, Sterculiaceae	Petiole, Seed, Leaf	**Weakness:** For the treatment of weakness, we can use petiole pulp by wetting them whole night. **Stomach pain:** Crushed seed combined with water used twice in a day for stomach pain. **Leucorrhoea:** Petiole pulp and leaf decoction combined with crushed pepper powder is being treated daily to prevent leucorrhoea for 2 days.
Acacia nilotica, Babla, Mimosaceae	Bark, Leaf	**Bronchitis:** Bronchitis can indeed be cured by taking bark concentrates verbally. **Dysentery:** Capsules are also used to treat Dysentery. **Leucoderma:** Extraction of leaves used to treat leucoderma.
Acalypha indica, Muktajhuri Euphorbiaceae	Leaf	**Ringworm:** For ringworm, leaf paste with lime is suggested to children. **Snake bite:** Paste made from young parts is administered to the injured area to cure snake bites. **Child constipation:** A herb used to treat constipation in children.
Achyranthes aspera, Apang, Amaranthaceae	Stem, Leaf, Root	**Jaundice:** Leaf paste of *Cajanus cajan* and mehendi and root decoction of apang and molasses has been taken verbally once daily. **Tonsillitis:** Filtrate leaf juice is taken for tonsillitis. **Traumatic injury:** Hot water extract of root is taken verbally to heal traumatic injury. **Insect bite:** Crushed young leaves use at the bite place of venomous insects as well as snake bite. **Urination problem:** Decoction of apang (30-50)gm taken twice a day relief urinary incontinence. It also used for increase urination. **Premature delivery:** Whole dried plant tied to the waist of the pregnant woman to prevent premature delivery.
Adhatoda vasica, Basak, Acanthaceae	Whole plant specially Leaf	**Cough, fever:** Leaf juice is the main remedy to cure cough, fever. **Bleeding piles:** The extract of plant is used in bleeding piles.
Aegle marmelos, Bel, Rutaceae	Fruit, Root	**Stomach-ache:** Pieces of young fruit has been used to treat stomach-aches.

		Constipation: Ripe fruit juice is used to treat constipation. **Diarrhoea:** 0.5 gm root extract along with sugar and 3 teaspoons of milk is used to treat diarrhoea. **Heart disorder:** 4 gm fresh root paste used twice daily for heart disease.
Allium cepa, Piaj, Liliaceae	Bulb	**Cold and cough:** Warm bulb juice and *Brassica napus* oil are massaged into the entire body to treat common colds and coughs. **Headache:** To relieve headaches, warm bulb juice with mustered oil and then apply to the temples. **Snake bite:** Juice is applied to the affected area of snake bite. **Hair treatment:** Juice is used to treat hair loss.
Allium sativum, Rasun, Liliaceae	Bulb	**Cough, fever:** Coughs and fever have been relieved by extracting the juice or pulp of the bulbs. **Scabies and eczema:** Juice extract or pulp has been used to prevent greying of hair and prevent skin disease like eczema and scabies. **Blood pressure:** Bulb is used to treat high blood pressure when combined with hot rice.
Aloe vera, Ghritakumari, Liliaceae	Leaf	**Paralysis:** Decoction of boiled leaf is used for paralysis treatment. **Viral jaundice:** To treat viral jaundice leaf juice used verbally twice in a day for 3 days. **Weakness of body:** Juice taken with sugar used for body weakness. **Skin treatment:** Leaf Paste used for skin care. **Hair treatment:** Leaf juice used for hair fall solution and also to make them silky and shining.
Alstonia scholaris, Chatim, Apocynaceae	Bark, Gum, Root	**Ulcer:** Gum is administered orally in ulcers. **Cancer:** Root extracts is prescribe to taken orally in preventing cancer. **Rheumatism:** Paste of dry bark with salt, and *Piper nigrum* used for rheumatism. **Gastric problem:** 50 mg bark powder with salt is administered once for 5 days.
Amaranthus spinosus, Katanotey Amaranthaceae	Whole plant	**Toothache:** For toothache plant extract used as a beneficial mouth wash. **Dysentery:** Leaves juice used in dysentery. **Burning wounds:** Leaves paste can healing burning wounds.
Amaranthus viridis, Shaknotey, Amaranthaceae	Whole plant	**Acidity:** Boiled and smashed leaves and roots are taken for acidity. **Leprosy:** The herb can cure leprosy by taking once daily for 2-3 weeks. **Immunity:** It is heard to say that plant is beneficial for health and Immunity.
Andrographis paniculata, Kalomegh, Acanthaceae	Leaf	**Headache, diarrhoea, cholera, fever:** Leaf juice used to treat fevers, headaches, diarrhoea, and cholera. **Lung infection:** Leaves are cooked in water and the resulting liquid is used to treat lung infections.

