Ethnomedicinal Knowledge among the M'ranas in Baloi, Lanao Del Norte, Philippines

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Abstract

Plants are utilized as traditional medicines since time immemorial. However, the dilemma of losing this knowledge is real because of poor documentation evidenced by the relatively few studies conducted coupled with rapid urbanization especially in the Philippines. It is imperative for ethnomedicinal knowledge especially of the M'ranas tribe in Baloi, Lanao del Norte to be conserved, hence this study. Ethnomedicinal data were collected from semi-structured interviews of 30 informants and analyzed qualitatively and quantitatively. Moreover, transect walk was performed to locate the frequently used medicinal plants. This study documented seventy eight (78) species of medicinal plants belonging to 36 families used for the treatment of various ailments belonging to 14 out of 16 human disease categories. The most important medicinal plant with a Use Value (UV) of 0.43 is Mingeayak (*Salvia plebeian*). There were fifty five (55) floral species found to have 100% Fidelity Level (FL) value. An Informant Concensus Factor (ICF) of 1.00 for disease Category 2, Category 3, and Category 16 indicates that there was a high degree of agreement among informants on how to treat cancer, anemia, and intestinal toxicity respectively. Leaves (63%) were the most frequently used plant part and decoction (41%) was the most common way of preparation. Internal application (77%) was the most recurrent way of plant administration to the ailing body. Herbs (47%) as medicine were the most frequently used plant habit. Qualitative investigation resulted to the identification of M'ranas traditional beliefs and practices in utilizing medicinal plants which include the time of collection, the number of plant organ collected (e.g. pito-pito) and the ways of conserving herbal plants for continuing sustainability. This study further revealed that the M'ranas tribe of Baloi has a rich floral resources use as medicines which could be further investigated for pharmacological properties to improve health care for various illnesses.

Keywords: Ethnomedicinal Knowledge, Medicinal plants, M'ranas tribe

I. INTRODUCTION

Plants with medicinal properties have always been the heart of man's interest in his quest for drugs for various ailments and in the promotion of good health. Since the ancient times, people have been utilizing medicinal plants for healing. Over the years, even with the many great advances made in treating and curing different diseases (1), traditional herbal remedies are still widely used by people all over the world (2). Recently, because of the greater demand for the utilization of plants in the field of medicine, bridging the gap between traditional beliefs and practices on medicinal plants and the modern science serves as today's innovation in the world of medicine. Medicinal plants utilized by indigenous people have taken much attention in modern medical practices. Balangcod and Balangcod (2011), noted that there is a continuing quest for the discovery of the new clinical effects of traditionally used medicinal plants.

The irony however, is that whilst Western countries are feasting on the utility of traditional medicines and subjecting them to intensive scientific research and product development, the Philippines however, is still struggling on how to document the local communities indigenous knowledge amidst threats of desertion and extinction of the floral resources. Moreover, these unexplored knowledge are confined among older generation transferred primarily through oral communication (4) and when the carriers of the said knowledge demise, then the said knowledge is lost forever (5). As Balangcod and Balangcod (2011) resonates, the knowledge that is trapped in the older generation is not documented, and the problems on deforestation and land conversion persist, plants and associated knowledge will be irretrievably lost, hence the urgent necessity of conducting this documentation.

A. Statement of the problem

The conservation of ethnomedicinal knowledge is becoming increasingly important, thus this research aimed to document the use of medicinal plants and the associated practices in the utilization of the said plants in Baloi, Lanao del Norte by, (a) enumerating the various plants utilized to treat diseases, (b) determining the disease category/categories treated by the mentioned plants, (b) which organ or parts of the plant is used, (c) the modes of preparation of the plant to be used as medicine, (c) frequency of use., (d) identify the medicinal plants used frequently and (e) calculate for the informant consensus factors.

B. *Significance of the Study*

Documentation of the traditional ethnomedicinal knowledge of the M'ranas in Baloi, Lanao del Norte hopes to provide information on how rich is the traditional knowledge of the local people. This research also hopes to provide a list of medicinal plants to the scientific community which could further investigate the enumerated plants as potential sources of novel drugs.

Moreover, documenting indigenous plants with medicinal uses and the associated ethnobotanical knowledge can be a basis for the formulation of conservation measures for the sustainable utilization of the flora for our future generation (Arquion, et. al., 2015).

II. METHODS

A. *Research Setting*

This study was conducted last July 2018 in Baloi, located in the geographical coordinates 8° 07' N 124° 13' E/ 8.120 N 124.220 E (Figure 1). Baloi is a third class municipality in the province of Lanao del Norte, Philippines with a total population of 58, 383 according to the 2015 census. Of the 21 political barangays in Baloi, four (4) barangays were selected through stratified random sampling, namely; Barangay Bangko, Lumbac, Nangka and Landa,

Fig 1: Map of the location of the study site, Baloi, Lanao del Norte .

