



Traditional Medicinal Plants Used to Treat Maternal and Child Health Illnesses in Ethiopia: An Ethno-Botanical Approach

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Abstract

Maternal and child morbidity and mortality is highest in sub Saharan African countries including Ethiopia, due to shortfalls in modern health institutions, women improper use of medicinal plants. Scientific utilization of traditional medicinal plants continues to play an important role in improving and maintaining health problems in developing countries. About (80%) of the Ethiopia people depend on traditional medicine for their health care and more than 90% traditional medicine preparations are made from plant origin. The aim of this review was to provide an overview on traditional medicinal plants used to treat maternal and child health illnesses in Ethiopia.

Materials and Methods: Databases (Pub Med, Google Scholar, Research Gate, and HINARI) were searched for published studies on the Ethno-botany of medicinal plants used to treat maternal and child health illnesses in Ethiopia. Studies that did not contain full ethno-botanical data of medicinal plants traditionally used to treat maternal and child health illnesses were excluded.

Results: In different database search, the investigators found a total of 360 articles. After adjustment for duplicates and inclusion and exclusion criteria, 38 articles were found appropriate for the review. None of the medicinal plants traditionally used to treat maternal and child health illnesses in Ethiopia are confirmed scientifically. Of the 103 plants identified from the various studies, 25 (25.75%) were herbs and the common plant part used was found to be root 40 (41.2%) followed by leaves 32 (32.96%). Based on this study, medicinal plants the most common route of administration was orally 71 (73.13%). In this review, medicinal plants which were abundant for maternal illness the leading were treatment of retained placenta 24 (24.72%) species followed by abortion, which comprise 6 (6.18%). On the other hand, milk feeding diarrhoea and Kwashiorkor 3 (3.09%) comprise high and equal percentage of childhood infection in Ethiopia.

Conclusion: Various medicinal plants have been used by Ethiopian people. Most of the plants were herb and the commonly used plant part was root. The most common maternal illness treated by medicinal plant was retained placenta in children milk feeding diarrhoea and Kwashiorkor. There is a need to conduct clinical trials to support traditional claims and to analyse cellular and molecular mechanisms involved.

Keywords: Ethno botany; Ethiopia; Maternal health; Child health; Medicinal plants

Introduction

Based on WHO traditional medicine is defined as the sum total of all knowledge and practices, whether explicable or not, used in diagnosis, prevention and elimination of physical, mental, or social imbalance and relying exclusively on practical experience and observation handed down from generation to generation, whether verbally or in writing. The emphasis on the use of medicinal plants had been focus on the treatment rather than prevention of diseases [1].

Maternal and child morbidity and mortality is highest in sub Saharan Africa including Ethiopia due to shortfalls in modern hospitals, women improperly use of medicinal plants About (80%) of the Ethiopia people and (90%) of livestock depend on traditional medicine for their health care and more than 90 and of traditional medicine preparations are made from plant origin. Similarly, there has been a continuous growth of demand for traditional medicines globally and in many developing countries health care system [2].

But when we use in scientific way, traditional medicine continues to play an important role in improving and maintaining health in developing countries. High income and knowledge of medicinal plants are important determinants of use of traditional medicine. This challenges the common assumption that poor and marginalized people are most dependent on traditional medicine due to its availability [3].

Ethiopia is believed to be home for about 6,500 species of higher

plants of which 12% are endemic [4] making the country among the most diverse floristic regions of the world [5]. However, conservation of these plants and knowledge of their use have generally been neglected since it was considered irrelevant in earlier times [6]. Moreover, the attitude of the society towards the traditional medicine healers was negative and this forced healers to keep the knowledge secret [7].

But currently different studies have been conducted on Ethno-botany of medicinal plants used to treat various human diseases in different parts of Ethiopia; Traditional medicine is commonly assumed to be a crucial health care option for poor households in the country. However, there has not been any review done that comprehensively expresses the Ethno-botany of plants used to treat maternal and child health illnesses. Therefore, there is a need to assess the overall

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traditional preparation techniques and types of plants used in the country scientifically. So this review was aimed to provide an overview of Ethno-botany of medicinal plants used to treat maternal and childhood illnesses among the diversified population in Ethiopia. It gives a comprehensive information on the scientific name of plants, method of preparation, route of administration, plant part used and the habit of the plant used and the study will be an input for further study/call attention of other investigators on traditional medicine on the treatment of maternal and child diseases and increase quality of care on maternal and child health (MCH) service delivery system in Ethiopia.

Materials and Methods

Search strategy

Databases (Pub Med, Google Scholar, Research Gate, and HINARY) were searched for published studies done on Ethno-botany of medicinal plants in Ethiopia. Some studies were also identified through a manual

Google search. No restriction was applied on the year of publication, methodology, or study subjects. Primary search terms were “maternal and child health review”, “Ethiopia”, “medicinal plants”, and “Ethno botany”.

Inclusion/exclusion criterion

Studies which do not contain full information about Ethno botany (method of preparation, growth form, plant part used, route of administration), surveys which did not address maternal and child health illness as a disease treated traditionally by practitioners were excluded. Plants which are out of flora list of Ethiopia were also excluded from this review.

