

Original Research Article

Ethno-botanical survey of medicinal plants used traditionally in the treatment of mental disorders in Kano, Nigeria

Abdullahi R Abubakar^{1*}, Ibrahim H Sani², Suleiman S Chiroma³, Sani Malami¹, Abdullahi H Yaro¹

¹Department of Pharmacology and Therapeutics, Faculty of Pharmaceutical Sciences, Bayero University Kano, ²Unit of Pharmacology, College of Health Sciences, Maitama Sule University, ³Pharmacists Council of Nigeria, Kano State Branch. Kano State, Nigeria

*For correspondence: **Email:** unisza7@gmail.com; **Tel:** +234-9028774761

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Abstract

Purpose: To identify medicinal plants used by traditional medicine practitioners to treat mental disorders within Kano metropolis, Nigeria.

Methods: A semi-structured questionnaire was administered. It was made up of demographic information (Section A), description of the medicinal plants (Section B), and the professional experience of the respondents (Section C). The data generated were recorded, processed and analyzed.

Results: 255 responses were collected from 127 respondents. Among the participants, 101 (79 %) were male and 26 (21 %) were female. The age groups less than 31 years were 22 (17 %), 31 - 40 years were 29 (23 %), 41 - 50 years were 45 (36 %), and above 51 years were 31 (24 %). The sources of knowledge identified include ancestral (83 %), ancestral/training (9 %), training (6 %), and divination (2 %). Out of the total responses, fifty (50) different medicinal plants with various claims in the treatment of mental disorders were reported. The most commonly stated medicinal plants were *Securidaca longepedunculata* (8.6 %), *Jatropha curcas* (7.5 %), *Solanum aethiopicum* (7.1 %), *Artemesia annua* (6.7 %), *Terminalia macroptera* (6.3 %), *Aristolochia albidia* (5.9 %), *Nigella sativa* (5.5 %), *Andira inermis* (5.5 %), *Calotropis procera* (5.1 %), and *Burkea africana* (4.7 %).

Conclusion: This survey revealed fifty medicinal plants used traditionally in the treatment of mental disorders within Kano metropolis.

Keywords: Ethno-botanical, Survey, Mental disorders, Medicinal plants, Traditional medicine

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INTRODUCTION

Traditional medicine practice (TMP) and the use of medicinal plants as a natural source of medicine are gaining wider acceptance globally. It is believed that 80 % of people living in

developing countries use traditional medicines [1]. This is perhaps due to the ease of access, low cost, and fewer side effects [2,3]. In addition, over 25 % of the prescribed orthodox medicines were directly derived from medicinal plants [4]. Furthermore, it was estimated that there are up

to 250,000 species of medicinal plants worldwide, but only 10 % have been scientifically investigated [5,6]. Notably, traditional medicine practitioners, herbalists, and herb sellers have a great role to play in the development of herbal medicines [7,8]. An ethno-botanical survey provides information on the traditional knowledge of medicinal plants, including parts of the plants used for the treatment, tips on the dosage forms, solvent of extraction and duration of use. The accuracy and precision of information obtained from TMP depend on their source of knowledge and years of experience. Consequently, this could be used to guide the selection of plant candidates for scientific research [7,8].

Phytotherapy involves the use of medicinal plants to treat or prevent diseases or promote wellbeing and dates back to the period of Mesopotamia [9,10]. Studies involving traditional medicines around the globe include Ayurvedic medicine, Unani medicine, Kampo medicine, Acupuncture, and Chinese oriental medicine [9-11]. The TMP include the knowledge, expertise and practices of herbal medicine based on theories, beliefs and experiences of the people. It is known to be inherited from one generation to another. It involves the application of TMP in the prevention, diagnosis, and treatment of physical and mental illness [1]. A medicinal plant refers to a plant comprising active ingredients that possess biological activity. A whole plant may be medicinally active or plant parts [12-14]. Herbal medicines can be described as medicinal preparations comprising active ingredients obtained from medicinal plants. Preparations from products of herbal plants such as oils, gums, and other secretions are also considered herbal medicine [12-14].

