

# **E**THNOBOTANY OF MANAGEMENT OF TEETHING CONDITIONS IN BABIES FROM ISEYIN, NIGERIA

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## **ABSTRACT**

*In view of health conditions and pains associated with the eruption of teeth in infants, this study investigated the indigenous remedies used in the management of pains and diseases associated with teething. Thirty-one (31) medicinal plants from twenty five (25) families were documented from respondents with vast ethnomedicinal knowledge on management of teething condition in infants from Iseyin, Nigeria. The interview was conducted in Yoruba language and the recipes, plant parts used, method of preparation and administration were recorded. Some of the documented plants were *Alternanthera nodiflora* R. Br, *Xylopiya aethiopica* (Dunal) A. Rich., *Vernonia amygdalina* Delile, *Typha domingensis* (Pers.) Steud., *Carica papaya* L., *Morinda lucida* Benth., *Cussonia arborea* Hochst, *Cola acuminata* (P. Beauv.) Scott & Endl. and *Annona senegalensis* Pers. Of the thirty-one (31) medicinal plants, the priority plant species*

## **Introduction:**

Teething, a natural physiologic process which involves the upward movement of the developing teeth through the jawbone to break through the gum and project into the mouth comes with differing painful signs in infants. Teething is the process by which an infant's teeth break through the gum and gradually appear (Meer and Meer, 2011). Teething or tooth eruption is the process by which a tooth moves from its site of development within the jaws to its final functional position in the oral cavity (Wake, Hesketh and Lucas, 2000).

Teething has traditionally been the explanation for a variety of symptoms and signs in young child both by doctors and parents alike (Swann, 1975). The available

were *Alternanthera nodiflora* and *Xylopiya aethiopica*. The ethnobotanicals are used as regimen for the treatment of fever (*Cola acuminata*), boils (*Vernonia amygdalina*) diarrhoea (*Saccharium officinarium* L), sleeplessness and restlessness (*Typha domingensis*) associated with teething. The plants documented in this study could form basis for future research activities in departments such as Botany, Microbiology, Pharmacognosy and Chemistry.

**Keywords:** Teething, Infants, Medicinal plants, Paediatric diseases, Indigenous recipes

**b**ody of research is inconclusive with several experts arguing for and against the presence of teething symptoms.

The eruption of the primary incisor begins around 4- 8 months and teething is complete around 30-36 month with the eruption of second primary molar (Meer and Meer, 2011). Teething pain is thus the commonest symptom associated with the eruption of the primary dentition (Tsang, 2010). The symptoms associated with teething can be categorised into being local and systemic with the local symptoms ranging from irritation, redness of the gum, gingival swelling, thumb sucking and gum rubbing (Hulland, Lucas, Wake, Hesketh., 2000; Cunha, Garcia, Carvalho, Murata, 2004 & Jones, 2002) while systemic symptoms include loss of appetite, crying, increased salivation, drooling, diarrhea, boils and general irritability (Peretz, Ram, Laura, Maria Otero, 2003). The teething process can therefore be said to be either pathological or physiological. However, the relationship between tooth eruption and the local or systemic manifestations in children has generated controversy among dentists and physicians. Although orthodox medical practitioners believe that there are no specific symptoms that can reliably predict the emergence of a tooth (Meer & Meer, 2011), yet they prescribe drugs aimed at achieving analgesia, anaesthesia, sedation or a combination of these.

### Teething Management Strategy

Alternative management strategy for teething as noted by Meer and Meer (2011) include

1. Cuddle therapy: this involves cuddling the child with the intention of distracting the child from the pain

2. Rubbing gums: the discomfort of teething could be temporarily relieved through light massaging of the infant's gum with a clean finger for 1-2 minutes.
3. Use of teething gel

Historical management of teething included methods such as blistering, bleeding, placing leeches on gum and applying cantery to the back of the head. Lancing was one particular invented in the 16<sup>th</sup> century by Ambrose Pare. It involves making two incisions crossing at 90 over the difficult tooth and this is usually done without the use of anaesthesia.

Modern day management of teething can be broadly classified into Non-pharmacological and Pharmacological management. Non-pharmacological management of teeth according to McIntyre & McIntyre (2002) include the use of teething rings.

