Acta Biochimica Indonesiana

https://doi.org/10.32889/actabioina.189

RESEARCH ARTICLE

Open Access

Traditional medicinal plants in Barangay Dagbasan, Mabinay, Philippines: an ethnobotanical documentation of local knowledge and practices

Alexander Baena[1], Wahyu Wido Sari[2*]

[1]Graduate School, St. Paul University Dumaguete, Philippines
[2]College of Education, Sanata Dharma University, Indonesia
[*]Corresponding author: Jl. Affandi, Mrican, Caturtunggal, Depok, Sleman, DIY 5528. Email: w.widasari@usd.ac.id

ABSTRACT

Background: Traditional medicinal plants constitute an essential component of primary healthcare in rural Philippine communities, yet systematic documentation remains limited in many regions.

Objective: This study aimed to document traditional healing practices utilizing medicinal plants in Barangay Dagbasan, Mabinay, Negros Oriental, Philippines, identifying plant species used for various ailments, commonly used plant parts and preparation methods, and pathways of traditional knowledge transmission.

Methods: A qualitative ethnobotanical approach employing rapid ethnographic assessment was conducted through semi-structured interviews, participatory demonstrations, and guided field walks. Data were analyzed using thematic analysis with frequency counts for plants, ailments, plant parts, and preparation methods.

Results: Thirty-three biomedicinal plant species were documented, including several Philippine Department of Health-approved plants. The most commonly treated ailments were cough (15%), wounds (15%), stomachache (9%), fever (8%), and diarrhea (7%). Leaves were the most frequently utilized plant part (56%), with preferred preparation methods being topical application (23%), ingestion (21%), and decoction (13%).

Conclusion: Barangay Dagbasan maintains rich ethnobotanical traditions providing essential healthcare access. However, limited knowledge about certain plant parts, external knowledge contamination through social media, and conservation concerns necessitate interventions including pharmacological validation, conservation programs, and educational initiatives to preserve traditional knowledge while ensuring sustainable medicinal plant use.

Keywords: biomedicinal plants, mabinay philipphines, traditional medicines

Introduction

Plants have served as sources of traditional medicine for human civilizations across millennia, with their therapeutic applications documented in ancient medical systems from China, India, and the Near East [1]. The Philippines is home to 10,000 to 14,000 plant species, with approximately 1,500 containing potential medicinal value, although only 120 have been scientifically validated [2]. In the Philippine archipelago, traditional healing practices predate colonial contact, with indigenous communities developing sophisticated ethnomedicinal knowledge systems that have been transmitted orally through generations.

The albularyo, a general indigenous healing practitioner, possesses extensive knowledge of folkloric healing modalities and is especially versed in medicinal herbs [3]. These traditional healers, commonly found in rural areas of the Philippines, heal people using herbs and traditional practices such as hilot or massage. The evolution of Philippine indigenous medicine represents a complex synthesis of cultural, spiritual, and practical knowledge, with rituals and processes evolving over time while maintaining the fundamental connection between humans and nature.

Despite the enduring cultural significance of traditional healing, several contemporary challenges

threaten the preservation of ethnobotanical knowledge in the Philippines. Traditional knowledge regarding plant use remains common among older generations but is scarcer among younger generations, creating a significant risk that ethnobotanical knowledge may be permanently lost unless promptly and properly documented [1]. Contemporary globalization, urbanization, and the erosion of native languages pose significant challenges to indigenous knowledge systems [4]. As younger individuals migrate to metropolitan areas, traditional knowledge becomes challenging to transmit to the next generation, therefore eliminating itself from indigenous medical practices [4].

Cancer ranked as the third leading cause of death in the Philippines [5]. The economic burden of conventional therapy remains prohibitive for many Filipinos, particularly those with low socioeconomic status and poor health literacy. For patients in remote areas, traditional, complementary, and alternative medicines provide critical healthcare access. The practice of using prayers, natural remedies, and herbs in healing remains deeply embedded in Filipino tradition. Cancer patients who rely on natural remedies employ these practices to stabilize their condition, boost their immune system, and manage the side effects of conventional therapy, thereby improving their quality of life [6].

Recent ethnobotanical surveys have documented medicinal plant use across various Philippine indigenous groups and rural communities. Mindanao has at least 530 medicinal plant species belonging to 372 genera across 118 families, with Euphorbia hirta and Psidium guajava being the two most frequently cited species [7]. Studies in Panay Island revealed that the documentation of traditional knowledge serves as a medium for preserving cultural heritage, providing ethnopharmacological bases for drug research and discovery, and preserving biological diversity [7]. The Philippine Department of Health endorsed just 10 medicinal plants that can be used in herbal teas, tinctures, fluid extracts, poultices, tablets, supplements, powders, creams, and essential oils [2], recognizing the therapeutic value of evidence-based traditional medicine.

However, the shift to contemporary healthcare systems has been accompanied by the depletion of a substantial quantity of knowledge concerning the healing qualities of plants [4]. Indigenous knowledge about medicinal plants is linked to threatened languages, and language loss is an even greater danger to the survival of such knowledge than biodiversity loss Science. Furthermore, threats such as habitat destruction, agricultural expansion, deforestation, and loss of important indigenous knowledge related to plants are fueled by population pressure [8].

