



Ethnobotanical Uses of Medicinal Plants among the Muslim Maranaos in Iligan City, Mindanao, Philippines

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ABSTRACT

This study aimed to document the indigenous knowledge (IK) of the Maranaos in Iligan City on the utilization of locally available medicinal plants on their healthcare practices. A series of informal interviews was conducted using a semi-structured questionnaire involving 228 informants ages 27-85 years old. A total of 122 plant species, grouped within 113 genera and 53 families were recorded. The families best represented (top five) were Asteraceae/Compositae and Malvaceae (8 species), Poaceae/Gramineae (7), Euphorbiaceae and Fabaceae/Leguminosae (6), Lamiaceae/Labiatae and Solanaceae (5), and Cucurbitaceae, Meliaceae, and Verbenaceae with four (4) species. Out of the 51 medicinal uses, the five most common were (1) cough and stomachache, (2) fever and urinary tract infections, (3) diarrhea, (4) hypertension and cuts or wounds, and (5) muscle pain or over fatigue ("bughat") in women. Usually their herbal preparations were done by boiling the plant part (mostly the leaves) with water (decoction) and taken internally (drink). Some of the medicinal plants presented in this study are also used by different ethnic groups in the Philippines and various tribal and rural communities in other countries too. Such widespread use of these medicinal plants provides basis for their efficacy in treating various diseases.

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INTRODUCTION

Traditional or folk medicine that has been developed by various rural indigenous communities over centuries is still widely practiced in most developing countries throughout the world. It has been estimated that as many as 70-95% of the people living in developing countries rely on medicinal plants for their primary healthcare needs [1] because of its better cultural acceptability, better compatibility with the human body and lesser side effects, and it is affordable and locally available [2, 3, 4]. Medicinal plants used by virtually all cultures do not only serve as a source of affordable healthcare but also as a source of income and livelihood [5,6]. Medicinal plants contain a wide range of metabolites that can be used to treat and cure various forms of diseases [7]. Thus, many of today's drugs have been derived from plant resources. Fourteen countries in the Asia-Pacific region are actively involved in research and development on medicinal plants [8] amongst is the Philippines. In the Philippines, the Department of Science and Technology-Philippine Council for Health Research and Development and the National Research Council of the Philippines and other major academic Institutions such as University of the Philippines and the University of Santo Tomas have been supporting many studies on medicinal plants for several years now [9].

Nowadays, several ethnobotanical studies were carried out in different parts of the world to document the indigenous knowledge on the uses of medicinal plants. This knowledge on the utilization of medicinal plants is passed on from one generation to the next based on indigenous knowledge system (IKS) and orally by the traditional herbal practitioners or local healers [10]. Ethnomedicinal healing systems vary across cultures [11]. The different Philippine ethnic groups are a rich source of this indigenous knowledge. One of these indigenous groups is the Maranao tribe in Mindanao. The Maranaos are one of three related indigenous Moro groups (along with the Iranun and Maguindanao) native to the island of Mindanao [12]. These groups also share genes, linguistic and cultural ties to non-Muslim Lumad groups such as the Tiruray or Subanon. About 90% of the Maranaos live in the province of Lanao del Sur, with the remainder living in Lanao del Norte and parts of

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Cotabato, Zamboanga del Sur, and Bukidnon [13]. This ethnic group occupy the most strategic place in Mindanao owing to their access to Iligan bay in the north and Illana bay in the south. Literally, "Maranao" means "people of the lake" [14]. The Maranao version of Islam includes many elements of pre-Islamic belief and ritual, particularly those connected with agriculture, the spirit world, and the cycles of nature [15]. This study aimed to record the indigenous knowledge of the Maranaos in Iligan City on their uses of locally available medicinal plants to meet their daily healthcare needs. Ethnobotanical studies that document the indigenous knowledge of a particular group is significant for the conservation and sustainable utilization of the medicinal plants. Thus, the data generated out of this research work would be helpful in preserving the IKS and traditional healthcare practices of the Maranaos in Iligan City and would serve as baseline information for future pharmacological investigations of these plants.

MATERIALS AND METHODS

Ten barangays in Iligan City were selectively chosen as sampling sites, namely: Bonbonon, Dalipuga (Tagibo), Del Carmen, Digkilaan, Hinaplanon (Cabaro), Mahayahay, Mandulog, Maria Cristina, Sta. Elena, and Tomas Cabili because mostly of the Maranaos are occupying in these areas. A semi-structured questionnaire consisting of the demographic (age, gender, source of livelihood, etc) and ethnobotanical (medicinal plants and its uses) information was used in conducting the survey through a series of interviews carried out between January to May 2014. The interviews were developed as informal conversations in order to let them speak spontaneously and not feel pressured. A total of 228 individuals were interviewed with ages between 27 to 85 years old including some local healers ("pamomolong") and "datus" (community leader). The data acquired for each plant consists of the plant's family, common (English) and local names (Maranao name), the part of the plant used, the mode of preparation and administration, and its medicinal uses. Photos were taken on each plant during short field walks with some of the respondents and samples were collected for scientific identification. The medicinal plants were identified with the help of an expert botanist and literatures [16-22]. The total number of medicinal plants, number of botanical families and genera, most reported medicinal uses, and the most commonly mentioned method of preparation and mode of application were determined. The most commonly used plant part for herbal preparations was evaluated in order to assess if the survival and continuity of the medicinal plants in the area are maintained and protected by the locals to ensure sustainability in the utilization of these plants.

RESULTS AND DISCUSSION

Table 1 shows the list of the medicinal plants utilized by the Maranaos to treat various forms of diseases or ailments. A total of 122 (two are pteridophytes) plant species distributed to 113 genera (including *Solanum verbascifolium*) and 53 families was recorded. The highest number of species (8) were represented by families Asteraceae/Compositae and Malvaceae followed by Poaceae/Gramineae with seven (7) species, Euphorbiaceae and Fabaceae/Leguminosae with six (6) species, Lamiaceae/Labiatae and Solanaceae (including *Solanum verbascifolium*) with five (5) species, four (4) species in families Cucurbitaceae, Meliaceae, and Verbenaceae, and three (3) in families Annonaceae, Musaceae, Rubiaceae, and Rutaceae. Families Acanthaceae, Amaryllidaceae, Anacardiaceae, Apiaceae/Umbelliferae, Apocynaceae, Araceae, Arecaceae/Palmae, Boraginaceae, Convolvulaceae, Moraceae, Myrtaceae, Piperaceae, and Zingiberaceae were represented by two (2) species and the rest of the families were all represented by only one (1) species. The obtained results revealed the considerable diversity of the medicinal plants and the vast indigenous knowledge of the Maranaos in Iligan City. Despite of the fact that Iligan is a highly urbanized city the Maranao people still rely on traditional healthcare practices and medicinal plants probably because most of them are living in remote areas (barangays) where traditional medicine is mostly the accessible and affordable treatment available for them. According to Diallo and others [23], the vast knowledge on how to use the medicinal plants against different illnesses may be expected to have accumulated in areas where the use of the plants is still of great importance.

