



TÉCNICAS INDÍGENAS DE PREVENCIÓN DE LA MORBILIDAD INFANTIL EN EL ÁREA METROPOLITANA DE IBADAN, NIGERIA

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ABSTRACT

The high cost of allopathic medical health care and the expensive pharmaceutical products have underlined the importance of African Traditional Medicine (ATM), the use of which is limited by its oral dissemination tradition. Its documentation as obtainable in other climes will be a great stride at sustainably curbing illnesses in the continent. This depends on collation of original data from the traditional custodians of such knowledge. In Nigeria, communicable diseases, immunisable childhood infections and malnutrition have been submitted as the main sources of child mortality. This paper, therefore, reports the traditional means of curbing infant morbidity by traditional infant healers in Ibadan metropolis, Nigeria. The study was conducted in Bode market, Ibadan; the herbal market headquarters in Nigeria using primary and secondary information sources. Snowball technique was used in the selection of the twenty (20) infant healers (*Elewe omo/Aremo*) for sampling. The test instrument was a set of open-ended questionnaires divided into three parts. Section A captured information on Respondents' bio-data, section B focused on other background information while section C probed into plants and parts used in the treatment of infant morbidity as well as dosage and usage of traditional infant healing recipes. Data garnered were analysed using descriptive statistics (frequency, range, mean, percentage and histogram). Eighty-nine local plants, identified with their botanical names and families were documented alongside their medicinal use(s) in the treatment of infant morbidity. Information on some recipes, dosages and application period was also documented with their preparation as well as parts of plant used. Although, there will still be the need for researchers to explore other vital information for scientific validation of the infant healers' claims, the study lays a sustainable foundation towards documentation of indigenous techniques for infant morbidity prevention in the study area.

Keywords: Infant morbidity, Phytomedicine, illness (*aisan*), Traditional medicine, Sustainable health



TÉCNICAS INDÍGENAS DE PREVENÇÃO DA MORBIDADE INFANTIL EM IBADAN METROPOLITANO, NIGÉRIA

RESUMO

O alto custo dos cuidados de saúde médicos alopáticos e os caros produtos farmacêuticos sublinharam a importância da Medicina Tradicional Africana (ATM), cujo uso é limitado pela sua tradição de disseminação oral. Sua documentação obtida em outros climas será um grande passo na contenção sustentável de doenças no continente. Isso depende da coleta de dados originais dos guardiões tradicionais de tal conhecimento. Na Nigéria, doenças transmissíveis, infecções infantis imunizáveis e desnutrição foram apresentadas como as principais fontes de mortalidade infantil. Este artigo, portanto, relata os meios tradicionais de reduzir a morbidade infantil por curandeiros infantis tradicionais na metrópole de Ibadan, Nigéria. O estudo foi realizado no mercado Bode, Ibadan; a sede do mercado de ervas na Nigéria usando fontes de informação primárias e secundárias. A técnica de bola de neve foi usada na seleção dos vinte (20) curandeiros infantis (Elewe omo/Aremo) para amostragem. O instrumento de teste foi um conjunto de questionários abertos divididos em três partes. A seção A captou informações sobre os dados biográficos dos entrevistados, a seção B concentrou-se em outras informações básicas, enquanto a seção C investigou plantas e partes usadas no tratamento de morbidade infantil, bem como dosagem e uso de receitas tradicionais de cura infantil. Os dados coletados foram analisados por meio de estatística descritiva (frequência, amplitude, média, porcentagem e histograma). Oitenta e nove plantas locais, identificadas com seus nomes botânicos e famílias, foram documentadas juntamente com seu(s) uso(s) medicinal(is) no tratamento da morbidade infantil. Informações sobre algumas receitas, dosagens e período de aplicação também foram documentadas com sua preparação, bem como partes da planta utilizadas. Embora ainda haja a necessidade de os pesquisadores explorarem outras informações vitais para a validação científica das alegações dos curandeiros infantis, o estudo estabelece uma base sustentável para a documentação de técnicas indígenas para prevenção de morbidade infantil na área de estudo.

Palavras-chave: Morbidade infantil, Fitomedicina, doença (aisan), Medicina tradicional, Saúde sustentável.



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RESUMEN

El alto costo de la atención médica alopática y los costosos productos farmacéuticos han subrayado la importancia de la Medicina Tradicional Africana (ATM), cuyo uso está limitado por su tradición de difusión oral. Su documentación como disponible en otros climas será un gran paso para frenar de manera sostenible las enfermedades en el continente. Esto depende de la recopilación de datos originales de los custodios tradicionales de dicho conocimiento. En Nigeria, las enfermedades transmisibles, las infecciones infantiles vacunables y la desnutrición se han presentado como las principales fuentes de mortalidad infantil. Este documento, por lo tanto, informa sobre los medios tradicionales para frenar la morbilidad infantil por parte de los curanderos infantiles tradicionales en la metrópolis de Ibadan, Nigeria. El estudio se realizó en el mercado de Bode, Ibadan; la sede del mercado de hierbas en Nigeria utilizando fuentes de información primarias y secundarias. Se utilizó la técnica de bola de nieve en la selección de los veinte (20) curanderos infantiles (Elewe omo/Aremo) para el muestreo. El instrumento de prueba fue un conjunto de cuestionarios abiertos divididos en tres partes. La sección A capturó información sobre los datos biográficos de los encuestados, la sección B se centró en otra información de antecedentes, mientras que la sección C investigó las plantas y las partes utilizadas en el tratamiento de la morbilidad infantil, así como la dosis y el uso de las recetas tradicionales de curación infantil. Los datos recogidos se analizaron mediante estadística descriptiva (frecuencia, rango, media, porcentaje e histograma). Ochenta y nueve plantas locales, identificadas con sus nombres botánicos y familias, fueron documentadas junto con su(s) uso(s) medicinal(es) en el tratamiento de la morbilidad infantil. También se documentó información sobre algunas recetas, dosis y período de aplicación con su preparación, así como las partes de la planta utilizadas. Aunque todavía será necesario que los investigadores exploren otra información vital para la validación científica de las afirmaciones de los curanderos infantiles, el estudio sienta una base sostenible para la documentación de las técnicas indígenas para la prevención de la morbilidad infantil en el área de estudio.