Data abstraction

The authors screened the articles based on the inclusion/exclusion criteria. The details of medicinal plants were extracted from each study

No	Names			Habit	Part(s) used	Specific use	Method(s) of preparation and Dosage	ROA	Reference
	Scientific	Family	Local						
1.	<i>Justicia schimperiana</i> (Hochst.ex Nees) T. Anders	Acanthaceae	n	H	R	Retained placenta	n	oral	[4]
2.	<i>Acacia nilotica</i> (L.)	Fabaceae	N	HA	L,R	Retained placenta	n	Oral,Nasal	[1]
3.	<i>Senna italica</i> Mill	Fabaceae	n	T	S	Retained placenta	n	Oral	[1]
4.	<i>Ziziphus mauritiana</i> Lam	Rhamnaceae	n	CA	L	Retained placenta	n	Oral	[1]
5.	<i>Ziziphus spina-christi</i> (L.) Desf	Rhamnaceae	n	H	L	Retained placenta	n	Oral	[1]
6.	<i>Premna oligotricha</i> Baker	Verbenaceae	n	n	L	Retained placenta	n	Oral	[1]
7.	<i>Hippocartea africana</i> (Wild.) Loes	n	Aadeeguratii	n	Leaf	To remove the blood after birth	Crushing	Oral	[1]
8.	<i>Sida ovata</i> Forssk	n	Baleenbulaa	H	Root	To prevent Abortion	crushing & Powdering	Oral and dermal	[1]
9.	<i>Zehneria scabra</i> [L.f.] Sond.	Cucurbitaceae	Aregresa (Haregresa)	N	Leaf	To induce labour	Boiled with water and steam inhaled Leaf with awazie half-filled teaspoonful once	Inhalation	[5]
10.	<i>Cynoglossum coeruleum</i> Hochst. ex A. DC.	Boraginaceae	Mexene Tiro	HA	Leaf	Kwashiorkor	Concocted with verbascum sinaiticum	Orally	[6]
11.	<i>Verbascum sinaiticum</i> Benth.	Scrophulariaceae	Muka Ioni, Gura Haree	Sh		Kwashiorkor Ap	Concocted with Cynoglossum coeruleum	Orally	[6]
12.	<i>Ziziphus spina-christi</i> (L.) Desf.	Rhamniaceae	Kurkura	T	Leaf	Hemorrhage	Crushed and bath the anal opening	Anal	[6]
13.	<i>Pousolzia parasitica</i> (Forssk) scheweinf	Urticaceae	Dirba	HA	Root, leaf	Infertility in female	Concoction taken to increase chance of fertility	Orally	[6]
14.	<i>Lagenaria siceraria</i> (Molinia) Standl.	Curcubitaceae	Buqee	CA	Leaf	Obstructed labour	Crushed and filtrate		[6]
15.	<i>Capsicum annuum</i> L.	Solanaceae	Berbere	Shrub	Leaf	Infertility	small quantities of fruit chewed and swallowed once (small fruit once)	Orally	[7]
16.	<i>Anoigissus leiocarpa</i> (A. DC.) Guill. & Perr.	(Combretaceae)	Sigga	Hu	Stem bark	Retained placenta	Stem bark is crushed, diluted in water and one cup is taken(diluting)	Orally	[9]
17.	<i>Cissampelos mucronata</i> A Rich.	Menispermaceae	Siyapewa	Hu	Root	Children (Milk feeding) diarrhea	Root is crushed, squeezed with water and one cup of watery juice is given (crushing and squeezing) One cup	Orally	[9]
18.	<i>Combretum collinum</i> Fresen.	Combretaceae	Abasteya (hafa)	HA	Fruit	Obstructed labour	Fruits are crushed, diluted in water and 1/2 cup is taken (diluting)	Orally	[8]