The present study aims to determine the traditional healing practices utilizing biomedicinal plants in Barangay Dagbasan in the municipality of Mabinay, Philippines. This research addresses a critical gap in ethnobotanical documentation, as Mabinay is known for its cave systems ideal for spelunking and eco-tourism, surrounded by forest representing a highly biodiverse zone. Originally dominated by Negritos who lived for many years until contact with upland Cebuanos [9], the locality today features a landscape covered with patches of farm fields. Despite modernization pressures, locals remain engaged in traditional practices such as farming and the use of medicinal plants as alternative medicine.

The specific objectives of this study are to: (1) identify the different biomedicinal plants used for corresponding ailments or conditions recognized by locals; (2) classify the different plant components, especially those most frequently used in healing processes; and (3) document the methods and processes used by locals in preparing herbs to treat respective diseases and the manner of acquisition of traditional knowledge and skills in treatment.

This research contributes to the growing body of ethnobotanical literature on Philippine indigenous communities while responding to the urgent need for documentation before this knowledge disappears. The findings provide valuable information for colleges and universities in appreciating the importance of biomedicinal plants, promoting conservation of both culture and environment. Additionally, the study can

help improve services offered by barangay health units (BHU) by maximizing natural remedies for local populations. By documenting these surviving traditions in Barangay Dagbasan, this research preserves irreplaceable cultural heritage and provides a foundation for future pharmacological investigations and sustainable healthcare interventions.

Method

Study site

This research was conducted in Barangay Dagbasan, Municipality of Mabinay, Negros Oriental, Philippines. Mabinay is known for its cave systems ideal for spelunking and eco-tourism, surrounded by forest representing a highly biodiverse zone. Originally, the locality was dominated by Negritos who had lived for many years until contact with upland Cebuanos [9]. Today, the landscape is covered with patches of farm fields, while locals remain engaged in traditional practices such as farming and the use of medicinal plants as alternative medicine.

Research design and ethical considerations

The research employed a qualitative ethnobotanical approach using rapid ethnographic assessment methods. Semi-structured interviews and group discussions with informed consent were used in the study [10]. Before the study was conducted, the researchers obtained informed consent from all participants. Each person involved was asked to sign a Term of Free and Informed Consent to authorize the collection, use and publication of data [11], adhering to international ethical standards established by the International Society of Ethnobiology. Confidentiality of the data was strictly observed throughout the research process.

Participant selection

Participants were selected using purposive and snowball sampling techniques. Key informants were selected purposefully and systematically based on the recommendation of the local government, village head, and other personnel, while other informants were selected by the snowball method [12]. Key informants included individuals recognized by the community as knowledgeable about traditional medicinal plants, traditional healers, and experienced practitioners of herbal medicine.

Data collection

Semi-structured interviews were conducted with local people to obtain their knowledge of medicinal plants and how they disseminate this information [13]. Interviews were conducted in the local language (Cebuano) and covered topics including: local and scientific names of plants, plant parts used, ailments treated, preparation methods, dosage, and sources of knowledge acquisition.

During the study, participants demonstrated preparation processes of medicinal plants practiced in the community. Semi-structured and in-depth interviews allowed maximum obtained information and the possibility to interview more than one participant simultaneously [14]. Guided field walks were conducted with key informants to observe and document medicinal plants in their natural habitats or cultivation areas.

Plant specimens were collected following standard ethnobotanical protocols [15]. Voucher specimens consisting of pressed and dried samples containing aboveground structures and belowground structures when possible [16] were prepared for taxonomic identification. Digital photographs were taken of each plant species, preparation demonstrations, and collection sites.

Data analysis

Coding in qualitative research is a systematic process through which collected data were condensed into smaller analyzable units, called codes, which were further categorized and developed into themes [17]. Interview recordings were transcribed verbatim and coded using both first-order and second-order coding approaches. The opinions of the participants' descriptive qualitative data were coded and categorized. Second-order coding was performed to segregate further specific data within categories.

The researchers ensured that terms and concepts from the verbatim responses of participants were captured through feedback and verification by the participants to ensure the integrity and reliability of data [18]. Thematic analysis involved the identification and reporting of patterns in the data set, which were then interpreted for their inherent meaning [19].

The analysis was made based on patterns of data through systematic counting and grouping of elements. Inferences were developed by connecting information or ideas anchored on patterns of clues that were compared from different clusters of information. Counts of the recurrence of elements, especially in the emergence of medicinal plants used, diseases treated, and preparation processes were captured. The analysis was based on "informant consensus" - the degree of agreement among different people interviewed concerning the use of medicinal plants [20].

Frequency data were calculated for: plant species mentioned, ailments treated, plant parts used, and preparation methods employed. Traditional uses documented in this study were cross-referenced with existing ethnobotanical literature and the Department of Health (DOH) list of approved medicinal plants to identify concordances and novel findings.

Results

Diversity of medicinal plants

The municipality of Mabinay is rich in medicinal plant species used in traditional healing practices. This study documented a total of 33 biomedicinal plant species used by residents of Barangay Dagbasan, comprising herbs, shrubs, trees, and creepers (Table 1). The rich diversity of plants with medicinal properties is truly remarkable, representing the extensive traditional knowledge maintained within this upland community.

Among the documented species, several are included in the Department of Health (DOH) list of approved medicinal plants in the Philippines. These DOH-approved plants documented in Dagbasan include *Psidium guajava* (guava), *Blumea balsamifera* (gabon), *Peperomia pellucida* (sinaw-sinaw), *Cassia alata* (sunting), *Vitex negundo* (lagundi), *Euphorbia hirta* (tawa-tawa), and *Origanum vulgare* (oregano), which are among the most utilized plants in the community [21]. Two other DOH-approved species, ampalaya (*Momordica charantia*) and yerba buena (*Clinopodium douglasii*), were not reported by residents during interviews.