Palabras clave: Morbilidad infantil, Fitomedicina, enfermedad (aisan), Medicina tradicional, Salud sustentable.



Introduction

Globally, about ten (10) million children below five years pass away annually, although huge differences are recorded across regions and countries (Espo, 2002). However, UNICEF (2010) reported a decline in the number of mortalities among children less than age five from 12.4 million in 1990 to 8.1 million in 2009. In Nigeria, communicable diseases such as malaria, diarrhoea, measles, respiratory infections, and other immunisable childhood infections were submitted by Mesike and Mojekwu (2012) as well as Fatoba *et al.* (2018) as the main sources of child mortality. Also, UNICEF (2006) observed malnutrition as partly responsible for over 50% of mortality during the infant's (0-5) years from rough estimation. Fatoba *et al.* (2018) reposed micronutrient deficiency as a direct source of infant morbidity and mortality aside from substandard feeding practices and deficit in food intake. Micronutrients such as iron, iodine, vitamin A, are mandatory for the healthy development of children. Their absence in the diet causes serious diseases. For example, lack of sufficient iodine according to UNICEF (2002) can lead to hypothyroidism, goiter and mental as well as physical impairments.

Illnesses in the Nigerian Yoruba language is called “*ailera, okunrun, aisan, ojojo or amodi*” literarily meaning “not well” or “indispose”, a description of the specific symptoms noted in the negative statements about health (Jegede, 2002; Fatoba *et al.*, 2018). As observed by Osunwole (2018), illnesses are categorised according to their response to medication and nature. *Okunrun* is a health condition where the sick person is initially indisposed for a short or long period of time and at a point becomes disposable or healthy again. *Amodi* is a Yoruba name called chronic disease and it is a prolonged illness, which lacks an instant cure. In some cases where the body and mind of the ill infant are not harmonised, it is believed that such illness may be unexplainable. This category of illnesses manifests in minor discomfort as the affected person may painfully perform their daily events. The traditional healers believe that health is wealth (in Yoruba language, *ilera loro*). Osunwole (2018) stated that traditional African healers perceive morbidity as any form of spiritual, physical or socio-psychological issues, which prevents persons from carrying out their moral, economic or social activities within the stipulated procedure.

In spite of the introduction of Western medicine and health care systems in Africa, many African communities still rely on traditional health care (WHO, 2001). The WHO (2000) defines traditional medicine or health care as the total combination of knowledge and practice, whether explicable or not,



used in diagnosing, preventing or eliminating physical, mental and social diseases. This practice exclusively relies on past experience and observation handed down from generation to generation verbally or in written form. Kofi-Tsekpo (2004) noted that the phrase ‘traditional medicine’ has become a catchword among the peoples in all countries in Africa. This is partly because the use of herbal remedies has gained popularity worldwide and the exploitation of these remedies has become a multimillion industry. Thus, the term ‘African traditional medicine’ cannot be a synonym to ‘alternative and complementary medicine’; it is the African indigenous system of health care and therefore, cannot be an alternative (Kofi-Tsekpo, 2004).

In Africa, there is an important reason why African traditional medicine has become increasingly popular. The high cost of allopathic medical health care and the expensive pharmaceutical products have become unavailable to a majority of people. Indigenous approaches to preventing childhood diseases had been in existence before the advent of orthodox medicine. Nursing mothers in urban areas also employ these methods to prevent babies from illnesses, in spite of the availability of modern community medicine. It was observed by Jegede (2002) that some conditions, which could have been identified as diseases in medical terms are not regarded as such because they are considered normal under certain circumstances because they are required in the child’s developmental processes. From this angle, Helms and Cook (1999) refer to indigenous healing as the helpful beliefs and practices that originate within a culture or society and are designed to treat the inhabitants of a given community (Fatoba *et al.*, 2018). Good health behaviour can reduce health risks, prevent morbidities and promote sustainable life and well-being. The different determinants of infant morbidity include age, sex, and gestational age, parity of mother, birth spacing, birth weight, and mode of delivery, maternal education, socioeconomic conditions, and vaccination. Breastfeeding is a sacrosanct determinant, which reduces the rate of infection-related morbidities (Habib, *et al.*, 2009).

It was not known where or when plants first began to be used in the treatment of disease, but the connection between plants and health has existed for thousands of years (Faleyimu and Oluwalana, 2008). Herbal, botanical medicine, or Phytotherapy, was defined as “the utilisation of flora materials to prevent and treat ill health and promote wellness” (Ameh *et al.*, 2010). The utilisation of herbs as medicine is the ancient form of healthcare known to humanity and has been utilised in all cultures throughout history (Barnes *et al.*, 2007). Thus, for a broad preventive measures in infant morbidity and activities that must be sustainable the importance of plant cannot be overemphasized. Sustainable development as defined by



Brundtland (1987) is “development that meets the needs of the present without compromising the ability to meet future generation’s needs”. Likewise, sustainable health could be defined as “health status that meets the needs of the present without compromising the ability of future generations to meet their own health-wise needs”.

The emphasis on the use of medicinal plants had hitherto been placed on the treatment rather than the prevention of diseases. However, there exists in the literature considerable report in recent times on research work on the use of medicinal plants and their constituents in disease prevention. A World Health Organisation (WHO) Expert Group defined Traditional Medicine 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 written form (WHO, 1976). For Africa, this may be extended further by including an expression, such as ‘while bearing in mind the original concept of nature, which includes the material world, the sociological environment whether living or dead and the metaphysical forces of the universe’ (Sofowora *et. al.*, 2013).

However, Traditional African Medicine (TAM) is very broad. In Nigeria alone Ezekwesili-Ofilo and Okaka (2016) observed that researchers cannot just consult standard document on TAM useful for clinical practice on a cross-cultural basis. They stressed the imperative of documenting Nigerian cultures generally not limiting to her medicines alone. This was reposed by Bello (1991) who linked the crucial complication facing the unity of Nigeria culture to the disregard for documentation, which holds the key to comprehensive and sustainable cultural development. As submitted by Tan *et al.* (2010), achievement of a comprehensive compilation of medicinal plants that are utilised for infant morbidity prevention depends on collation of original data from the traditional custodians of such knowledge. This is extremely sacrosanct in the instances of ATM reliance on oral tradition of information dissemination from generation to generation about useful flora.

