

## Reversal of tooth eruption sequence: beliefs and perceptions

OO Bankole<sup>1</sup> and FB Lawal<sup>2</sup>

Departments of Child Oral Health and Periodontology and Community Dentistry,  
College of Medicine, University of Ibadan, Ibadan, Nigeria

### Abstract

**Background:** Among some Nigerians, eruption of the maxillary primary incisors before their mandibular counterparts is considered a taboo. Data regarding the perceptions of residents of Igbo Ora to reversal of eruption sequence appear non-existent.

**Aims and objectives :** The aim of this study is to assess the attitudes and beliefs of some adults of Igbo Ora to reversal of eruption sequence of primary incisors

**Design of study:** A cross-sectional study was conducted among community dwelling females aged 18 years and older in Igbo Ora, Southwestern Nigeria  
**Materials and methods.** A house to house survey was conducted among all willing adult females available at the time of the study. Data for the study was collected with an interviewer administered questionnaire in the Yoruba Language. Data collected were analyzed with SPSS version 21. Frequencies, means and proportions were generated and test of association between categorical variables was done using Chi Square statistics.

**Results:** There were 229 participants with a mean age of 34.6 (SD = 12.6) years and majority (34.1%) had secondary school education. Reversal of eruption sequence was attributed to child being evil (47.6%) and mother exposed to other evil children (4.8%). About 56.3% of respondents believe that reversed eruption sequence has a negative effect on the child, including the ability to place irrevocable curses on people. A perceived consequence of having a child with reversed tooth eruption sequence on the family was fear of the child by other family members (21.8%). Beliefs about reversed sequence of eruption of primary anterior teeth being a normal variation increased with educational qualification ( $p = 0.001$ ).

**Conclusion:** The study has revealed gross fallacies regarding reversal of eruption sequence in children in Igbo Ora. Health education intervention should be given to them particularly targeting mothers and the less educated.

**Keywords** Eruption, teeth, reversal, taboo

### Résumé

**Contexte :** Chez certains Nigériens, l'éruption des incisives primaires maxillaires avant leurs homologues mandibulaires est considérée comme un sujet tabou. Les données concernant les perceptions des résidents d'Igbo Ora sur l'inversion de la séquence d'éruption semblent inexistantes.

**Buts et objectifs :** Le but de cette étude est d'évaluer les attitudes et les croyances de certains adultes d'Igbo Ora à l'inversion de la séquence d'éruption des incisives primaires.

**Plan d'étude :** Une étude transversale a été menée parmi des femmes de 18 ans et plus vivant dans la communauté d'Igbo Ora, dans le sud-ouest du Nigéria.

**Matériels et méthodes :** Une enquête porte à porte a été menée auprès de toutes les femmes adultes consentantes disponibles au moment de l'étude. Les données de l'étude ont été recueillies à l'aide d'un questionnaire administré par un enquêteur en langue yoruba. Les données collectées ont été analysées avec SPSS version 21. Des fréquences, des moyennes et des proportions ont été générées et un test d'association entre variables qualitatives a été réalisé à l'aide de statistiques Chi Carré.

**Résultats:** Il y avait 229 participants avec un âge moyen de 34,6 (SD = 12,6) ans et la majorité (34,1 %) avaient fait des études secondaires. L'inversion de la séquence d'éruption a été attribuée à être un enfant maléfique (47,6%) et à une mère exposée à d'autres enfants maléfiques (4,8%). Environ 56,3% des personnes interrogées pensent que la séquence inversée des éruptions a un effet négatif sur l'enfant, notamment en ce qui concerne la possibilité de lancer des malédictions irrévocables à des personnes. Une conséquence perçue d'avoir un enfant avec une séquence d'éruption de dent inversée sur la famille était la peur de l'enfant de la part des autres membres de la famille (21,8%). Les croyances selon lesquelles la séquence inversée d'éruption des dents antérieures primaires était une variation normale augmentaient avec le diplôme éducatif ( $p = 0,001$ ).