All documented information on the use and preparation of these biomedicinal plants originated from traditional or folk knowledge that has been transmitted within the community across generations. The knowledge transmission patterns showed that the majority of medicinal plant information was passed through community networks, with some knowledge specifically transmitted through familial lines, particularly from parents and relatives (Table 1).

Ailments treated with medicinal plants

The presence of a greater number of medicinal plants may be attributed to the high prevalence of various ailments in the community. The most frequently reported ailments treated using medicinal plants in Dagbasan were cough (25 citations, 15%), wounds (25 citations, 15%), stomachache (14 citations, 9%), fever (13 citations, 8%), and diarrhea (12 citations, 7%) (Table 2). These five conditions accounted for 54% of all reported therapeutic applications.

Additional health conditions treated with medicinal plants included bruises (7 citations, 4%), cancer (7 citations, 4%), high blood pressure (6 citations, 4%), spasm (6 citations, 4%), asthma (5 citations, 3%), colds (5 citations, 3%), and dengue (5 citations, 3%). Less frequently reported conditions included headaches, boils, flatulence, hyper acidity, joint pains, ulcer, fractures, and various other ailments, each representing 1-2% of total citations.

The total number of ailment citations (163) exceeded the number of plant species (33) because individual plant species were often used to treat multiple health conditions. For example,

Table 1. Biomedicinal Plants used, their preparation, and application.

	Biomedicinal Plants	Treatment for	Plant Parts	Preparation	Knowledge passed on from	Count
1	Atis (Annona squamosa)	Flatulence, fracture	Leaves	Applied (plaster)	Community	2
2	Avocado (Persea americana)	Diarrhea	stem, twig	Decoction	Community	1
3	Balbas-pusa (Orthosiphon aristatus)	Stomachache, Cancer	Leaves	Decoction	Community	1
4	Banaba (Lagerstroemia speciosa)	UTI	Leaves	Decoction	Community	1
5	Banana-Saba (Musa acuminata)	Boils	Fruit (Young / bud)	Ointment, Applied (plaster)	Community	2
6	Banka-banka-an (Tradescantia spathacea)	Colon Cleansing	Leaves	Decoction	Community	1
7	Coconut (Cocos nucifera)	Bruise	Extract	Juiced, Applied (plaster), oiled, Ointment, Ingested	Community	4
8	Gabon (Blumea balsamifera)	Fever, Spasm, High blood, wound, cough	Leaves, Tip, Stem	Brewed (Tea), Decoction	Parents, community	6
9	Ginger (Zingiber officinale)	Cough	Roots	Ingested	Community	1
10	Gmelina (Gmelina arborea)	Flatulence	Leaves	Pounded, Applied (Plaster)	Community	1
11	Guava (Psidium guajava)	Stomachache, Diarrhea, Wound	Leaves	Applied (plaster), Ingested, Drink	Community	6
12	Gumamela (Hibiscus)	Cancer, swells, boils, wound	Flower (bud)	Applied (plaster), Dried, Brewed (Tea)), Ingested	Community	1
13	Guyabano (Annona muricata)	Cancer, Diarreah	Fruit, Roots	Ingested	Community	5
14	Hagunoy (Chromolaena odorata L)	Wound, Hyper Acidity, Ulcer	Leaves, Tips	Decoction	Community	3
15	Iba (Averrhoa bilimbi)	Cough	Fruits	Juiced	Community	1
16	Labnog (Ficus septica)	Fever, Cough, Headache	Leaves	Applied (plaster), Ingested	Community, Relatives	4
17	Lagundi (Vitex negundo)	Cough	Leaves	Decoction	Community	1
18	Lemmon Grass (Cymbopogon citratus)	Cough	Whole	Decoction	Community	1
19	Mahogany (Swietenia mahagoni)	Stomach Parasite, Malaria	Seed	Ingested, Chew	Community	1
20	Maligayap rice variety (Oryza sativa)	Fever, joint pains	Kernel	Pounded	Community	3
21	Malungay (Moringa oleifera)	Wound	Leaves	Pounded, Extract, Applied (plaster)	Community	6
22	Mayana (Coleus blumei)	Cough, Asthma, Colds	Leaves	Applied, Juiced, Ingested, Pounded	Community	5
23	Nuo-nuog plant (Solanum erianthum)	Stomachache	Leaves	Applied (plaster), Grill	Community	1
24	Oregano (Origanum vulgare)	Cough	Leaves	Juiced, Roast Heated	Community	5
25	Panyawan (Tinospora rumphii)	Toothache	Leaves	Liquid Drop, Ingested	Community	1
26	Papaya (Carica papaya)	Low Platelets	Flowers	Juiced, Ingested	Community	1
27	Sinaw-Sinaw (Peperomia pellucida)	Wound	Leaves	Pounded, Applied (Plaster)	Community	1
28	Sunting (Cassia alata)	Tinea versicolor	Leaves	Pounded, Applied (Plaster)	Community	1
29	Tabing Plant (Abutilon indicum)	Cleansing Inner Body, Diuretic, Cough	Roots, Stem	Soaked, Decoction	Community	1