		Leprosy: Until the leprosy is cured, leaf paste is applied externally or to the affected area. **Liver disorder:** To treat liver disease, juice derived from macerated leaves is mixed with water and consumed 2-3 times daily.
Ananas sativus, Anarosh, Bromeliaceae	Flower, Leaf, Fruit	**Fever:** Fruits can prevent several fevers. **Abortion:** Fruit has the properties to abort baby.
Areca catechu, Supari, Arecaceae	Seed, Root	**Taeniasis:** Crushed, boiled and concentrated seed extract used orally in twice daily for 3 days. **Dyspepsia:** 2 spoon of young fruit juice can be taken every day for dyspepsia. **Blood dysentery:** Crushed young seed of (4 gm), boiled and filtered it and the jelly like decoction taken twice a day to prevent blood dysentery. **Toothache:** Ashes made from the root powder and dry nut powder in same proportion is a beneficial remedy for toothache. **Sore:** Dry fruit powder applied on the sore area.
Argemone mexicana, Shialkata, Papaveraceae	Root, Latex	**Skin cracks:** Root paste used in skin disease and latex is to skin cracks. **Jaundice:** Jaundice is treated with latex. **Tumors, cancer:** Latex is used to treat tumors and cancer. **Malarial fever:** To treat malarial fever, 1-2 gm root decoction with betel leaves two time a day for 3 days.
Azadirachta indica, Neem, Meliaceae	Leaf	**Chicken pox:** For chicken pox, leave the paste in warm water while bathing. **Jaundice:** Leaf juice is used to treat jaundice. **Pyorrhoea:** Leaf decoction used in gargling to treat sore and pyorrhoea. **Skin disease:** While bathing, apply a paste mixed with warm water to treat ailments.
Boerhaavia diffusa, Punarnava, Nyctaginaceae	Root, Leaf	**Diuretic:** Root paste applies verbally twice a day in diuretic. **Asthma:** Moderate amount of remedy made from roots and leaves extract used to treat asthma. **Insomnia:** Tender leaf paste used twice a day in treating insomnia.
Bombax ceiba, Shimul, Bombacaceae	Gum, Root	**Burning sensation:** For a burning feeling in the body, a gum paste is employed. **Male weakness:** Males with sexual weakness are given tender root decoction with boiling water. **Rheumatism:** For rheumatism, a grinding of root bark is administered orally.
Brassica napus, Sorisha, Brassicaceae	Seed	**Hair treatment:** Seed oil is slightly heated and applied to the hair. It strengthens and shines hair. **Insomnia:** Seed oil applied to the scalp for a good night's sleep. **Skin crack:** Seed oil is applied to the skin to prevent skin cracks. **Gout:** Gout is treated with mustard plaster. **Cough and neuralgic:** Cough and neuralgia are treated with a little warm oil.

Cajanus cajan, Arhar, Fabaceae	Leaf, Seed	**Piles:** Leaves are used to treat mouth disease and piles. **Jaundice and pneumonia:** Leaf juice is a laxative and helps to treat jaundice and pneumonia. **Mother milk secretion:** Seeds are hard on intestines. Seeds and leaf decoction is used in mother milk secretion.
Calotropis procera, Akando, Asclepiadaceae	Leaf	**Arthritis:** By warming over a flame, leaves along with a pinch of salt and *Brassica napus* oil are administered to rubbing the hurted area. **Paralyses:** When leaf paste is heated and applied, it paralyzes the affected area. **Rheumatism:** Gums and mustered oil are taken every night for rheumatism.
Carissa carandus, Karamcha, Apocynaceae	Fruit, Root bark	**Diabetes:** Root bark and ripe fruit is taken orally in controlling diabetes. **Anti helminthic and wounds:** Root bark decoction used as anthelminthic and also orally taken to cure wounds.
Catharanthus roseus, Nayantara, Apocynaceae	Whole plant	**Child leukemia:** Plant juice which helps in preventing child leukemia. **Anti tumour and anti cancer:** Leaves and stems has alkaloids which used as anti tumor and anti cancer. **Diabetes and blood pressure:** Leaves used in controlling diabetes and high blood pressure.
Centella asiatica, Thankuni, Apiaceae	Whole plant	**Dysentery and stomach pain:** Plant paste with steamed rice used in dysentery and stomach pain due to indigestion. **Tuberculosis:** Plant juice taken twice a day for 2days to treat tuberculosis.
Cissus quadrangularis, Harjora, Vitaceae	Whole plant	**Scurvy and irregular menstruation:** Juice is used in the treatment of scurvy and menstrual disorder. **Asthma:** Stem paste is taken by asthma patients. Boiling stem with lime water is beneficial in stomach pain. **Indigestion:** Leaf juice combined with water and taken orally to treat indigestion. **Piles:** Leaf juice is consumed orally to aid in pile recovery. **Broken limbs:** Stems, roots, and leaves are applied to broken limbs as a plaster.
Citrus aurantifolia, Lebu, Rutaceae	Fruit	**Catarrhal fever:** Fruit juice along with honey and warm water is useful for catarrhal fever. **Increase digestive power and appetite:** Lemonade or by taking with rice is useful in increasing digestive power and appetite. **Skin irritation and nausea:** Fruits is taken orally to cure skin problem and nausea. **Balance diet:** Lemon juice with warm water is taken every morning in empty stomach.
Clerodendrum viscosum, Bhat, Verbenaceae	Leaf, Root	**Tumors, Asthma and skin problem:** Leaves and roots are used them as anti asthmatic, anti-tumors, and certain skin problems. **Hair treatment:** Leaf paste used to the scalp and left it for sometimes twice a week for hair treatment. **Anti helminthic:** Young leaf juice has antihelminthic properties.
Clitoria ternetea, Oporajita, Fabaceae	Root, Leaf	**Throat pain:** To treat throat pain, a paste of leaves is applied externally.