Table 1: Medicinal plants used by the Maranaos in their healthcare practices.

Family & Scientific name	English/ common name	Maranao name	Plant part used	Preparation and mode of application	Medicinal uses
Acanthaceae					
<i>Andrographis paniculata</i> (Burm. f.) Wall. ex Nees	King of bitters	Ampion	leaves	boil with water, drink thrice a day	relief of stomachache and dysmenorrhea; enhance proper blood circulation
<i>Gendarussa vulgaris</i> Nees	Gandarusa	Salimbagoan or Palyas	leaves	boil with water, drink thrice a day roast partly, put in chest and back wrapped in a piece of cloth or "hampo"	cures cough and stomachache
			roots	clean thoroughly, cut into pieces, and soak in lukewarm water (with Punas roots for cough & fever); drink thrice a day	relief severe twinge in the body (sides & back) or "sinda" (a severe flatulence) and stomachache; cures cough & fever
Asparagaceae (Agavaceae)					
<i>Cordyline fruticosa</i> (L.) A. Chev.	Good luck plant	Kilala	bark	scrape inner portion, soak in lukewarm water, and drink as needed	lowers fever

Amaryllidaceae (Alliaceae)					
<i>Allium sativum</i> L.	Garlic	Lasona a tukapun	stem (bulb)	chew and eaten raw or cut into small pieces and swallow with water	lowers hypertension; cures sore throat
				cut into small pieces and put on aching tooth	relief of toothache
<i>Allium tuberosum</i> Rottler ex Spreng.	Garlic chives	Ganda	leaves	wash, squeeze with lukewarm water, and rub on the belly	easy labor during childbirth
Anacardiaceae					
<i>Mangifera indica</i> L.	Mango	Mangga	leaves	boil with water, drink thrice a day	cures indigestion and typhoid fever
			bark	boil with water, drink thrice a day	relief of flatulence or "panuhot"
<i>Spondias pinnata</i> (L. f.) Kurz.	Common hog plum	Alubihid	leaves	squeeze, soak in water, and use as first bath for person who recovers from measles & chickenpox	for fast recovery and prevents the reoccurrence of the disease
			bark	scrape the inner part, squeeze, and apply around the mouth (as poultice)	treats herpes simplex infection along the mouth or "ugahip"
Annonaceae					
<i>Annona muricata</i> L.	Soursop	Gabana	leaves	boil with water, drink thrice a day	lowers blood sugar (diabetes); lowers hypertension; diarrhea
			young leaves	chew, use sap to rub on belly	easy labor during childbirth and for the relief of gas pain or stomach pain
			flower	boil with water, drink thrice a day	lowers hypertension
			fruit	eaten raw	cures cancer; stimulates fertility in males
			dried seeds	roast, pound into powder, and add hot water (use as tea); drink	cures heart-related diseases
<i>Annona squamosa</i> L.	Sugar apple	Atis	bark	boil with water, drink thrice a day	treats diarrhea
<i>Annona reticulata</i> L.	Custard apple	Sarikaya	leaves, bark	boil with water, drink thrice a day	treats diarrhea, dysentery, and indigestion
Apiaceae/Umbelliferae					
<i>Centella asiatica</i> (L.) Urb.	Asiatic pennywort	Tangila a lopa	leaves	wash, chew, and eaten raw; once a day	lowers hypertension; diabetes
				wash, squeeze, then soak in lukewarm water; or boil with water; drink thrice a day	cures cough; induces urination; lowers fever
				pound until become soft and juicy; squeeze sap directly on wounds	heals wounds
<i>Daucus carota</i> L.	Carrots	Carrots	root	scrape, squeeze, and drink the sap or juice	cures hepatitis; lowers blood sugar
Apocynaceae					
<i>Catharanthus roseus</i> (L.) G. Don	Pink periwinkle	Kumintang	roots	boil with water, drink thrice a day	enhance proper blood circulation
<i>Plumeria obtusa</i> L.	White calachuche	Kalatsutsing-puti	leaves	roast partly, put in chest and back wrapped in a piece of cloth or "hampol"	relief severe twinge in the body (sides & back) or "sinda" (severe flatulence)
Araceae					
<i>Acorus calamus</i> L.	Sweet flag	Karomenga	roots	pound, wrap in banana leaf, roast, and mix with coconut milk; rub on belly	stimulate menstruation in females who missed a period
<i>Rhaphidophora celatocaulis</i> (N.E. Brown) F. Knoll	Shingle plant	Likop-likop	leaves	roast partly, pound until become soft and juicy, and apply around the mouth (as poultice)	treats herpes simplex infection along the mouth or "ugahip"
Araliaceae					
<i>Polyscias scutellaria</i> (Burm.f.) Fosb.	Saucer-leaf	Salapiin	leaves, roots	boil with water, drink thrice a day; use 7 leaves, boil in 3 glasses of water, and drink thrice a day (for "supga")	induce urination in person with kidney infection (UTI); cures person vomiting with blood or "supga"
Arecaceae/Palmae					
<i>Cocos nucifera</i> L.	Golden coconut	Lubi nga limbahon	bark, roots	boil with water, drink thrice a day	lowers hypertension
			water/juice	drink as needed	induce urination in person with kidney infection (UTI)
			white flesh (endosperm)	scrape, fry until brown and produces oil, and rub oil on skin	cures dermatitis (eczema)
<i>Areca catechu</i> L.	Betle nut palm	Mamaan	leaves	roast partly, squeeze to get the sap, mix with coconut oil, and apply (rub) on affected areas	treats sprains and bruises
			fruit (nut)	peel, cut into small pieces, chew to get the sap, and allow to stay in mouth for several minutes	whitens teeth and strengthens the gum and teeth; cures bleeding gums and toothache
Asteraceae/Compositae					
<i>Artemisia vulgaris</i> L.	Mugwort	Bawkasina	leaves	boil with water, drink	relief of flatulence or "panuhot," stomachache, and vertigo
<i>Bidens pilosa</i> L.	Beggar ticks	Dagum-dagum	roots	clean thoroughly, cut into pieces, and soak in lukewarm water; drink thrice a day	relief of muscle pain or over fatigue or "bughat" in women
<i>Blumea balsamifera</i> (L.) DC.	Camphor plant	Punas or Salimbewangen	leaves	wash, squeeze, then soak in lukewarm water (with Pisaw-pisaw leaves); or boil with water; drink thrice a day	cures cough, common colds, and fever
				squeeze, rub or massage the leaves into the body	relief of flatulence or "panuhot," rheumatism, arthritis, and skin itchiness
			young leaves & roots	use 3 shoots plus 2 pieces of roots and boil with water, drink thrice a day	appetite stimulant
<i>Chromolaena odorata</i>	Hagonoy	Hagonoy	leaves	wash thoroughly, pound, and apply directly or squeeze sap on wounds	abate bleeding on cuts or wounds
<i>Elephantopus scaber</i> L.	Prickly-leaved elephant's foot	Tambda	leaves	wash thoroughly, pound, and apply directly or squeeze sap on wounds	abate bleeding on cuts or wounds
			roots	crush, soak in hot water, and drink thrice a day	treats diarrhea
				boil with water, drink thrice a day	relief of stomachache
<i>Emilia sonchifolia</i> (L.) DC. ex Wight	Lilac tassel flower	Pisaw-pisaw (used with Punas)	leaves, whole plant	wash and soak in lukewarm water; or boil with water; drink thrice a day	cures cough
<i>Erigeron sumatrensis</i> Retz.	Tall fleabane	Mango-aw (use with Talawatawa and Rambiyowa leaves)	leaves	wash, chew, and allow to stay in mouth for several minutes	relief of toothache
<i>Vernonia cinerea</i> (L.) Less.	Ironweed	Katabas	leaves, roots	boil with water, drink thrice a day	induce urination; expel intestinal parasites
Balsaminaceae					
<i>Impatiens balsamina</i> L.	Touch-me-not	Sarengka	leaves	pound until become soft and juicy; apply on affected area (as poultice)	treats abscesses on nails (fingers & toes)
				wash, pound, squeeze, and apply the juice (put a drop) on warts	cures warts
Basellaceae					
<i>Basella rubra</i> L.	Malabar nightshade	Alugbati	leaves	cook as vegetable or boil with water and eaten	laxative in children
				pound until become soft and juicy; apply on	heals swellings (boils and ulcers)