	Biomedicinal Plants	Treatment for	Plant Parts	Preparation	Knowledge passed on from	Count
30	Tawa-Tawa (Euphorbia hirta)	Dengue	Whole	Decoction, Ingested	Community	5
31	Tiger tiger (Sansevieria trifasciata)	Wound	Leaves	Pounded, Applied (plaster)	Community	2
32	Turmeric (Curcuma longa)	Bruise	Roots	Juiced, Applied (plaster), Ointment, Ingested	Community	3
33	White and Red Cacao (Theobroma cacao)	Relapse, Postpartum	Flowers	Soaked, Decoction	Parents	1

Table 2. Ailments employed with biomedicinal plants in Dagbasan

Ailment	Total Count	%
Cough	25	15%
Wounds	25	15%
Stomachache	14	9%
Fever	13	8%
Diarrhea	12	7%
Bruises	7	4%
Cancer	7	4%
High blood	6	4%
Spasm	6	4%
Asthma	5	3%
Colds	5	3%
Dengue	5	3%
Headaches	4	2%
Boils	3	2%
Flatulence	3	2%
Hyper Acidity	3	2%
Joint pains	3	2%
Ulcer	3	2%
Fractures	2	1%
Cleansing of Inner Body	1	1%
Colon Cleansing	1	1%
Diuretic	1	1%
Low Platelets	1	1%
Malaria	1	1%
Postpartum	1	1%
Relapse	1	1%
Eliminating of Stomach Parasites	1	1%
Swells	1	1%
Tinea versicolor	1	1%
Toothaches	1	1%
UTI	1	1%
Total	**163**	**100%**

Psidium guajava (guava) was reported for treating stomachache, diarrhea, and wounds, while *Blumea balsamifera* (gabon) was cited for fever, spasm, high blood pressure, wounds, and cough.

Plant parts used in medicinal preparations

Identifying the specific parts of these plants used in traditional practices is a vital component of ethnobotanical documentation. In Barangay Dagbasan, leaves were the most frequently utilized plant part, representing 54 citations (56%) of all documented uses (Table 3). Leaves were the most commonly used part of the plants, making up 67.9% of plant parts used, followed by roots, a pattern consistent with other ethnobotanical study [22].

Following leaves, the next most commonly used plant parts were roots (10 citations, 10%), fruits (8 citations, 8%), and stems (8 citations, 8%). Entire plants were used in 6 cases (6%), while extracts, flowers, and kernels were each used in 3-4 instances. Seeds were the least frequently used plant part, with only one citation (1%).

The high utilization of leaves can be attributed to their accessibility, abundance, and regenerative capacity. The relatively low use of seeds and kernels reflected limited knowledge among community members regarding the medicinal properties of these plant parts.

Preparation and application methods

Knowledge about preparation methods is fundamental to ethnobotanical study. The most widely employed method for medicinal plant preparation in Dagbasan was topical application

Table 3. Plant parts used in biomedicinal practice in Dagbasan

Parts	Count	%
Leaves	54	56%
Roots	10	10%
Fruit	8	8%
Stem	8	8%
Entire Plant	6	6%
Extract	4	4%
Flower	3	3%
Kernel	3	3%
Seed	1	1%
Total	**97**	**100%**

Table 4. Preparation and application of biomedicinal plants in Dagbasan

Preparation and application	Count	%
Applied (plaster)	39	23%
Ingested	37	21%
Decoction	22	13%
Juiced	19	11%
Pounded	19	11%
Ointment	9	5%
Brewed (Tea)	7	4%
Extracted	6	3%
Roasted	6	3%
Oiled	4	2%
Soaked	2	1%
Chewed	1	1%
Dried	1	1%
Liquid Drop	1	1%
Total	**173**	**100%**

using plaster or dressing, accounting for 39 citations (23%) of all documented preparation methods (Table 4). This technique was primarily used for treating wounds, cuts, and external injuries.

Ingestion of medicinal plants, either raw or after processing, was the second most common method with 37 citations (21%). Decoction, the process of extracting medicinal compounds by boiling plant parts in water, represented 22 citations (13%). Juicing and pounding of plant materials using mortar and pestle each accounted for 19 citations (11%).

Other preparation methods included making ointments (9 citations, 5%), brewing as tea (7 citations, 4%), extracting (6 citations, 3%), roasting (6 citations, 3%), and applying oil (4 citations, 2%). The least commonly employed methods were soaking (2 citations, 1%), chewing (1 citation, 1%), drying (1 citation, 1%), and using plant extracts as liquid drops (1 citation, 1%).

The diversity of preparation methods reflects the accumulated traditional knowledge regarding optimal extraction and application techniques for different plant species and ailments. Some plants required multiple preparation steps, such as pounding followed by application, or soaking before decoction.

Knowledge transmission patterns

Analysis of knowledge acquisition revealed that traditional medicinal plant knowledge in Dagbasan was primarily transmitted through community networks. The majority of documented knowledge was passed through informal community education, with residents learning from neighbors, community elders, and traditional healers. Parent-to-child transmission represented another important pathway, particularly for commonly used medicinal plants. A smaller portion of knowledge was acquired through relatives outside the immediate family unit.

In recent years, social media has emerged as an additional source of traditional medicine information, with younger generations accessing and sharing medicinal plant knowledge through digital platforms. However, the core traditional knowledge base remains rooted in oral transmission from experienced community members and family elders.