METHODS

Study population

The study was conducted among a population of traditional medicine practitioners (TMPs), herbalists and herb sellers within the Kano metropolis.

Study area

The area selected for the survey was Kano metropolis. Kano State is located in the north-western region of Nigeria. Kano State shares border with Katsina State to the north, Bauchi State to the south, Jigawa State to the east and Kaduna State to the west (Figure 1). Kano State is located between latitude 130 ° N to the North and 110 ° S to the South and longitude 80 ° W to the West and 100 ° E to the East. It also has a

mean height of about 472.45 m above sea level [15]. In addition, the state has a total of 44 local government areas with total population of 18.08 million [16]. The TMP, herbalists, and herb sellers are found in large numbers in the major markets, including Kurmi Market in Dala Local Government Area, Sabon Gari Market in Fagge Local Government Area, Abubakar Rimi Market in Municipal Local Government Area, Hajj Camp Traditional Medicine Trade Fair in Dala Local Government Area, and a few other locations dispersed within residential areas.

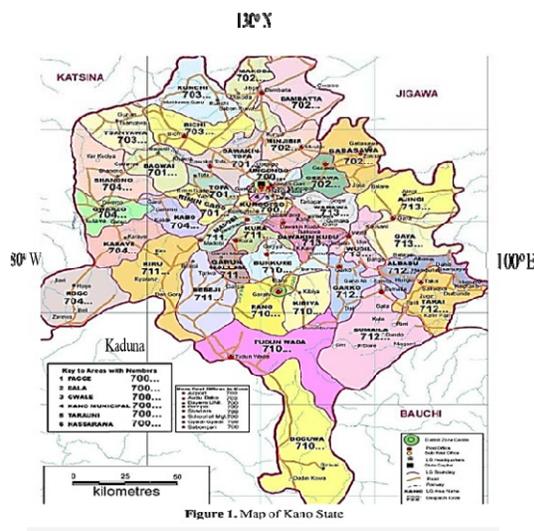


Figure 1: Map of Kano State, Nigeria [15]

Study design

A cross-sectional study was conducted among the population of TMP, herbalists, and herb sellers using a semi-structured questionnaire. The questionnaire was adopted, modified, and validated from an earlier study [17].

Development of the questionnaire

Section A was made up of demographic information such as gender, age, religion, nationality, and type of practice involved. Section B describes the medicinal plants used locally in the treatment of mental disorders. These include local names and parts of the plants used. Section C assesses the professional experience of the respondent, these include the source of knowledge, duration of the treatment, frequency of administration, verbal instructions, side effects, and method of preparation. The questionnaire was translated into Hausa language by language experts. In addition, it was administered directly to those who could read and comprehend. However, it was read out verbally for those who

could not read. The responses were collected and documented. The herbalist provided the information on the medicinal plants used traditionally in the treatment of mental disorders by giving the detailed description of the plant, the location where it can be found, or a plant sample where available.

Ethical approval

The study was conducted after obtaining ethical clearance from the ethical committee of the College of Health Sciences, Bayero University, Kano. Ref No: BUK/CHS/REC/69.

Data collection

The data was collected using a self-administered questionnaire across the population of TMPs, herbalists and herb sellers. The study was carried out between June 2018 and March 2020.

Data analysis

The results were tabulated, and descriptive statistics were computed. The data was presented as frequencies (percentages) and mean \pm standard deviation (SD) where appropriate. The whole analysis was carried out

using the Statistical Package for Social Sciences (SPSS[®]), version 22.0.

