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Plant-base remedies for the management of mental health disorder in Buea Municipality, Southwest Cameroon

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ABSTRACT

Mental health issue (mental illness) is the malfunctioning of individuals as a result of altering their behaviour, reasoning, life achieving goals and as well as emotions of the affected individual. In Buea, there is a rise in mental health issues as a result of socioeconomic crises and an increase in modernization that has resulted in increased school dropout. The health facilities in the municipality are very limited in managing these increased mental health issues. As a result, plants have come in as alternatives. The study was conducted to evaluate the different plants used in managing mental health disorders. Field surveys, interviews and semi-structured questionnaires were used to collect data from this study. RFC = FC/N (0<RFC<1), Use Reports (UR), the use value (UV) and the informant agreement ratio (IAR) were computed. Twenty-two plants were used to treat one or more categories of mental illness in Buea municipality. The mental illness categories were depression (52.5%), stress (26.3%), fear (21.3%), anger (13.8%) and anxiety (10%). *Ocimum gratissimum*, *Aframomum melegueta* and *Afrostyrax lepidophyllus* were reported to treat four of the five categories of mental illness. The medicinal plants with the highest Frequency of citation were A. *melegueta*, *Ageratum conyzoides*, *Voacanga africana*, *O. gratissimum* and A. *lepidophyllus* (42, 32, 26, 22, 21) respectively. For the used reports, 168, 96, 88, 84 and 78 were reported for A. *melegueta*, A. *conyzoides*, *O. gratissimum*, A. *lepidophyllus* and V. *africana* respectively. Leaves were the most used plants parts and the mode of preparation was by decoction. In conclusion, these plants will be further screened to improve on drug discovery in mental health management.

KEYWORDS: Mental health, Medicinal plants, Management, Buea Municipality, Cameroon

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INTRODUCTION

Mental health issues (mental illness) are those issues that change the normal functioning of the affected individual by altering behaviour, reasoning, life achieving goals and as well as the emotions of the affected person (Kyolo *et al.*, 2022). Mental disorders affect every country and the most common mental problems faced by people are depression and anxiety globally (Alonso *et al.*, 2018; Dattani, 2023). These mental health problems can be a result of some factors that may be genetically motivated, wars or conflicts, spiritual bewitching and many more (Fakembe *et al.*, 2024).

Little knowledge has been recorded on mental health research management and the limited number of psychiatric centers is a problem (Aguwa *et al.*, 2022). The mental health issue is mostly a problem with the youths and it is mostly seen in the males more than females (Gustavson *et al.*, 2018). With the increase in population, living a sustainable life has become difficult, hence there is an increased rate of stress that has resulted in mental imbalance for many youths trying to meet up with their economic upkeep. The stress accompanied by hard work imposed by either parents or family guardians is an important factor which turns to push up children to develop depression and post-traumatic stress at tender ages. This could be a result of phobias (fear) thereby bringing in failure to both the educational and living standards of the children due to lack of concentration (Lippard & Nemeroff, 2020). Indigenous knowledge on mental health in Cameroon is deeply rooted in traditional beliefs, practices and community structures. Like any other developing and less developed nations of the world, the available modern healthcare services are not only insufficient but also inaccessible

and unaffordable to the majority of majority mental patients (Yineger *et al.*, 2008). Thus, medicinal plants continue to be in high demand in the health care system as compared to modern medicine, which is neither available nor accessible.

In Cameroon and Buea Municipality in particular, there is an increasing mental health problem due to the current crisis in the Southwest and Northwest parts of the country, resulting in displacement and loss of personal property. This has caused some of the population to migrate from the rural areas to Buea. The quest for feeding, housing, employment and education for the youths is a big challenge to the migratory population. Research by Djatche *et al.* (2022) reported that anxiety disorders and trauma- and stressor-related disorders are the most causes of mental health. Most people who suffer from mental illnesses are often not attained to fully and the prevalence of these mental problems rapidly increases due to a lack of psychiatric professionals and psychiatric facilities.