19.	<i>Combretum collinum Fresen.</i>	Combretaceae	Abasteya (hafa)	HA	Root	Retained placenta	Root is crushed, squeezed with water and one cup is taken (crushing & squeezing)	Orally	[9]
20.	<i>Cordia africana Lam.</i>	Boraginaceae	Wanza	HA/goat	Root bark	Children (milk feeding) diarrhea	Root bark is crushed, squeezed with water and given to drink (crushing and squeezing)	Orally	[9]
21.	<i>Ficus sycomorus L</i>	Moraceae	Fuga	HA	Root	Children (milk feeding) diarrhea	Root is crushed, soaked in water and one cup is taken	Orally	[9]
22.	<i>Grewa mollis A.Juss.</i>	Tiliaceae	Gediya	HA	Stem bark	Retained placenta	Stem bark is soaked in water and one cup is taken (maceration)	Orally	[9]
23.	<i>Kigelia africana (Lam.) Benth.</i>	Bignoneaceae	Endehua	HA	Fruit	Infertility in female	Fruits are crushed, soaked in water and (maceration) one bottle taken in morning	Orally	[9]
24.	<i>Lonchocarpus laxiflopus Guill. & Perr.</i>	Fabaceae	Beewa	HA	Stem bark	Infertility in female	Stem bark is crushed, soaked in water, filtering one cup is drink	Orally	[9]
25.	<i>Sorghum bicolor (L.) Moench</i>	Poaceae	Awut	HA	Seed	Retained placenta	Malt seeds are crushed with table salt, diluted one bottle is taken	Orally	[9]
26.	<i>Trichodesma zeylanicum (Burm.f.) R.Br.,</i>	Boraginaceae	Jgewusha	HA	Root	Infertility in female	Roots are crushed with garlic, boiled and (decoction) one cup is taken	Orally	[9]
27.	<i>Ruta chalepesis L.</i>	polygonaceae	Tult		Root	Umbilical cord laboring	Tying fresh root around west		[36]
28.	<i>Vernonia adoensis Sch.Bep. ex Walp.</i>	Asteraceae	Etse Mossa		Root	Menstrual disorder	Root are chewed with honey	Orally	[36]
29.	<i>Ajuga integrifolia Buch.-Ham. Ex D. Don</i>	Lamia ceae	Orsha	Herb	leaf	Retained placenta	n	Orally	[36]
30.	<i>Bidens pilosa L.</i>	Asteraceae	GURDAY	Herb	Leaf/seed	Retained placenta	n	Orally	[8]
31.	<i>Rumex nepalensis spring</i>	polygonaceae	Germach	Herb	Root	Child diarrhea	n	Orally	[8]
32.	<i>Colocasia esculenta (L.) Schott</i>	Araceae	Haleko		Root	To detach retained fetal membrane	Root dried, ground and mixed with powdered root of Momordica spp. and all soaked in warm water and One cupful	Orally	[8]
33.	<i>Solanum acuminatum Ruiz & Pav</i>	Solanaceae	Raki	Sh	Root	To detach placenta	Root chopped, mixed with cold water One cupful	Orally	[8]
34.	<i>Ximenia americana L.</i>	Olacaceae	Hudhaa	Sh		Menstruation disorder	Crushed and mixed with water one cup of tea taken for 1–5 days until the blood stop	Orally	[37]
35.	<i>Ximenia americana L.</i>	Olacaceae	Hudhaa	Sh		Contraceptive	Exudates drunk for five days 2cup per a day	Orally	[37]
36.	<i>Achyranthes aspera L.</i>	Amaranthaceae	Telenj/qaytele	n		Treatment of RH incompatibility	The herbs are dried, chopped together and put in a cotton pouch to be hung around the pregnant woman's neck in the seventh month. When the baby is born it is taken off the mother and put on the baby thought.	Dermal	[38]
37.	<i>Datura stramonium L.</i>	Solanaceae	mestenager	Herb	Seed	Abortion	Half tea spoon of seeds are ground into powder, mixed with water half of cup is drink once	Oral	[39]
38.	<i>Gomphocarpus fruticosus (L.) Aiton f.</i>	Asclepiadaceae	Demaito bereka	Herb	Root	Abortion	Chew the root and taken stat	Oral	[39]
39.	<i>Linum usitatissimum L.</i>	Linaceae	Entatie	Shrub	Seed	Retained placenta	Seeds roasted on iron sheet and grinding into powder, then cooked in t-he presence of honey taken for a month before delivery	Oral	[39]

