

Use of Medicinal Plants for the Treatment of Diarrhea in Under-Five Children in Ikot Abasi Community, Akwa-Ibom State

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ABSTRACT

Background: Diarrheal diseases remain a leading cause of child morbidity and mortality with higher prevalence in under-five children in developing countries.

Aim: This study was conducted to investigate the use of medicinal plants for the treatment of diarrhea in under-five children in the study area.

Methods: Households in the community with under-five child(ren) were purposively selected for the study. A well-structured questionnaire was self-administered to collect basic data. The data was analyzed and the results were presented with descriptive statistics.

Results: Majority (59.7%) of the respondents were familiar with the use of medicinal plants for treating diarrhoea. Only 15.6% were aware of the side effects of its use. *Ocimum gratissimum* (37.7%) was the most commonly used plant while *Citrus aurantifolia* and *Lasianthera africana* (4%) were the least. A good number (42.9%) of the mothers attested to the effectiveness of medicinal plant for treatment in the studied group. Major personal factors influencing their choice of medicinal plants over conventional medicine were; limited access to healthcare facilities (66.2%) and financial constraint (45.5%). The most common social factors influencing their choice of medicinal plants were; family influence (51.9%) and peer influence (48.1%).

Conclusion: Majority of the respondent used medicinal plants to treat diarrhea in their under-five children and their perceived effectiveness was very high. However, their level of awareness on its side effects was very low. Limited access to healthcare and family influence were the major factors that influenced their choice of medicinal plants over conventional medicine.

Key words: diarrhea, under-five children, treatment, medicinal plants, factors, households.

INTRODUCTION

Diarrhea remains one of the leading causes of morbidity and mortality in the world, with higher prevalence in under-five children from low- and middle-income

countries [1-3]. According to [4], globally, diarrheal diseases account for an estimated 1.7 billion cases every year. In Nigeria, the estimated mortality rate of diarrhea in

children below five years of age was 204,106 per annum [5].

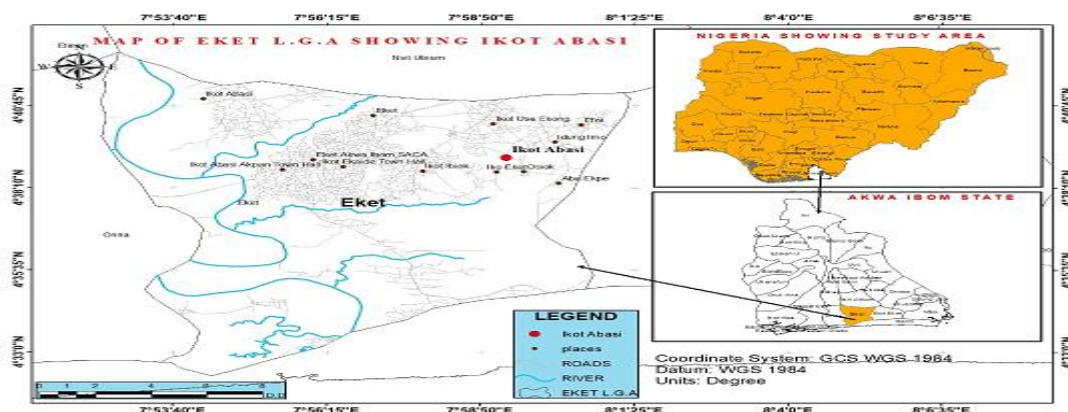
Studies have shown that high mortality of diarrhea in children is associated with their unhygienic practices and lack of access to potable water; poor nutritional status associated with poverty also exacerbates susceptibility to infections [6,7]. Apart from high mortality rates associated with diarrhea, repeated and prolonged episodes of diarrheal disease in children may have long-term consequences on a child's growth, cognitive development, academic performance and increased risk for non-communicable diseases [8-10].