Recently, plant as a source of medicine have been gaining international popularity because of its natural origin, availability in local communities, cheaper to purchase, ease of administration, and perhaps less troublesome (Fonge *et al.*, 2024). Also, herbal medicine may be a useful alternative treatment in case of numerous side effects and drug resistance (Azwanida, 2015). Traditional medicine is the first-ever method used in the treatment and management of diseases. Herbal practices are ancient practices that were developed long before the rise of human civilization (Petrovska, 2012). Medicinal plants are cheaper and are most available in the treatment of most ailments including mental health.

Traditional medicine in Cameroon is mostly practiced by the indigenous population. However, traditional treatments of mental health problems have become limited and hence causing a low level of awareness of using local medicinal plants to treat mental problems. Hence, mental health problems can be treated traditionally as there is a connection between the affected individual and the traditional practitioner (Nortje *et al.*, 2016).

The people of Buea are facing serious challenges due to the influx of population from other neighbouring towns and villages due to the socio-political crisis in the Southwest and northwest regions of Cameroon. As a result, there is difficulty in having a day's meal and housing. Most of the youths have abandoned schools, indulged in smoking and have decided to take the street because of hardship, leading to mental problems.

The increase of mentally sick people most especially the youth on the streets of the main towns in the Southwest region is a call for concern. With the increase in mentally deranged persons on the street, there is a need to seek for traditional means of treatment. Like any other developing and less developed nations of the world, the available modern health care services are not only insufficient but also inaccessible and unaffordable to the majority of mental health patients. Hence, this study seeks to evaluate the different plants used for the management of mental disorders in Buea municipality.

MATERIALS AND METHODS

Study Area

Buea municipality is located in the Southwest region of Cameron. Based on geographical coordinates, it is located between latitude 4.14° N of the equator and longitude 9.20° E of the Greenwich meridian (Fon & Ayuk-Nkem, 2014). This study site covers an area of surface area of 870 sq. km and it is demographically diverse, with Christians forming the majority. The town is commonly known for its educational and administrative power. It has a monomodal rainforest with rich plant diversity. Volcanic soils specifically of andosols derived from volcanic ash and basaltic lava consist of rich minerals and contribute to diverse agricultural activities for crops like banana and plantain cultivation and cocoa. Besides agriculture, the people are involved in some trade. This municipality is composed of many diverse ethnic groups from all over Cameroon and internationally. It is a cosmopolitan municipality with legendary hospitality.

Data Collection

This study was conducted through field surveys, interviews, and semi-structural questionnaires to investigate medicinal plants related to mental health treatment that took place from November 2023 to June 2024 in Buea municipality. The aims and objectives of the project were first explained to the prospective respondents in order to solicit their consent and cooperation before any data were gathered. A total of 80 informants including both male and female participants of age 19 years and above were selected from 5 different villages (Muea, Bokwango, Bolifamba, Molyko and Bokova). These villages were selected because they were close to the main town in the municipality where most of the youths live. Data collection included interviews, semi-structured questionnaires and discussion with traditional practitioners. Information obtained about the traditional medicine for the management and treatment of mental health illness included; the local plants used for treatment, their habit, part of plant used, method of preparation, dosage, duration and any other uses of the plant. Pidgin English was the language used in communicating with the respondents and the questionnaires were filled by the researcher as questions were responded. A face-to-face interview was used to interact with all respondents recruited in the study. The traditional knowledge of the plants was collected from all the five villages under study. For an accurate understanding of the plants concerned and treatment methods, traditional practitioners were contacted.

Data Analysis

All information gathered in section A of the questionnaire was entered into Excel and presented in chart and frequency tables. Several indices were used in analyzing data obtained from section A of the questionnaire. These included; the frequency of citation (FC) represents the percentage of respondents citing a particular plant species. A high frequency of citation indicates the potential importance of the plant species reported in the

study area. The relative frequency of citation (RFC) index which is expressed as a percentage was calculated using the formula;

$$RFC = FC/N \ (0<RFC<1) \quad (1)$$

Use Reports (UR) (Kufer *et al.*, 2005; Tardio & Pardo-de Santayana, 2008) were used to categorize the uses of species. The maximum value of UR per species is the total number of respondents multiplied by the total number of use categories.