		Swellings: To treat edema, a paste of leaves is administered externally. **Tuberculosis glands:** Tuberculosis glands are treated with an oral decoction of the root. **Headache:** Externally, a paste of leaves is used to relieve headaches
Coccinia grandis, Telakucha, Cucurbitaceae	Leaf, Fruit	**Diabetes:** Leaves and fruits are used to lower blood sugar levels. **Hypertension:** To normalize hypertension, consume leaf juice in the morning for 7 days. **Fever and vomiting:** For fever and vomiting, crushed leaves juice combined with water is utilized. **Insomnia:** A paste made from cooked leaves that is used to treat insomnia.
Colocasia esculenta, Kochu, Araceae	Leaf, Petiole	**Stop bleeding:** Juice of the petioles used for stop bleeding. it is also stimulant in athlet's foot. **Tumors cancer:** Leaf juice used in treatment of tumors, polyp, nose cancer and warts.
Coriandrum sativum, Dhone, Apiaceae	Seed, Whole plant	**Asthma:** Plant extract used orally for 3 weeks to cure asthma. **Cold:** Juice made from seeds, ginger, jeera, pepper and milk and taken twice a day to cure sneezing. **Fever:** Plant juice used for cold, cough and fever.
Costus speciosus, Buno Ada, Costaceae	Rhizome, Stem, Tuber	**Menstrual disorder and urinary inflammation:**Rhizome used to treat menstrual irregularities and urinary inflammation when urine contains blood, the paste is administered internally. **Dysentery and other Digestive problem:** Chutney made from the brunt tuber, sugar, and tamarind used. **Eye inflammation:** Eye irritation is treated with rhizome juice mixed with sugar.
Curcuma longa, Holud, Zingiberaceae	Rhizome, Flower	**Eczema:** Rhizome is used externally to treat scabies, itch, abscesses, and eczema. **Cold fever:** Rhizome used to treat, cold, cough fever, inflammations, liver affections, and jaundice of lactating mother. **Dysentery:** Rhizome with rice, mustard oil, and salt is taken to treat dysentery. **Gonorrhea:** Flower used in the treatment of ringworm and many skin diseases, as well as gonorrhea. **Gastric problem:** Rhizome chewing with salt is useful in gastric problem. **Stop bleeding and wounds:** Turmeric powder or paste used in the cutting area to stop bleeding or heal wounds.
Cuscuta reflexa, Sarnolata, Cuscutaceae	Stem, Leaf	**Constipation, liver disorder and antioxidant:** Juice is beneficial in constipation, flatulence, liver disorder and antioxidant.
Cynodon dactylon, Durbaghas, Poaceae	Whole plant	**Control bleeding:** Plant juice used for stop bleeding in fresh cuts and wounds.
Cyperus rotundus, Mutha, Cyperaceae	Tuber, Root	**Fever:** Crushed and boiled root decoction and used the filtrate solution for fever. **Diarrhoea:** Soak 5 gm of crushed root wetting whole night and consume twice daily.