Globally, over 50 plant species have been reported to treat diarrhea in both children and adult, these plants include and not limited to *Senna didymobotrya*, *Zingiber officinale*, *Artemisia abyssinica*, *Psidium guajava*, *Balanites aegyptiaca*, *Malva parviflora* L, *Ocimum lamiifolium* L. *Rumex abyssinicu*, *Punica granatum*, *Rumex abyssinicus*, *Cucumis ficifolius*, *Leonotis ocymifolia*, *Stephania abyssinica*, *Mentha piperita* L, *Ocimum gratissimum* [1,3,11,12]. The use of medicinal plant materials has remained the most accessible and affordable source of treatment in rural communities and developing countries. Herbal medicines have been shown to be effective in the treatment of gastrointestinal ailments, including diarrhea [1,13-15] the major challenge remains the issue of potential side effects such as allergic reactions, toxicity, drug interaction emanating from dosage and drug quality [16]. The World Health Organization

recommends management of diarrhea and associated dehydration with Oral Rehydration Solution (ORS) and fluids available in the home, breastfeeding, continued feeding, selective use of antibiotics and zinc supplementation for 10–14 days [17]. The WHO guidelines for treatment of diarrhea may not be strictly adhered to due to high dependence and acceptance of indigenous medicine as a primary source of health care of people in rural African communities. This high dependence and acceptance may be attributed to; high cost associated with the western healthcare system, ignorance and the benevolence attached to culture and tradition [18]. Therefore, this study was aimed at investigating the use of medicinal plants for treating diarrhea in under-five children in IkotAbasi, with a focus on identifying commonly used plants, assessing their perceived effectiveness and exploring the socio-economic and cultural factors surrounding the use of these plants.

MATERIALS AND METHODS

A cross-sectional descriptive study was conducted to assess the use of medicinal plants for the treatment of diarrhea in under-five children in Ikot Abasi community, in Eket Local Government Area, Akwa Ibom State of Nigeria. The population of households with under-five children was estimated to be hundred and seven (Census by Traditional Leader). Ikot Abasi community was purposely selected by researcher for their known use of medicinal plants in treating diarrhea in children.



The study population comprised of ninety six (96) households with children under the ages of 0- 5 years in Ikot Abasi, that were purposively selected for the study.

A well-structured questionnaire was used for collection of information regarding the use of medicinal plants for the treatment of diarrhea in under-five children in Ikot Abasi. The questionnaire sought information on the socio demographic characteristics of the respondents, the knowledge of the use of medicinal plants, methods of administration, perceived effectiveness, cultural and socio-economic factors influencing use and its possible side effects, in treating childhood diarrhea in under-five children. Informed consent was obtained from each respondent before commencement of the study. The researcher had person-to-person interaction with the respondents. Data were collected from non-literate respondents in the local language (EkiD Ibibio) with the aid of an interpreter. The questionnaires were completed and collected on the spot.

STATISTICAL ANALYSIS

The data were analyzed using Microsoft Excel (2023) and results presented in frequency tables and percentages.

RESULTS

Table 1: Socio-Demographic Characteristics of Respondents

Table 1 shows that majority (93.5%) of the respondents were married, while others (6.5%) were single mothers. Majority of the women (46.8%) had more than four children, nineteen women (24.7%) had three children, sixteen women (20.7%) had two children and six women (7.8%) had only one child. Table 1 also shows that good number (54.5%) of the respondents had secondary education, 27.3% had primary level, (6.5%) had college or University qualifications, while 11.7% of the respondents had no formal education. Majority (50.6%) of the participants were self-employed, 32.5% were unemployed, while 16.9% were employed.

Table 1: Socio-Demographic Characteristics of Respondents

Variables	Frequency (n=77)	Percentage (%)
Marital status		
Married	72	93.5
Single	5	6.5
Separated/Divorced	0	0.0
Widowed	0	0.0
Number of children		
1	6	7.8
2	16	20.7
3	19	24.7
4 and above	36	46.8
Education level		
No formal education	9	11.7
Primary	21	27.3
Secondary	42	54.5
College or University	5	6.5
Employment status		
Employed	13	16.9
Unemployed	25	32.5
Self-employed	39	50.6
Student	0	0.0

Table 2: Knowledge of the Use of Medicinal Plants and Its Potential Side Effects among Mothers in Ikot-Abasi for

the Treatment of Diarrhea in Under-Five Children.

Table 2 shows that majority (59.7%) of the respondents were familiar with the use of

medicinal plants for treating diarrhea in their under-five wards while 40.3% of the respondents were not. It also reveals the highest (54.5%) source of information on the use of medicinal plant by households was through family members, followed by friends (48.1%,) However, only 15.6% of

the respondents were aware of the potential side effects of medicinal plant-based treatment while 54.5% of the participants were not aware. Majority (68.8%) of the participants were confident in use the medicinal plant use while 11.7% were neutral and 19.5% were doubtful.