The use value (UV) is a metric that quantifies the importance of a plant species based on the different uses reported by the respondents. The cultural and practical significance of a plant was determined by its UV. The utilization value was calculated using the formula (Prance *et al.*, 1987);

$$UV = Ui/N \quad (2)$$

Where Ui is the total number of use reports of each respondent, and N is the total number of respondents involved in the study. The UVs do not reflect the consensus of informants on medicinal plant use (Latham & Mbuta, 2014). Thus, to obtain the consensus of informants on medicinal plants used, the informant agreement ratio (IAR) parameter was calculated using the following formula;

$$IAR = \frac{Nr - Na}{Nr - 1} \quad (3)$$

Where Nr is the total number of citations of the species and Na is the number of diseases treated by the species.

RESULTS AND DISCUSSION

Demographic Results

Results from the demographic data indicate that most of the participants were of the age greater than 60 years (31.25%) and were mostly males (85%). Based on occupation, farmers (62.5%) were mostly involved in medicinal plants and the majority of the respondents were Christian (77.5%). Married people recorded the highest percentage (57.5%) while single parents were the least (11.25%) (Table 1).

It was observed that most of the respondents in the treatment of mental illness were males. This is contrary to what was observed when it comes to plants used in the treatment of children's ailments as reported by Fonge *et al.* (2024). Having men more can be explained by the fact that men are more involved in situations that requires them to use their brain. Most of those interviewed had suffered from one or more of the categories of mental illness or had a relation who had suffered from it.

Diverse form of mental illness was observed in the study with depression recording the highest number of the type of mental illness (52.5%) and anxiety the least (10%) (Figure 1).

The rate of mental illness in the study area is a result of the ongoing socio-political unrest. Many have left the areas to settle in Buea to seek security. There is no job, no means of sustaining oneself and even shelter. Due to all these odds people are bound to suffer from the ailment.

Table 1: Presentation of the information of the respondents

Characteristics	Categories	Frequencies	Percentages
Age	19-28	15	18.75
	29-40	20	25
	41-59	20	25
	>60	25	31.25
	Total	80	100
Gender	Male	68	85
	Female	12	15
	Total	80	100
Occupation	Farmers	50	62.5
	Traders	10	12.5
	Traditional practitioners	6	7.5
	Herbalists	14	17.5
	Total	80	100
Religion	Christians	50	62.5
	Muslims	10	12.5
	Others	20	25
	Total	80	100
Marital status	Single	15	18.75
	Married	36	45
	Living with partner	25	31.25
	Others	4	5
	Total	80	100

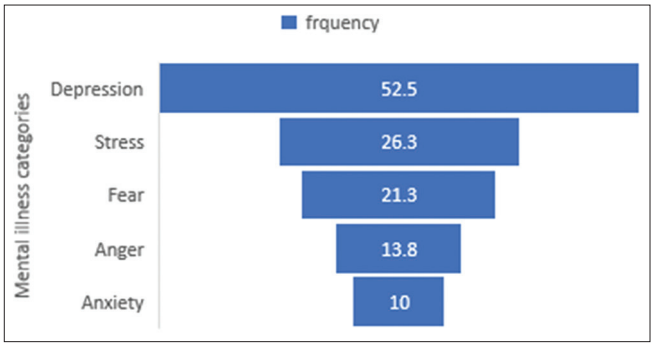

Figure 1: Percentage of the different mental illness

Plants used for the Treatment of Mental illnesses in Buea Municipality

From the study, a total of twenty medicinal plants were discovered for the treatment of the different categories of mental illness (Table 2).

The study indicates that twenty-two plant species spread out in different families were used as medicines for the management of mental illnesses. The Family most represented was Lamiaceae with 4 species of plants, followed by Asteraceae with 3 plant species and Euphorbiaceae, Fabaceae and Zingiberaceae were each represented by 2 plant species. The rest of the families recorded just one species. Plants species of the Lamiaceae family are most used in the study probably due to their neurotropic activity as reported by Zvezdina *et al.* (2020). The Family Asteraceae has been reported to have phytochemical compounds with cholinergic dopaminergic

or serotoninergic system actions, which are major systems involved in the manifestation of neuropsychiatric disorders (Guenne *et al.*, 2016).