		Wounds, Sores: Wounds and sores are treated with macerated root paste.
Dalbergia sissoo, Sisso, Fabaceae	Leaf, Bark	**Hemorrhage:** In many types of bleeding, dry bark employed as astringent and haemostatic. **Gonorrhea:** To treat acute gonorrhea, leaf decoctions are prescribed verbally. **Dysentery:** Leaf decoction used orally to treated dysentery.
Datura metel, Dhutra, Solanaceae	Leaf, Flower, Fruit	**Rheumatic swelling:** Leaves used as topical treatment in rheumatic joint pain. **Ear pain and asthma:** Smoked to relieve spasmodic asthma and used externally for earache. **Skin disease:** Leaf paste applied with neem leaf to treat skin diseases.
Eclipta alba, Kalokeshi, Asteraceae	Whole plant	**Diarrhoea:** To treat diarrhea of infant plant Juice added with sugar or honey and feeding 2 times a day until cure. **Constipation:** Smashed leaf drinking with water helps in constipation. **Hair treatment:** Leaf applied for making hair black and shine.
Euphorbia hirta, Dudhiya, Euphorbiaceae	Whole plant	**Dysentery:** To treat dysentery, the entire plant is ground into a paste and given three times daily. **Bronchitis:** A whole plant grinding decoction is taken once day for a week to treat bronchitis. **Edemas:** Edemas are treated with a grinding decoction of the entire plat administered once a day for 4-5 days.
Enhydra fluctuans, Helencha, Asteraceae	Whole plant	**Fever:** Cooked plant taken for regaining food taste and appetite in fever.
Ficus racemosa, Jagdumur, Moraceae	Fruit, Gum	**Dry cough:** For dry cough, fruits extract or vegetables taken by culinary process. **Asthma:** One week, eat young fruits mixed by honey twice daily to treat asthma. **Diabetes:** To treat diabetes, ½ spoon of dehydrated raw fruit powder taken 2 times for two months.
Heliotropium indicum, Hatisur, Boraginaceae	Leaf	**Dog bite:** Macerated leaves used in dog bite. **Insects bite:** Leaf juice with with same portion of *Ricinuscommunis* oil applied in insects bite place.
Hibiscus rosa-sinensis, Joba, Malvaceae	Flower	**Burning injury:** Flower paste applied in burning injury. **Menstrual disorders:** Flower paste along with water is taken orally to treat menstrual disorder. **Soothing and antiseptic:** Buds are crushed and combined with water to make juice, which is used orally for cooling and astringency. **Treatment of hair:** A floral paste that is used to treat hair.
Ipomoea aquatia, Kolmishak, Convolvulaceae	Whole plant	**Jaundice:** Dried leaf paste combined with cold water taken by mouth for jaundice and bronchitis **Bronchitis, leprosy and fever:** Plants are anthelminthic and emetic, effective in leprosy, fever, liver disorder.
Kalanchoe pinnata, Pathorkuchi, Crassulaceae	Leaf	**Stop bleeding:** Leaf paste is very effective in stop bleeding.

		Blood dysentery: Leaf juice prescribe once for 7days in blood dysentery. **Stomachic:** Smashed leaves along with salt used for stomach pain.
Lantana camara, Chotra, Verbenaceae	Leaf	**Aches and pains:** Crushed leaves, turmeric and salt apply weekly to the wounds. **Measles:** Leaves used in the treatment of measles. **Tetanus, rheumatism and malaria:** The plant is emetic , and antiphasic. solution is often used to treat Tetanus, rheumatism, and malaria.
Leucas aspera, Setodron, Lamiaceae	Leaf, Root	**Snake-bite:** Macerated leaves given orally to the bitten people. And macerated roots are applied to the bitten area. **Severe rheumatism:** The juice of the leaves is also beneficial in severe rheumatism. **Stomachic:** For stomach pain, 10 milliliters of leaf decoction mixed in a small amount of rock salt are administered twice daily until the condition is resolved. **Psoriasis and other skin disease:** Leaf paste being used orally for psoriasis and other skin diseases. **Antihelminthic:** A cooked plant paste used to keep worms at bay.
Lawsonia inermis, Mehedi, Lythraceae	Leaf	**Skin care:** Leaf solution is an open and effective remedy for skin issues. **Treatment of hair:** Leaf solution is wonderful topical remedy for hair growth and keeps hair soft and shining.
Mikania micarantha, Asamlota, Asteraceae	Leaf	**Stop bleeding:** Leaf paste is very effective in cutting to immediately stop bleeding. **Skin care:** Leaf paste is used regularly at night for 1 week in skin care. It helps to prevent discoloration of facial skin.
Mimosa pudica, Lajjaboti, Mimosaceae	Root, Leaf	**Diarrhoea:** Treating diarrhoea, solution made from root is used. **Piles:** To treat piles, root solution is given twice a day for one month. **Snake bites:** For snake bites, soak the plant's roots in raw milk overnight and drink it morning for 3 days. **Muscular pain:** Leaves solution combined to water taken orally in muscle soreness.
Momordica charantia, Korolla, Cucurbitaceae	Whole plant	**Fever:** A stomachic made from plant solution in alcoholic condition used to treat colic and fever. **Diabetes:** Juice obtains from whole plant is eaten orally to treat diabetes. **Head pain:** Root paste is used to treat headaches. **Stomachic:** Stomachic cure with the remedy made from cooked fruits.
Moringa oliefera, Sajna, Moringaceae	Leaf, Root, Fruit, Seed	**Blood pressure:** Cooked whole leaves eaten by people with high blood pressure. **Wormicidal and abortion:** A paste of root bark and water used as homicide and abortive. **Fever, abdomen pain:** Root decoction is given once a day for two days to treat fever and stomach ache.