40.	<i>Rumex nervosus</i> Vahl.	Polygonaceae	Huhot	Shrub	Leaf	Breast Cancer	Leaves are crushed and paste applied on affected area	Dermal	[39]
41.	<i>Solanum nigrum</i> L.	Solanaceae	Alalemo Wezero	Shrub	Leaf	PPH	Leaves are crushed and inserted into vagina	Dermal	[39]
42.	<i>Cucumis ficifolius</i> A. Rich.	Cucurbitaceae	Ramboramb, lomin bita	Herb	Root	Abdominal cramp after delivery	Roots are chewed	Oral	[39]
43.	<i>Aloe trichosantha</i> A. Berger	Aloaceae	N	N	Leaf, stem	Breast infection	Oral, nasal, body wash	Oral, dermal	[40]
44.	<i>Aloe trichosantha</i> A. Berger	Aloaceae	N	N	Leaf, root	Retained placenta	N	Oral	[40]
45.	<i>Aerva javanica</i> (Burm.f.) Schultes	Amaranthaceae	N	n	Leaf	Breast infection	Nasal ,body wash	Nasal, dermal	[43]
46.	<i>Celosia polystachia</i> (Forssk.) C.C.	Amaranthaceae	N	n	Leaf	Breast cancer	n	Oral,nasal, topical	[40]
47.	<i>Calotropis procera</i> (Ait.) Ait.f.	Asclepiadaceae	N	n	Leaf	Breast swelling	n	Nasal,topical	[40]
48.	<i>Balanites aegyptiaca</i> (van Tieghem) Blatter	Balanitaceae	N	n	Root	Infant sickness	n	Oral	[40]
49.	<i>Balanites aegyptiaca</i> (van Tieghem) Blatter	Balanitaceae	N	n	Leaf	Breast cancer	n	Oral ,nasal, body wash	[40]
50.	<i>Boscia coriacea</i> Pax.	Capparidaceae	N	_ n	Root	Retained pl	n	Tying	[40]
51.	<i>Cadaba farinosa</i> Forssk.	Capparidaceae		n	Leaf	Breast cancer	not mentioned	Oral	[40]
52.	<i>Senna accidentalis</i> (L)link	Fabaceae	Assenmeka	H	Root	Excessive menstruation	Fresh root powder with butter is taken a drink before breakfast for three days	Oral	[41]
53.	<i>Sida schimperiana</i> Hochst. ex A.Rich.	Malvaceae	Tifrarria	Shrub	Root	RH disease	Crush ,filter & drink a cup of fluid	Oral	[10]
54.	<i>Phytolacca dodencandra</i> L.Herit.	Phytolaccaceae	Indod	N	Root	Abortion	Crush the root and mix with water and drink	Oral	[42]
55.	<i>Pentaslanceolata</i> (Forssk.) Defflers,	Rubiaceae	jamto,dori-charo,jamto	Herb	Root	Retained placenta	not mentioned	Oral	[11]
56.	<i>Amaranthus caudatus</i>	Combretaceae	Akuba shukfa (Ku), Eshok mergem	T	leaf	Prolonged labour	Pounding ,homogenize the powder with water and wash the vagina thoroughly or apply a half cup of solution nasaly	Vagina ,nasal	[43]
57.	<i>Acalypha fruticosa</i>	Euphorbiaceae	Timigidda (Ku)	T	Leaf	Excess menstruation	Add the leaf into fire and expose the vagina to smoke	Vagina	[43]
58.	<i>Ageratum conyzoides</i>	Asteraceae	Gugisha (Ku)	H	Root	Reduce pain during labour		Vagina	[43]
59.	<i>Entada abyssinica</i>	Fabaceae	Sesenaffa (ku)	T	Root	Treat children diarrhea	Pounding the root and drink a bottle cup of the juice in the morning	Oral	[43]
60.	<i>Nigella sativa</i>	Ranunculaceae	Tselim Aweseda (Tig)	H	Stem	Children abdominal pain	Adding the seed into boiled water, add small amount of sugar to the decoction, cool and drink a tea spoon of the solution during pain	Oral	[43]
61.	<i>Pentatropis nivalis</i>	Asclepiadaceae	Amemmeka(ku)	H	Root	Rx loss of appetite in children	Pounding the root drink a tea spoon of the juice in the morning	Oral	[43]
62.	<i>Pterolobium stellatum</i>	Fabaceae	kuka (Ku)	Sh	Root	Retained placenta	Pounding the root, mix with water and drink a bottle cup of it in the morning.	Oral	[43]
63.	<i>Rhamnus prinoides</i>	Rhamnaceae	Gesho (Tig)	T	Leaf	Fever in children	Adding the leaf in to water, stay for a while and give the drop of this Concoction to the child	Oral	[43]
64.	<i>Ipomoea obscura</i> (L.) Ker-Gawl	Convolvulaceae	N	Herb	Leaf	Malnutrition in Child &Diarrhea	N	Oral	[44]
65.	<i>Indigofera zavattarii</i> Chiov.,	Fabaceae	Kechine	T	Root	Rh factor		Oral	[45]
66.	<i>Phytolacca dodecandra</i>	Phytolaccaceae	n	CA	Root	Abortion	Root of Indod and seed of Gomen	Oral	[46]