RESULTS

Table 1: Demography of respondents

Variable	Specification	N (%)
Type of Practice	TMPs	64 (50)
	Herbalists	46 (36)
	Herb sellers	17 (14)
Gender	Male	101 (79)
	Female	26 (21)
Age (years)	Less than 31	22 (17)
	31-40	29 (23)
	41-50	45 (36)
	Above 50 years	31 (24)
Religion	Islam	116 (91)
	Christianity	11 (9)
Nationality	Nigerian	124 (98)
	Non-Nigerian	3 (2)
Locations	Kurmi market	66 (52)
	Sabon Gari market	31 (24)
	Abubakar Rimi market	14 (11)
	Hajj camp trade fair	11 (9)
	Others	5 (4)

N: Number of respondents; %: percentage of respondents

Table 2: Professional experience of respondents

Variables	Specification	N (%)
Frequency of treatment	Regular	115 (91)
	Irregular	12 (9)
Duration of treatment (days)	2-3	9 (7)
	4-5	26 (20)
	6-14	92 (73)
Other treatment apart from herbs	Divination/incantation	6 (5)
	None	121 (95)
Source of knowledge	Ancestral	105 (83)
	Training	8 (6)
	Ancestral/Training	11 (9)
	Divination	3 (2)
Availability of plant/ plant parts	Forest	84 (66)
	Home garden	11 (9)
	Market	32 (25)
Accompanied side effects	Nausea/vomiting	20 (16)
	Others	18 (14)
	None	89 (70)
Accompanied verbal instructions	Yes	127 (100)
Method of Preparations	Maceration	79 (62)
	Decoction	17 (13)
	Infusion	31 (25)