Discussion

The reliance on traditional medicinal plants in Barangay Dagbasan must be understood within the broader socioeconomic context of rural Philippine communities. Residents reported that life in the rural agricultural area is challenging, with farming requiring regular attention and

significant investment in fertilizers and other inputs. Rising prices of farm inputs coupled with minimal income from agricultural production create difficult economic conditions for families in the community. The situation was further exacerbated during the COVID-19 pandemic, when lockdowns severely impacted rural livelihoods. According to the World Bank, approximately 70% of workers from the farming industry lost their jobs during pandemic lockdowns, while another 61% were from small-scale farming operations [23]. This economic vulnerability directly impacts access to conventional healthcare services.

Traditional medicine is commonly used in large parts of Africa, Asia and Latin America. For many millions of people, often living in rural areas in developing countries, herbal medicines, traditional treatments and traditional practitioners are the main, sometimes the only, source of health care [24]. The situation in Dagbasan reflects this global pattern, where the percentage of the population in developing countries that depends on traditional medicine for their primary health care ranges from 40% (Colombia) to 90% (Ethiopia) [25]. Even in the recovery period following the pandemic, most residents in Dagbasan continue to experience limited access to conventional medicine. Maintaining health, especially for children, presents particular challenges as many children no longer prefer to eat vegetables, and alternative herbal medicines often have unpleasant tastes that children resist. In general TM can be used in the primary healthcare system where no access to allopathic medicine and when conventional medicine is ineffective in treatment of disease [26], making traditional medicine a practical necessity rather than merely a cultural preference.

Despite these challenges, the people of Dagbasan demonstrate remarkable resilience—a characteristic trait of Filipino communities that regularly face calamities and hardships. This resilience is deeply rooted in strong family ties and cultural values. Parents continue to care for their children even after they establish their own families, with multiple generations commonly living together under one roof. Long-distance relatives are expected to return home at least once annually for important occasions such as fiestas, All Souls' and All Saints' Day, and Christmas or New Year celebrations. These strong familial bonds ensure open communication and mutual support within families. Parents recognize children's talents, while children acknowledge their parents' sacrifices. This reciprocal love within the family unit serves as the foundation for preserving traditional knowledge, including medicinal plant use. Learning skills from older family members is considered an honorable tradition within Filipino culture. Teaching extends beyond household chores to encompass essential life skills, including traditional medicine practices. Children learn farm life through exposure and experience, being taught to plant and cultivate from an early age. Plants and herbs grown in backyard gardens not only provide medicinal resources but also serve as stress relief and sources of delight when harvested.

The tradition of using biomedicinal plants continues to thrive in Dagbasan because community elders possess abundant knowledge that is passed to younger generations through oral tradition. The community maintains high respect for traditional practices and rituals, with learning occurring through direct exposure and experience from parents and elders. However, an important contemporary development is that younger generations with access to mobile technology are now learning about traditional medicine through social media platforms and subsequently sharing this knowledge with their parents and family members. While this represents an additional pathway for knowledge transmission, it also introduces external influences that may contaminate the original local knowledge that has developed in isolation over generations. The community recognizes the benefits of medicinal plants and uses herbs as a form of primary healthcare. Local health workers also endorse the use of herbs as alternatives to conventional medicine within the community, lending additional legitimacy to these traditional practices.

The present study documented 33 biomedicinal plant species used in Dagbasan, comprising herbs, shrubs, trees, and creepers. This diversity

is comparable to other ethnobotanical studies conducted in the Philippines. Mindanao has at least 530 medicinal plant species belonging to 372 genera across 118 families, with Euphorbia hirta and Psidium guajava being the two most frequently cited species [7]. Notably, *Psidium guajava* (guava) was also among the most frequently utilized species in Dagbasan, indicating consistency in medicinal plant preferences across different Philippine regions. Several of the documented species in Dagbasan are included in the Department of Health (DOH) list of approved medicinal plants, including *Psidium guajava*, *Blumea balsamifera*, *Peperomia pellucida*, *Cassia alata*, *Vitex negundo*, *Euphorbia hirta*, and *Origanum vulgare*. The endorsement of these plants by both DOH and local health workers helps bridge traditional and modern healthcare systems, providing communities with validated therapeutic options that are culturally acceptable and locally accessible.

The most commonly treated ailments in Dagbasan were cough, wounds, stomachache, fever, and diarrhea, which together accounted for 54% of all reported therapeutic applications. These findings align closely with national health patterns. Loreche, Pepito, and Dayrit (2023) found that cough and diarrhea were among the common list of acute conditions among the general Philippine population, which also included back pain, allergic rhinitis, general acute pain, cold, constipation, and stress. The high prevalence of respiratory and gastrointestinal complaints in rural communities can be attributed to environmental factors, sanitation challenges, and limited access to preventive healthcare. Hypertension was also reported as a condition treated with medicinal plants in Dagbasan. Oral administration was reported as the most common route of administration followed by dermal administration, a pattern consistent with findings from our study where ingestion and topical application (plaster) were the most frequent preparation methods. Studies have been conducted to determine antihypertensive medicinal properties of biomedicinal plants for people with hypertension, especially those living in underdeveloped countries, because they are tolerable and have less adverse effects compared to pharmaceutical interventions [27]. Although less common in the community, cancer—a terminal disease—was also treated with medicinal plants. Cancer patients who rely on natural remedies employ these practices to stabilize their condition, boost their immune systems, and manage the side effects of conventional therapy to improve their quality of life [6]. The documented plants contain bioactive compounds known to possess anticancer properties [28], though rigorous pharmacological validation is needed to confirm their efficacy and safety.