67.	<i>Cynoglossum lanceolatum</i> Forssk.	Boraginaceae	N	Herb	Root	Mastitis	Chopped root or crushed and dried root mixed with butter	Topical	[47]
68.	<i>Solanum anguivi</i> Lam.	Solanaceae	n	Shrub		Mastitis	Dried and crushed leaves mixed with butter	Topical	[47]
69.	<i>Periploca linearifolia</i> Quart.Dill. & A. Rich	Asclepiadaceae	n	Climber	Leaf	Mastitis	Crushed leaves mixed with water and then applied	Topical	[47]
70.	<i>Dodonaea angustifolia</i> L. f.	Sapindaceae	Eticha	Shrub	Leaf	Retained placenta &	Chopped leaves mixed with water and filtered	Oral	[47]
71.	<i>Urera Philodendron</i> (A. Rich.) Wedd.	Urticaceae	n	Shrub	Leaf	Retained placenta	Chopped Leaves and mixed with water	Oral	[47]
72.	<i>Cucumis ficifolius</i>	Cucurbitaceae	Yemidir Embuay	Climber	Root	Infertility in women	Juice	Oral	[48]
73.	<i>Achyranthes aspera</i>	Amaranthaceae	Telenji	Herb	Stem	Retained placenta	Juice with water	Oral	[48]
74.	<i>Withania somnifera</i>	n	n	n	Root	Refusing to give milk the child by mother	Washing the breast with this dilute	Dermal	[49]
75.	<i>Phytokacca Dodecandra</i>	n	n	n	Fruit, stem, flower	Abortion, STDs	n	Oral	[50]
76.	<i>Ureta hypselodendron</i>	Urticaceae	Hajijaa	Li	Leaf	Retained placenta	Chopping the leaves, making solution, adding magado salt and giving one liter orally at once	Oral	[12]
77.	<i>Aloe Vera</i> L.	Aloaceae	Ret	H	Root	Rh disease	Crashed and mixed with butter, then eating in three month interval during pregnancy	Oral	[51]
78.	<i>Calpurnia aurea</i> (Aiton) Benth.	Fabaceae	Cheketa	S	Leaf	Mastitis	n		[52]
79.	<i>Ekebergia capensis</i> Sparrm.	Meliaceae	Olonchoo	T	B	Weight loss in children	n		[52]
80.	<i>Olea europaea</i> subsp. <i>cuspidata</i> (Wall. ex G.Don.) Cif.	Oleaceae	Ejersu	T	B	Kwashiorkor	n		[52]
81.	<i>Artemisia absinthium</i>	Asteraceae	Naatiruwa	Herb	All parts	Retained placenta	crushed and mixed/ concoted with butter and taken	Oral	[53]
82.	<i>Brucea antidysentrica</i> J.F.mill	Solanaceae	Shureshuupiya	Tree	Root	Parasitic disease in children	crushed and taken	Oral	[53]
83.	<i>Stephenia abyssinica</i>	Menispermaceae	Bazo tura/Ado tura	Climber	Root	Stomach ache in children	crushed, decocted and mixed with fresh	Oral	[53]
84.	<i>Impatiens tinctoria</i>	n	Ensofila	n	Root	Abortion	The roots are chopped, crushed, mixed with water and drunk once or twice. For arthritis (Rh) the roots are chopped, boiled, crushed and drunk.	Oral	[54]
85.	<i>Achyranthesaspera</i>	n	N	H	Root	Hemorrhage at birth	Pounded and squeezed leaf is filtered with water to be drunk in a half size of water cup	Oral	[55]
86.	<i>Asparagusafricanus</i>	n	N	Hi	Root	Rh disease	It is pounded with the root of other species likeA.pulcherrima	Oral	[55]
87.	<i>Cucumisficifolia</i>	n	N	H	Root	Birth control	Is chewed and absorbed with ripe fruit of <i>Solanumanguivi</i> before sexual intercourse at the end of menstrual –cycle	Oral	[55]
88.	<i>Jasminumgrandiflorum</i>	n	N	H	Leaf	Hemorrhage at birth	It is crushed with the leaf of <i>Solanumin canumandC.pepoand</i> applied as cream on the vagina	Vaginal	[55]
89.	<i>Blepharis edulis</i> (Forssk.) Pers.	Acanthaceae	Harar	H	Leaf	Tiredness during labour	Hanging on the ceiling of the house to avoid exhaustion during labour	Hanging on roof	[56]
90.	<i>Leucas neulizeana</i> COll'bon	Lamiaceae	Hebrud	H	Leaf	Infertility in women	fresh leaves crushed and squeezed with water and orally taken	Oral	[56]

91.	<i>Barleria eranthemoides</i> R. Br. ex C.B. Clarke	Acanthaceae	N	H	Root	Women infertility and Rh disease	Smoke bath smoke	Smoke bath	[57]
92.	(Hochst.)A.Rich	Malvaceae	N	Ha	Leaf	Rh disease	Decoction taken orally	Oral	[6]
93.	<i>Cadabarotundifolia</i> Forssk.C	apparidaceae	N	Sh	B ,L	Extended flow of menstruation/ Menometrorrhagia	Concocted together with Withania somnifera and a cup of filtrate is taken	oral	[6]
94.	<i>Ximenia americana</i> L.	Olacaceae	Hudhaa	Shrub	Leaf	Menstruation problem	not mentioned	Oral	[58]
95.	<i>Clerodendrum myricoides</i> (Hochst.) Vatke	Lamiaceae	Tulange	Shrub		Mastitis	Chopped root is mixed water	Topical Oral	[59]
96.	<i>Cucumis ficifolius</i> A.Rich	cucurbitaceae	Yemidr Embuay	n	Root	Retained placenta	Crushed fresh root mixed with water and given	Oral	[35]
97.	<i>Rumex nervosus</i> Vohal	Polygonaceae	Tult	n	Root	Retained placenta	Fresh root is inserted vaginally for few minutes	Vaginal	[35]
98.	<i>Rumex nervosus</i> Vohal	Polygonaceae	Tult	n	Root	Retained placenta	Fresh root is inserted vaginally for few minutes	Vaginal	[35]
99.	<i>Combretum adenogonium</i> Steud. ex A. Rich. / C.	Combretaceae	Weyeba	n	Root stem or stem bark	Disease of the uterus	Inhale the smoke	Oral	[13]
100.	<i>Combretum adenogonium</i>	Combretaceae	Weyeba	n		Uterus disease (mahtsen)	Fumigate and inhale the smoke	Oral	[39]
101.	<i>Cucumis ficifolius</i> A. Rich.	Cucurbitaceae	Ramboramb, Iomin bita	Herb	Root	Treat Stomach ache after delivery	Roots are chewed	Oral	[59]
102.	<i>Solanum nigrum</i> L.	Solanaceae	Alalemo Wezero	Shrub	Leaf	Treat bleeding after delivery (PPH)	Leaves are crushed and inserted into vagina	dermal	[60]
103.	<i>Rumex nervosus</i> Vahl.	Polygonaceae	Huhot	Shrub	Leaf	Breast cancer	Leaves are crushed and paste applied on affected area	Dermal	[61]