				affected area (as poultice)	
Bixaceae					
<i>Bixa orellana</i> L.	Anatto tree	Galaga	roots	boil with water, drink thrice a day	enhance proper blood circulation
Boraginaceae					
<i>Carmona retusa</i> (Vhal.) Masam.	Philippine tea tree	Tsaang gubat	leaves	boil with water, drink thrice a day	cures cough
<i>Heliotropium indicum</i> L.	Indian heliotrope	Elepante	whole plant	boil with water, drink thrice a day	treats kidney infection (UTI) and muscle pain or over fatigue or "bughat" in women
Brassicaceae					
<i>Brassica oleracea</i> L. var. <i>capitata</i> L.	White cabbage	Ripolyo	leaves	wash, pound, squeeze, and apply the juice (put a drop) on warts	cures warts
Cactaceae					
<i>Nopalea cochinellifera</i> (L.) Salm.-Dyck	Cochineal cactus	Bontor	leaves	pound, put in the affected area, and wrapped with a piece of cloth or "hampol"	cures inflamed sprain
Caricaceae					
<i>Carica papaya</i> L.	Papaya	Kopaya	leaves, roots	boil with water, drink thrice a day	induce urination in person with kidney infection (UTI); treats diarrhea; lowers fever
			fruit	eaten raw	for better digestion; prevents constipation (laxative); antioxidant
Chrysobalanaceae					
<i>Atuna racemosa</i> Rafin.	Makita tree	Tabon-tabon	fruit	cut, scrape the pulp, and apply on affected area (as poultice)	cures furuncle (a boil), as an antimicrobial agent
Clusiaceae/Guttiferae					
<i>Garcinia mangostana</i> L.	Mangosteen	Mangosteen	fruit	eaten raw	lowers hypertension and blood sugar level
Combretaceae					
<i>Quisqualis indica</i> L.	Chinese honeysuckle	Niyog-niyogan	leaves	wash and put it on the forehead	relief of headache
			dried seeds	chew and swallow with a glass of water; once only after a meal	expel intestinal parasites
Convolvulaceae					
<i>Ipomoea aquatica</i> Forsk.	Water spinach	Kangkong	leaves	cook and eaten as vegetable or squeeze to get the sap & drink	enhance proper blood circulation (in anemic)
<i>Ipomoea batatas</i> (L.) Lam.	Sweet potato	Rapa	leaves	cook and eaten as vegetable	lowers blood sugar level and enhance proper blood circulation (in anemic)
				pound until becomes soft and juicy and apply directly on affected area (as poultice)	cures boils
Costaceae					
<i>Costus igneus</i> Nak	Spiral flag	Insulin plant	leaves	wash, chew, and eaten raw; once a day	lowers blood sugar (diabetes)
Crassulaceae					
<i>Kalanchoe pinnata</i> (Lam.) Pers.	Life plant	Danggaw/Angelika	leaves	wash thoroughly, pound, and spread it out on forehead or rub on body (cooling effect for fever) or on sides of neck (for mumps)	lowers high fever; cures mumps
Cucurbitaceae					
<i>Citrullus lanatus</i> (Thunb.) Mansf.	Water melon	Dagita	fruit (pulp)	slice, wash, and eaten raw	induces urination in person with UTI
			dried seeds	roasted partly and eaten	expel intestinal parasites
<i>Cucurbita maxima</i> Duch.	Squash	Kalabasa	fruit	cook as vegetable and eaten	for good eyesight (source of Vit. A); lowers blood sugar
<i>Luffa cylindrica</i> (L.) M. Roem	Sponge gourd	Sikwa	fruit	cook as vegetable and eaten; or roast partly and eaten	lowers hypertension; cures hepatitis
<i>Momordica charantia</i> L.	Bitter melon	Paliya	fruit	cut into small pieces, squeeze or blend, and drink the juice as needed	lowers blood sugar, anti anemia
<i>Sechium edule</i> (Jacq.) Sw.	Chayote	Sayoti	fruit	remove the skin, slice, blend, and drink the juice as needed	lowers hypertension; cures person vomiting with blood
Cyperaceae					
<i>Cyperus kyllingia</i> Endl.	Whitehead spikesedge	Gontor	whole plant	boil with water, drink thrice a day	cures cough
				wash thoroughly, soak in lukewarm water, and drink thrice a day	egest measles to lower or diminish fever
Dioscoreaceae					
<i>Dioscorea alata</i> L.	Purple yam	Ubi	stem (tuber)	cook with water (by boiling), remove the skin, slice, and eaten	relief of flatulence or "panuhot"
Elaeocarpaceae					
<i>Muntingia calabura</i> L.	Panama cherry	Mansantas	bark	boil with water, drink thrice a day	relief sickness felt after missing a meal or "pasmu"
				scrape inner portion, squeeze to get the sap, and rub or massage on affected areas	relief of muscle pain
Euphorbiaceae					
<i>Euphorbia hirta</i> L.	Cat's hair	Talawatawa	whole plant	boil with water (together with the roots of Tambda and Rambiyowa) and drink as needed	lowers high fever (due to dengue and measles)
<i>Jatropha curcas</i> L.	Tuba-tuba plant	Katangan-tangan	stem	roast partly, scrape, squeeze and rub or massage on the body (can be added with a liniment oil)	heals sprain; relief of flatulence or "panuhot"
			leaves (with petiole)	obtain a leaf from the trunk (stem) by pulling it with its petiole, then drop the sap on the affected area	cures canker sores or "luas" and toothache
<i>Macaranga tanarius</i> (L.) Muell.-Arg.	Elephant's ear	Bonga	young leaves	boil with water, drink thrice a day	treats diarrhea and dysentery
			root	boil with water, drink as needed	lowers high fever
<i>Manihot esculenta</i> Crantz	Cassava	Banggala	leaves	wash, squeeze, mix the sap/juice with a little water, and drink	lowers hypertension
<i>Melanolepis multiglandulosa</i> (Reinw. ex Blume) Rech.f. & Zoll.	Mo lin	Alum	leaves	roast partly, put in chest and back and wrapped with a piece of cloth or "hampol;" or roast, squeeze, mix the sap with liniment oil, and rub on the body (mostly the belly part)	relief of flatulence or "panuhot"
				wash and put it on the forehead	relief of headache
<i>Phyllanthus niruri</i> L.	Seed-under-leaf	Kaniyo-niyog	whole plant	boil with water, drink thrice a day	treats hepatitis
Fabaceae/Leguminosae					
<i>Caesalpinia sappan</i> L.	Sappanwood	Sibokaw	stem	boil with water, drink thrice a day	lowers blood sugar
<i>Erythrina variegata</i> L.	Tiger's claw	Dapdap	bark	scrape the inner part of the bark, wrap it in a banana leaf (with a little vinegar & salt) and	relief of flatulence or "panuhot" and muscle pains