N: Number of respondents; %: percentage of respondents

Table 3: Medicinal plants commonly used in treatment of mental disorders

Botanical Names	Local Names	Family	Part	Claim	N (%)
<i>Aframonium melengueta</i> K. Schum.	Citta maikwaya (Hausa), Atare (Yoruba), Ose-oji (Igbo)	<i>Zingiberaceae</i>	Pod/Seed	Insomnia	1(0.4)
<i>Andira inermis</i> (Wright) DC.	Gwaska (Hausa), Geloki (Fulfulde)	<i>Fabaceae</i>	Stem Bark	Insomnia	14(5.5)
<i>Annona senegalensis</i> Pers.	<i>Gwandardaji</i> (Hausa), <i>Abo</i> (Yoruba), <i>Uburuocha</i> (Igbo)	<i>Annonaceae</i>	Leaf	i. Insomnia ii. Epilepsy	1(0.4)
<i>Anogeissus leiocarpus</i> (DC) Guill and Perr.	<i>Marke</i> (Hausa), <i>Atara</i> (Igbo), <i>Ayin</i> (Yoruba)	<i>Combretaceae</i>	Stem Bark	i. Insomnia ii. Epilepsy	1(0.4)
<i>Aristolochia albida</i> Duch.	<i>Madacin qasa</i> , (Hausa), <i>gad'ahuka</i> (Fulfulde)	<i>Aristolochiaceae</i>	Root	Evil Spirit	15(5.9)
<i>Aristolochia bracteolata</i> L.	<i>Duman Dutse</i> (Hausa)	<i>Aristolochiaceae</i>	Leaf	Mental illness	1(0.4)
<i>Artemisia annua</i> L.	<i>Tazargade</i> (Hausa)	<i>Asteraceae</i>	Leaf	Evil Spirit	17(6.7)
<i>Balanite aegyptiaca</i> Del.	<i>Aduwa</i> (Hausa), <i>Dubakara</i> (Fulani), <i>Dawagara</i> (Kanuri)	<i>Balanitaceae</i>	Stem Bark	i. Insomnia ii. Anxiety	2(0.8)
<i>Bridelia ferruginea</i> Benth.	<i>Kirmi</i> (Hausa), <i>Iralodan</i> (Yoruba), <i>Ola</i> (Igbo)	<i>Euphorbiaceae</i>	Root/ Leaf	Epilepsy	1(0.4)
<i>Burkea Africana</i> Hook.	<i>Maqarho</i> (Hausa)	<i>Fabaceae</i>	Stem Bark	i. Anxiety ii. Insomnia	11(4.3)
<i>Calotropis procera</i> L.	<i>Tumfaafiyaa</i> (Hausa), <i>Bomubomu</i> (Yoruba), <i>babambi</i> (Fulani)	<i>Asclepiadaceae</i>	Flower	Evil spirit	13(5.1)
<i>Carica papaya</i> L.	<i>Gwanda</i> (Hausa) <i>Egemmu</i> (Igbo), <i>Ibepe ibepe</i> (Yoruba)	<i>Caricaceae</i>	Leaf	Evil spirit	4(1.6)
<i>Celtis integrifolia</i> Lam.	<i>Zuwoo</i> (Hausa), <i>Ganki</i> (Fulani), <i>Akpe</i> (Yoruba)	<i>Ulmaceae</i>	Leaf	i. Epilepsy ii. Mental illness	12(4.7)
<i>Cinnamomum verum</i> J.Presl.	<i>Girfa</i> (Hausa)	<i>Lauraceae</i>	Stem Bark	CNS Stimulant	1(0.4)
<i>Combretum molle</i> R.BR. EX G.don	<i>Wuyandamo</i> (Hausa), <i>Boodi</i> (Fulani) <i>Anragba</i> (Yoruba)	<i>Combretaceae</i>	Root/ Leaf	Insomnia	1(0.4)
<i>Enantia chlorantha</i> Oliv	<i>Awopa/Osu pupa</i> (Yoruba), <i>Erenba-vbogo</i> (Igbo)	<i>Annonaceae</i>	Stem Bark	Epilepsy	3(1.2)
<i>Entada africana</i> Guill. and Perr.	<i>Tawatsa</i> (Hausa), <i>Ogurobe</i> (Yoruba)	<i>Fabaceae</i>	Leaf	i. Mental illness ii. Epilepsy	1(0.4)
<i>Ficus congensis</i> Engl.	<i>Baure</i> (Hausa)	<i>Moraceae</i>	Stem Bark	Insomnia	1(0.4)
<i>Ficus ingens</i> (Miq.) Miq.	<i>Qaawurii</i> (Hausa), <i>basaga</i> (Kanuri), <i>Fut</i> (Biom)	<i>Moraceae</i>	Stem Bark	Insomnia	1(0.4)
<i>Ficus platyphylla</i> Del.Holl.	<i>Gamji</i> (Hausa), <i>Dundehe</i> (Fulani), <i>Ogbagba</i> (Yoruba)	<i>Moraceae</i>	Stem Bark	i. Epilepsy ii. Insomnia	3(1.2)
<i>Ficus thonningii</i> (Blume.)	<i>Chediya</i> (Hausa)	<i>Moraceae</i>	Leaf/Stem Bark	Mental illness	3(1.2)
<i>Garcinia kola</i> (Heckel).	<i>Namijingoro</i> (Hausa), <i>Orogbo</i> (Yoruba)	<i>Clusiaceae</i>	Fruit	Stimulant	1(0.4)
<i>Guiera senegalensis</i> J.F. Gmel	<i>Saabara</i> (Hausa) <i>Kaashi</i> (Kanuri), <i>Gelooki</i> (Fulani)	<i>Combretaceae</i>	Leaf	i. Anxiety ii. Insomnia	5(2)
<i>Indigofera pulchra</i> Willd.	<i>Namijin Baabaa</i> (Hausa), <i>Ejaomode</i> (Yoruba)	<i>Papilionoideae</i>	Leaf	.Mental Illness	4(1.6)
<i>Ipomoea asarifolia</i> (Desr.) Roem. & Schult.	<i>Dumanrafi</i> (Hausa), <i>Layre ngabbu</i> (Fulani), <i>Gbooro ayaba</i> (Yoruba)	<i>Convolvulaceae</i>	Leaf	Mental illness	14(5.5)
<i>Jatropha curcas</i> L.	<i>Biniidazuguu</i> (Hausa), <i>Bulu olu</i> (Igbo), <i>Botuje</i> (Yoruba)	<i>Euphorbiaceae</i>	Stem Bark	i. Insomnia ii. Epilepsy	19(7.5)