Sh-shrub, T-tree, CA-climber/annual, CP-climber/perennial, HA-herb/annual, HP-herb/perennial, CH-creeper herb, n=not mentioned, Hb=Habit, Pu=Parts used, Cp=Condition of preparation, Ra=Route of application, T=Tree, H=Herb, Hcl=Herbaceous climber, Li=Liana, Hu=Human, F=Fresh, D=Dried, F/D=Fresh/Dried, O=Oral, Dm=Dermal, Na=Nasal, Op=Optical, L=Leaf, R=Root, St=Stem, Ba=Bark, Fl=Flower, Fr=Fruit, S=Stem, Bu=Bulb, Rh=Rhizome, La=Latex, HI=both (Human/Livestock)

Table 1: List of traditional medicinal plant species used to treat maternal and child health illnesses in Ethiopia.

using an abstraction forms: Scientific, Family and Local name, habit of plant, plant part used, methods of preparation, specific use and route of administration (Table 1).

Results

Literature search results

The search of the Pub Med, Google Scholar, Research Gate, and HINARY databases and Google provided a total of 350 studies. After adjustment for duplicates, 105 remained. Of these, 40 studies were discarded, since after review of their titles and abstracts, they did not meet the criteria. The full texts of the 66 studies were reviewed in detail. Finally, 38 studies were included in the review (Figure 1).

Study characteristics

Methodological validity of all the reviewed articles were checked prior to inclusion in the review by undertaking critical appraisal using a standardized instrument adapted from [8]. These studies differed significantly in the number of plants identified. From these 38 articles, almost all were conducted to assess the Ethno-botany of medicinal plants used to treat human diseases. All the studies were conducted in different parts of Ethiopia and are qualitative and mixed type. The studies used purposive sampling to select study articles. The detailed description of each plants collected from different studies is given below (Table 1).

Method of preparation and route of administration

Traditional medicinal practioners in Ethiopia apply different techniques of preparation like drying, crushing, concoction, decoction and eating with some other plants or animal products (Table 1). They

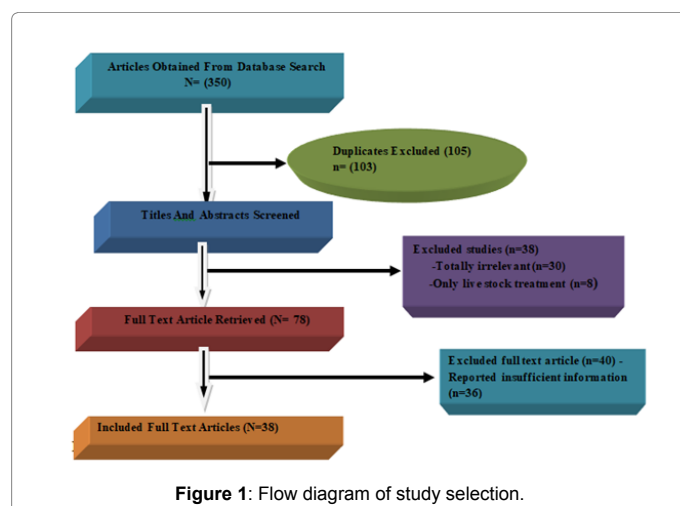


Figure 1: Flow diagram of study selection.

use simple methods and equipments during their remedy preparation. Of the routes commonly used to administer remedies in the treatment of maternal and child health illnesses, oral route was the common route which consists 71 (73.13%) followed by dermal 6 (6.18%) way of administration. About 6% of the medicinal plants among 103 reviewed from published articles, the rout of administration is not specified (Figure 2).

Maternal and child health illnesses treated by traditional medicinal plants

In this study, the investigators were intended to deal both maternal and child health disease treatments of traditional medicinal plants.

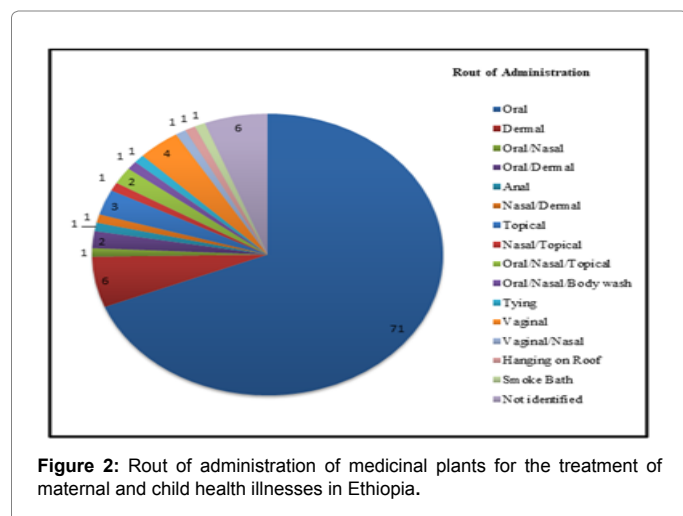


Figure 2: Rout of administration of medicinal plants for the treatment of maternal and child health illnesses in Ethiopia.