In the Chinese Traditional Medicine (CTM) and the Indian systems of medicine (Ayurveda, Siddha, Unani and Yoga, Naturopathy and Homoeopathy) comparatively (Prasad, 2002), their information is available in books (and online). However, WHO-AFRO is trying their possible best to build up the various inaccessible databases on medicinal plants through the provision of guidelines for documentation of herbal recipes (WHO/AFRO, 2010). Specific ethno-botanic surveys at village level using some of the methods described by Sofowora (2008) can be utilised in the documentation of those herbal recipes. For



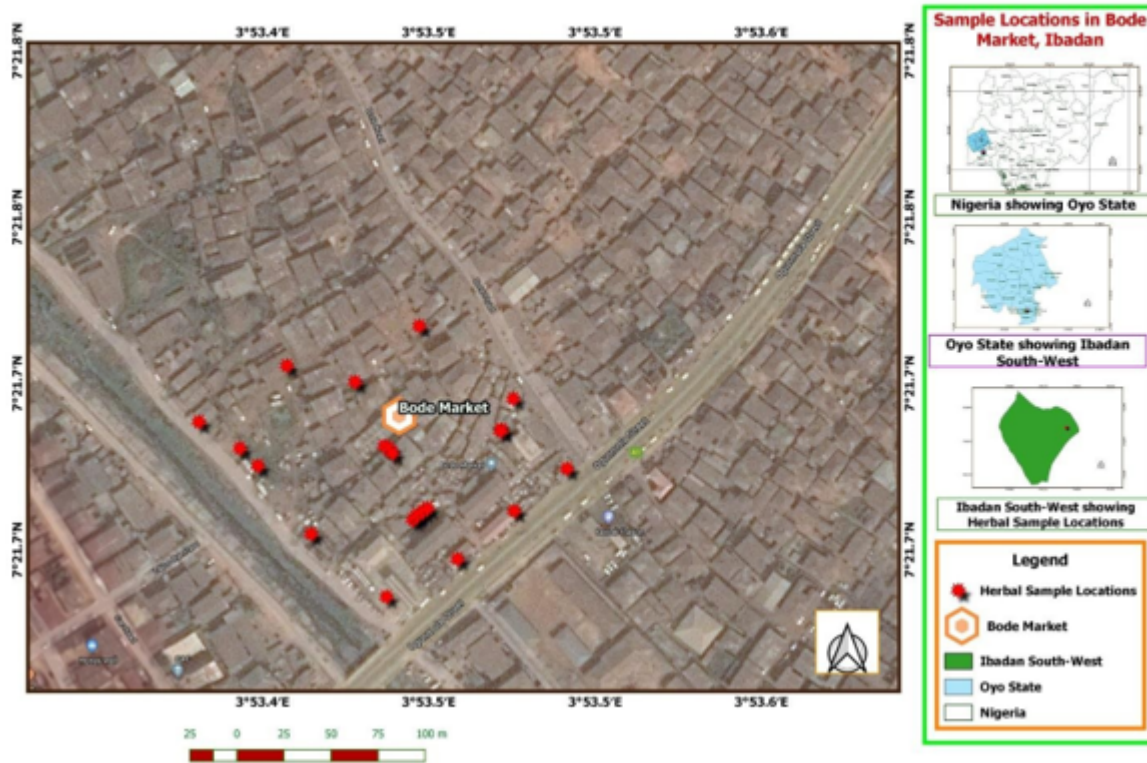
instance, a survey by Biswas *et al.* (2011) on medicinal plants used for preventive medicinal purposes in Muktipara village, Chuadanga District of Bangladesh were able to yield authentic plants including *Azadirachta indica* and *Moringa oleifera*, which are quite common in Africa (Sofowora *et al.*, 2013). Against this backdrop, this paper reports the use of indigenous methods of reducing infant morbidity in Ibadan metropolis, an ancient town in southwestern Nigeria, which is central to the historical and political development of the country.

Methodology

Study Area

Ibàdàn, the capital of Oyo State, Nigeria with a population of 3,464,000 people (NBS, 2006 - based on 2.39% increment from 2018 figure) is the third most populous city in Nigeria after Lagos and Kano. It is Nigeria's largest city by geographical area. At the time of Nigeria's independence in 1960, Ibadan was the largest and most populous city in the country, and the second-most populous in Africa behind Cairo (United Nations - World Population Prospects, 2019). The submission of Ibadan as the herbal market headquarters, with practicing women herb sellers (*Elewe omo/Aremo*) in southwestern Nigeria by Aworinde and Erinoso (2015) informed her selection for the study. Ibadan lies within latitude 7° 19' 08" and 7° 29' 25" of the equator and longitude 3° 47' 50" and 4° 0' 22" at a distance of about 154km North-East of Lagos. The temperature range is between 27°C and 32°C with a relative humidity of about 75% to 90%. Ibadan metropolis consists of five Local Government Areas (LGAs), namely Ibadan North, South-East, North-West, North-East and South-West respectively (Famuyide *et al.*, 2018). Ibadan had been the centre of administration of the old Western Region. The principal inhabitants of the city are the Yoruba people, with its strategic location on the railway line connecting Lagos to Kano. The city is a major center for trade in scent leaf, pepper, tomato, onion, leafy vegetables, and spices. The main industries in the area include those processing agricultural products (Usman *et al.*, 2011). The herbal market headquarters in Ibadan (Fig. 1) is known as Bode market, and it lies within latitude 7.36 and longitude 3.89 in Ibadan South-West LGA. Below is the map and satellite view of the herbal sample point, that is, the survey area Mapped.

Fig. 1: Satellite view of the Herbal Sample Points in Bode Market, Ibadan, Oyo State, Nigeria



Method of Data Collection

Primary data for the survey was obtained through the use of structured questionnaires, which avails the researcher significant information about the indigenous techniques for preventing infant morbidity in Ibadan. Secondary information was also used in this study to incorporate elements of science and deductions from journals, books, reports, and literature reviewed from previous research in ethnomedicine, phytomedicine, alternative medicine, Traditional African Medicine, *etc.*

Population of the study

The population of the study was Infant Healers (*Elewe omo/Aremo*) in Ibadan, Oyo State. The selection of respondents cut across age, religion, gender, occupation, household size, and other sources of livelihood and literacy level.