Table 2: Level of Knowledge of Mothers on Use of Medicinal Plants and Its Potential Side Effects for Treatment of Diarrhea in Under-Five Children in IkotAbasi

Variables	Frequency	Percentage (%)
Familiarity with the use of medicinal plants in the treatment of diarrhea in under-five children		
Yes	46	59.7
No	31	40.3
Source of information on medicinal plants to use for treating diarrhea in under-five children		
Family	42	54.5
Friends	37	48.1
Public	30	39.0
General knowledge	36	46.8
Healthcare providers	16	20.8
Awareness of potential side-effects of using medicinal plants for the treatment of diarrhea in under-five children		
Yes	12	15.6
No	42	54.5
Not really	23	29.9
Confidence level in knowledge of medicinal plant use for treatment of diarrhea in under-five children		
Confident	53	68.8
Neutral	9	11.7
Doubtful	15	19.5

Table 3: Some Common Medicinal Plants Used in the Treatment of Pediatric Diarrhea in Ikot Abasi

Table 3 shows that the six most commonly used plants were *Ocimum gratissimum*

(37.7%), *Vernonia amygdalina* (29.9%) and *Psidium guajava* (13%). *Zingiber officinale* (9%) *Citrus aurantifolia* and *Lasianther africana* (5.2%).

Table 3: Some Common Medicinal Plants Used in the Treatment of Pediatric Diarrhea in IkotAbasi

Common name	Botanical name	Frequency (n=77)	Percentage (%)
Editan	<i>Lasianthera Africana</i>	4	5.2
Scent leaf	<i>Ocimumgratissimum</i>	29	37.7
Bitter leaf	<i>Vernonia amygdalina</i>	23	29.9
Guava	<i>Psidium guajava</i>	10	13.0
Ginger	<i>Zingiber officinale</i>	7	9.0
Lime	<i>Citrus aurantifolia</i>	4	5.2

Table 4: Methods of Administration of the Medicinal Plants Used

Table 4 highlights the methods of administration of these medicinal plants. *Lasianthera Africana* was administered as an infusion by 75% of the respondents and

as a decoction by 25%. *Ocimum gratissimum* was solely administered as an infusion (100%) while *Vernonia amygdalina* was administered as an infusion by 69.6% of the respondents, as a decoction by 8.7% and was chewed by 21.7%.

Psidium guajava (100%) and *Citrus aurantifolia* (100%) were solely administered as infusions while *Zingiber officinale* was administered as an infusion by 57.1%, as a decoction by 28.6% and was chewed by 14.3%.

Table 4: Methods of Administration of the Medicinal Plants Used

Methods	<i>Lasianther aafriicana</i>	<i>Ocimumgrati cumssimum</i>	<i>Vernoniaam ygdalina</i>	<i>Psidiumguaj ava</i>	<i>Zingiberoffi cinale</i>	<i>Citrus aurantifolia</i>
Tea	3 75.0%	29 100.0%	16 69.6%	10 100.0%	4 57.1%	4 100.0%
Decoction	1 25.0%	0 0.0%	1 4.3%	0 0.0%	2 28.6%	0 0.0%
Chewing	0 0.0%	0 0.0%	6 21.7%	0 0.0%	1 14.3%	0 0.0%

Table 5: Perceived Effectiveness of Medicinal Plants in Treating Diarrhea in under Five Children in Ikot Abasi.

As shown in Table 5, the overall satisfaction of mothers with the use of medicinal plants was as follows: 24.7% were very satisfied, 23.4% satisfied, 22.1% neutral, 19.5% were unsatisfied and 10.3% were very dissatisfied. In terms of the perceived effectiveness, 3.9% of the respondents believed that medicinal plants are highly

effective, 42.9% believed that medicinal plants are effective, 40.2% were neutral on effectiveness, 6.5% of the respondents found it to be ineffective while 6.5% believed that it is very ineffective. However, in a situation where the child did not recover after some days of treatment, majority (59.7%) of the mothers resorted to self-medication with antibiotics while 40.3% visited the hospital.

Table 5: Perceived Effectiveness of Medicinal Plants in Treating Diarrhea in Under-Five Children by Mothers and Caregivers in IkotAbasi.

Variables	Frequency (n=77)	Percentage (%)
Overall satisfaction with use of medicinal plants for treating diarrhea in under-five children		
Very satisfied	19	24.7
Satisfied	18	23.4
Neutral	17	22.1
Not satisfied	15	19.5
Very dissatisfied	8	10.3
Effectiveness rating by mothers of medicinal plant-based diarrhea treatment in their under-five children		
Highly effective	3	3.9
Effective	33	42.9
Neutral	31	40.2
Ineffective	5	6.5
Very ineffective	5	6.5
Next line of action if medicinal plants are ineffective		
Hospital	31	40.3
Self-medication with antibiotics	46	59.7

Table 6: Socio-Economic and Cultural Factors that Influence the Choice of Medicinal Plants for the Treatment of Diarrhea over Conventional Medical

As shown in Table 6, the most common personal factor influencing the choice of

medicinal plants was limited access to healthcare facilities (66.2%), financial constraints (45.5%), followed by positive past experiences at 32.4% with the least common factor being educational status (14.3%).