**Conclusion :** L'étude a révélé des fausses idées concernant l'inversion de la séquence d'éruption chez les enfants d'Igbo Ora. Une intervention d'éducation pour la santé devrait leur être ciblée, en particulier pour les mères et les moins instruits.

**Mots-clés** Eruption, dents, inversion, taboo

## Introduction

Tooth eruption in children is an important milestone in the Nigerian culture as parents, neighbors and friends eagerly await eruption of baby's first teeth. Literature reveals that the primary mandibular incisors usually erupt before their maxillary counterparts [1-3]. In some instances however, the primary maxillary incisors have erupted ahead of the mandibular ones reversing the order of eruption [4,5].

Prevalence rates of reversal of eruption sequence of primary incisors in infants appear scarce. In a Nigerian study, 3.1% of mothers claimed that their children erupted the maxillary primary incisors prior to the mandibular counterparts [5].

The eruption of maxillary primary incisors before the mandibular ones have sometimes been unacceptable in certain cultures. Among the Marakwet of Kenya [6], some tribes in Zambia [7], Benin republic [8], and the Hammer of Ethiopia [9] eruption of upper teeth before the lowers have been viewed with disdain. Amid some Nigerians tribes, it is considered a taboo and affected children are deemed evil: believed to possess mysterious powers [10-14]. An earlier study on eruption sequence in infants among Yoruba rural dwellers in southwestern Nigeria revealed that 70.4% of the community members regarded eruption of upper primary incisors before the lowers as a sign of the affected child being evil [4]. Consequently, as affected children grow, they are stigmatized, suffer humiliation and immense emotional trauma [4,12]. Data regarding the perceptions of Nigerians in remote areas of Igbo Ora, a rural farming community in Ibarapa to reversal of eruption sequence in infants appear nonexistent. Hence this study, aims to investigate their beliefs, attitudes and practices towards reversal of eruption sequence of primary incisors in children.

It is expected that the results of this study will reveal knowledge gaps, which will lead to development of health education tools/programmes to address such misconceptions.

## Materials and Methods

This cross-sectional study was conducted among community dwelling females aged 18 years and older in Igbo Ora, Southwestern Nigeria. Igbo Ora is the headquarters of Ibarapa Central Local Government Area in Oyo State and administratively consists of seven wards [15]. The town is bordered by six other Ibarapa communities with typical characteristics of rural settlements and the local language of this community is Yoruba [15].

Ethical approval for the study was obtained from the Oyo State Ethics Review Board.

A minimum sample size of 166 was calculated for the study using a sample size calculation formula for cross sectional study [16] at a power of 90%, a degree of error of 5% and prevalence rate of 12.3% obtained from a previous study [12].

Participants for the study were selected using a cluster random sampling technique. Two wards were randomly selected from a list of seven wards within this community by balloting using sealed envelopes. Within the two selected clusters, a house to house survey was conducted, all females who satisfied the inclusion criteria were approached for the study.

Permission and approval was obtained from the head of each household before approaching the females. The purpose of the study was explained to each of the participants and consent sought before interviewing them. Females that were 18 years or older who have been residing in the community for at least one year were recruited for the study while those that were ill or did not consent to participate or those in whom communication was impossible were excluded from the study.

Data for the study was collected with an interviewer administered questionnaire which was translated into Yoruba Language and back translated to English by independent individuals versed in both languages. Ambiguous questions were modified appropriately. The questionnaire was divided into three sections: Section A comprised of sociodemographic characteristics of the participants, Section B; beliefs about reversed tooth eruption and Section C assessed advice the respondents will give mothers of children with reversed sequence of tooth eruption. The questionnaire consisted of both open and close ended questions. The close ended questions had responses obtained from literature review on similar issue, while open ended questions were included so as to capture extensively the opinions and beliefs of the participants. The questionnaire was pretested among females in another cluster not included in the study so as to validate and ascertain that the questionnaire actually addressed what it set out to measure. Ambiguous questions were removed and appropriate modification was made before the final study. The research assistants employed for this study received a one day training on the proper technique of administration of the questionnaires. Data was collected over a period of four weeks

Data collected were analyzed with SPSS version 21. Frequencies, means and proportions were generated and test of association between categorical variables was done using Chi Square statistics. To reduce the number of empty cells for cross tabulation and analyses, age was dichotomized around the mean age as  $< 35$  years and  $\geq 35$  years. Likewise, perceptions of the study participants about reversed eruption of tooth sequence in a child was also reconstructed into two categories as being “normal variation” in a category and other views into the second category named “others”. Statistical level of significance was set at  $p < 0.05$ .