		Rheumatism: Rheumatism is treated with seed oil. **Diabetes:** Heat-dried leaves aid in diabetes control when combined with rice on a daily basis. **Cold-cough:** Leaf extract used orally two times for 3 days to treat cold and cough. **Anti-inflammatory:** Leaf solution used in inflammation.
Musa sapientum, Kola, Musaceae	Stem, Bark	**Stop bleeding:** Stem juice is effective for stop bleeding. **Snake bite:** Bark juice helps in snake bite **Dysentery:** Fruit is used to prevent Dysentery.
Nerium indicum, Korobi, Apocynaceae	Leaf, Root, Bark	**Ulcers:** Solution of root bark is being used topically to alleviate penile ulcer. **Joint pain:** Mixture of root bark is applied topically to relieve joints pain. **Insect bite:** Fresh leaves are soaked in water and used to relieve venomous insect bite. **Swellings:** Hot water extract of leaves is often used to behave swellings.
Nigella sativa, Kalijeera, Ranunculaceae	Seed	**High blood pressure:** Seed has the significant effect of decreasing blood pressure. **Asthma:** To eat the seed everyday decreased asthma. **Diabetes:** Regularly eating seed helps to decrease blood sugar.
Ocimum sanctum, Tulsi, Lamiaceae	Leaf	**Cough:** To treat cough, take 1-2 spoonfuls of leaf extract twice daily until cured. **Bronchitis and cold:** Warm leaf juice is used to treat cough, coldness, and bronchitis. **Gastric disorder and ringworm:** Leaf juice is beneficial for gastric disorders, earaches, ringworm, leprosy, and itches.
Oxalis corniculata, Amrul, Oxalidaceae	Leaf	**Stomach pain:** Leaf solution mined by water and take for stomach pain **Scurvy:** Leaves juice helps to cure scurvy.
Phyllanthus emblica, Amloki, Euphorbiaceae	Fruit, Bark, Leaf	**Diabetes:** Diabetes can be treated by green fruit. **Stomach problem:** Fruit powder and bark juice is taken orally thrice daily until the gastrointestinal condition is resolved. **Skin diseases:** Fruits are used to treat a variety of skin conditions, **Scurvy:** Fruit juice use as well as mouth wash and toothaches issue for about 2-3 months, take one green fruit twice a day. **Hair treatment:** Fruit is used as a hair fall remedy as well as a black hair dye.
Piper betel, Pan, Piperaceae	Leaf	**Phlegm:** Leaves act as a good decongestant, facilitating the elimination of phlegm. **Louse removal and coughing:** Leaf extract aids in lice removal and cough relief. **Toothache and gum disease:** Leaf also used to treat many types of oral ailment (pyorrhea) and toothache.
Persicaria hydropiper, Biskatali, Polygonaceae	Whole plant	**Liver illness and sore:** Solution of the plant is said to be useful in treating swollen liver and sore. **Epilepsy:** In epilepsy it is reported to have recovered people when used with tinctures and chewing myrrh.