N = Number of plants mentioned; % = percentage of plants mentioned

Table 3: Medicinal plants commonly used in treatment of mental disorders (continued)

Botanical Names	Local Names	Family	Part	Claim	N (%)
<i>Laptadenia hastata</i> (Pers.) Decne	Yaadiya (Hausa), Isanaje (Igbo), Iran-aji (Yoruba)	<i>Asclepiadaceae</i>	Leaf	i. Evil spirit ii. Mental illness	10(3.9)
<i>Lawsonia inermis</i> L	Lalle (Hausa)	<i>Lythraceae</i>	Leaf	Insomnia	1(0.4)
<i>Lophira alata</i> Banks ex Geartn.	Kujeme (Hausa)	<i>Ochnaceae</i>	Stem Bark	i. Epilepsy ii. Mental illness	2(0.8)
<i>Mentha piperita</i> L.	Na,a na,a (Hausa)	<i>Lamiaceae</i>	Leaf	i. Mental illness ii. Stimulant	2(0.8)
<i>Mormordica balsamina</i> L.	Garaafunii (Hausa), Akban ndene (Igbo), Ejirin (Yoruba)	<i>Curcubitaceae</i>	Leaf	Mental illness	2(0.8)
<i>Moringa oleifera</i> Lam.	Zogale (Hausa), Ewe (Yoruba), Okweolu (Igbo)	<i>Moringaceae</i>	Leaf	i. Mental illness ii. Epilepsy	2(0.8)
<i>Nauclea latifolia</i> (Smith) Bruce	Tuwonbiri (Hausa), Egbesi (Yoruba), Uburu-ilu (Igbo).	<i>Rubiaceae</i>	Leaf	Evil spirit	2(0.8)
<i>Ocimum grattissimum</i> L.	Daddoya (Hausa), (Ahuji) Igbo, (Efinrin) Yoruba	<i>Lamiaceae</i>	Whole	i. Mental illness ii. Epilepsy iii. Insomnia	3(1.2)
<i>Olax subscopioidea</i> Oliv.	Gwaanon kurmi (Hausa)	<i>Olacaceae</i>	Leaf	i. Epilepsy ii. Mental illness	3(1.2)
<i>Piliostigma thonningii</i> (Schumach.) Milne-Rech.	Kalgo (Hausa), Abefe (Yoruba), Okpoatu (Igbo)	<i>Leguminosae</i>	Leaf	i. Epilepsy ii. Mental illness iii. Insomnia	1(0.4)
<i>Propolis Africana</i> (Guill and Perr.) Taub.	Kirya (Hausa) Ayan (Yoruba), Ubwa (Igbo)	<i>Mimosoideae</i>	Root	i. Anxiety ii. Epilepsy	2(0.8)
<i>Ricinus communis</i> Linn.	Zurman (Hausa), Laraa (Yoruba), Ogilisi (Igbo)	<i>Euphorbiceae</i>	Leaf/Seed	i. Insomnia ii. Epilepsy	1(0.4)
<i>Sclerocarya birrea</i> (A Rich) Hochst.	Danya (Hausa), Eedere (Fulani), Kamaa (Kanuri)	<i>Anacardiaceae</i>	Stem Bark	Epilepsy	1(0.4)
<i>Securidaca longepedunculata</i> Fres.	Sanyaa/ Uwar maguna (Hausa), Alali (Fulani)	<i>Polygalaceae</i>	Stem Bark	i. Depression ii. Epilepsy	22(8.6)
<i>Strychnos spinosa</i> (Lam.)	Kokiya (Hausa), Atako (Yoruba),	<i>Loganiaceae</i>	Fruit	i. Mental illness ii. Epilepsy	1(0.4)
<i>Solanum aethiopicum</i> L.	Gauta (Hausa), Anara (Igbo), Igbagba (Yoruba)	<i>Solanaceae</i>	Fruit	i. Anxiety ii. Insomnia	18(7.1)
<i>Spathodea campanulata</i> P. Beauv	Oruru/mojutoro (Yoruba), Imi ewu (Igbo)	<i>Bignoniaceae</i>	Stembark	i. Mental illness ii. Epilepsy	2(0.8)
<i>Terminalia macroptera</i> Guill and Perr.	Baushe (Hausa), idi (Yaruba), and Booji (Fulfulde)	<i>Combretaceae</i>	Stem Bark	i. Depression ii. Insomnia	16(6.3)
<i>Veronica amygdalina</i> Prot.	Shuwaka/chusar-doki (Hausa), ewuro (Yoruba), onugbu (Igbo)	<i>Asteraceae</i>	Leaf	i. Mental illness ii Insomnia	2(0.8)
<i>Vitellaria paradoxa</i> (C. F. Gaertn)	Kadanya (Hausa), Balire (Fulfulde), Kendager (Kanuri)	<i>Sapotaceae</i>	Stem Bark	i. Evil Spirit ii. Epilepsy	3(1.2)