Regarding plant parts utilized, leaves were the most frequently used component, representing 56% of all documented uses in Dagbasan. This pattern is consistent with global ethnobotanical trends. The most frequently used plant part was leaves (39.9%), followed by roots (23.83%), and of a majority of documented species, herbs and leaves were the most utilized plant parts for the preparation of ethnomedicines (45.28%). The predominance of leaf use can be explained by multiple factors. Leaves are active in food and metabolite production [29], making them rich in bioactive compounds. The medicinal value of plants is largely concentrated in photosynthates—the products of photosynthesis. Leaves, as the primary photosynthetic organs, regenerate faster than other plant parts, making them readily available and sustainable to harvest. Photosynthates affect the secondary metabolites of plants, which determine the therapeutic ability of plants [30]. Over 50,000 secondary metabolites have been discovered in the plant kingdom. Medicinal herbs and many modern medicines rely on secondary plant metabolites for their actions [31]. These secondary metabolites include alkaloids, flavonoids, terpenes, phenolic compounds, and other bioactive molecules that exhibit antimicrobial, anti-inflammatory, antioxidant, and other therapeutic properties.

Roots and fruits were the next most commonly used plant parts in Dagbasan. Roots were the second frequently used plant part by healers, likely due to their higher concentration of bioactive compounds than other plant parts. Roots and

stems contain bioactive compounds that function as antioxidants, antimicrobials, and regulators of blood sugar and cholesterol levels. Root compounds also boost the immune system and are used in treatment of diseases as well as in cosmetics. Like leaves, roots contain secondary metabolites that make them potent in curing diseases. However, the extensive use of roots presents conservation concerns, as extensive use of the roots may be detrimental as it leads to complete destruction of the plant, thereby eventually rendering the species rare, threatened or even extinct. This highlights the importance of sustainable harvesting practices and conservation education within the community.

The least utilized plant parts in Dagbasan were kernels and seeds, representing only 4% of total uses. This limited utilization stems from insufficient knowledge among local residents regarding the medicinal properties of these plant parts. However, seeds possess significant therapeutic potential. Seeds are rich in essential minerals including iron, copper, and zinc, and they store active secondary metabolites. Seeds can be prepared by pounding or taken whole, and they are also used to produce essential oils and extracts for treatment and cure [32]. This knowledge gap represents an opportunity for community education and research to expand the therapeutic repertoire available to local healers.

The most widely employed preparation method in Dagbasan was topical application using plaster or dressing (23% of all methods), followed by ingestion (21%) and decoction (13%). The preference for topical application reflects its effectiveness for treating wounds and external injuries, which were among the most common ailments reported. Decoction, the process of extracting medicinal compounds by boiling plant parts in water, represents a time-tested method for preparing internal remedies. Fresh medicinal plant part contents that are presented for a long period before use and effective to treat diseases compared to the dried form, suggesting that the community's preference for fresh preparations over dried materials is pharmacologically justified. The diversity of preparation methods—including juicing, pounding, making ointments, brewing tea, roasting, and applying oil—demonstrates sophisticated traditional knowledge about optimal extraction and application techniques for different plant species and therapeutic purposes.

An important finding concerns the sources and transmission of traditional knowledge. The majority of medicinal plant knowledge in Dagbasan was acquired through community networks, with residents learning from neighbors, community elders, and traditional healers. Parent-to-child transmission represented another crucial pathway, particularly for commonly used medicinal plants. This oral transmission of knowledge across generations is characteristic of indigenous knowledge systems worldwide. However, contemporary globalization, urbanization, and the erosion of native languages pose significant challenges to indigenous knowledge systems [4]. As young people migrate to urban areas, it becomes challenging for traditional knowledge to be transmitted to the next generation, therefore eliminating itself from indigenous medical practices [4]. The emergence of social media as a knowledge source presents both opportunities and challenges. While it facilitates broader sharing of traditional medicine information, it may introduce practices from other cultures that could contaminate or displace locally developed knowledge that has evolved specifically for the Dagbasan ecosystem and community needs.

The integration of traditional medicine into the formal healthcare system deserves consideration. Integration of TM in health system will result in increased coverage and access to healthcare services. The role of complementary and alternative medicine for health is undisputed particularly in light of its role in health promotion and well-being. It also supports local health workforces [26]. The fact that local barangay health unit (BHU) workers endorse the use of herbal medicines in Dagbasan represents an important step toward such integration. In many communities, traditional medicine offers trusted, accessible care where biomedical services are limited. Integrating safe, evidence-informed traditional medicine into health systems expands primary health care and strengthens equity [33]. However, successful integration requires maintaining

scientific rigor. A full 40 percent of the drugs behind the pharmacist's counter in the Western world are derived from plants that people have used for centuries, demonstrating that traditional knowledge can lead to modern pharmaceutical development when subjected to rigorous scientific validation.