Instruments for Data collection



Relevant data were collected with the use of structured questionnaires, which was designed using close-ended and open-ended style of questioning. The questionnaire was used to collect information on the indigenous techniques used in preventing Infant morbidity in Ibadan, Nigeria. The questionnaire was divided into three sections (A to C) which captured the four general objectives of the study. Section A captured information on Respondents' bio-data. Section B focused on other background information while section C enhances plants and parts of medicinal use in the treatment of infant morbidity as well as dosage of preparation and usage.

Method of Data Analysis

Data garnered were analysed using descriptive statistics (frequency, range, mode, percentage and histogram).

Sampling Scheme

Snowball sampling technique (Naderifar, *et al.*, 2017) was used in the selection of the twenty (20) infant healers (*Elewe omo/Aremo*). Respondents were randomly picked based on referral by one of the infant healers and they were interviewed with different questionnaires.

Results and discussion

Socio-demographic characteristics of respondents

Table 1 shows the demographic characteristics of the respondents. More females (95.0%) were captured in the study. The majority of the respondents (50.0%) fall within age groups of 30 to 50 years and were married (75.0%). Similarly, modal Household size (35.0%) was seven while that of education status (40.0%) was primary education. Also worthy of note is that majority of the respondent (85.0%) were herb sellers (*Aremo/elewe-omo*), 10.0% were apprentice herb seller, while 5.0% was engaged in lecturing and research on herbs. The finding of this study on respondents' education did not sharply differ from the educational status of respondents from a research survey on medicinal plants used in the treatment and prevention of malaria in Cegere sub-county, Northern Uganda, where interviews were conducted with traditional healers mobilized by the leader of their Association in their local language (*Langi*) with the assistance of a local interpreter and a field assistant (Anywar *et al.*, 2016). This study also identified scholars engaged in traditional healing. This is expected to positively impact the negative attitude towards traditional medicines by educated Africans, brought up through this culture as reported

by Adefolaju (2011) as well as Borokini and Lawal (2014).

Tab. 1 Frequency Distribution of Respondents' Demographic characteristics

Variable	Frequency	%age	Mode
Sex			
Male	1	5.0	
Female	19	95.0	Female
Age (years)			
<20	2	10.0	
20 – 30	3	15.0	
30 – 40	10	50.0	30 – 40 Years
>40 – 50	2	10.0	
>50	3	15.0	
Marital status			
Single	5	25.0	
Married	15	75.0	
Religion			
Christianity			Married
Islam	1	5.0	
	19	95.0	
Household size			
Four	3	15.0	
Five	3	15.0	
Six	7	35.0	Six
Seven	3	15.0	
Eight	4	20.0	
Occupation			
Elewe-omo (apprentice)	2	10.0	lewe omo (Arema)
Elewe-omo (Arema) Lecturing and Research	17	85.0	
	1	5.0	
Academic qualification			
No formal education	4	20.0	
Primary	8	40.0	Primary
Secondary	6	30.0	
HND	1	5.0	
PhD	1	5.0	

Background information about Infant Ailments Treatment in Ibadan

On some background check about treatment protocol, the study (Table 2) revealed that majority of the respondents (35.0%) attended to infants of between 8 days and 5 years per month. Also, majority (55.0%) cannot affirm the number of their male or female patients in the last one year. However, only 15.0% of the respondents have attended to physically challenged infants and all the respondents allow nursing mothers to breastfeed infants under their care. In this study, the traditional infant healers in the study area were observed to have limited ability for proper documentation of their activities as they could



only memorise recipe. This will explain why they neither have any record of the numbers of infants treated, even in the recent one year nor document the herbal recipes for treatment. They could however recollect treating a lot of infants and receiving commendation for other patients from nursing mothers who have experienced their service. Being their profession also, they could remember the period of recipe administration for each disease and the quantity given to the infant for the specified period of use.

Tab. 2 Frequency Distribution of Background Information on Infant Treatment

Variable	Frequency	%age	Mode
Age Range of Infants Treated per Month			
month – 5 yrs	6	30.0	8 Days – 5 Years
months – 5 yrs	3	15.0	
8 days – 5 yrs	7	35.0	
No response	4	20.0	
Male Infants Treated in the Last One Year			
9	1	5.0	Cannot say precisely
35	1	5.0	
Cannot remember	3	15.0	
No response	11	55.0	
	4	20.0	
Female Infants Treated in the Last One Year			
6	1	5.0	Cannot say precisely
30	1	5.0	
Cannot remember	3	15.0	
Cannot say precisely	11	55.0	
No response	4	20.0	
Attend to physically challenged infants?			
Yes (deaf, dump & lame) No	3	15.0	No
	17	85.0	
Allow Breastfeeding of Infants under Care?			
Yes No	20	100.0	Yes
	0	0.0	

Plants of Medicinal Use in the Treatment of Infant Ailments

This study (Appendix 1) identified eighty-nine plants on the prevention of infant morbidity and some of these plants had been documented by previous related studies. For example, the study by Ndukwu and Ben-Nwadibia (2019) also documented about twenty-three (23) related plants in the summary of data on species used for spices and condiments. Also, in Fatoba *et al.* (2018), the recipes for the treatment of twelve (12) infant diseases were enumerated and most of the forty-five (45) plants that were listed in the profile of plants used in their treatment were part of this study findings.

Table 3 shows the plants that are used for the treatment of different identified ailments of infants by



the respondents. Majority of the respondents use similar plants but different parts in the preparation of identified ailment recipes. However, the use of leaf appears to be more popular among them than the use of other plant parts (bark, root, and seed). For example, *arira*, *eru Alamo* and *oruwo* appeared more in the plants used for treatment, followed by *ahun*, *Aidan*, *akere jupon*, *atale pupa*, *dogoyaro*, *egbesi*, *gbewutu*, ginger, mango, and *yani*.