Based on the mental illness, five categories were reported. These included; Depression, stress, anxiety, anger and fear (phobia). The highest category used by the plants was four, while the least was one (Table 3). None of the plants treated the five categories. Most of the local plants used for the treatment of depression were equally used to treat anxiety and fear. This might be due to the fact that the control of psychosis requires sedation for patient presenting agitation.

Varied methods of preparing the plants, mode of application, habits of the plants and the different mental illness treated were observed in the study in Table 3.

The highest frequency for the method of preparation of these plants is decoction. The decoction method involved boiling of plant parts to extract the compounds in the medicinal plants. Some of the plant species that were used as decoctions were also used as concoctions for medicinal purposes. In addition, some plants such as *Emilia coccinea* used as decoction were macerated and taken raw without boiling. Boiling as reported by some respondents reduces the active ingredients while others say that boiling helps to kill pathogens found in the medicine. Boilling can affect the bioactive compounds in the plants as reported by Salamatullah *et al.* (2021). Accordingly, plants may be mixed (concoction) to enhance the effectiveness of herbal medication. The concoction of plants along with their active components may act synergistically and treat the ailments more effectively (Fabie-Agapin, 2020). A study by Fabie-Agapin (2020) shows that decoction was the most employed method of preparing plants for medicinal applications and was done by boiling the materials in a sufficient amount of water to extract water-soluble compounds in plants that have medicinal values.

Table 2: Plants used as treatment of mental illnesses in Buea municipality

S. No.	Common Name	Scientific Name	Family
1	Onion	*Allium sativum*	Amaryllidaceae
2	Vaocanga	*Voacanga africana*	Apocynaceae
3	King Grass	*Ageratum conyzoides*	Asteraceae
4	Black jack	*Bidens pilosa*	Asteraceae
5	Gastric plant	*Emilia coccinea*	Asteraceae
6	Pawpaw	*Carica papaya*	Caricaceae
7	Chrismas Bush	*Alchornea cordifolia*	Euphorbiaceae
8	Milk plant	*Euphorbia hirta*	Euphorbiaceae
9	Coffee Fruits	*Griffonia simplicifolia*	Fabaceae
10	Touch me not	*Mimosa pudica*	Fabaceae
11	Country onion	*Afrostyrax lepidophyllus*	Huaceae
12	Honey Plant	*Melissa officinalis*	Lamiaceae
13	Mint	*Mentha piperita*	Lamiaceae
14	Scent Leaf	*Ocimum citratus*	Lamiaceae
15	Masepo	*Ocimum gratissimum*	Lamiaceae
16	Adam's fruits	*Passiflora incarnata*	Passifloraceae
17	Fever Grass	*Cymbopogon citratus*	Poaceae
18	African Cherry	*Pronus africana*	Rosaceae
19	Bush toilet roll	*Datura stramonium*	Solanaceae
20	Married flower	*Lantana camara*	Verbenaceae
21	Alligator Pepper	*Aframomum melegueta*	Zingiberaceae
22	Ginger	*Zingiber officinale*	Zingiberaceae

Plants parts used in Managing Mental Health Disorder in Buea Municipality.

Different plant parts were observed for the different plants used to control mental illness in the study area. It varied from leaves, roots, stems, flowers and whole plants. Leaves were highly cited

Table 3: Mode of preparation, application, habit and the different mental illness treated