				roast, and spread out in the chest and back wrapped in a piece of cloth or "hampol"	
			young leaves	cook as vegetable with coconut milk and fish; eaten	promotes sleep in a person with insomnia
<i>Gliricidia sepium</i> (Jacq.) Kunth ex Walp.	St. Vincent plum	Madre-kakaw	leaves	pound until become soft and juicy; squeeze sap directly on wounds or rub on the skin (skin disease)	abate bleeding on cuts or wounds; cures skin diseases (itchiness)
				soak in hot water (as tea) then drink once a day (morning)	cures blurry eye vision
			bark	scrape, squeeze (to extract the sap), and rub on the affected area	relieves skin itchiness
			roots	boil with water, drink thrice a day	relief of stomachache
<i>Leucaena leucocephala</i> (Lam.) de Wit	Lead tree	Ipil-ipil	seeds	chew and eaten directly	expel intestinal parasites
<i>Mimosa pudica</i> Mart.	Sensitive plant	Kimpo	roots	boil with water, drink thrice a day	cures person vomiting with blood or "sugpa"
				boil with water (together with the roots of Bros), drink thrice a day	relief of arthritis and lowers fever
<i>Pterocarpus indicus</i> Willd.	Rosewood	Narra	bark	cut into small pieces and boil with water, drink thrice a day	cures person vomiting with blood or "sugpa;" an antioxidant
				scrape inner portion, squeeze to get the sap, and apply directly	cures canker sores or "luas"
Lauraceae					
<i>Persea americana</i> Mill.	Alligator pear	Abukado	bark	boil with water, drink thrice a day	treats diarrhea
			leaves (fresh or dried)	boil with water (often with Mangga leaves) and drink thrice a day	treats indigestion and diarrhea
Lamiaceae/Labiatae					
<i>Coleus amboinicus</i> Lour.	Oregano	Kapal	leaves	wash, squeeze, then soak in lukewarm water, and drink as needed	cures cough; relief of asthma and arthritis; and lowers fever
<i>Coleus blumei</i> Benth.	Painted nettle/ Mayana	Mayana (often used with Kapal)	leaves	wash, squeeze, then soak in lukewarm water; drink thrice a day	cures cough
				pound until become soft and juicy; apply a poultice to abscesses or squeeze sap (wounds)	heals wounds and abscesses
			roots	boil with water, drink thrice a day	relief of stomachache
<i>Hyptis capitata</i> Jacq.	Knobweed	Arbaka	leaves or roots (for cough)	boil with water and drink thrice a day or use as an antiseptic wash (for wounds)	cures dry cough and heals wounds
			roots	boil with water, cool, and gargle	relief of toothache
<i>Mentha arvensis</i> L.	Mint	Biks	leaves	wash, soak in lukewarm water, and drink thrice a day	cures cough
<i>Orthosiphon aristatus</i> (Blume) Miq.	Cat's whiskers or Java tea	Balbas pusa	leaves	soak in hot water or boil with water and drink thrice a day before meals	treats kidney infection (UTI) and stomachache
Lythraceae					
<i>Lagerstroemia speciosa</i> (L.) Pers.	Queen's flower	Banaba	leaves	boil with water, drink thrice a day	lowers blood sugar level
Malvaceae					
<i>Abelmoschus esculentus</i> (L.) Moench	Okra	Okra	fruit	slice into small pieces, boil with water, drink thrice a day	relief of arthritis
			leaves	boil with water, drink as needed	lowers fever and relief of headache
<i>Ceiba pentandra</i> (L.) Gaertn.	Kapok	Kamir	leaves	pound until become soft and juicy and apply directly on affected area	cures furuncle (a boil)
			bark	cut in small pieces, soak in hot water, and drink as needed	lowers high fever
				use 7 small slices (thorns for teething infant, with shoots of Kogon), boil with water, and drink thrice a day	treats diarrhea; prevents diseases in teething infants
<i>Durio zibethinus</i> Murr.	Durian	Durian	leaves	boil with water, drink thrice a day	relief of stomachache
<i>Hibiscus rosa-sinensis</i> L.	Hibiscus	Antulanga	flower bud	pound until become soft and juicy; apply directly on affected area	heals swellings; act as anti-inflammatory agent
			leaves	boil with water, drink as needed	lowers fever
<i>Malvastrum coromandelinum</i> (L.) Garcke	False mallow	Sapar	roots	boil with water, drink thrice a day	relief of muscle pain or over fatigue or "bughat" in women
				boil with water (with roots of Dalupang) and drink thrice a day	post-partum care to prevent bleeding or hemorrhage
<i>Theobroma cacao</i> L.	Cacao	Kakaw	leaves	pound until become soft and juicy; apply on affected area as poultice	treats sprains
			seeds	roast, pound, and apply (rub) on affected areas	treats skin diseases (eczema)
<i>Urena lobata</i> L.	Caesar weed	Dalupang	leaves	roast leaves with charcoal in a metal basin and place belly above it while enclosing the whole body (except the head) with a big blanket (the process is called "pauslob or tuob"); direct the smoke over one's belly	relief of muscle pain or over fatigue or "bughat" in women
			dried leaves	roast leaves with charcoal in a metal basin and allow the smoke to purify the whole body (this process is called "palina")	treats nettle rash or locally termed as "dupang"
Meliaceae					
<i>Azadirachta indica</i> A. Juss.	Neem tree	Neem tree	leaves	boil with water, drink as needed	treats dengue fever and arthritis
<i>Lansium domesticum</i> Corr. Serr.	Langsat/ Duku	Bowaan	bark, roots	boil with water, drink thrice a day	treats diarrhea, hemorrhoid, and flatulence or "panuhot,"
			bark	scrape the inner portion, squeeze to get the sap (can be added with little amount of water), and drink	cures person vomiting with blood or "sugpa" due to tuberculosis; treats malaria
<i>Sandoricum koetjape</i> (Burm. f.) Merr.	Wild mangosteen	Santol	bark	boil with water, drink thrice a day	treats diarrhea; relief sickness felt after missing a meal or "pasmo"
<i>Swietenia mahogani</i> Jacq.	Mahogany	Mahogany	bark, roots	cut into small pieces and boil with water; drink thrice a day	relief of stomachache
			seeds	chew and swallow the juice or sap	
Menispermaceae					
<i>Tinospora crispa</i> (L.) Hook. F. & Thoms.	Heavenly Elixir	Patawali	stem	cut into small pieces and boil with water; drink once a day	enhance proper blood circulation; relief of stomachache; lowers hypertension and blood sugar; induces abortion