### Results

There were 229 participants with a mean age of 34.6 (SD = 12.6) years and only a few 19.2% of the participants had no formal education (Table 1).

6 (2.6%) while 93 (40.6%) believed it as a normal variation but may have consequences (Table 2). More than half of the respondents 129 (56.3%) believed that a child with reversed eruption sequence may suffer adverse consequences as a result and 66 (51.2%) of them affirmed that it included the ability of child to place permanent curses on others (Table 2). Perceived consequences of having a child with reversed tooth eruption sequence on the family mentioned by respondents were; fear of the child by other family members as the child is believed to be evil 50 (21.8%) (Table 2).

Respondents will advise mothers of affected children to hide/get rid of them (28.4 %) and extract the teeth (22.3%) (Table 2).

A higher proportion 90 (91.8%) of older women (aged 35 years or older) were found to have seen children with reversed sequence of tooth eruption when compared with those younger than 35 years ( $p = 0.004$ ).

**Table 1:** Demography of study participants

Variable	Frequency	%
<i>Age group (years)</i>		
$\leq 20$	27	11.8
21-30	77	33.6
31-40	66	28.8
41-50	31	13.6
$> 50$	28	12.2
<i>Educational qualification</i>		
No formal education	44	19.2
Primary	65	28.4
Secondary	78	34.1
Post-secondary	42	18.3
Tertiary	0	0
<i>Tribe</i>		
Yoruba	222	96.9
Hausa	5	2.2
Ibo	2	0.9
<i>Religion</i>		
Christian	57	24.9
Muslim	159	69.4
Tradition	1	0.4
Others	12	5.3

The majority 192 (83.8%) had seen or heard of a child with reversed sequence of tooth eruption.

Ninety-four (41.0 %) respondents would be alarmed on seeing such a child (Table 2). Attributed reasons to reversed sequence of tooth eruption in children include; child being evil 109 (47.6%), mother's exposure to a child with reversed sequence of tooth eruption during pregnancy 11 (4.8%), mother had contravened laid down cultural rules and traditions

No statistical significance was found with educational qualification and having seen a child with reversed sequence of eruption (Table 3).

Analysis of the perception of participants about reversed eruption sequence and their sociodemographic characteristics (Table 4) showed that beliefs about reversed sequence of eruption as being a normal variation increased with educational qualification with the highest proportion (76.2%) noted

**Table 2:** Beliefs and perceptions of respondents about reversal of tooth eruption sequence  
Multiple responses

Variable	n = 229	N	%
<i>Initial reaction on seeing a child with reversed sequence of tooth eruption</i>			
Surprised		94	41.0
Suspect it's an evil child		51	22.3
Will not be surprised as they had seen such before		84	36.7
<i>Reasons why children erupt the upper incisors before lower ones</i>			
Evil children		109	47.6
Mother contravened cultural taboos		6	2.6
Mother exposed to other evil children		11	4.8
Mother touching the child's gum before tooth erupts		1	0.4
It is a normal variation		93	40.6
No idea		9	4.0
<i>Effect of reversed sequence of tooth eruption on the child</i>			
Negative consequences		129	56.3
None		100	43.7
<i>Perceived negative effect of reversed sequence of tooth eruption (n=129)</i>			
Places permanent curse on family and other people		66	51.2
Engages in strange/abnormal/dangerous things		47	36.4
Dull		2	1.6
Combination of all the options above		14	10.9
<i>Consequences of reversed sequence of tooth eruption on the family</i>			
Child feared by others members of the family		50	21.8
Source of embarrassment		49	21.4
A source of curse on the family		26	11.4
Abomination		19	8.3
Combination of the above		10	4.4
None		82	35.8
No idea		3	1.3
<i>Advice to the mother of a child with reversed sequence of tooth eruption</i>			
Hide the child/get rid of the child		65	28.4
Extract the tooth		51	22.3
Appease gods with sacrifice to reverse the eruption sequence, then extract tooth		15	6.6
Leave child alone (do nothing)		94	41.0
No idea		4	1.7

among those with post-secondary education ( $p = 0.001$ ).