B. *Study Population*

Data were collected from thirty (N=30) informants which are traditional healers or pamomolongs knowledgeable on the different medicinal plants utilized to treat various ailments. Around 5 to 10 informants per barangay were chosen. Majority (70%) of the informants were housewives whose educational attainment is until the primary level only.

C. *Data Collection*

Prior to the conduct of the study, permission was first obtained from the Municipal office and the barangay chairman of the four (4) selected barangays. Data were collected employing a semi-structured interview from 30 informants which were first requested to sign an informed consent. The interview questions were translated into the M'ranao dialect

The interview questions include the demographic profile, knowledge on ethnomedicinal plants along with the associated beliefs and practices, the M'ranao local name of the plant, ailment treated, plant part used, method of preparation, and method of application. Interviews were done in conjunction with a field visit to allow collection

of plant specimens for taxonomic identification. Voucher specimens were also collected and preserved by immersing them in denatured alcohol. Identification of the specimens was done by comparing the specimens with the List of Medicinal Plants of the Philippines, referral to experts and other plant databases.

A transect-walk was also performed in the four (4) selected barangays (Bangko, Lumbac, Nangka and Landa) to locate the medicinal plants. A GPS software was used to trace the pathway taken throughout the transect walk and to plot the approximate location of the most frequently used medicinal plants.

D. Data Analysis

The collected data was analysed using the quantitative indices namely; Relative frequency, Use Report, Use Categories, Use Value, Informant Consensus Factor and Fidelity Level. The Relative Frequency refers to the rate of occurrence which was used to describe the habit of growth of the medicinal plants, most common plant parts used, most common methods of preparation, and application. Diseases mentioned were also categorized based on the International Classification of Diseases (ICD-10) by the World Health Organization (WHO). While the Use Value is the ratio of the number citations per species (U) to the number of informants (N) and is given by the formula: $UV = U/N$. High UV indicates high use-reports for a plant implying its relative importance to the local community. Low UV indicates few reports related to its use. The Informant Consensus Factor, on the other hand, is evaluated using the formula: $FIC = (Nur - Nt) / Nur - 1$: where Nur is the number of use reports in each category and Nt is the number of species used for a particular category by all informants. The maximum value for this index is 1, which implies that the informants completely agree that the particular species cited could cure a particular ailment. A value of 0, the minimum value, means that there is no exchange in information among the informants about plants.

III. RESULTS AND DISCUSSION

This study revealed that M'ranao traditional healers of Baloi were utilizing seventy eight (78) species of medicinal plants belonging to 36 families in treating 47 different ailments (Table 1). Family Asteraceae and Poaceae recorded the highest number of 7 medicinal plant species each, followed by Euphorbiaceae with 6 recorded species and Family Lamiaceae with 5 species. Dominance of medicinal plant species from the abovementioned families could be attributed to their wider distribution and abundance in the flora area (3). Moreover, the wide utilization of species from these families might relate to the presence of effective bioactive ingredients against the ailments mentioned (4).

TABLE 1. MEDICINAL PLANTS USED BY M' RANAO IN BALOI, LANA DEL NORTE.

FAMILY NAME	Local Name	Scientific Name	Ailments Treated
ACANTHACEAE	Tolan a nungok	<i>Asiatodori varius</i> Nees	Cough, Fever, Ease the pain during labor
AMARANTHACEAE	Sarano Paagagati	<i>Achyrocline saturei</i> Lam.	Lack of appetite, fever
AMARTILLIDACEAE	Gula	<i>Althaea zosterophorum</i>	body pains
ANACARDIACEAE	Manga	<i>Mangifera indica</i> L.	irregular menstrual flow (spotting)
ANNONACEAE	Aks	<i>Annona squamosa</i> L.	For diabetes
	Gabana	<i>Annona muricata</i> L.	Hypertension and body pains
APIACEAE	Tanapa lupa	<i>Corylio arvensis</i> L.	Fever
APOCYNACEAE	Manglambo	<i>Cynanchum dore</i> (Mikss.) Pers.	indistinct pain and wound
ARALIACEAE	Tagma	<i>Schiffneria orthoceras</i> Wight	Fever
ARECACEAE	Nyog	<i>Coccothrinax</i> L.	
	Manam	<i>Areca catechu</i> L.	Asthma
ASPARAGACEAE	Dita a palas	<i>Saururus ceylanicus</i> Wild.	Bleeding
ASTERACEAE	Kahiro-boro	<i>Tridax procumbens</i> L.	fever and cough
	Kasapi-rapi	<i>Ageratum conyzoides</i> L.	cough and gynecomastia
	Sakiboragan	<i>Arenaria vulgaris</i> L.	edema and abdominal pain
	Tae a taragan	<i>Chrysanthemum indicum</i> L.	for easy delivery, abdominal pain, migraine, campidela bite and skin diseases.
	Maguti a ota	<i>Ageratum officinale</i>	healing fever and wound
	Tanda	<i>Pseudophanoglossis spicata</i> (Guss.) Richt.	asthma, delayed menstruation and diarrhea
	Latusas	<i>Lactuca sativa</i> Lam.	Delayed menstruation