Teething rings: this are manufactured from silicon-based material which are designed for infants to gnaw on. The gnawing provides temporary pain relief. This pain relief can also be achieved by chewing on a variety of materials such as oven-hardened bread, fresh and frozen fruits such as frozen cucumber and banana.

Pharmacological management include the use of:

Topical agents: these refer to local anaesthetic and minor analgesics which are generally marketed as teething gels. They are either lignocaine-based or chroline-salicylated- based products which are applied to the painful area of the mucous membrane. They are rapidly absorbed and provide temporary relief from the pain.

Systemic analgesics: A sugar-free paracetamol elixir is the systemic medicine of choice in teething because of its actions in reducing pain and pyrexia. Under dose of paracetamol is ineffective while overdose is dangerous as it leads to hepatocellular necrosis. Drugs of these nature though capable of relieving pains, has not been evidenced to be efficacious against teething pain (Cranswick, 2001). The side effects of the active constituents of these paediatric drugs range from hepatocellular necrosis, renal tubular necrosis and death (McIntyre & McIntyre 2002) to Reyes syndrome (Owais, Zawaideh & Bataineh, 2010; Schechter, 2003; MIMS, 2003) as shown in the table below:

Table 1: Major Drug Constituents and their Side Effects

Drug Constituent	Side Effects
Paracetamol	Overdosing with paracetamol results in hepatocellular necrosis, renal tubular necrosis and death (McIntyre & McIntyre, 2002)
Ibuprofen	Causes frequent adverse reactions in children (Titchen, Cranswick & Beggs, 2005; Pierce & Voss, 2010.)
Choline Salicylates	Excessive application can cause a chemical burn (McIntyre & McIntyre, 2002; Wilson & Mason C, 2002 ) May cause Reyes syndrome in susceptible children (Owais, Zawaideh & Bataineh, 2010; Schechter, 2003; MIMS, 2003).
Lignocaine and Benzocaine	Poses high risks of hypersensitivity reactions and severe adverse effects such as methaemaglobinaemia (Mofenson, Caraccio, Miller & Greensher, 1993; Townes, Geertsma & White, 1997; Balicer & Kitai, 2004; Bong, Hillard & Seefelder, 2009)

Source: Compiled from several authors as indicated in the table

This indicates the potentials of pharmacological products to have side effects and severe complications. Thus, there is a need to use safer non pharmacological methods especially natural materials such as plants as remedies for teething problems. The use of herbal remedies in preventing and treating problems associated with teeth eruption in children can save parents from exposing their children to the complications related to the use of pharmacological products.

Despite being commonly used in treating both the local and systemic symptoms associated with teeth eruption in children, there is little or no documentation of herbal materials used in the management of this condition. It is against this background that this study wishes to investigate and document the herbs, the method of preparation and administration of these recipes on children.

## Materials and Methods

Ethno-botanical survey of plants used in the management of teething condition in children was conducted in Iseyin, Oyo state, Nigeria. Purposive sampling technique with structured interview was used for data collection. Ten (10) traditional medical practitioners with vast knowledge in the treatment of infants (of age range 40-60) were interviewed and ethno-botanical information on the recipes used, local name of plants used, plants parts, method of preparation and administration was documented.

## Results and Discussion

### Demographic Data of Respondents

S/N	Profile	Characteristics	Values
1	Sex	Male Female	8 (80%) 2 (20%)
2	Age	50-75	10 (100%)
3	Marital status	Married	10 (100%)
4.	Literacy level	Literates Semi-illiterates Illiterates	3 (30%) 2 (20%) 5 (50%)

The survey yielded 31 species of plant belonging to 25 families. The family Fabaceae has the highest number of species followed by Combretaceae, Meliaceae, Euphorbiaceae. Amaryllidaceae, Poaceae, Rutaceae, Sapindaceae, Araceae have two (2) species each while other plant families are each represented by a lone species. The leaves and roots contributed to the frequency of plant parts used while the stem has the least frequency. The opened fruit of *Xylopiya aethiopica* featured in virtually all the recipes. This is suggestive of its wide application in the treatment of common ailments. The methods of preparation cited were decoction, infusion and soap, while the solvent of choice was water. The respondents mentioned a particular brand of bottle water which they believe is pure enough for herbal preparation. Other materials/ingredients cited include: soft traditional black soap, sulphur, Shea butter, antimony/black lead ore, and local sponge. Method of administration and dosage involves diluting

extracts from infusion or decoction in higher parts of water – to be drunk as well as for bath. Other methods of preparation include steeping in cold water, soap and cream. The recipes are enumerated as follows:

Table 2: Some Traditional Recipes Used in the Management of Teething Conditions

S/N	Component of recipes	Preparation/ Administration	Therapeutic effect
1.	The bark of <i>Cola acuminata</i> tree and Black soap	The plant is ground into powder and mixed with the black soap for bathing	Antipyretic
2.	<i>Alternanthera nodiflora</i> leaves, <i>Xylopiya aethiopica</i> fruit and Black soap	The plant is ground into powder and mixed with the black soap for bathing	Analgesic, Antiseptic
3.	<i>Alternanthera nodiflora</i> leaves, Bat head and Black soap	The plant and bat are ground together and mixed with black soap to bathe the babies head only	Analgesic
4.	<i>Calotropis procera</i> leaves and black soap	The plant is ground into powder and mixed with the black soap for bathing	Analgesic, antipyretic
5.	<i>Xylopiya aethiopica</i> fruits, <i>Allium ascalonicum</i> , egg and black soap	The plant is ground into powder and mixed with the black soap for bathing	Analgesic, antiseptic
6	<i>Citrullus colocynthis</i> leaves, <i>Xylopiya aethiopica</i> , Black soap	The plant is ground into powder and mixed with the black soap for bathing	

7	<i>Carica papaya</i> dried leaves, <i>Thypha domingensis</i>	Burn both to ashes and mix with palm oil, rub on the child's head	Antipyretic, anti-insomnia
8	<i>Alternanthera nodiflora</i> leaves and black soap	The plant is ground into powder and mixed with the black soap for bathing	Analgesic
9.	<i>Morinda lucida</i> , <i>Hymenocardia acida</i> , black soap	The branch of the plants are charred and mixed with black soap for bathing	Antipyretic
10	<i>Alternanthera nodiflora</i> dried leaves, <i>Xylopi aethiopica</i> and black soap	The leaves are powdered and mixed with black soap for bathing	Analgesic, antiseptic
11	<i>Aframum meleguata</i> , dried head of <i>Sus domesticus</i> , black soap	The ingredients are charred and mixed with black soap for bathing	Analgesic
12	<i>Cussonia arborea</i> leaves, <i>Xylopi aethiopica</i> , black soap	The plants are powdered and mixed with black soap for bathing	Analgesic, antiseptic
13	<i>Azadiracta indica</i> leaves, <i>Vernonia amygdalina</i> leaves, <i>Ficus carpensis</i> leaves and black soap	The plants are powdered and mixed with black soap for bathing	Antipyretic, antidiarrhoea,
14	<i>Abrus precatorius</i> leaves, <i>Melissa officinalis</i> root, <i>Vernonia amygdalina</i> young leaves	Decoction of the leaves is used to bath the child	Antipyretic, boils

15	<i>Terminalia avicennoides</i> root, <i>Glyphaea brevis</i> , <i>Kalanchoe crenata</i> , <i>Xylopi aethiopica</i> and <i>Saccharium officinarium</i>	Decoction of plants is taken orally and used to bath	Analgesic, anti-diarrhoea
16	<i>Mangifera indica</i> root, <i>Securidata longepedunculata</i> , <i>Caccia occidentale</i> root, <i>Crescentia cujete</i> root, <i>Ficus thoningn</i> leaves <i>Xylopi aethiopica</i> and black soap	The plants are pounded into powdery form and mixed with black soap for bathing	Antipyretic, antiseptic, analgesic

Source: Compiled from Field result

### Conclusion

Teething is a natural process which involves the upward movement of the tooth and its naturally accompanied by pain and other symptoms such as diarrhoea. Several management methods have been adopted through the years including lancing, pharmacological and non-pharmacological methods.

The result of this study provides evidence of the vast indigenous knowledge about teething and its management among the Iseyin people as well as the biodiversity of the plants used in the management. It also showcases the versatility of the opened fruit of *Xylopi aethiopica* in the treatment of common ailments.

### Recommendation

Further research should be carried out on the above listed plants to identify the active agent, test its potency as well as standardize the dosage required for effective use in relieving the symptoms associated with teething in infants.

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