				cut into small pieces, boil with water (together with roots of Sapar, Dagum-dagum, and Coconut), and drink thrice a day	prevent muscle pain or over fatigue or "bughat" in women who gave birth (post-partum care)
				cut and squeeze the latex or sap over tooth	relief of toothache
				cut into small pieces and boil with water; wash on the affected area	antiseptic wash of gangrene (diabetes)
			leaves	wash, squeeze to get the sap (mix with oil), and rub or massage on affected areas	relief of flatulence or "panuhot"
Moraceae					
<i>Artocarpus heterophyllus</i> Lam.	Jack fruit	Budak	leaves	boil with water, drink thrice a day	treats diarrhea
<i>Ficus septica</i> Burm.f. var. <i>septica</i>	Septic fig	Maganonok	leaves	boil with water, transfer the boiled leaves in a small basin, and place belly above the steam while enclosing the whole body (except the head) with a big blanket (the process is called "paulob or tuob"); direct the steam/vapor over one's belly	relief sickness felt after missing a meal or "pasmu"
			roots (with roots of Tabako sa lako, <i>Solanum verbascifolium</i>)	cut into small pieces and soak in lukewarm water or boil with water; drink thrice a day	relief of muscle pain or over fatigue or "bughat" in women
Moringaceae					
<i>Moringa oleifera</i> Lam.	Horse radish tree	Kalamunggay	leaves	roast, add with hot water, mix, and drink (at least thrice a day)	relief of rheumatism and arthritis; lowers fever; ulcer; cancer
				boil with water, drink as needed	
			roots	pound until become soft and juicy; squeeze sap on affected area	abate bleeding in cuts or wounds
				cut into small pieces, squeeze, mix sap with water; drink thrice a day	relief of stomachache
				boil with water, drink twice a day for two to three days only	stimulates menstruation in women; induces abortion
Musaceae					
<i>Musa sapientum</i> L. var. <i>compressa</i> (Blco.) Teod.	Banana saba	Saging kardaba/saba	dried leaves	remove petiole, cut into smaller pieces, boil with water, and use as first bath for women after giving birth	prevents muscle pain or over fatigue or "bughat" in women who gave birth
			young leaves	obtain a leaf bud, remove the petiole, cut it into halves, and spread out in the chest and back.	lowers very high fever in person with convulsion
			stem (bark)	scrape (inner portion), squeeze (sap), and apply as poultice	abate bleeding on cuts or wounds
				cut into small pieces, squeeze to extract the sap and drink it	cures person vomiting with blood or "sugpa"
<i>Musa sapientum</i> L. var. <i>cinerea</i> Blco.	Banana (Latundan)	Saging tundan	fruit	eaten raw or can be roasted partly (preferably unripe) with its skin and eaten	treats diarrhea
<i>Musa textilis</i> Nee	Abaca	Abaka	shoot (leaf bud)	roast partly, squeeze, and drink the sap; the remaining sap are rub/massage of the body	relief of muscle pain or over fatigue or "bughat" in women
Myrtaceae					
<i>Psidium guajava</i> L.	Guava	Bayaba	young leaves	wash, pound, and rub or massage on affected areas	underarm deodorant; treats pimples & acne
				wash, chew, and spit the sap or juice directly on affected area	abate bleeding on cuts or wounds
			leaves	wash, chew, and swallow the juice or sap	cures person vomiting with blood or "sugpa"
				wash, pound (with Marina-ot, young leaves), add a little water, and drink	
				boil with water and use as an antiseptic wash	for wounds, scabies, and post-partum care (vaginal wash) in women
				boil with water, drink thrice a day	relieves hyperacidity
<i>Syzygium malaccense</i> (L.) Merr. and Perry	Malay apple	Toal	bark	boil with water, drink thrice a day	treats diarrhea and dysentery
			leaves	boil with water, drink thrice a day	lowers blood sugar in person with diabetes
Orchidaceae					
<i>Phalaenopsis amabilis</i> (L.) Bl.	Moth orchid	Manan-aw	flower	wash, soak in lukewarm water, and drink thrice a day	cures cough
Piperaceae					
<i>Peperomia pellucida</i> (L.) HBK	Shiny bush	Sinaw-sinaw	whole plant	boil with water, drink thrice a day	treats kidney infection; lowers hypertension
<i>Piper betle</i> L.	Betel leaf pepper	Namat	leaves	wash and spread out (as bandage) on belly and sides of the body	relief severe twinge in the body (sides & back) or "sinda" (severe flatulence)
Poaceae/Gramineae					
<i>Bambusa vulgaris</i> Schrad. ex J.C. Wendl.	Common bamboo	Kawayan	leaves	squeeze and soak in lukewarm water or boil with water; drink thrice a day	cures person who urinate frequently (with UTI)
<i>Chrysopogon aciculatus</i> (Retz.) Trin.	lesser spear grass	Amorsiko	roots	boil with water, drink thrice a day	prevents diseases in teething infants
<i>Cymbopogon citratus</i> (DC.) Stapf	Lemon grass	Bawing	whole plant	boil with water, drink thrice a day	lowers hypertension; treats diarrhea
<i>Eleusine indica</i> (L.) Gaertn	Goosegrass	Rambiyowa (often used with roots of Tambda)	roots	boil with water, drink thrice a day	prevent muscle pain or over fatigue or "bughat" in women who gave birth
			leaves	wash thoroughly, pound, and squeeze sap on affected area	eliminates poison (venom) of snake bite
<i>Imperata cylindrica</i> L.	Speargrass	Bros	roots	boil with water, drink thrice a day	treats kidney infections (induces urination) and edema
<i>Saccharum officinarum</i> L.	Sugarcane	Tubuh	stem	cut into small pieces, squeeze to get the juice, drink thrice a day	treats UTI; induces urination
<i>Zea mays</i> L.	Corn	Kamais	young hairs	boil with water, drink thrice a day	treats kidney infection; induces urination
Portulacaceae					
<i>Portulaca oleracea</i> L.	Purslane	Biala	whole plant	boil with water, drink thrice a day before meals	treats kidney infection (UTI); induces urination
Rubiaceae					
<i>Coffea arabica</i> L.	Coffee	Kape	young leaves	pound until become soft and juicy and apply (as poultice) on affected area	cures burns
<i>Ixora macrothyrsa</i> Teijsm. & Binn.	Garden Ixora	Santan pula	roots	boil with water, drink thrice a day	enhance proper blood circulation; induces abortion