S. No.	Common Name	Scientific Name	Plant Part Used	Mode of Preparation	Mode of Application	Habits	Mental Illness Treated
1	Scent Leaf	*O. citratus*	Leaves	Maceration	Drinking Infusion	Shrub	Depression
2	Masepo	*O. gratissimum*	Leaves	Decoction	Tea Infusion and inhaling of dry leaves	Shrub	Depression, Anger, fear and Anxiety
3	King Grass	*A. conyzoides*	Stems/leaves	Decoction	Infusion	Herbs	Depression, Anger and Anxiety
4	Vaocanga	*V. africana*	Bark, Roots	Decoction	Infusion	Tree	Anxiety, fear and Depression
5	Fever Grass	*C. citratus*	Leaves And Roots	Decoction and White Honey Added	Tea Infusion	Herb	Depression and Anxiety
6	African Cherry	*P. africana*	Bark	Decoction	Tea Infusion	Tree	Depression
7	Mint	*M. piperita*	Bark	Decoction	Infusion	Shrub	Depression
8	Alligator Pepper	*A. melegueta*	Bark, Seed	Poultices	Rubbing	Herb	Depression, anxiety, fear and stress
9	Chrismas Bush	*A. cordifolia*	Leaves	Decoction	Infusion	Shrub	Anxiety and depression
10	Pawpaw	*C. papaya*	Leaves	Decoction	Infusion	Tree	Anger and anxiety
11	Adam's fruits	*P. incarnata*	Fruits, Flower	Decoction	Infusion	Herb	Depression
12	Honey Plant	*M. officinalis*	Leaves	Extraction of Juice	Infusion	Herb	Anxiety
13	Coffee Fruits	*G. simplicifolia*	Seeds	Decoction	Infusion	Tree	Depression and anger
14	Ginger	*Z. officinale*	Rhizome	Decoction	Infusion	Herb	Depression, Anxiety and stress
15	Onion	*A. sativum*	Bulb	Decoction	Chew and drink extract	Herb	Depression and stress
16	Milk plant	*E. hirta*	Leaves	Concoction	Boil and drink/macerate	Herb	Depression
17	Touch me not	*M. pudica*	Leaves	Decoction	Boil and drink	Herb	Depression and anger
18	Married flower	*L. camara*	Leaves	Concoction	Boil and drink	herb	Depression and fear
19	Country onion	*A. lepidophyllus*	Seed/bark	Concoction	Boil and drink	Tree	Depression, anxiety, anger and stress
20	Black jack	*B. pilosa*	Leaves	Decoction	Drink	Herb	Depression, stress and fear
21	Bush toilet roll	*D. stramonium*	Leaves	Concoction	Drink	Herb	Anxiety, anger and stress
22	Gastric plant	*E. coccinea*	Leaves	Concoction	Macerate	Herb	Stress and anger

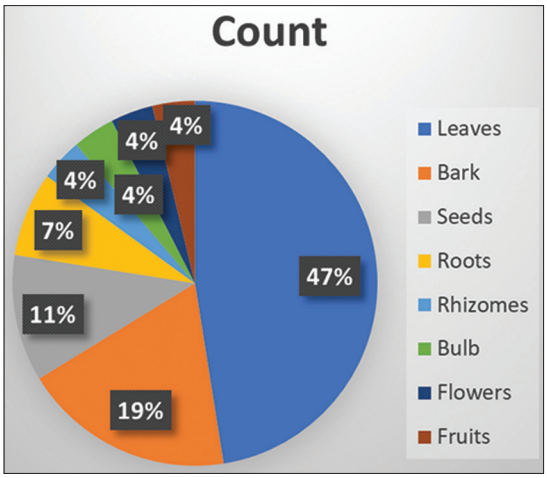

Figure 2: Plant parts used

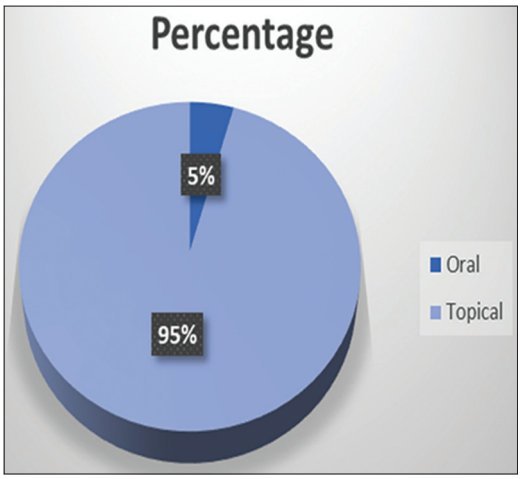

Figure 3: Mode of application

in the villages as parts used in treatment (Figure 2). The highest plant part frequency is leaves with a percentage of (47%), followed by bark and seeds. Leaves are found to be the most commonly used part of the plant for herbal medication. One reason for this is that leaves are the easiest to take and they preserve the wholeness of the plants as they are easily regenerated, unlike stems and roots (Pierre *et al.*, 2011). Moreover, important chemical compounds such as tannins, essential oils, and flavonoids are stored in the leaves at high concentrations (Morilla *et al.*, 2014). The routine use of leaves could also be due to the fact that they are the site of the synthesis of organic substances (Njoroge & Bussmann, 2005).