The findings of this study provide valuable baseline data for future pharmacological investigations. Plants with high frequency of citation and multiple therapeutic uses, such as *Psidium guajava* (6 citations), *Blumea balsamifera* (6 citations), *Moringa oleifera* (6 citations), *Origanum vulgare* (5 citations), *Annona muricata* (5 citations), *Euphorbia hirta* (5 citations), and *Coleus blumei* (5 citations), merit priority for phytochemical and pharmacological studies. These investigations should aim to identify active compounds, establish efficacy through clinical trials, determine optimal dosages, and assess potential toxicity or drug interactions. Such research would not only validate traditional uses but could also lead to the development of new therapeutic agents, contributing to both local healthcare improvement and global pharmaceutical discovery.

Conservation of medicinal plants emerges as a critical concern. The landscape of Dagbasan has been transformed from its original forested state to patches of agricultural fields, potentially threatening medicinal plant populations. Agricultural expansion, deforestation, and unsustainable harvesting practices—particularly of roots and bark—pose risks to medicinal plant biodiversity. Community-based conservation strategies should be implemented, including cultivation of medicinal plants in home gardens, sustainable harvesting protocols, and designation of protected areas for wild medicinal plant populations. The establishment of community seed banks and botanical gardens focusing on medicinal species could ensure long-term availability of these vital resources.

This study had several limitations that should be acknowledged. The relatively small geographic focus on a single barangay may limit generalizability to other regions of the Philippines, though the findings show consistency with broader Philippine ethnobotanical patterns. The rapid ethnographic assessment approach, while appropriate for initial documentation, could be supplemented by longer-term anthropological fieldwork to capture seasonal variations in plant use and deeper cultural meanings associated with traditional healing practices. Additionally, this study documented traditional uses without conducting phytochemical or pharmacological analyses to validate therapeutic claims. Future research should address these gaps through expanded geographic coverage, longitudinal studies of knowledge transmission, and collaborative efforts between ethnobotanists, phytochemists, and pharmacologists to provide scientific evidence for traditional uses while respecting and preserving cultural knowledge.

Conclusion

The difficulty of life in the rural farm area is caused by the rising of the prices of commodities and farm inputs. The minimal income hinders the access to conventional medicine and turn to the use of tradition medicine as alternative. Strong family ties and communication within family members is the reason why traditional medicine is present in the young generations in the community. The once isolated local knowledge in biomedicinal plants are contaminated with other traditional knowledge spread by the social media. The local folks recognize the potency of their medicinal plants to cure common ailments including those serious once like hypertension and cancer.

The identified 33 biomedicinal plants in the community includes those that are approved by DOH. This is one of the reasons why the local barangay health unit workers endorsed their use. Leaves are the most widely prepared plant part due to its potent compounds for cure. But the lack of knowledge of the medicinal properties of seeds and kernels in the community is the reason for their limited use. Plastering, ingestion, and decoction are often preferred preparations of these medicinal plants but soaking and used as drop are the least methods used.

Acknowledgment

We would like to extend my gratitude to Friendian Estoconing and Dr. Teddy A. Cubelo for their assistance during this research. I would also like to express my appreciation to Sanata Dharma University and St. Paul University Dumaguete for their support in conducting this research as part of collaboration between the two university.

Funding

None.

Declaration of interest

The authors declare that none of them has any conflict of interest with any private, public or academic party related to the information contained in this manuscript.

Author contributions

AB: Conceptualization, Methodology, Investigation, Fieldwork and data collection, Writing – Original Draft preparation, Project administration. WWS: Conceptualization, Methodology, Writing – Review and Editing, Supervision, Validation.

Received: October 2, 2024
Revised: April 3, 2025
Accepted: July 7, 2025
Published: December 4, 2025