Table 6: Socio-Economic and Cultural Factors that Influence the Choice of Medicinal Plants for the Treatment of Diarrhea over Conventional Medical

Personal Factors	Frequency	Percentag (%)
Limited access to healthcare facilities/ easy access to plant materials	51	66.2
Financial constraints	35	45.5
Illiteracy	11	14.3
Positive past experiences	25	32.4

Table 7: shows that family influence (51.9%) was the major social factor influencing the use of medicinal plants. This

was closely followed by peer influence (48.1%), religious influence (31.2%) and cultural influence (24.7%).

Table 7: Social Factors Influencing Choice of Medicinal Plant-Based Diarrhea Treatment for Under-Five Children in Ikot Abasi

Social Factors	Frequency	Percentage (%)
Family influence	40	51.9
Peer influence	37	48.1
Cultural influence	19	24.7
Religious Influence	24	31.2

DISCUSSION

The practice of application medicinal plants in treating childhood diseases is a practice is embraced, and deeply rooted in many African cultures, including in Nigerian communities like Ikot-Abasi. The results of this research showed that majority (59.7%) of mothers in Ikot-Abasi, were familiar with the use of medicinal plants to treat diarrhea in their under-five children. Similar findings have been reported by [1,14,19]. This phenomenon has been reported by [12] in a study in rural communities, where the researcher observed heavy acceptance and reliance on traditional medicinal plants due their accessibility, affordability and belief system.

The survey revealed that 6 plant materials used by households in Ikot-Abasi for treatment of the diarrhea in under-five children include *Ocimum gratissimum*(37.7%), *Vernonia amygdalina* (29.9%) and *Psidium guajava* (13%). *Zingiber officinale* (9%) *Citrus aurantifolia* and *Lasianthera africana* (5.2%). Previous studies have shown that 75% of their rural dwellers rely on traditional medicine for health care delivery [20,21].

The study revealed high acceptability of these medicinal plants for treatment of diarrhea, with few little knowledge (15.6%) of possible side effects these plants could

have on human. While medicinal can be effective in the treatment of diarrhea [20,22], it is crucial to be aware of possible potential adverse effects such as gastrointestinal issues, toxicity and allergy, emanating from dosage, quality, standardization and drug interaction especially in young children [16]. The findings of this study are in line with that of [23] in Northern Nigeria, where the researcher found that many people were not aware of the risks associated with the use of herbal medicines, often due to strong cultural belief among community members. Many plant materials have been scientifically proven to be effective in the treatment of diarrhea, the challenge in the use of medicinal plants has to do with the issues related with dosage effect, method of preparation and administration. Drug misuse and abuse arising the combination of alternative medicine with conventional medicine can lead life-threatening complications.

According to the participants, their major source of information on use of medicinal plant material was family (54.5%) and friends (48.1%). These major sources of information on use of medicinal plants for treatment of diarrhea in under-five children could be attributed to their way of life. In IkotAbasi, communal living is highly

practiced as it is believed to promote peace and unity among the community members. However, these practice my disadvantageous, where the source of information is incorrect. According to [24], proper education on the administration of alternative medicine can enhance the safe use of traditional remedies, ensuring they remain a valuable health resource.

Results on the commonly used plants (table 4), revealed that *Ocimum gratissimum* (scent leaf), was the most (37.7%) commonly used plant for treating diarrhea in under-five children in IkotAbasi. Comparatively, a study by [25] in Southern Nigeria also reported high usage of *Ocimum gratissimum* due to its acknowledged antimicrobial and anti-inflammatory properties, aligning with the preferences observed in Ikot-Abasi.

The findings further highlighted that the only method of administration of *Ocimum gratissimum* was as tea or decoction of the leaves. However, while these plants are perceived to effective, there is often a lack of formal validation of their efficacy and safety, which can pose risks. A research by [26] in Central Nigeria highlighted potential health risks due to varying dosages and preparations of medicinal plants like *Vernonia amygdalina*, which can lead to adverse effects if not properly managed. This also points to a necessity for careful handling and preparation of these remedies to prevent adverse effects.