Ginger is a common plant used in the treatment of cold, cough, malaria, diarrhea and walking challenges with similar parts, while *Ata ijosi* is peculiar to teething and typhoid. It was also observed that there were additional ingredients added to most of the plants' parts before administration (e.g. salt, honey and tomtom sweet). Atacora (2019) however, fingered baobab fruit powder as potent in the treatment of fevers, gastric complaints, malaria, haemoptysis, and as a general health tonic, particularly in children, pregnant women and elderly people (www.aminaherbs.com). Baobab power efficacy was reposed by Osman (2004) who not only reported it as a vitamin C supplements but observed the seed as a good source of energy, protein, and fat. Ndukwu and Ben-Nwadibia (2019) also documented the use of *Denniattia tripetala* and *Pergularia Daemia* for the treatment of cough and fever. Also, in the case of infant having walking challenges, seven (7) incisions (called *gbere sisin* in Yoruba language) will be done around the baby's left and right knee with blade. Also, the same number of incisions will be done on the left and right leg of a Roan Antelope (an animal called *Etui* in Yoruba language). The incised animal legs will then be burnt separately and the ashes will be mixed with *atare* and rubbed on the infant's incisions (that is, the left burnt leg of *Etui* will be used to rub the left leg of the infant and same is applicable to the right).

In the case of convulsion, another means of treating infant without plants is the use of *somiroro* also known as bluestone and it can be found at the Northern part of Nigeria, it is in powder form and one teaspoonful of the powder is poured in to drinkable water, some particles will be put on the infant's head and under the armpit of both hands, the process should be repeated after 15 days. Also, on the treatment of teething problem, very well grounded *ota inu iroko* is added to local soap (*ose dudu*) and the mixture is again mixed with the burnt leaf of *dagunro pelebe elegun* and *Eru Alamo*. It should however be noted that the number of the leaves of the *Eru Alamo*, which will be used depends on the child sex. For a male child, nine of the leaves (*eru-mesan*) will be used while for female seven leaves of *eru* (*eru-meje*) will be plucked and added to the recipes for treatment. The infant will bathe with the local soap mixed with the burnt arches from head to toe.

However, Nigerian Journal of Basic and Applied Science (2018) documented the application of grounded *Allium cepa*, *Allium sativum*, and *Zingiber officinale* mixed with palm oil all over the body of the baby. The mixture should be allowed to enter the baby's eyes and in addition, about 2.5 ml of the mixture should be applied orally to the affected child. Also, recommended for convulsion is 10 ml oral application thrice daily of the concoction of leaves of *Rauwolfia vomitoria* and the leaves and fruits of *Xylopia aethiopica* boiled in water for 45minutes (Nigerian Journal of Basic and Applied Science, 2018).

Tab. 3 Identified Local Plants and Parts Used in the Treatment of Identified Common Infant Ailments in the Study Area

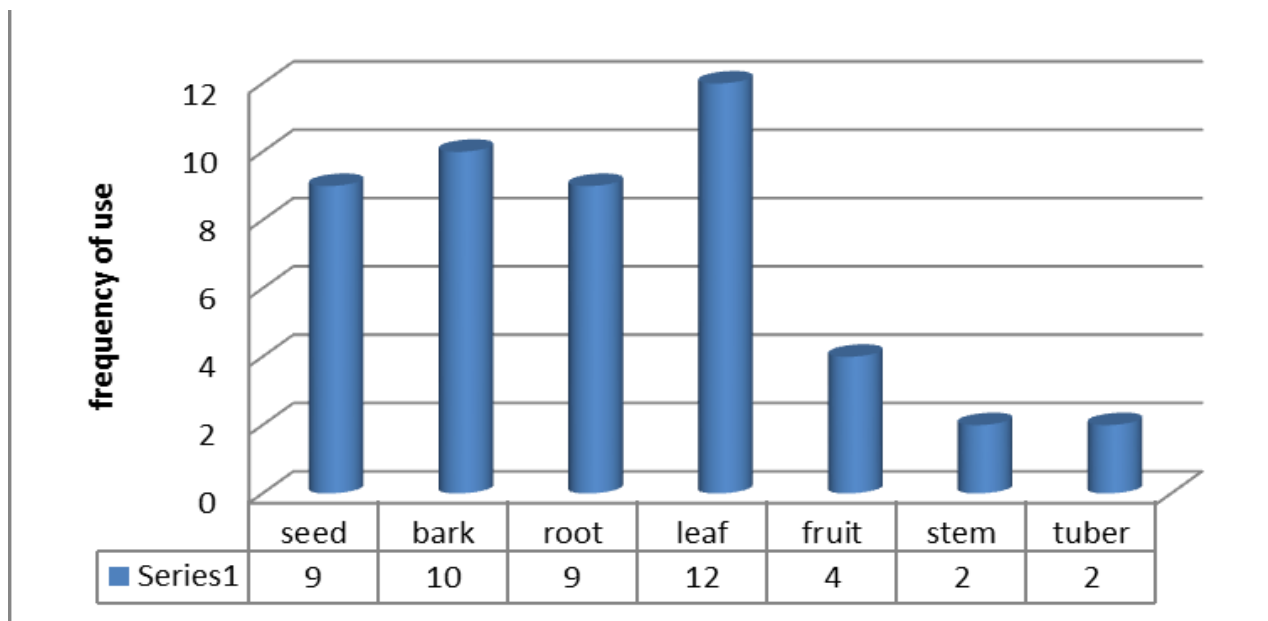
Ailments	Plants used	Parts Used
Cold	<i>Aidan, igbesi, Oruwo, Ginger, mango, akere jupon, eru alamo, ahun, dogoyaro (neem), yani, atale pupa (Turmeric), gbewutu</i>	Seed, bark, roots, and leaves
Cough	<i>Bitter cola (orogbo), ipin, Aidan, Modun moro, and ginger</i>	Seed, bark, roots, and leaves
Malaria	<i>Dogoyaro, Ginger, Oruwo, igbesi, mango, akere jupon, gbewutu, yani, atale pupa, eru alamo, ahun, arira, and oganho</i>	Seed, bark, roots, and leaves
Measles	<i>ira, Imi esu (white weed), Ogiri isako, tagiri/amuletutu, and eru Alamo</i>	Seed, bark, roots, fruits, and leaves
Small pox	<i>Idi, Ifon, Opon, Okuku, Imi isu, Ayin, opiri, oro agogo, adete, iyemi, enu gbegiri, inagiri, ipeta, arira, emi, sapo, rere and eru</i>	Bark, and leaves
Teething	<i>Dagunro pelebe elegun, kanafuru, iyere, Ata ijosi and Eru Alamo</i>	Bark, roots, seed, and leaves
Chicken pox	<i>Arira, Ifon, Inagiri, Ayin, Imi isu, ipeta, opon, idi, gbegiri, apaasa, rinrin, inagiri, oro adete, oro agogo, eruji and opiri</i>	bark, roots and leaves
Diarrhea	<i>Ayu (garlic), Erin rawale, Arira, Efinrin, kanafuru, bara, oronbo wewe, aidan toro, akogun, idi, orira, ogono, abeereand Ginger</i>	Seed, bark, roots, fruits, stem and leaves
Convulsion	<i>Ayu (garlic), itoo, Aidan, ewe ogede (fresh banana leaves), taba, alubosa elewe and onisu (onion), and somiroro</i>	Roots, tuber, and leaves
Typhoid	<i>Ata ijosi, kerewu, yani, ahun, osan (Orange), orogbo (Bitter cola), Oruwo, eeru, laali, ope, ewe tii, egbesi, grape, akere jupon, Gbewutu, Atale, Dogoyaro, ibepe dudu (Unripe Pawpaw), osan jagani, atale pupa, mango, iyeye, Pineapple, Grape and osan were(Lime)</i>	Seed, bark, root, fruits, stem, and leaves
Jaundice	<i>Oruwo, Egbesi, Gbewutu, Mango, Dogoyaro, orogbo (Bitter cola), Atale pupa, eeru, ahun, akere jupon, eru Alamo, yani, ibepe dudu (unripe pawpaw), laali, ope (palm tree) and owu/kerewu</i>	Seed, bark, roots, fruits, and leaves
Walking challenge	<i>Ayu (ginger), vegetables, Atare, Shea butter, and ewe noni</i>	Tuber, seed, and leaves