<i>Morinda citrifolia</i> L.	Noni	Gunkaw	fruit (ripe)	eaten raw (with salt)	stimulate menstruation in women; diabetes
			leaves	roast partly and spread out on chest and back	lowers fever and treats cough
Rutaceae					
<i>Citrus grandis</i> (L.) Osb.	Pomelo	Pega (with leaves of Atis, Mangga, and Apel)	leaves	boil with water, drink thrice a day	relief sickness felt after missing a meal or "pasmo" and stomachache
<i>Citrus hystrix</i> DC.	Kafir lime	Marina-ot	young leaves	boil with water, drink thrice a day	treats stomachache and indigestion or dyspepsia ("impatso")
<i>Citrus microcarpa</i> Bunge	Chinese orange	Limonsito	fruit	roast partly and squeeze, drink the juice	cures cough and common colds
Sapotaceae					
<i>Chrysophyllum cainito</i> L.	Star apple	Apel	leaves or bark (inner part)	boil with water, drink thrice a day	treats diarrhea and vomiting; relief sickness felt after missing a meal or "pasmo"
Solanaceae					
<i>Capsicum frutescens</i> L.	Red pepper	Loya tidek	fruit	crush, mix with liniment oil, and apply on joints and aching parts	relief of rheumatism and arthritis
			leaves	crush and squeeze sap on tooth	relief of toothache
<i>Cestrum nocturnum</i> L.	Night blooming jessamine	Dama de noche	flowers	wash, squeeze to extract the sap, mix with liniment oil and rub on the belly and back of the body	relief of stomachache especially in children
<i>Cestrum nocturnum</i> L.	Night blooming jessamine	Dama de noche	flowers	smell the flower, twice a day	relief of dry cough
<i>Nicotiana tabacum</i> L.	Tobacco	Lagut	dried leaves	roast, squeeze, mix with liniment oil, and apply on affected area using the sap	prevents tetanus on nail puncture wound of the foot
				chew and allow to stay in mouth for several hours	relief of toothache
<i>Solanum lycopersicum</i> L.	Tomato	Kamatis	fruit	wash and eaten raw	boost immune system (good source of Vit. C); an anticancer
Urticaceae					
<i>Pipturus arborescens</i> (Link) C.B. Rob.	Luo wei mu	Handalamay	leaves	wash and spread out directly on affected area	treats skin diseases and herpes simplex infection along the mouth or "ugahip"
Verbenaceae					
<i>Gmelina arborea</i> Roxb	Gmelina	Gemilina	leaves	wash, then spread out (as bandage) in chest and back or can be roasted partly	relief severe twinge in the body (sides & back) or "sinda" (severe flatulence)
<i>Lantana camara</i> L.	Wild sage	Sapor	leaves	wash, soak in lukewarm water or boil, and drink twice a day	relief of dry cough
			leaves	pound until become soft and juicy; apply on affected area (as poultice)	heals wounds and abscesses
			leaves	boil with water and use as an antiseptic wash	cleans and cures wounds
			roots	boil with water, cool, and gargle	relief of toothache
<i>Stachytarpheta jamaicensis</i> L.	Bastard vervain	Kabirobiro	bark	boil with water, drink as needed	lowers fever
<i>Vitex negundo</i> L.	Five-leaved chaste tree	Lagundi	leaves	pound until become soft and juicy; squeeze sap or apply on affected area (as poultice)	abate bleeding in cuts or wounds and prevents infection
<i>Vitex negundo</i> L.	Five-leaved chaste tree	Lagundi	leaves	boil with water, drink thrice a day	cures cough and lowers fever
Xanthorrhoeaceae					
<i>Aloe vera</i> (L.) Burm. f.	Aloe	Sabila	leaves	cut it to squeeze out the gel and rub or apply on affected areas	treats burns and skin diseases (eczema)
Zingiberaceae					
<i>Curcuma longa</i> L.	Turmeric	Kalawag	stem (rhizome)	boil with water, drink thrice a day	treats edema and stomachache; cancer; ulcer; cures person vomiting with blood; lowers hypertension; an antioxidant
			young leaves	boil with water and use as first bath of the newly born child	avoids flatulence or "panuhot" in the infant
<i>Zingiber officinale</i> Roscoe	Ginger	Loya pagirisun	leaves	boil with water, drink thrice a day	relief of flatulence or "panuhot;"
			stem (rhizome)	pound to extract the sap, added with hot water, and drink	relief of flatulence or "panuhot;" cures cough; induces urination
				cut into small pieces and use as lozenges (candy), allow to stay in mouth	relief of sore throat
FERNS					
Athyriaceae					
<i>Diplazium esculentum</i> (Retz.) Sw.	Vegetable fern	Pako	roots (rhizome)	boil with water, drink thrice a day	treats diarrhea
Equisetaceae					
<i>Equisetum</i> sp.	Horsetail	Horsetail	stem	cut into small pieces, boil with water, and drink	treats UTI; induces urination