MORACEAE	Badak	<i>Artocarpus heterophyllus</i> Lam.	Allergies
	Magmonok	<i>Ficus aspera</i>	healing diabetes, gallstone, abdominal pain and skin diseases
	Karamu	<i>Solomon signatus</i> Linn.	Measles
	Morus	<i>Morus nigra</i> Linn.	Bone fracture
MORINGGACEAE	Kalamuang	<i>Moringa oleifera</i>	Anemia
MUSACEAE	Waka Kakayon	<i>Musa sapient</i>	Diarrhea and for normal flowing of blood after delivery (giving birth)
MUSACEAE	Saging	<i>Jaca perakensis</i> Linn.	Asthma
MYRTACEAE	Bayabas	<i>Psidium guajava</i> L.	Used for diarrhea, indigestion, flatulence and wounds
	Tambis	<i>Scaphium apocyn</i>	diarrhea and ulcer
	Jambo	<i>Syzygium jambos</i> Linn.	Asthma
OXALIDACEAE	Karp	<i>Oxalis corniculata</i>	treating fever for infant and toddler
PAPAVERACEAE	Balmahing	<i>Anthriscus carumbolo</i> Linn.	Ulcer and dysmenorrheal pain
PAPILIONACEAE	Kagang-kagang	<i>Argemone mexicana</i>	Wound
PAPILIONACEAE	Gallios	<i>Cassia corymb</i> Linn.	Erythematous Rash
PIPERACEAE	Namat	<i>Piper hille</i> L.	healing arthritis
POACEAE	Baring	<i>Cynodogon citratus</i>	Hypertension
	Berrada	<i>Cynodon dactylon</i>	lack of calcium
	Carabao grass	<i>Paspalum conjugatum</i> (P.J. Bergius)	wound and delayed menstruation
	Monsage	<i>Imperata cylindrica</i>	healing diarrhea due to teething (for infants)
	Rambipana	<i>Echinochloa polystachya</i>	cancer and asthma
	Margas	<i>Oryza sativa</i> L.	Hypertension
	Paddy	<i>Oryza sativa</i> L.	diabetes, abdominal pain and wound
PONTEDERIACEAE	Gabi-gabi	<i>Monochoria toton</i>	Wound
	Marmasit	<i>Citrus reticulata</i> Blanco.	healing migraine / headache
RUTACEAE	Paga	<i>Citrus monnina</i>	Asthma
SAPOTACEAE	Apel	<i>Crotophytum canola</i> L.	Diarrhea
	Laget	<i>Nicotiana glauca</i> Linn.	Edema
SOLANACEAE	Kamakantaman	<i>Artocarpus communis</i> J.R. & Forst.	Swelling
VERBENACEAE	Kabak-bak	<i>Lantana camara</i>	Cough
ZINGIBERACEAE	Luya a papimen	<i>Zingiber officinale</i>	body cleansing
	Kalanag	<i>Cacuma longa</i>	diabetes, hypertension, indigestion pain
	Wild Turmeric	<i>Curcuma aromatic</i>	healing arthritis
BIGNONIACEAE	Milingtonia	<i>Milingtonia hortensis</i> Linn.	Fever
CARICACEAE	Kapaya	<i>Carica papaya</i> L.	hypertension, cough and high fever
CRASSULACEAE	Demagay	<i>Kalanchoe pinnatifida</i> (Lam.) Pers.	Fever
CYPERACEAE	Thi	<i>Cyperus alternifolius</i>	pregnant women
DIOSCOREACEAE	Ang Gabi a violet	<i>Dioscorea alata</i>	Whitcraft
EUPHORBIACEAE	Bangala	<i>Morchea excoecaria</i>	hypertension and diarrhea
	Katangan-tangan	<i>Antropus carnos</i> L.	healing hypertension and bone fractures
	Kamoy	<i>Philanthus aridis</i> Steud.	Cough
	Tapadak	<i>Hemiphragma totandus</i>	healing ulcer
	Talaratara	<i>Euphorbia hirta</i> L.	dengue fever
	Alen	<i>Melastoma malabanicolum</i>	Abdominal pain
FABACEAE	Madre Cacao	<i>Glyricidia sepium</i>	healing itchiness
GRAMINEAE	Satideleta	<i>Chrysopogon aciculatus</i> (Ret.) Trin.	Fat fever and wound
GUTTIFERAE	Mangosten	<i>Garcinia mangostana</i> L.	healing dysentery and itchiness
LAMIACEAE	Gensina	<i>Gmelina arborea</i> Rottb.	Flatulence
	Kapel	<i>Colina aromaticus</i> Benth.	Cough
	Lagundi	<i>Flac nerioides</i>	healing cough
	Pan	<i>Origanum vulgare</i>	cough and itchiness
	Mingayak	<i>Salvia plebiensis</i>	healing fever
LAURACEAE	Mocado Abokado	<i>Persea americana</i>	Diarrhea, anemia and lack of potassium
LEGUMINOSAE	Kinpo	<i>Mimosa pudica</i> Linn.	Wound
LYTHRACEAE	Banaba	<i>Lagerstrœmia speciosa</i>	Convulsion
MALVACEAE	Gumamela	<i>Hibiscus rosarinensis</i> L.	Balls
	Dahpang	<i>Urena grandiflora</i>	Asthma