		Dysentery: Seed mixture along with water used double a day to cure dysentery.
Psidium guajava, Piyara, Myrtaceae	Leaf, Bark	**Diarrhoea:** Hot water extract of leaf and stem bark are taken morning and night for a week in treating diarrhoea. **Mouth cleaner:** Tender leaf is used as mouth rinse. **Dysentery:** Root mixture along with water being applied daily for 5 in weeks to resolve dysentery.
Rauvolfia serpentina, Sarpogandha, Apocynaceae	Root	**Blood pressure, sedative and febrifuge:** Milled solution of root used daily for hypertension, sedative and febrifuge. **Dysentery:** It is an appropriate cure for dysentery.
Ricinus communis, Bherenda, Euphorbiaceae	Leaf, Seed	**Jaundice:** To manage jaundice,consume 10 ml of leaf juice directly intake once daily about 3-4 days. **Dysentery:** To medicate Dysentery fresh leaf juice taken directly with sugar. **Constipation:** Seed oil inhaled or ingested medicates constipation.
Saccharum officinarum, Aakh, Poaceae	Stem	**Jaundice:** Juice is the effective medication for jaundice.
Swertia chirata, Chirata, Gentianaceae	Whole plant	**Fever:**Chirata is an valuable fever-reduction solution. also useful in the treatment of severe malarial fever. **Hiccups and vomiting:** The plant's root is combined with honey to treat hiccups and vomiting. **Acidity:** Soak leaves in water overnight and consume orally to prevent acidity.
Syzygium cumini, Jam, Myrtaceae	Bark, Seed, Fruit	**Asthma:** For treating asthma a pulverized solution is administered directly once daily about a week. **Diabetes:** To control diabetes seed pulp mixing with sugar or salt and fruity extraction were consumed on regular basis.
Tagetes erecta, Gendaphul, Asteraceae	Whole plant	**Bleeding:** To halt bleeding, mashed leaves were placed to cut marks. **Blotch:** After mild heating crushed leaf paste is place to the blotch to minimize pain. **Tuberculosis:** It is prescribe to consume 250 mg of leaf dust combined with tiny portion of goat milk twice daily about 1 month for treating Tuberculosis. **Dysentery:** Leaf juice combined with same portion of sugar is taken thrice about 3 days.
Tamarindus indica, Tetul, Fabaceae	Fruit, Seed, Leaf,	**Gastric:** The fruit pulp used as home medicine in fever and gastric and it is eaten daily for 1-7 days. **Fever:** 200 g crushed seed in 3 cups water and cooked until it remains two cup, eaten twice a day for 10days. **Dyspepsia:** 100 gm fresh leaf cooked with 1 liter water till the solution reaches 1/2 liter, then eaten twice daily for 5-6 days. **Blood dysentery:** To prevent oral illness, a boiled decoction of stem and bark is given three times a day for five days.
Terminalia arjuna, Arjun, Combretaceae	Bark	**Blood pressure:** Stem bark solution combined with cold water are administered empty stomach every morning to treat high blood pressure. **Heart disease:** This solution also taken to avoid heart disease.

Terminalia belerica, Bahera, Combretaceae	Green fruit	**Cough:** Hot water extract of young fruit taken to cure cough.
Terminalia chebula, Haritaki, Combretaceae	Seed, Fruit	**Vomiting:** Seed dust combined with honey is managed to control nausea. **Dysentery:** Around ten gm of fruit dust with heated water double the daily for treating dysentery till recovered.
Tinospora cordifolia, Guloncho, Menispermaceae	Stems, Leaf stalk	**Discharge of semen, gonorrhoea:** For treating gonorrhoea and seminal passage juice extracted from young stems diluted with tepid water or heated with milk eaten thrice daily. **Diabetes:** For diabetes, crushed leaf stalk with Neem paste being eaten. **Jaundice:** 10 ml of leaf juice taken couple of times a day about 5 day for treating jaundice. **Discomfort and edema:** The herb essence is beneficial for discomfort and swelling.
Tridax procumbens, Tridhara, Asteraceae	Leaf	**Dysentery and diarrhoea:** Leaf decoction helps in treating diarrhoea and dysentery. **Bronchitis:** Pulverized leaf extract combined with water intake for bronchitis. **Bleeding:** Leaf dust applied to scratches and bruises to prevent bleeding.
Vitex negundo, Nishinda, Verbenaceae	Leaf	**Sinuses, scrofulous sores:** Sinuses and scrofulous sores are treated with leaf juice mixed with oil. **Catarrhal fever:** In catarrhal fever, leaf decoction and long pepper is taken. **Worms:** Worms are treated by powder from dried fruit with cold water.
Wedelia trilobata, Mohavringaraj, Asteraceae	Leaf	**Alopecia and hair disease:** Leaves are elective to hair stimulating and used for encouraging hair development and beneficial for alopecia. **Stop vomiting:** Leaf juice with salt help in nausea.
Zingiber officinale, Ada, Zingiberaceae	Rhizome	**Indigestion:** For indigestion, take two grams of plant rhizome powder with hot water twice a day until cured.