Out of the 51 medicinal uses, the top five (most frequently claimed) uses were: (1) cough and stomachache, (2) fever and urinary tract infections (UTI), (3) diarrhea, (4) hypertension and cuts or wounds, and (5) muscle pain or over fatigue ("bughat") in women. The species *Blumea balsamifera*, *Annona muricata*, and *Tinospora crispa* have the most number (8) of different medicinal uses. The preparation and mode of administration of the medicinal plants vary depending on the kind of disease or ailment treated. Mostly the medicinal plants were prepared by boiling it (usually the leaves) with water and administered internally by drinking the sap or juice thrice a day. External administration of the medicinal plants was done by spreading out the plant part (mostly leaves) directly (as bandage) on any part of the body or the plant material is applied over the body wrapped with a piece of cloth ("hampol") or roasted and/or pounded and directly applied on the body (skin) either by squeezing or rubbing the sap through massage (usually with liniment oil) on the affected area or as poultice. To abate bleeding on cuts or wounds, either the leaves were crushed or the barks of stems were scraped and the juice is extracted and administered topically or as poultice. Moreover, some plants were used as bath/wash after boiling it with water such as the leaves of *Spondias pinnata* (first bath for person who recovers from measles and chickenpox), *Curcuma longa* (first bath of the newly born child), *Musa sapientum* var. *compressa* (first bath in women who gave birth), and *Hyptis capitata*, *Lantana camara*, and *Psidium guajava* (vaginal wash in post-

partum care) as an antiseptic wash for wounds and scabies. In some plants only the smoke from its roasted leaves (*Urena lobata*) and the steam (vapor) of boiled leaves (*Ficus septica*) were used to treat diseases. In the other hand, the fruit of *Citrullus lanatus*, *Morinda citrifolia*, *Musa sapientum* var. *cinerea*, *Annona muricata*, and *Solanum lycopersicum* can be eaten raw for treating UTI, diabetes, diarrhea, and cancer, respectively. Also the leaves of *Centella asiatica* and *Costus igneus* can be chewed and eaten raw to lower hypertension and blood sugar, respectively. Conversely, the leaves of some plants such as *Basella rubra* (as laxative), *Ipomoea aquatica* (enhance proper blood circulation in anemic), *Ipomoea batatas* (for diabetics), and *Erythrina variegata* (promotes sleep in person with insomnia) as well as the fruit of *Cucurbita maxima* (in diabetics) and *Luffa cylindrica* (for hypertension and hepatitis) should be cooked first and eaten as vegetable.

The most cited plant part for their herbal preparation was the leaves (81 uses). The use mostly of the leaves of plant ensures sustainability in the utilization of the plants, thus the survival and continuity of these valuable medicinal plants are greatly protected by the Maranaos in Iligan City. As mentioned by Lulekal [24] harvesting of roots has a negative influence on the survival and continuity of the medicinal plants and hence affects its sustainable utilization. The use more on leaves than other plant parts implies that traditional medical culture in the area does not threaten biological diversity [11]. Stems (bark), roots, flowers, and fruits (seeds) as well as modified plant parts (bulb, rhizome, or tuber) were sometimes used in their herbal preparations. There were various uses of the roots in their herbal preparations. Mostly the roots of the medicinal plants were used to treat stomachache (*Gendarussa vulgaris*, *Elephantopus scaber*, *Gliricidia sepium*, *Coleus blumei*, *Swietenia mahogany*, and *Moringa oleifera*), urinary tract infections (*Polyscias scutellaria*, *Vernonia cinerea*, *Carica papaya*, and *Imperata cylindrica*), muscle pain or over fatigue ("bughat") in women (*Bidens pilosa*, *Eleusine indica*, *Malvastrum coromandelinum*, and *Ficus septica*, and *Solanum verbascifolium*), fever (*Gendarussa vulgaris*, *Carica papaya*, and *Macaranga tanarius*), diarrhea (*Elephantopus scaber*, *Diplazium esculentum*, *Carica papaya*, and *Lansium domesticum*), and enhance proper blood circulation (*Catharanthus roseus*, *Bixa orellana*, and *Ixora macrothyrsa*). Further, the roots or stem of some plants were claimed to cause (induce) abortion, like *Tinospora crispa* (stem), *Moringa oleifera* (roots), and *Ixora macrothyrsa* (roots).

The medicinal plants utilized by the Maranaos are the same with the plants used by the Higaonon tribe in barangay Rogongon (Iligan City). This might be due to the proximity of the two tribal groups because they are both occupying in Iligan City, for example barangays Digkilaan and Bonbonon are adjacent to barangay Rogongon. Moreover, some Higaonons are married to the Maranaos from the two aforementioned barangays. Their modes of preparation and medicinal uses of plants are very similar. Like for example, both groups used boiled leaves of *Annona muricata*, *Persea americana*, *Mangifera indica*, *Artocarpus heterophyllus*, and bark of *Chrysophyllum cainito* to treat diarrhea. Also, both utilized *Allium sativum*, *Cymbopogon citratus*, and *Curcuma longa* in lowering hypertension. As reported by Olowa *et al.* [25], the Higaonons used boiled leaves of *Blumea balsamifera*, *Coleus amboinicus*, and *Vitex negundo* to cure cough and pounded leaves of *Stachytarpheta jamaicensis* and *Chromolaena odorata* to abate bleeding on cuts or wounds. Relative to the findings of this study, Balangcod and Balangcod [26] reported that the Kalanguya tribe in Tinoc, Ifugao (Luzon) used boiled roots of *Imperata cylindrica* and young hairs of *Zea mays* to treat kidney (urinary tract) infections as it induces urination, crushed leaves of *Kalanchoe pinnata* to lower fever, boiled leaves of *Lantana camara* relieves dry cough, and fruits of *Areca catechu* when chewed and kept in mouth strengthens teeth. Thus, other indigenous groups in the Philippines such as the Higaonons in Iligan City, Kalanguya tribe of Tinoc in Ifugao, Pinatubo Negritoes [27], Tasaday of Mindanao [28], Itawes of Cagayan [29], and Ibalois of Tabaan Norte [30] have the same pattern of medicinal plant utilization with the Maranaos, wherein these groups also used boiled leaves of *Psidium guajava* as an antiseptic wash for wounds and other skin diseases. Moreover, a mixture of two or more plants were claimed to be more effective in treating a particular ailment, for example, the leaves of *Persea americana*, *Mangifera indica*, *Artocarpus heterophyllus*, and *Chrysophyllum cainito* are boiled together in treating diarrhea. It is a function of the traditionally-held belief that the synergistic combination of several active principles in some herbal preparations is responsible for their beneficial effects (IARC monographs). In the other hand, a particular medicinal plant can be used to treat two or more different diseases. Conversely, two or more plants can treat the same ailment or disease.