A greater proportion of those with lower educational levels will be surprised at seeing children with such teeth and will suspect affected children are evil as compared to respondents with post – secondary education ( $p=0.001$ ) (Table 5).

### Discussion

This study reveals gross misconceptions regarding reversal of eruption sequence of primary incisor teeth in Igbo Ora. This is hazardous and may affect the child's physical, psychological and social wellbeing in the future. Over four fifths of the respondents had seen/ heard of a child with reversed sequence of tooth eruption. However, about two fifths would be astounded at seeing such a child. This may be due to the fact that it is a deviation from the acceptable

cultural norm that lower anterior incisors should erupt first. In addition, none of the respondents mentioned ever having a child with reversed sequence of tooth eruption. This may either be due to the relatively low prevalence of the condition or the cultural norm associated with owning up to having such children because of the associated consequential stigmatization that may be suffered if others in the community get to know about it.

Many (47.6%) of the respondents were convinced that affected children erupt their upper teeth before the lower ones because they are evil. 'Evil children' in this context implies that these children are witches/sorcerers possessing supernatural powers. Reports by Aderinokun and Oyejide (1991) [4] and Uchegbue (2010) [11] are in congruence with this report. Other African cultures such as Baribar of Benin [8] and Hamar of Ethiopia [9] share this

**Table 3:** Socio demographic characteristics, having seen a child with reversed sequence of tooth eruption and perceptions about a child with reversed sequence of tooth eruption

Variable	Seen a child with reversed sequence of tooth eruption		X <sup>2</sup>	P- value
	Yes n (%)	No n (%)		
<i>Age (years)</i>				
<35	102 (77.9)	29 (22.1)	8.081	0.004*
≥35	90 (91.8)	8 (8.2)		
Total	192 (83.8)	37 (16.2)		
<i>Educational qualification</i>				
None	38 (86.4)	6 (13.6)	0.528	0.913
Primary	54 (83.1)	11 (16.9)		
Secondary	64 (82.1)	14 (17.9)		
Post-secondary	36 (85.7)	6 (14.3)		
Total	192 (83.8)	37 (16.2)		

\*Statistically significant

**Table 4:** Socio demographic characteristics and perceptions about a child with reversed sequence of tooth eruption

Variable	Normal variationn (%)	Others n (%)	X <sup>2</sup>	P value
<i>Age (years)</i>				
<35	51 (38.9)	80 (66.1)	0.549	0.588
≥35	42 (42.9)	56 (57.1)		
Total	93 (40.6)	136 (59.4)		
<i>Educational qualification</i>				
None	14 (31.8)	30 (68.2)	27.026	<0.001*
Primary	21 (32.3)	44 (67.7)		
Secondary	26 (33.3)	52 (66.7)		
Post-secondary	32 (76.2)	10 (23.8)		
Total	93 (40.6)	136 (59.4)		

\*Statistically significant

**Table 5:** Socio demographic characteristics and reaction on seeing a child with reversed sequence of tooth eruption

Variable	Reactions on seeing a child with reversed sequence of tooth eruption			X <sup>2</sup>	P-value
	Surprised n (%)	Suspect child is evil n (%)	Reassure mother n (%)		
<i>Age (years)</i>					
<35	51 (38.9)	33 (25.2)	47 (35.9)	1.560	0.458
≥35	43 (43.9)	18 (18.4)	37 (37.8)		
Total	94 (41.0)	51 (22.3)	84 (36.7)		
<i>Educational qualification</i>					
None	19 (43.2)	12 (27.3)	13 (29.5)	23.883	0.001*
Primary	31 (47.7)	14 (21.5)	20 (30.8)		
Secondary	36 (46.2)	20 (25.6)	22 (28.2)		
Post-secondary	8 (19.1)	5 (11.9)	29 (69.0)		
Total	94 (41.0)	51 (22.3)	84 (36.7)		