NB* Please, see Appendix 1 for the botanical names of Identified Flora

Plant Parts Used in the Treatment of Infant Ailments in Ibadan

Examining the flora parts used in the preparation of infant concoctions, the study (Fig. 2) revealed that all parts are used. However, the leaves were mostly used as 12 (60.0%) of the 20 sampled healers subscribed to the use of leaves. The use of leaves was closely followed by the use of tree barks, root and seed. Flora stem and tuber were the least used. This is a slight difference from the findings of Aworinde and Erinoso (2015), which documented slightly higher use of roots and underground stems (39.1%) than the use of above ground stems (32.6%) of the 48 species fingered in the management of infants' illnesses in the study area. Other identified parts used are bark (15.2%), seeds (8.7%) and tuber (4.4%) - Aworinde and Erinoso (2015).

Fig. 2 Frequency Distribution of the Plant Parts Used for Recipe Preparation by Infant Healers in Ibadan



Consent on and Treatment of Other Infant Ailments in Ibadan

Apart from the common infant ailments, Table 4 shows that few (10%) of respondents consent to treating other infant ailments.

Tab. 4 Frequency Distribution of Respondents Consent on Treatment of Other Infant Ailments

Variable	Frequency	Proportion (%)
Treat other infant ailments often?		
Yes	2	10.0
No	18	90.0
Total	20	100

Table 5 shows the details of other types of ailments treated by the respondents. Three types of such ailments were identified viz: Asthma, *oka ori*, and *jewo*. The healers also discussed the plants and parts used for the treatment (Table 5) as well as the preparation and dosage. Also worthy of note is that none of the herb sellers (*Elewe omo*) consented to the use any metaphysical power, act or art in the treatment of infant ailments apart from the use of herbs prescribed for the treatment of each ailment. This contradicts the assertion of Kayombo (2013) that some illnesses are believed to be caused by witchcraft, evil eye, curse, sorcery, jealousy and cosmic world intervention, and can cannot be detected or cured with orthodox health facilities. This was why he proposed treating such illnesses using indigenous/traditional knowledge or techniques.

Tab. 5 Plants and Parts Used in the Treatment of Other Infant Morbidity in Ibadan

Other Ailments	Plants used, Preparations and Dosages	Parts Used
Asthma	<i>Isu ege</i> (cassava), <i>epa</i> (groundnut), <i>epo igi oori</i> (shea butter), <i>baaka</i> , <i>oruru</i> , <i>aridan</i> , <i>tete abalaye</i> , <i>orogbo</i> , <i>Aayu</i> <i>Preparation: fry both cassava (isu ege) & a handful of groundnuts to powder and grind others mix them together</i> <i>Dosage: mix with honey (oyin igan) and lick thrice in a day</i>	Leaf, bark, bulb, tuber, seed
<i>Oka ori</i> (an observed green line, which is like muscle on the head or stomach of infants)	<i>Egbo Apoka</i> and <i>Ayoka</i> , <i>epo enu iyemi</i> and <i>enu gbegiri</i> , <i>epo jebo</i> , <i>epo ayira</i> , <i>epo ponpola</i> , <i>epo opon</i> , <i>small epo odan</i> , <i>epo aye</i> , <i>epo idi</i> , and <i>eru Alamo</i> <i>Preparation: cook all together</i> <i>Dosage: half cup of baby cup drink three times (Morning, afternoon & night) and bathe with the water once a day</i>	Root, bark, leaf
<i>Jewo</i> (stomach ache that make infants twist the body and make them restless)	<i>Paro pupa</i> , <i>Paro funfun</i> , <i>ere</i> , <i>modun moro</i> , <i>agba</i> , <i>omonijedejede</i> , and <i>alubosa elewe</i> <i>Preparation: soak in a bottle of water</i> <i>Dosage: half cup of baby cup drink three times (Morning, afternoon & night)</i>	Root, bark, leaf

Dosage and Usage of Preparation in the Treatment of Infant Morbidity

Examining the none-measurable administration weakness of most traditional recipe, the study (Table

6) revealed that the healers actually have measures in place for dosages and administration of traditional medications in treatment of infant ailments. Seven of the ailments (cold, cough, measles, smallpox, teething, chickenpox and walking challenge) were prescribed for treatment once a day; malaria, typhoid, and jaundice were prescribed for treatment thrice (morning, afternoon and night) a day, while diarrhea and convulsion were prescribed for treatment twice (morning and night) a day. This compliment the documentation by Aworinde and Erinoso (2015) of fifteen (15) recipes from forty-eight (48) plants belonging to different families, parts used as well as the dosages for each recipe in the management of infants' ailments in Ibadan.