Different methods were employed for the administration of treatment to patients. Methods of administration of these medicinal plants involved two main processes including oral and topical (Figure 3).

Ethnobotanical Parameters of Plants Used in the Management of Mental Health Disorders

From the study, the frequency of citation was highest (42) for A. *melegueta* and least (4) for *E. hirta*. The highest use value was recorded for A. *melegueta*, *O. gratissimum* and A. *lepidophyllus*. The top plants used to treat anxiety disorders were V. *africana* and *M. piperita* (Table 4).

A. *Melegueta*, A. *lepidophyllus* and *O. gratissimum*, were plants cited to treat four out of the five categories of mental illness. These were followed by *A. conyzoides*, V. *Africana* and *Z. officinale* treating three categories of mental illnesses. This is an indication that these plants have active act compounds that permit them to be used in treating mental ailments.

In terms of use report (UR), A. *melegueta*, A. *conyzoides*, *O. gratissimum*, A. *lepidophyllus* and V. *africana* recorded a use report of greater than 50 (Table 5). The highest informant

Table 4: Plants used to treat different mental problems, their FC, RFC and UV values

S. No.	Common Name	Scientific Name	Frequency of citation (FC)	Relative frequency of citation (RFC)	Use value (UV)
1	Scent Leaf	*O. citratus*	18	0.235	0.012
2	Masepo	*O. gratissimum*	22	0.275	0.050
3	King Grass	*A. conyzoides*	32	0.40	0.038
4	Vaocanga	*V. africana*	26	0.325	0.038
5	Fever Grass	*C. citratus*	19	0.238	0.025
6	African Cherry	*P. africana*	9	0.113	0.013
7	Mint	*M. piperita*	11	0.138	0.013
8	Alligator Pepper	*A. melegueta*	42	0.525	0.050
9	Chrismas Bush	*A. cordifolia*	6	0.075	0.025
10	Pawpaw	*C. papaya*	10	0.125	0.025
11	Adam's fruits	*P. incarnata*	13	0.163	0.013
12	Honey Plant	*M. officinalis*	5	0.063	0.013
13	Coffee Fruits	*G. simplicifolia*	6	0.075	0.025
14	Touch- me- not	*M. pudica*	7	0.088	0.025
15	Ginger	*Z. officinale*	14	0.175	0.038
16	Onion	*A. sativum*	13	0.163	0.025
17	Milk plant	*E. hirta*	4	0.050	0.013
18	Married flower	*L. camara*	5	0.063	0.025
19	Country onion	*A. lepidophyllus*	21	0.263	0.050
20	Black jack	*B. pilosa*	19	0.238	0.038
21	Bush toilet roll	*D. stramonium*	13	0.163	0.025
22	Gastric plant	*E. coccinea*	15	0.188	0.025

Table 5: Plants used to treat mental illnesses, use categories, informant agreement ratio and use report in Buea municipality

S. No.	Common Name	Scientific Name	Use Categories (UC)	Informant Agreement Ratio (IAR)	Use Report (UR)
1	Scent Leaf	*O. citratus*	1	1	18
2	Masepo	*O. gratissimum*	4	0.857	88
3	King Grass	*A. conyzoides*	3	0.935	96
4	Vaocanga	*V. africana*	3	0.920	78
5	Fever Grass	*C. citratus*	2	0.944	38
6	African Cherry	*P. Africana*	1	1	09
7	Mint	*M. Piperita*	1	1	11
8	Alligator Pepper	*A. melegueta*	4	0.927	168
9	Chrismas Bush	*A. cordifolia*	2	0.800	12
10	Pawpaw	*C. Papaya*	2	0.888	20
11	Adam's fruits	*P. incarnata*	1	1	13
12	Honey Plant	*M. officinalis*	1	1	5
13	Coffee Fruits	*G. simplicifolia*	2	0.800	12
14	Ginger	*Z. officinale*	3	0.923	42
15	Onion	*A. sativum*	2	0.917	26
16	Milk plant	*E. hirta*	1	1	4
17	Touch me not	*M. pudica*	2	0.833	14
18	Married flower	*L. camara*	2	0.750	10
19	Country onion	*A. lepidophyllus*	4	0.850	84
20	Black jack	*B. pilosa*	3	0.888	57
21	Bush toilet roll	*D. stramonium*	2	0.917	26
22	Gastric plant	*E. coccinea*	2	0.929	30