The results of this study are comparable to other ethnobotanical researches conducted in other parts of the world. In the ethnobotanical survey of Camejo-Rodrigues and others [31] in the Natural Park of Serra de Sao Mamede (Portugal) the most frequently used medicinal plants belonged to families Asteraceae, Lamiaceae, Fabaceae, Rosaceae, and Apiaceae and boiling (decoction) the plant part was the common practice. In the study of Ripunjoy [7], families Fabaceae/Leguminosae and Malvaceae were represented by the highest number of medicinal plant species utilized by the Sonowal Kachari tribe of Dibrugarh district in Assam, North-East India. Ugulu [4] documented that the most common families of medicinal plants used to make Therapeutic Turkish Baths were Lamiaceae, Asteraceae, Fabaceae, Malvaceae and Poaceae. Fabaceae and Lamiaceae were the most commonly reported medicinal plants used by the local people in the lowlands of Konta Special Woreda in South-Western Ethiopia [11]. Thus, the aforementioned families of plants were commonly used in the traditional healing practices of various tribal and rural communities worldwide, especially Asteraceae. Plants from

Asteraceae family are commonly used in the treatment of various diseases due to their bioactive properties [32]; they produce a broad range of secondary plant products such as terpenes and sesquiterpenes which give them their medicinal properties [33-37]. Also, Asteraceae is probably the largest family of flowering plants, with more than 25,000 species world-wide [38], which are cosmopolitan in distribution, except in Antarctica [39]. In addition, the most frequently utilized plant part was the leaves in all of the studies cited, which indicated that indigenous people are providing protection and maintenance in the sustainable use of their plants. The preference of leaves to other plant parts could be due to the easiness of preparation [40], and the presence of more bioactive ingredients in the leaves developed in response to phytophagous organisms since they are the most vulnerable parts of a plant [41].

Based on the obtained results, various ethnic groups in the Philippines share the same patterns in the utilization of their medicinal plants probably because their knowledge on traditional medicine is intrinsic among them and inherited from their great ancestors. It is a common knowledge that indigenous peoples have known the healing properties of several medicinal herbs for generations [42]. Generally, this indigenous knowledge on the use of medicinal plants is passed on orally by traditional local healers to their younger generations. There are about 250,000 practitioners of traditional medicine in the Philippines [43]. Mainly, the reason for the belief in the powers of traditional local healers is that most cultural societies are strongly bound with their cultural traditions [26]. Most of the tribal and rural communities have strong beliefs on spirits, thus their ethnobotanical healing practices are done in conjunction with this supernatural beings. Also they have a strong conviction that diseases or ailments are caused by these supernatural beings. For this reason, rituals or ceremonies are conducted prior to their use of the medicinal plants which are believed to improve the efficacy of these plants in treating the disease or ailments. These series of ceremonies are also done in a way of asking permission to the spirits in using the plants because they believed that the bountiful resources of nature, like plants, are protected by these beings. As stated by Balangcod and Balangcod [26], this is a common practice shared by most indigenous groups in the Philippines and perhaps by other countries too. For the Maranaos, "kiparat" or offerings are given to traditional local healers or "pamomolong" as a form of gratitude for sharing their indigenous knowledge and for the efficacy of the treatment.

Documenting indigenous knowledge through ethnobotanical approach is not only significant for species conservation and sustainable use of resources [44] but also for community healthcare and drug development [45] as well as for economic development [46]. The documentation of traditional knowledge on medicinal plants has gained a wide recognition due to an escalating faith in herbal medicines [47, 48]. However, the traditional knowledge on medicinal plant uses of various ethnic and rural communities, accumulated over centuries, may disappear in only a couple of generations [49] due to the advent of modern technology and transformation of traditional culture [50]. During the last decades, the rapid population growth, commercial logging, and scarcity of alternative agricultural lands have led to a drastic reduction of forest cover in the Philippines [51]. In this study most of the trees and some herbs used as medicinal plants by the Maranaos were collected from the wild (small forests and thickets). Their medicinal plants (most herbs and some shrubs) were usually cultivated as ornamental plants, like *Gendarussa vulgaris*, *Cordyline fruticosa*, *Catharanthus roseus*, *Polyscias scutellaria*, *Impatiens balsamina*, *Nopalea cochinellifera*, *Coleus blumei*, *Hibiscus rosa-sinensis*, *Phalaenopsis amabilis*, *Ixora macrothyrsa*, *Quisqualis indica*, and *Aloe vera*. Some tree species are domesticated for its fruits, like *Mangifera indica*, *Annona muricata*, *A. squamosa*, *Cocos nucifera*, *Carica papaya*, *Persea americana*, *Lansium domesticum*, and *Psidium guajava*. Although the Maranaos practice sustainability in the use of their plants, still many of these valuable species are facing great danger from disappearing. Lense [49] stated that the process of transferring traditional knowledge appears to be the main factor leading to the decline of knowledge of traditional medicine, since there is no formal school or traditional institution involved in passing on this knowledge. Further, most of the younger generations are adopting new lifestyles and technologies. If the present pace of cultural changes continues to exist amongst the Maranaos in Iligan City, then the indigenous knowledge (IK) within this ethnic group may disappear. Thus, there is an urgent need to document this IK before it is completely lost.

There is a need to evaluate the active constituents of the plants by conducting bioassays especially the rarely used species or when its phytochemicals are not yet analyzed. This is to validate the effectiveness and safety in using these medicinal plants in treating various diseases. In the other hand, there is an urgent need to conserve the medicinal plants and the IKS of the Maranaos because of the continued deforestation and land conversion in the different areas in the country and the current pace of cultural changes, respectively, that might lead to the extinction of both. Coordination and cooperation among various sectors in the country in promoting public awareness in the importance of the medicinal plants for the achievement of well-established protection of this biodiversity, and ensures the transmission of the IKS to the next generations.

Conclusion:

The obtained results of this study revealed the significant diversity of the medicinal plants and the vast indigenous knowledge system (IKS) of the Maranaos in Iligan City in terms of their healthcare practices using these plants. It indicated that the Maranaos have managed to protect and maintain the sustainable utilization of these valuable plants especially in their use of mostly the leaves of the plants. The preservation of these practices could be due to their continued dependence on medicinal plants. They exhibited the same pattern of their traditional healthcare practices with other ethnic groups in the Philippines and some tribal and rural communities in other countries too. This could be due to the inherent quality of this indigenous knowledge and because IK has been practiced by these groups for several decades.

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