\*Statistically significant

same belief. Some of the respondents alluded this condition to the fact that mothers of affected children had come in contact with other children with a similar condition during pregnancy, while others alleged it to retributive justice as it is believed that their mothers had contravened some cultural norms of their communities. This reveals a great degree of ignorance. The consequences of designating a child as evil in the Nigerian society is associated with discrimination and general avoidance of such a child by the society which could culminate in emotional instability later in the child's life [4]. Mothers' touching gum pads of their babies prior to tooth eruption was another factor believed to be responsible for such a reversal.

It is worthy of note that only about two fifths of the respondents were of the opinion that reversal of eruption sequence was just only a natural occurrence.

Over half, believed that reversed eruption sequence leads to negative consequences in the child's life. This include the supernatural ability to place irreversible / lifelong curses on individuals and display of bizarre behavior. Participants stated that in neighborhoods and communities' other children avoid playing with such children as they are believed to transmit an aura of ill luck and perceived as a bad omen and in local markets community members avoid buying wares from their mothers thus creating great misery.

The study has revealed that the family unit, an important place for care and solace of the child is gravely affected by the prevailing condition of the child. A fifth of the respondents affirmed that the child becomes a source of intense fear and dread by family members. This is due to the child being perceived as evil, believed to possess strange powers and capability to pronounce irrevocable curses on people. Furthermore, some of the respondents regarded these children as a source of a ill luck and were deemed as abominations to their families. This results in avoidance of such children by neighbors, relatives and friends further contributing to physical isolation, and psychological and emotional stress which may even progress into adulthood. Many of the respondents (21.4%) adjudged these children as a huge family embarrassment. The family is thus under intense emotional pressure. Consequently, they may dodge social relationships, spend energy in concealing the family's "problem", or relocate to another area leading to social isolation [17,18]

Generally, in the Yoruba culture in South Western Nigeria, children who erupt the upper teeth before the lowers are highly stigmatized and disparagingly called *omo eleyin oke* meaning "upper teeth child". Unwholesome and scornful comments

are made about them, and they are often sneered and jeered at, thus suffering from intense emotional trauma as they grow [14]. This may affect their self-esteem, academic achievement and prospects for marriage in the future [4,19]. This may explain why over a quarter of the participants would advise mothers that such children should be hidden/gotten rid of. This is cruel and disheartening and is in congruence with other studies [4,12] and anecdotal reports [20]. Sometimes affected children are poisoned with some local herbs and left to die [13]. Over two fifths would want such teeth extracted and since the child is believed to be endowed with supernatural powers such extractions are preferably done by the quacks in the community. Sacrifices to appease the gods prior to the tooth extractions were considered crucial by some of the respondents. Quacks forcefully and traumatically remove teeth with unsterile crude instruments and consequences of patronizing them include high probability of child contacting bacterial and viral infections such as Human Immunodeficiency Virus and hepatitis [21-22].

Beliefs about reversed sequence of eruption as being a normal variation increased with educational qualification. The less educated respondents were more deeply entrenched in the myths and misconceptions associated with reversed tooth eruption

### Conclusion

The study has revealed gross fallacies regarding reversal of eruption sequence in children among the studied population. In view of these findings, oral health education to this community will be highly beneficial as this will deliver affected individuals from needless stress, anxiety /fear and save the lives of some children who would otherwise have suffered infanticide. Health education intervention should be given to rural societies particularly targeting pregnant women, nursing mothers, elderly women (who are the grandmothers and mother in law), mothers, and the less educated.

### Limitations of the study

A cluster random sampling technique was employed and two wards were selected from seven within this community. Sampling of a greater number of wards would have given a more representative sample of the inhabitants of Igbo Ora.

### References

1. Choi NK and Yang KH . A study on the eruption timing of primary teeth in Korean children. ASDC J Dent Child, 2001; 68: 244-249, 228.