Table 6: Other uses of plants used in the treatment of mental disorder with a FC greater than 20 in Buea municipality

S. No.	Scientific names	FC	Disease cured	Cultural importance
1	*A. melegueta*	42	Sore throat	Incantation, believed to protect the environment from evil spirits
2	*A. conyzoides*	32	Prostate cancer and malaria	Death celebrations and Cultural dance. Also used to drive evil spirit
3	*V. africana*	26	Treatment of leukemia, malaria and ulcers	Death celebration, believed to prevent evil spirits and ill luck
4	*O. gratissimum*	22	Use to treat gastritis, sleeping disorder and stomach pains	Death celebrations
5	*A. lepidophyllus*	21	Treat scabies, fungi and common cold in children	Incantation
6	*B. pilosa*	19	Fever, malaria and typhoid	-
7	*C. citratus*	19	Cough, chest pain and cold	Insect repellant during celebrations
8	*O. citratus*	18	Nerve pains and relaxation	Spices for different dishes
9	*E. coccinea*	15	Treatment of gastric, improve fertility and controls pile.	-
10	*Z. officinale*	14	Cough, cold, nausea, vomiting and nerve relaxation	Spices and used to send away evil spirit
11	*A. cepa*	13	Treatment of venereal infections, fungal infection and improve hair growth	Spices
12	*M. piperita*	11	Cough, chest pain and cold	Spices for different dishes, house fragrant

agreement ratio was recorded in plants that recorded only one, use category.

Other uses of Plants used in the Management of Mental Health Disorders

Most of the plants used to manage mental illnesses were also used in the treatment of other ailments and had other cultural values (Table 6). Some of the medicinal plants were used for religious ceremonies as well as for magic and medicinal purposes. A. *melegueta* has been reported to treat male sexual impotence, low abdominal pains, abscess, pneumonia, toothache, panacea for witchcraft and metaphysical power (Jiofack *et al.*, 2009)

Voacanga has been reported to treat ailments like malaria, inflammation and ulcers (Duru & Onyedineke, 2010). Moukette *et al.* (2021) reported that A. *lepidophyllus* has a high vitamin C content an indication that this plant can equally be used for the treatment of anemia, wound healing and common cold. Neuroprotective properties of *O. gratissimum* have been documented (Jahanger *et al.*, 2023). *Z. officinale* and A. *cepa* have been reported to have medicinal potential in relation to maternal health (Sharaibi *et al.*, 2024).

Most of the plants are common herbs in the vicinity. Fruits such as onions and ginger are cultivated, while voacanga and country onions are harvested in the wild. About 80% of the herbalists make use of barks of forest trees such as *P. africana* and *V. africana*. Common herbs such as *E. coccinea*, A. *conyzoides* and *O. gratissimum* are widely known for their medicinal values (Nkongmeneck *et al.*, 2007).

CONCLUSION

This study shows that twenty-two plants were used to treat one or more categories of mental illness in Buea municipality. The mental illness categories were depression, stress, anger, fear, and anxiety. These plants are mostly used orally and

can be used as concoctions, decoctions, macerated or taken as poultries. Some of the plants had religious and cultural values. Leaves are mostly used in preparation of the medicine. *O. gratissimum*, *A. melegueta* and *A. lepidophyllus* reported to treat four of the five categories of mental illness. The medicinal plants with the highest frequency of citation and used reports were *O. gratissimum*, *A. melegueta*, *V. africana*, *A. conyzoides* and *A. lepidophyllus*. Screening of these plants will help in the identification of the different bioactive compounds to enhance drug discovery in the management of mental health disorders.

AUTHORS' CONTRIBUTIONS

Fonge BA conceived the project, Arrey DB, Essomo SE, Tajeukem VC and Ayamba BA carried out the research. All authors wrote and proofread the manuscript.

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