References

1. Andalan JR, Mondejar AJS, Sumaya NHN, Guihawan JQ, Madamba MRSB, Baltazar Tabelin C, et al. Ethnobotanical survey of medicinal and ritual plants utilized by the indigenous communities of Benguet province, Philippines. Trop Med Health. 2024;52: 59. https://doi.org/10.1186/s41182-024-00624-1
2. Nomoto S. Indigenous Filipino healing practices. Cold Tea Collective. 2020.
3. Villanueva JM. Indigenous healing practices, policies and perceptions of young and elderly Ga'dang people in Nueva Vizcaya, Philippines. J Nat Remedies. 2021; 149-163. https://doi.org/10.18311/jnr/2021/25167
4. Alum EU. The role of indigenous knowledge in advancing the therapeutic use of medicinal plants: challenges and opportunities. Plant Signal Behav. 2024;19: 2439255. https://doi.org/10.1080/15592324.2024.2439255
5. Vera-Ruiz D. Heart diseases, cancer top causes of death in PH. Manila Bulletin.
6. Arevalo MVPN, Robredo JPG, Valenzuela S, Ho FDV, Alberto NRI, Alberto IRI, et al. The role of traditional, complementary, and alternative medicine in cancer care in the Philippines. Chin Clin Oncol. 2022;11: 49. https://doi.org/10.21037/cco-22-91
7. Meñiza JF, Pasco MM, Alimbon JA. A review of ethnobotanical studies reveals over 500 medicinal plants in Mindanao, Philippines. Plant Divers. 2024;46: 551-564. https://doi.org/10.1016/j.pld.2024.05.001
8. Derso YD, Kassaye M, Fassil A, Derebe B, Nigatu A, Ayene F, et al. Composition, medicinal values, and threats of plants used in indigenous medicine in Jawi District, Ethiopia: implications for conservation and sustainable use. Sci Rep. 2024;14: 23638. https://doi.org/10.1038/s41598-024-71411-5
9. Oracion EG. The ecology of interethnic resource exchange: The socioeconomic adaptation of Negritos in Southern Negros. Philippines; 1984.
10. Chen W-Y, Yang T, Yang J, Qiu Z-C, Ding X-Y, Wang Y-H, et al. Wild plants used by the Lhoba people in Douyu Village, characterized by high mountains and valleys, in southeastern Tibet, China. J Ethnobiol Ethnomed. 2021;17: 46. https://doi.org/10.1186/s13002-021-00472-x
11. Silva HCH, Caraciolo RLF, Marangon LC, Ramos MA, Santos LL, Albuquerque UP. Evaluating different methods used in ethnobotanical and ecological studies to record plant biodiversity. J Ethnobiol Ethnomed. 2014;10: 48. https://doi.org/10.1186/1746-4269-10-48
12. Tongco MDC. Purposive sampling as a tool for informant selection. Ethnobotany Research and Applications. 2007;5: 147-158. https://doi.org/10.17348/era.5.0.147-158
13. Huang S-S, Huang C-H, Ko C-Y, Chen T-Y, Cheng Y-C, Chao J. An ethnobotanical study of medicinal plants in Kinmen. Front Pharmacol. 2021;12: 681190. https://doi.org/10.3389/fphar.2021.681190
14. Alexiades MN. Protocol for conducting ethnobotanical research in the tropics. In: Dalam MN, editor. Selected guidelines for ethnobotanical research: A field manual. New York Botanical Garden Press; 1996. pp. 5-18.
15. Martin GJ. Ethnobotany. London, England: Routledge; 2010. https://doi.org/10.4324/9781849775854
16. Culley TM. Why vouchers matter in botanical research. Appl Plant Sci. 2013;1: 1300076. https://doi.org/10.3732/apps.1300076
17. Jnanathapaswi SG. Thematic Analysis & coding: An overview of the qualitative paradigm. figshare; 2021.
18. Lincoln YS, Guba EG. Naturalistic Inquiry. SAGE Publications; 1985. https://doi.org/10.1016/0147-1767(85)90062-8
19. Naeem M, Ozuem W, Howell K, Ranfagni S. A step-by-step

process of thematic analysis to develop a conceptual model in qualitative research. Int J Qual Methods. 2023;22. https://doi.org/10.1177/16094069231205789

20. Jha SK. Research methodology in ethnobotany. In: Dalam SK, editor. Advances in ethnobotany (hlm. Satish Serial Publishing House; 2018. pp. 169-191.
21. Tolentino RD, Austria RE, Bernal LC, Caguiat M G S and Castillo KLL, Dizon RP, Garcia BJL, et al. Herbal medicine utilization among Batangueños. Asia Pacific Journal of Education, Arts and Sciences. 2019;6: 14-20.
22. Mekonnen AB, Mohammed AS, Tefera AK. Ethnobotanical study of traditional medicinal plants used to treat human and animal diseases in Sedie Muja district, south Gondar, Ethiopia. Evid Based Complement Alternat Med. 2022;2022: 7328613. https://doi.org/10.1155/2022/7328613
23. Fallesen D. How COVID-19 impacted vulnerable communities in the Philippines. World Bank Blogs. World Bank Group; 2021.
24. Zhang Q. Traditional and complementary medicine in primary health care. Medcalf DA, Bhattacharya S, Momen H, Seckinelgin M, Frymus M, editors. 2015; 175-182.
25. van Andel T, Carvalheiro LG. Why urban citizens in developing countries use traditional medicines: the case of suriname. Evid Based Complement Alternat Med. 2013;2013: 687197. https://doi.org/10.1155/2013/687197
26. Gizaw Z, Astale T, Kassie GM. What improves access to primary healthcare services in rural communities? A systematic review. BMC Prim Care. 2022;23: 313. https://doi.org/10.1186/s12875-022-01919-0
27. Khatoon T, Naskar A, Datta K, Kumar D, Kaur G, Karmakar P. A short review on role of some natural herbs in the treatment of hypertension. Asian Journal of Pharmaceutical Research and Development. 2022;10: 88-93. https://doi.org/10.22270/ajprd.v10i3.1142
28. Pucot JR, Manting MME, Demayo CG. Ethnobotanical plants used by selected indigenous peoples of Mindanao, the Philippines as cancer therapeutics. Pharmacophore. 2019;10: 61-69.
29. Faruque MO, Uddin SB, Barlow JW, Hu S, Dong S, Cai Q, et al. Quantitative ethnobotany of medicinal plants used by indigenous communities in the bandarban district of Bangladesh. Front Pharmacol. 2018;9. https://doi.org/10.3389/fphar.2018.00040
30. Rahman S, Iqbal M, Husen A. Medicinal plants and abiotic stress: An overview. Medicinal Plants. Singapore: Springer Nature Singapore; 2023. pp. 1-34. https://doi.org/10.1007/978-981-19-5611-9_1
31. Teoh ES. Secondary metabolites of plants. Medicinal Orchids of Asia. Cham: Springer International Publishing; 2016. pp. 59-73. https://doi.org/10.1007/978-3-319-24274-3_5
32. Shahrajabian MH, Sun W. Five important seeds in Traditional medicine, and pharmacological benefits. Seeds. 2023;2: 290-308. https://doi.org/10.3390/seeds2030022
33. WHO. Traditional medicine. 2025. Available: https://www.who.int/news-room/questions-and-answers/item/traditional-medicine