The survey also assessed the perceived effectiveness of medicinal plants used by mothers in Ikot-Abasi for treating diarrhea in their under-five children. The results indicated that while a substantial number (46.8%) of mothers perceived medicinal plants as being effective for treating diarrhea in their under-five children, a significant number (40.2%) were neutral about its perceived effectiveness. This mixed response aligns with the findings of [27] in Western Nigeria, where the effectiveness of traditional remedies was similarly reported in varying levels. Mothers (participants) in the above study also

showed a range of satisfaction with herbal treatments, dependent largely on the perceived speed and permanence of cure. However, the scenario contrasts with findings in Northern Nigeria, where [28] reported higher satisfaction rates, possibly due to stronger cultural adherence to traditional medicine practices in those regions.

Moreover, the survey highlighted a crucial behavior when traditional remedies fail; a shift towards self-medication with antibiotics, which was reported by 59.7% of respondents. This practice raises concerns about the potential for antibiotic resistance, a problem that is becoming increasingly significant in Nigeria. This behavior was noted by [29] in their study in Eastern Nigeria, where inappropriate use of antibiotics following unsuccessful herbal treatments contributed to rising cases of antibiotic resistance.

Investigation on the socio-economic factors that influence the choice of medicinal plants over conventional medical treatments among mothers in Ikot-Abasi revealed that the major factor (66.2%) was limited access to healthcare facilities and financial constraints (45.5%) were the major contributory factors. The influence of financial constraints and lack of health care facilities have also been reported by [30] in Northeastern Nigeria, where the researchers found that economic hardships significantly drove the reliance on herbal remedies, particularly in areas where healthcare services were scarce or unaffordable.

However, the impact of educational status, which appears to be less significant in Ikot-Abasi, contrasts with findings from urban areas like Lagos, where [31] noted that higher education levels were associated with decreased reliance on traditional medicine, likely due to better access to and trust in medical science.

The major social factors that influence the use of medicinal plants for treating diarrhea in children were family influence 51.9%, and peer influence at 48.1%. These observations also echo the strong

community and social network ties that often guide healthcare decisions in many rural African settings [32]. This researcher, [32] in rural Western Nigeria found that family and community elders often play a crucial role in health-related decisions, including the use of traditional remedies. A research carried conducted by [33] in Northern Nigeria also showed similar trends, where family and peer recommendations were predominant drivers in the choice of healthcare practices.

The study revealed that religious and cultural influences also played a role, although exceedingly (31.2% and 24.7%) of respondents respectively. This is consistent with findings from other parts of Nigeria, such as those by [34] in Southwestern Nigeria, where religious beliefs significantly dictate the acceptance and use of herbal remedies within communities.

The study further highlighted the cultural beliefs surrounding the use of medicinal plants for treating childhood diarrhea in the Ikot-Abasi community. It is worthy to note that (87.01%) of the respondents reported that their choices are not influenced by cultural beliefs, suggesting a pragmatic approach to healthcare that may prioritize effectiveness and accessibility over tradition. This is in contrast to a study by [35] in Southeastern Nigeria, and [36] where the researchers found strong ties between cultural beliefs and the persistent use of traditional medicine, emphasizing how cultural heritage can dictate healthcare practices.

The minimal influence of cultural beliefs in Ikot-Abasi could reflect a community that is transitioning, could be possibly due to increased exposure and acceptance of modern approaches to life issues. [11] found that increased education and access to global communication have been shown to reduce the reliance on strictly traditional approaches to medicine.

Given this context, it is possible that public health initiatives aimed at educating the community about the benefits and risks of medicinal plants could be particularly

effective in Ikot-Abasi. Unlike areas with strong cultural resistance to change, the pragmatic nature of the community could facilitate the acceptance of evidence-based approaches to traditional medicine use.

CONCLUSION

The findings indicated that medicinal plants are increasingly being utilized by mothers and caregivers to treat childhood diarrhea in their under-five children in Ikot Abasi with *Ocimum gratissimum* being the most used. The study also revealed that the level of perceived effectiveness among mothers for the use of medicinal plants in treating diarrhea in their under-five children was high. Personal factors such as limited access to healthcare facilities and financial constraint were found to influence the choice of medicinal plant-based treatment of diarrhea over orthodox medicine. Secondly, family influence and peer influence were the major social influences on mothers of under-five children in Ikot-Abasi while treating diarrhea in their under-five children.

Declaration by Authors

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