Figure 1 showed that most of the frequently used medicinal plants are located in close proximity to the informants. Some of the plants were cultivated by the informants for easy access whenever they needed the plants.

Figure 1. The location of the enumerated plants in the four barangays

Characterization of the plant habit of the enumerated medicinal plants revealed that out of 68 plants, herbs (47%) were the most numerous (Figure 2). Grasses like kapal, g'nda (*Allium schoenoprasum*), and rambiyawa (*Eleusine indica*) were classified as herbs. Thirty-three percent of the mentioned plants were trees, followed by shrubs (17%) and vines (3%). Herbs are small in terms of size, hence collection and processing is less tedious. The finding agrees with the general pattern of dominance of herbaceous species seen in most medicinal plant inventories (7-12).

Figure 2. Growth habit of the medicinal plants used by M'ranas in Balo-i, Lanao del Norte

The leaves, roots, fruits, bark, stem, seeds, whole plant, flower, latex, sprouted grain and rhizome were the medicinally important plant parts cited by the informants. The most frequently used medicinal plant parts were the leaves (63%) followed by root (16%) and the whole plant (12%) as shown in Figure 3.

Figure 3. Plants parts used by M'ranos in Balo-i, Lanao del Norte for traditional remedies: Bk, Bark; Fl, flower; Fr, Fruit; Lf, Leaf; Rt, Root; Gr, grain; St, stem; Lx, Latex; Spr, Sprouted; Rz, Rhizome; Wh, whole plant

The recorded methods of preparation includes: burning, chewing, decoction, extraction, pounding, smoked, and mixing with water. The most common preparation is decoction (41%) while some plants (8%) are utilized unprocessed (Figure 4). Moreover, the medicinal plant preparations were administered either internally (79%) or externally (Figure 5). The dominant use of medicinal plant decoctions for various ailments might be related to their proven effectiveness over many years of trial. Decoction was also reported as one of the major way of remedy preparation in ethnomedicinal inventory of other socio-cultural groups in other countries (5,6).

Figure 4. Methods of preparation of medicinal plants as practiced by M'ranos in Balo-i, Lanao del Norte. Bu, burning; Ch, chewing; Dc, decoction; Ex, extraction. Pd, pounding; Sm, Smoked; Wt, mix with water; Un, Unprocessed.

Plants with the highest use values were mingeyak (*Salvia plebeia*) with UV=0.43 for disease category 14, followed by kapal (*Coleus aromaticus* Benth.) and talawatawa (*Euphorbia hirta* L.) with UV=0.37 for category 8 and category 1 respectively. The medicinal plant, tamda (*Pseudelephantopus spicatus* (Juss.) Rohr.) for category 9 had a UV=0.23. The plants with high use values are indicative of species with many use reports and are considered important by the traditional healers.

Figure 7. Methods of administration of medicinal plants practiced by M'ranos in Balo-i, Lanao del Norte.

There were fifty-five (55) species found to have 100% FL values namely; mingeyak (*Salvia plebeia*) for the treatment of fever, Gabana (*Annona muricata* L.) for the treatment of hypertension had 85.71 FL values. A high FL values indicate that the plants mentioned have specific use as mostly preferred by the informants.

IV. CONCLUSION

This research revealed that M'ranas of Baloi, Lanao del Norte possess rich ethnomedicinal knowledge evidenced by their dependence on naturally growing plant species in treating different ailments. Plants in their immediate surrounding are their immediate source of alternative medicine since access to healthcare facilities is limited.

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