Ailments	Dosage and Usage of Treatment		
	Morning	Afternoon	Night
Cold	Half baby cup once a day any time		
Cough	2 teaspoonful once a day any time		
Malaria	1 teaspoonful	1 teaspoonful	1 teaspoonful
Measles	Half baby cup once a day any time		
Smallpox	Half baby cup once a day any time		
Teething	Half baby cup once a day any time		
Chickenpox	Half baby cup once a day any time		
Diarrhea	2 teaspoonful	None	2 teaspoonful
Convulsion	1 teaspoonful	None	1 teaspoonful
Typhoid	3 teaspoonful	3 teaspoonful	3 teaspoonful
Jaundice	3 teaspoonful	3 teaspoonful	3 teaspoonful
Walking challenge	A shot of baby cup once a day any time		

Summary

The study identified eighty-nine different plants species from different families used in the treatment of twelve common and three (3) additional infant diseases in the study area. The additional three are: Astma, *Oka ori* (a green line like muscle on the head or stomach of infants), and *Jewo* (stomach ache that make infants sleepless). Also, before an infant could be allowed to use herbs for treatment, such must be at least eight (8) days old and traditional healing does not prevent infant from being breastfed adequately so that the herbs prescribed can be effective.

Conclusion

Indigenous medicine has been practiced in Africa before the introduction of orthodox medicine. Therefore, for sustainable health, it is advocated that the integration of both indigenous and orthodox



techniques of preventing morbidity in infants, would achieve the goal 3 (to ensure healthy lives and promote well-being for all at all ages) by 2030 as the United Nations proposes. This present study recognises the fact that traditional medicine (herbal therapies) has an important role to play in health care delivery. Furthermore, some illnesses and diseases are better treated by traditional healing system especially the ones not recognised by orthodox medical practitioners. Therefore, for preventing childhood diseases in Nigeria, the medical scientists and health workers should integrate indigenous methods of preventing childhood diseases from western medication. Although, there will still be a need for researchers to explore this vital information through scientific validation to the claim of the indigenous people. Also, screening, isolation, and characterization of active constituents of the plants would give leads in the production of a novel drug.

Recommendations

The use of herbal therapy in the prevention and cure of Infants illnesses should be given significant attention because of their potencies and ready availability within users' environment. A regulatory measure for both herbal practitioners and the public is encouraged as this will endear herbal therapy to the populace (Aworinde and Erinoso, 2015). Also worthy of note is the need to take documentation of Traditional African Medicine very important so as to prevent loss of vital indigenous knowledge in this area.

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Appendix 1: Botanical Name and Family of Local Floras Used in the Prevention of infants' Morbidity in Metropolitan Ibadan, Nigeria

S/N	Local name	Botanical name	Family
1	Aayu (Garlic)	<i>Allium Sativum L.</i>	Amaryllidaceae



2	Abeere/Oloko/Ajisomobia (Neou oil tree)	<i>Bidens bipinnata l.</i>	Asteraceae
3	Agba/loshi-erin	<i>Gossweilerodendron balsamiferum (vermoesen) Harms</i>	Fabaceae (caesalpinoideae)
4	Ahun	<i>Alstonia congensis Engl.</i>	Apocynaceae
5	Aidan tooro	<i>Senna fistula Linn</i>	Leguminosae – Caesalpinoideae
6	Aidan/Aridan	<i>Tetrapleura tetraptera (Schumach.) Taub.</i>	Fabaceae (Mimosoideae)
7	Aiye	<i>Maranthes robusta (Oliv.) Prance (syn. Parinari robusta Oliv.</i>	Chrysobalanaceae
8	Akere jupon	<i>Sphenocentrum jollyanum</i>	Menispermaceae
9	Akogun	<i>Aristolochia ringens Vahl</i>	Aristolochiaceae
10	Alubosa elewe	<i>Allium cepa L.</i>	Amaryllidaceae
11	Alubosa onisu	<i>Allium cepa L.</i>	Amaryllidaceae
12	Apaasa (Billygoat weed)	<i>Agerantum Conyzoides</i>	Asteraceae (Compositae)
13	Apoka (red bushwillow)	<i>Combretum sordidum</i>	Combretaceae
14	Arira (whitebeam)	<i>Averrhoa carambola</i>	Oxalidaceae
15	Ata ijosi	<i>Capsicum annum Linn.</i>	Solanaceae
16	Atale (Ginger)	<i>Zingiber officinale</i>	Zingiberaceae
17	Atale pupa (Tumeric)	<i>Curcuma longa</i>	Zingiberaceae
18	Atare (Alligator pepper)	<i>Aframomum melegueta K. Schum.</i>	Zingiberaceae
19	Ayin	<i>Delonix regia</i>	Leguminosae
20	Ayoka	<i>Combretum tomentosum</i>	Combretaceae
21	Baka	<i>Gladiolus daleni Van. Geel.</i>	Iridaceae
22	Bara	<i>Curculigo pilosa Engl</i>	Amaryllidaceae
23	Dagunro pelebe	<i>Acanthospermum hispidum</i>	Asteraceae
24	Dagunro pelebe elegun	<i>Acanthospermum hispidum</i>	Asteraceae
25	Dogoyaro (Neem)	<i>Azadirachta indica (A. Juss.)</i>	Meliaceae
26	Efinrin	<i>Occimum gratissimum Linn</i>	Labiatae (Lamiaceae)
27	Efo Tete (vegetable)	<i>Amaranthus hybridus ssp. cruentus (Linn.)</i>	Amaranthaceae
28	Egbesi	<i>Nauclea latifolia Rubiaceae</i>	<i>Nauclea latifolia</i> Rubiaceae
29	Emi esu	<i>Adenostemma perrottetii</i>	Asteraceae
30	Emi gbegiri	<i>Pseudocedrela kotschyi</i>	Meliaceae
31	Enu-Opiri	<i>Euphorbia laterifolia</i>	Euphorbiaceae
32	Epa (Groundnut)	<i>Arachis hypogaea L.</i>	Fabaceae
33	Ere	<i>Aloe percrassa Tod.</i>	Asphodelaceae
34	Erin rawale	-	-
35	Eru Alamo	<i>Xylophia aethiopica</i>	Annonaceae
36	Erunje/Eeru (Ethiopian pepper)	<i>Xylophia aethiopica</i>	Annonaceae
37	Ewe noni	<i>Morinda citrifolia</i>	Rubiaceae