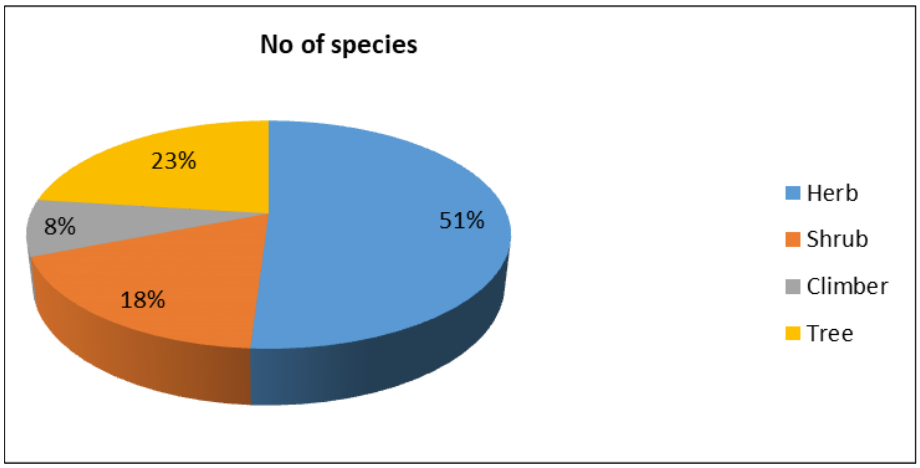

Figure 1 Recorded plant habit in the study area

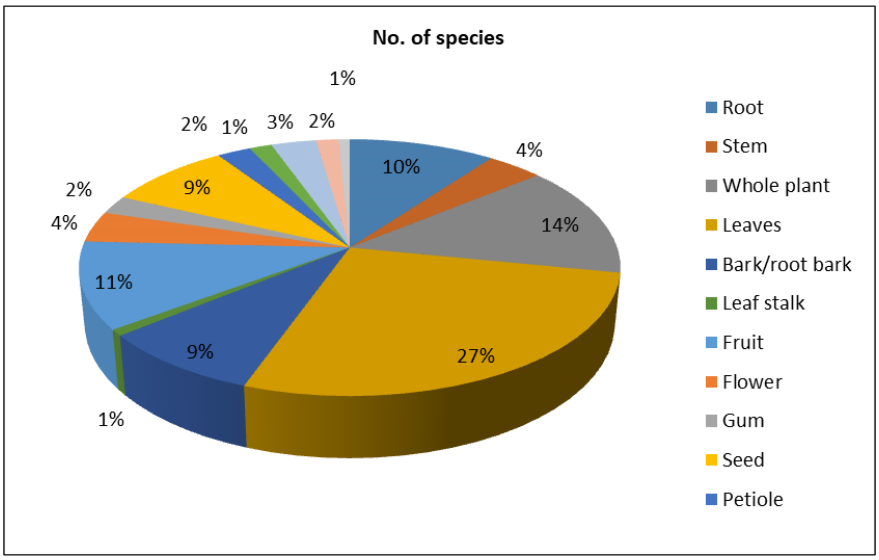

Figure 2 Recorded plant parts used as medicine

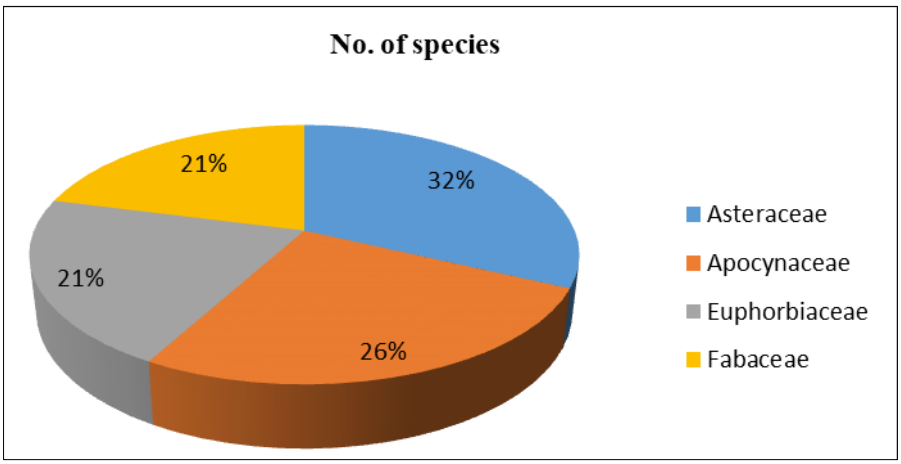

Figure 3 Recorded Dominant families in the study area

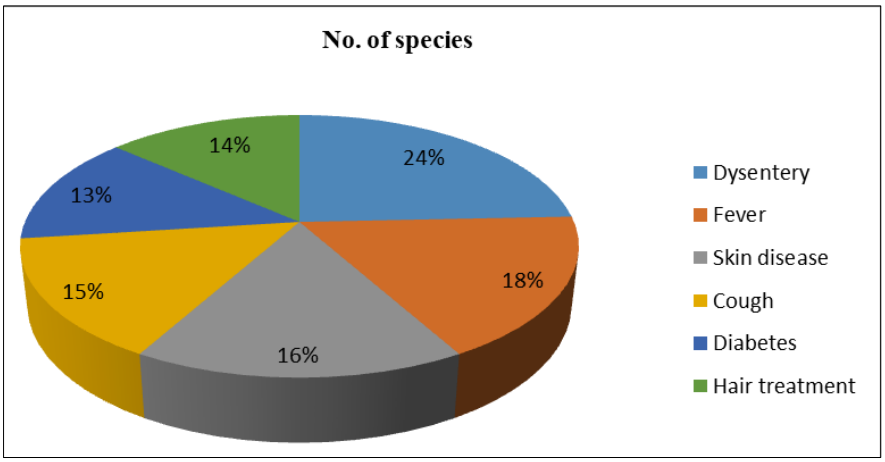

Figure 4 Recorded dominant disease in the study area

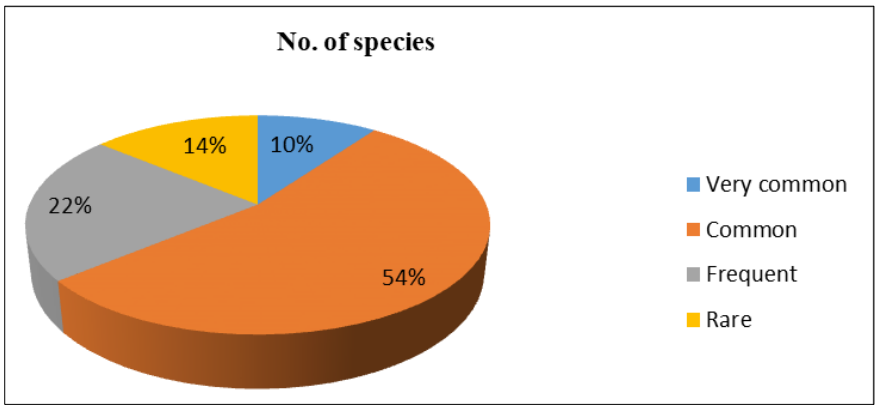

Figure 5 Recorded status of occurrence of the medicinal plants

4. Discussion

Medicinal plants used by the local peoples in sadarupazila of Sirajganj district of Bangladesh were carried out from October 2019 to December 2021. A total of 78 medicinal plants belonging to 73 genera and 46 families were recorded. The most frequently used species for the treatment of different diseases like *Enhydrafluctuans, Ficus racemosa, Heliotropium indicum, Hibiscus rosa-sinensis, Ipomoea aquatia, Kalanchoe pinnata, Lantana camara, Leucas aspera, Lawsonia inermis, Mikania micarantha, Mimosa pudica, Momordica charantia, Moringa oliefera. Musa sapientum. Nerium indicum, Nigella sativa, Ocimum sanctum, Oxalis corniculata, Phyllanthus emblica, Piper betel, Persicaria hydropiper, Psidium guajava, Rauvolfia serpentina, Ricinus communis, Saccharum officinarum, Swertia chirata, Syzygium cumini, Tagetes erecta, Tamarindus indica, Terminalia arjuna, Terminalia belerica, Terminalia chebula, Tinospora cordifolia, Tridax procumbens, Vitex negundo, Wedelia trilobata, Zingiber officinale.* This finding of common medicinal plant families in the study is in agreement with home and abroad by [2], [5], [6-85], [86-88] and [94-107]. There is no published record on the medicinal plants in sadar upazila of Sirajgonj district of Bangladesh.

5. Conclusion