Based on the information reviewed on published research results, medicinal plants which were abundant for the treatment of retained placenta 24 (24.72%) species followed by treatment of abortion, infertility in women, Menstrual disorder and treatment of Rh disease which comprise the same 6(6.18%) plant species (Table 2).

Habits of medicinal plants which treat maternal and child illness

In this review paper shows that the most widely used Medicinal plants habit in the reviewed articles the collected plants found to be herbs 25 (25.75%) followed by shrubs 19 (19.57%) (Figure 3).

Plant parts used in the reviewed articles

Every part of different plant species are used against a variety of diseases. In this review the commonly used plant parts were found to be root 40 (41.2%) followed by leaves 32 (32.96%), and stem bark 4 (4.12%) respectively. Among 103 reviewed medicinal plants about 7 (7.21%) were not identified their parts used for the case mentioned. In some cases, more than one organ of the same plant species, particularly a combination of parts, is used in the preparation of different therapies.

Diversity of medicinal plants in terms of families

In this paper review different families of medicinal plants were collected from published research articles. Among them Fabaceae is the most dominant family that holds 8 (7.77%) plant species followed by Solanaceae having 6 (5.82%) species and Cucurbitaceae having 6 (5.82%) species. From the documented medicinal plants 7 (6.79%) plant species at which their family was not clearly stated in the reviewed papers (Table 3).

Based on this systematic review, there is plant species used for food and drink purpose in addition to traditional treatment of maternal and child illnesses. Solanaceae, Berbere (local name) [7], Boraginaceae Wanza (local name) [9], Phytolaccaceae Indod (local name) [10] Rhamnaceae, Gesho (local name) [11] Aloaceae, Ret (local name) [12].

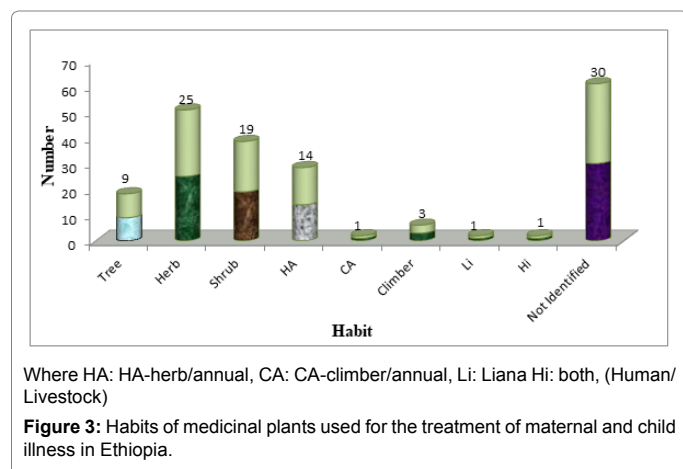
Discussion

This review indicated that about 103 plant species find applications by the traditional medicinal practitioners of Ethiopia to treat maternal and child health illnesses. Of the plants used traditionally, none of them were proven scientifically which shows the less attention given to the problem and the traditional practitioners in general. According

No	Disease Treated	Number	%
1.	Retained Placenta	24	24.72
2.	Prevent Abortion	6	6.18
3.	To induce Labour	1	1.03
4.	To remove blood after birth	1	1.03
5.	Infertility in Women	6	6.18
6.	Child milk feed diarrhea	3	3.09
7.	Obscured labour	1	1.03
8.	Umbilical cord	1	1.03
9.	Menstrual Disorder	6	6.18
10.	Contraceptive	2	2.06
11.	To treat Rh incompatibility	6	6.18
12.	To detach placental Fetal membrane	1	1.03
13.	Breast cancer	5	5.15
14.	Abdominal crump after delivery	1	1.03
15.	Breast infection	2	2.06
16.	Breast swelling	1	1.03
17.	Infant sickness	1	1.03
18.	Prolonged labour	1	1.03
19.	Reduced contraction during labour	1	1.03
20.	Malnutrition and Diarrhea in children	1	1.03
21.	Mastitis	4	4.12
22.	Refusing lactation by the mother	1	1.03
23.	Fever in child	1	1.03
24.	Abortion/STDS	1	1.03
25.	Weight loss by child	1	1.03
26.	Parasitic disease in child	1	1.03
27.	Stomachache in child	1	1.03
28.	Hemorrhage at birth	3	3.09
29.	Tiredness during labour	1	1.03
30.	Infertility/Rh disease	6	6.18
31.	Disease of the uterus	1	1.03
32.	PPH	1	1.03
33.	Kwashiorkor	3	3.09
34.	Total	103	100

Table 2: Maternal and child health illnesses diseases treated by traditional medicinal plants in Ethiopia.

to this review there is high species diversity of medicinal plants used which may be due to the climate variation that exists with the different parts of Ethiopia. In this study based on diversity of medicinal plants, Fabaceae is the most dominant family that holds 8 (8.24%) plant species followed by Solanaceae having 6 (6.18%). Similarly, a study done in Nigeria 22.5% [13], Afar [4], Harare regional State [14], Fiche Town [15], southern region, Konta [15], four districts of Jimma Zone 625% [16], Dire Dawa (8.5%) [17], Benishangul Gumuz (8.3%) [9] and Chifra District, Afar Region 15% [18], evidenced this.