38	<i>Ewe ogede</i>	<i>Musa sapientum L.</i>	Musaceae
39	<i>Ewe tii</i> (Lemon grass)	<i>Cymbopogon citratus</i>	Poaceae
40	<i>Ewe mangoro</i> (Mango)	<i>Mangifera idica L.</i>	Anacardiaceae
41	<i>Gbewutu</i>	<i>Cochlospermum tinctorium</i>	Cochlospermaceae
42	<i>Ibepe dudu</i> (Pawpaw)	<i>Carica papaya L.</i>	Caricaceae
43	<i>Idi</i>	<i>Terminalia glaucescens phanch.</i> (Syn. <i>Terminalia Schimperiana Hoch st.</i>)	Combretaceae
44	<i>Ifon</i>	<i>Olox subscorpioidea</i>	Olacaceae
45	<i>Imi esu</i>	<i>Ageratum Conyzoides L.</i>	Asteraceae
46	<i>Inagiri</i>	-	-
47	<i>Ipeta</i> (violet tree)	<i>Securidaca longepedunculata</i>	Polygalaceae
48	<i>Ipin</i> (sandpaper leaf)	<i>Ficus asperifolia</i>	Moraceae
49	<i>Ira</i>	<i>Bridelia ferruginea</i>	Euphorbiaceae
50	<i>Isu ege</i>	<i>Manihot esculenta</i>	Euphorbiaceae
51	<i>Ito</i> (Millet)	<i>Millettia thonningii</i>	Leguminosae
52	<i>Iyemi</i>	-	-
53	<i>Iyere</i>	<i>Piper quineense</i>	Piperaceae
54	<i>Iyeye</i> (Hog plum)	<i>Spondias mombin L.</i>	Anacardiaceae
55	<i>Jebo</i>	<i>Entandrophragma utile</i>	Meliaceae
56	<i>Kanafuru</i> (Clove)	<i>Syzygium aromaticum</i>	Myrtaceae
57	<i>Laali</i>	<i>Lawsonia inermis</i>	Lythraceae
58	<i>Modun moro</i>	<i>Gongronema latifolium</i>	Asclepiadaceae
59	<i>Odan-afomo</i>	<i>Ficus mucoso</i>	Moraceae
60	<i>Oganwo</i> (Mahogany)	<i>Khaya ivorensis</i>	Meliaceae
61	<i>Ogirisako</i>	<i>Anchomanes difformis</i>	Araceae
62	<i>Ogono</i>	-	-
63	<i>Okuku</i>	<i>Pteleiopsis suberosa Engl. & Diels</i>	Combretaceae
64	<i>Omonijedejede</i>	-	-
65	<i>Ope oyinbo</i> (pineapple)	<i>Ananas comosus</i>	Bromeliaceae
66	<i>Opon/ononagba</i>	<i>Tetracera alnifolia Willd.</i>	Dilleniaceae
67	<i>Ori</i> (Shea butter)	<i>Vitex doniana Linn.</i>	Verbenaceae
68	<i>Oro adete</i> (Cactus)	<i>Euphorbia unispina N.E.Br</i>	Euphorbiaceae
69	<i>Oro agogo</i> (Asthma weed)	<i>Euphorbia hirta L.</i>	Euphorbiaceae
70	<i>Orogbo</i>	<i>Garcinia kola Heckel</i>	Guttiferae
71	<i>Orombo wewe/osan wewe</i> (lime)	<i>Citrus aurantifolia (Christm.) Swingle.</i>	Rutaceae
72	<i>Oruru</i> (Sausage tree)	<i>Spathodea campanulata</i>	Bignoniaceae
73	<i>Oruwo</i> (Brime stone tree)	<i>Morinda lucida Benth.</i>	Rubiaceae
74	<i>Osan</i> (Orange)	<i>Citrus sinensis (Linn.)</i>	Rutaceae
75	<i>Osan gerepu</i> (Grape)	<i>Vitis vinifera L.</i>	Vitaceae
76	<i>Osan jagan</i> (Bitter orange/lemon)	<i>Citrus aurantifolia</i>	Rutaceae
77	<i>Otainu Iroko</i> (seed in Iroko tree)	<i>Milicia excels</i>	Moraceae



Revista Verde

Green Journal

ISSN: 2764-9024

doi: 10.29327/24769.1.1

78	<i>Owu/kerewu</i> (cotton)	<i>Gossypium barbadense</i> Linn	Malvaceae
79	<i>Parun funfun</i>	<i>Oxytenanthera abyssinica</i>	Poaceae
80	<i>Parun pupa</i>	<i>Oxytenanthera abyssinica</i>	Poaceae
81	<i>Ponpola</i> (silk cotton tree)	<i>Bombax buonopozense</i> P. Beauv	Bombacaceae
82	<i>Rere</i>	<i>Senna occidentalis</i>	Leguminosae
83	<i>Rinrin</i> (pepper elder)	<i>Peperomia pellucida</i> (Linn.) H.B. & K	Piperaceae
84	<i>Sapo</i>	<i>Anthocleista djalensis</i>	Loganiaceae
85	<i>Somiroro</i> (bluestone)	<i>Sorghastrum nutans</i>	Poaceae
86	<i>Taba</i>	<i>Nicotiana tabacum</i>	Solanaceae
87	<i>Tagiri/amuletutu</i>	<i>Laganaria breviflorus</i>	Cucurbitaceae
88	<i>Tete abalaye</i> (Green Amaranth)	<i>Amaranthus viridis</i>	Amaranthaceae
89	<i>Yanrin</i>	<i>Lactuca capensis</i>	Compositae