Medicinal plants were recorded in the sadar upazila of Sirajganj district of Bangladesh. A total of 78 medicinal plants belonging to 73 genera and 46 families were recorded. Out of the recorded species, 65 species were Dicotyledones, 13 species were Monocotyledons. Asteraceae, Apocynaceae, Euphorbiaceae and Fabaceae were dominant families used for medicinal purposes. The medicinal plants are used by the local people to cure 85 diseases. Out of recorded diseases, cough, skin disease, fever, dysentery, diabetes and hair treatment was dominant diseases in the study area. Documenting folk medicinal information could be an advantageous practice for human well-being native healers are quite knowledgeable about the healing characteristics and applications of their surrounding natural resources. It survives by the form of oral transmission of traditions and uses. These endeavors have resulted in the current study attempted to documenting and examine the folk medicinal information held by the people who lived in the study area.

This study found that traditional medicinal plant applications can be utilized as a positive predictor of the medicinal plants' efficacy in treating a variety of human ailments and disorders. However, additional efforts should be made to begin in-depth understanding of medicinal uses for pharmaceutical research will lead to new treatments and the development of a primary healthcare center for local residents.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare that there are no conflicts of interests.

Statement of informed consent

In this study, medicinal information was obtained through semi-structured interviews with knowledgeable informants. A total of 76 informants (46 male and 30 female) between 21 and 74 years of age were interviewed in the study area.

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