N = Number of plants mentioned; % = percentage of plants mentioned

Table 3: Medicinal plants commonly used in treatment of mental disorders (continued)

Botanical name	Local names	Family	Part	Claim	N (%)
<i>Vitex doniana</i> Sweet.	<i>Dinyaa</i> (Hausa), <i>Ngalbihi</i> (Fulfulde), <i>Elili</i> (Igbo) <i>Ori</i> (Yoruba)	<i>Verbenaceae</i>	Root Bark	i. Evil spirit ii. Insomnia	2(0.8)
<i>Waltheria indica</i> L.	<i>Hankufa</i> (Hausa), <i>Korikodi</i> (Yaruba), <i>Kafaffi</i> (Fulfulde)	<i>Sterculiaceae</i>	Whole	i. Epilepsy ii. Insomnia	2(0.8)
<i>Ximenia americana</i> L.	<i>Tsaada</i> (Hausa), <i>Kabbule</i> (Fulfulde), <i>Igo</i> (Yoruba)	<i>Oliaceae</i>	Stem Bark	Insomnia	3(1.2)
<i>Ziziphus mauritiana</i> Lam.	<i>Magarya</i> (Hausa), <i>Jaabe</i> (Fulfulde), <i>Kusulu</i> (Kanuri), <i>Eekannase adie</i> (Yoruba)	<i>Rhamnaceae</i>	Leaf	i. Insomnia ii. Epilepsy	2(0.8)

N = Number of plants mentioned; % = percentage of plants mentioned

Table 4: Families of plants reported

Family	Frequency (%)
<i>Anacardiaceae</i>	1 (2)
<i>Annonaceae</i>	2 (4)
<i>Aristolochiaceae</i>	2 (4)
<i>Asclepiadaceae</i>	2 (4)
<i>Asteraceae</i>	2 (4)
<i>Balanitaceae</i>	1 (2)
<i>Bignoniaceae</i>	1 (2)
<i>Caricaceae</i>	1 (2)
<i>Clusiaceae</i>	1 (2)
<i>Combretaceae</i>	4(8)
<i>Convulvulaceae</i>	1 (2)
<i>Curcubitaceae</i>	1 (2)
<i>Euphorbiaceae</i>	3(6)
<i>Fabaceae</i>	3 (6)
<i>Lamiaceae</i>	2 (4)
<i>Lauraceae</i>	1 (2)
<i>Leguminosaeae</i>	2 (4)
<i>Lythraceae</i>	1 (2)
<i>Mimosoideae</i>	1(2)
<i>Moraceae</i>	4 (8)
<i>Moringaceae</i>	1 (2)
<i>Orchnaceae</i>	1(2)
<i>Olacaceae</i>	2 (4)
<i>Papilionoideae</i>	1 (2)
<i>Polygalaceae</i>	1 (2)
<i>Rhamnaceae</i>	1 (2)
<i>Rubiaceae</i>	1 (2)
<i>Sapotaceae</i>	1 (2)
<i>Solanaceae</i>	1 (2)
<i>Sterculiaceae</i>	1(2)
<i>Ulmaceae</i>	1 (2)
<i>Verbenaceae</i>	1 (2)
<i>Zingiberaceae</i>	1 (2)

%; percentage of plant families mentioned.