2. Gupta A, Hiremath SS, Singh SK, et al. Emergence of primary teeth in children of Sunsari District of Eastern Nepal. *Mcgill J Med* 2007; 10 : 11–15.
3. GunaShekhar M and Tenny J. Longitudinal study of age and order of eruption of primary teeth in Indian children. *J Clin Exp Dent.*, 2010; 2: e113-116.
4. Aderinokun GA and Oyejide CO .Societal opinions on the eruption of deciduous maxillary central incisors before the mandibular ones in Nigeria .*Afr Dent J*, 1991;5: 26-30.
5. Opeodu OI. Eruption of primary incisors: prevalence of sequence reversal and attitude of mothers in a Yoruba community. *Nig Dent J* 2014; 22: 14-17.
6. Kipkorir B E, and Welbourn F B The Marakwet of Kenya: a preliminary study. East African Educational Publishers, Nairobi, Kenya , 2008, pp 50
7. Coe D G, Green all E C and Kaunda's Gaoler: Memoirs of a District Officer in Northern Rhodesia and Zambia . The Radcliffe Press .London , New York 2003, pp 42
8. Sargent, C F. Maternity, Medicine, and Power: Reproductive decisions in urban Benin University of California Press, Berkeley, 1989, pp 25-40.
9. Mingi. [www.wikipedia.org/wiki/Mingi](http://www.wikipedia.org/wiki/Mingi) pg 1 Last accessed 23<sup>rd</sup> August 2018
10. Ottenberg S. Boyhood rituals in an African society. An interpretation, University of Washington Press, Seattle , Washington 1989 ,pp 23
11. Uchegbue C.O. Infancy Rites among the Igbo of Nigeria. *Research Journal of Internatýonal Studýes*, 2010; 17 :159-164.
12. Bankole O. O., Taiwo J.O. and Falegan A.I. : Opinions of Traditional Birth Attendants in Ibadan, Nigeria, towards reversal of eruption sequence of primary central incisors in infants. *Open J Prev Med* 2013; 3 :374-379
13. Campaign Tackles Baby-killing Ritual in Nigeria <https://www.voanews.com/a/campaign-tackles-baby-killing-practice-nigeria/4055031.html> Last accessed 23<sup>rd</sup> August 2018
14. Denloye O O , Osuh ME and Oke GA. Parental attitude and cultural belief to reversal of eruption sequence –case report. *Ghana Dental Journal*, 2012; 9 : 17- 18
15. Igbo Ora. [www.wikipedia.org/wiki/Igbo-Ora](http://www.wikipedia.org/wiki/Igbo-Ora) Last accessed 23<sup>rd</sup> August 2018
16. Kish L. Survey Sampling. Wiley Interscience Publication, New York, 1965.
17. Corrigan P W, Watson A C and Miller FE. Blame, shame, and contamination: The impact of mental illness and drug dependence stigma on family members. *J Fam Psycho* 2006; 20: 239e246.
18. Mwinituo P.P and Mill J.E. Stigma associated with Ghanaian caregivers of AIDS patients *West J Nurs Res* 2006; 28 : 369-382
19. Heatherton TF, Kleck R E, Hebl MR. and Hull JG The Social Psychology of Stigma. Guilford Press, New York, 2000 , pp 153-246
20. Styles R. 2014 . 'I did not respect our traditions, so they killed my babies': Agony of Ethiopian mother whose 15 'cursed' children were thrown to hungry crocodiles by tribal elders [www.Dailymail.Co.Uk/Femail/Article-2694117/](http://www.Dailymail.Co.Uk/Femail/Article-2694117/) Last accessed 23<sup>rd</sup> August 2018
21. Puroshottam S, Patil S, Rao R and Agarwal A. Quackery in Dentistry –An uncurbed menace. *Int. J. Contemp. Dent.* 2013 ; 4: 6-8
22. Shaw E, Garg K, Mehrotra A and Mehrotra V. Suction Denture: A Case Report on dental quackery. *Rama Univ J Dent Sci* 2015; 2:27-29.