In this review, the commonly used plant part was found to be root 41.2%. Similarly the study conducted in Tanzania [19], Bale zone (35.71%) [20], South Omo (40%) [8], Benishangul Gumuz (39%) [9], Shewa Zone, 'Boo sat' sub-district 38% (48) and Chilga District 89% [12] dominant plant part used by traditional healers. On the other hand leaf is the most plant part used by traditional healers in the studies conducted in 57.2% Harari regional state (48%) [4,14] Afar 52% (14), Fiche Town (34.68%) [21], Tehuledere district, South Wollo (50%) [22], in Dire Dawa (29.4 %) [19], Gamo Gofa (44%) [23], Mirab-Badwacho district (41%) [24], Nekemt town 35% [25] and Alma-Ata, Southern Tigray 52% [26]. The reason for this difference is might be due to knowledge (awareness) of traditional healers, geographical difference, and availability of plant parts in the area.

Based on this study, the most widely used medicinal plants growth forms harvested in the reviewed articles found to be herbs (26%). This result is similar with the study conducted in Uganda 51.9% [27], Nigeria (68.5%) [16], Uganda 80% (55), Delanta 52.6% [28], Guzman District 51% [29], Hadiya zone 52% [30], Jimma 84% and Tehuledere district, South Wollo (48%) [31] herbs were dominantly used. Whereas shrub had highest dominancy in studies conducted Shewa Zone, 'Boo sat' sub-district 46% [19], Abaya district, Borena Zone 48.8% [22] and Dasa forest, Tigray 48.8% [32] and study in South Omo trees 29% [8] highly used. The reason for this difference is it might be due to the plant species exhibit high level of abundance and easy to access them. This review revealed that, most commonly route of administration is internal particularly oral that accounted for 71%. This was similar with the studies conducted in Nigeria (84.6) [33] Mexico 26% [34] and Uganda 100% [35].

Conclusions and Recommendations

Conclusions

The plant parts used for treatment of maternal health and child illness in this review was found to be root followed by leaves and it was unlike with other ethno-botanical studies which were leaf was the dominant plant part used and the common rout of administration was through orals. Most of the medicinal plants in this review were herb. The most common maternal illness treated by medicinal plant was retained placenta and whereas in children milk feeding diarrhoea and Kwashiorkor.

Recommendations

From this review the authors suggested to carry out similar studies in areas not previously covered in order to get a full picture of

No	Family name	Number	%
1.	Acanthaceae	1	0.97
2.	Fabaceae	8	7.77
3.	Rhamnaceae	4	3.88
4.	Verbenaceae	1	0.97
5.	Malvaceae	3	2.97
6.	Cucurbitaceae	6	5.82
7.	Boraginaceae	3	2.91
8.	Scrophulariaceae	1	0.97
9.	Urticaceae	1	0.97
10.	Solanaceae	6	5.82
11.	Combirtaceae	4	3.88
12.	Menispermaceae	2	1.94
13.	Moraceae	1	0.97
14.	Tiliaceae	1	0.97
15.	Bignoniaceae	1	0.97
16.	Poaceae	1	0.97
17.	Polygonaceae	4	3.88
18.	Astraceae	5	4.85
19.	Lamiaceae	3	2.91
20.	Araceae	1	0.97
21.	Olacaceae	3	2.91
22.	Amarantaceae	4	3.88
23.	Asclpiadaceae	4	3.88
24.	Lanaceae	1	0.97
25.	Aloaceae	1	0.97
26.	Blanitaceae	2	1.94
27.	Capparidaceae	2	1.94
28.	Phytolaceae	2	1.94
29.	Rubiaceae	1	0.97
30.	Euphorbiaceae	1	0.97
31.	Ranunculaceae	1	0.97
32.	Convolvulaceae	1	0.97
33.	Spindaceae	1	0.97
34.	Urticaceae	2	1.94
35.	Meliaceae	1	0.97
36.	Apparidaceae	1	0.97
37.	Olacaceae	1	0.97
38.	Not identified	7	6.79

Table 3: Diversity of medicinal plants in terms of families used for the treatment of maternal and child health diseases in Ethiopia.

the country's medicinal plants potential for a particular disease like maternal illness. There is a need to conduct clinical trials to support traditional claims and to analyse cellular and molecular mechanisms involved.

There should be photochemical analysis in order to determine the bioactive component which could heal the disease.

The combination effect of traditional medicinal plants (pooled effect of medicinal plants) on maternity health and other health problems should be studied. In this review, some papers were incomplete so for those authors it is better to incorporate some family names, local names, etc. for better work.

Declarations

Ethical approval and consent to participate

Not applicable

Consent for publication

Not applicable

Availability of data and material

No additional data are required; all information is clearly stated in the main manuscript.

Competing interests

The authors have declared that there is no competing interest.

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