Plant forms and parts used and their frequencies

The survey results reveal that trees were the most commonly reported form of plants (62 %), followed by shrubs (25 %), creepers (7 %) and climbers (6 %). The various parts of the tree used traditionally in the treatment of mental disorders include the leaves, the stem bark, and the root bark. In shrubs and climbers, the whole plant is used, whereas in creepers the bulb or rhizomes are used medicinally.

DISCUSSION

The study reported a total of fifty different medicinal plants with various claims in the treatment of mental disorders. During the course of this survey, one hundred and twenty-seven (127) respondents were interviewed within the Kano metropolis. Among them, 79 % were male, and the rest were female. The outcome of this study suggested that men were more involved in the traditional medicine practice (TMP) than women. Similar findings from another study

reported that males participated more in the TMP than females [7]. It was also observed that the age group 41 - 50 years had the highest participation among TMP. This implies that this age group had more experience in dealing with herbal medicine than the younger ones. Other ethno-botanical surveys carried out also revealed that elderly people were more involved in TMP [7,18]. The source of knowledge reported by the majority of the respondents was ancestral (83 %) indicating that the majority of the skills in TMP were learned through inheritance. Another study reported similar results [7].

The most frequently mentioned plants were *Securidaca longepedunculata* (8.6 %), *Jatropha curcas* (7.5 %), *Solanum aethiopicum* (7.1 %), *Artemesia annua* (6.7 %), *Terminalia macroptera* (6.3 %), *Aristolochia albida* (5.9 %), *Andira inermis* (5.5 %), *Ipomoea asarifolia* (5.5 %), *Calotropis procera* (5.1 %), *Celtis integrifolia* (4.7 %), *Burkea africana* (4.3 %), and *Laptadenia hastata* (3.9 %). The results obtained were similar to the findings of other ethno-botanical surveys [17,19-20,22-25]. The most commonly reported families used in the management of mental disorders were *Combretaceae*, *Moraceae*, *Euphorbiaceae* and *Fabaceae*. The majority of these families were also documented in other studies [19-25].

Data from this survey indicated that trees are the most common form of plants used, followed by shrubs, creepers, and climbers. In addition, the most commonly used part of plants is leaves, followed by stem bark, root bark, whole plants, and bulbs. Similar findings were reported in other surveys [3,17-18,22]. Furthermore, the majority of the respondents (70 %) reported that their medicinal plants produced no side effects. This is in line with the reports by other researchers [3,18].

CONCLUSION

In the course of this research, fifty (50) different medicinal plants with various traditional claims in the treatment of mental disorders have been reported. This includes information from the grassroots and database on the availability and the use of medicinal plants traditionally in the treatment of mental disorders within Kano metropolis. It is suggested that further experiments should be carried out on the plants with preliminary experimental outcomes and meta-analysis using published articles. This will serve as a guide in the choice of plant candidates for the development of phyto-medicine for the treatment of mental disorders.

DECLARATIONS

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Conflict of interest

No conflict of interest is associated with this work.

Contribution of authors

We declare that this work was done by the authors named in this article and all liabilities pertaining to the claims relating to the content of this article will be borne by the authors. Abdullahi Rabi Abubakar was involved in data collection, statistical analysis and manuscript writing. Ibrahim Haruna Sani and Suleiman Samaila Chiroma carried out the data collection and literature review. Sani Malami participated in study design, supervising the survey while Abudllahi Hamza Yaro developed the research idea, manuscript title, and editing. All the authors read and approved the final manuscript for publication.

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