Original Article

Oral health knowledge and practice of 12 to 14-year-old Almajaris in Nigeria: A problem of definition and a call to action

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Abstract We studied oral health knowledge and practices of 12 to 14-year-old Almajiri boys in northern Nigeria because we found few studies on their health, and none on their oral health. We present our study after explaining the desperate life circumstances and context of Nigeria's approximately 10 million Almajiri youth. Our results, when compared with those of previously studied populations (those most similar in terms of environment, age range, and oral health characteristics) show that the Almajiris fare poorly. Although the international community has paid some attention to the Nigerian Almajiri children's educational needs, there has been little support for health, and none for oral health. We argue that the World Health Organization could better assist Nigeria and these children by assuring that the Almajiris are not excluded from programs targeting children classified as 'street children', and make specific recommendations.
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Introduction

As Nigerian dentists and dental school faculty, we have been concerned about populations within our country whose health, including oral health, has been very seriously neglected. We reviewed the circumstances of a particular population of children in northern Nigeria – the Almajiris. We looked for information about their oral health and, finding none,

conducted a small study on the oral health of 12 to 14-year-old boys from this group. Below we explain the meaning of 'Almajiri', the circumstances that make them vulnerable to poor health, and present our study on elements of oral health that shows the need for major change and improvement. We then argue for reclassification by the World Health Organization (WHO) in such a way that this seriously 'at risk' population will appear regularly among other groups of street-involved children. We hope such a clarification will increase local, national, and international support. There needs to be attention not only to better the education of Almajiris, but also to their health and well-being, including oral health. We call for greater recognition and action to alleviate the extraordinary needs of this population before closing with several recommendations.

Context

Nigeria has the largest population in Africa, approximately 185 010 477 million inhabitants, 2.48 per cent of the world's population, the seventh largest worldwide.[1] It occupies a landmass of about 923 768 square kilometers in West Africa, with over 274 ethnic groups living in three major regions. There are 36 states and a Federal Capital Territory.[2]

A major population group in the northern region are Muslims. Ethnically, they are primarily Hausa-Fulanis. The term 'Almajiri', derived from the Arabic word 'Almuhijirun', means an emigrant seeking Islamic knowledge. Up to Nigeria's colonial period, Islamic schooling, the Qur'anic system of education, was the formal educational system in northern Nigeria. It encompassed intellectual and moral training.[3] In precolonial times, Qur'anic schools were nearby and pupils lived with their parents.[4] When British missionaries arrived in the north (unlike southern Nigeria) they first confined their evangelism and Christian schooling to remote villages because the Emirs remained forceful leaders.[5] When the British invaded and killed or otherwise disposed of ruling Emirs, the latter lost control of the Almajiri system as they were reduced to a status of 'traditional rulers'.[6] The British abolished state funding for Qur'anic schools, and the ancient Almajiri system collapsed.[7] In the past, community members had seen the migrant pupils as "religious figures who attracted the kindness of the community in terms of basic needs. The street life was non-existent" (p. 64).[7] Gradually the spirit of collectivism dissipated, especially in the emerging urban centers in northern Nigeria.[8]

Estimates vary, but approximately 10 million Almajiris roam the streets of northern Nigeria,[7,8] ranging in age from 5 to 19 years.[9] Parents voluntarily release their male children to Islamic scholars known as 'Mallams'. Since the defunding of the Almajiri system, the Mallams have been responsible for meeting the daily needs of their pupils as well as for Qur'anic education. There are no payments from any school system. It has not worked.

Nineteenth-century British colonialism, especially in the south, brought another form of education to Nigeria, adding literacy, numeracy, and other elements from its western curricula, along with another religion – Christianity. Independence (1960), then civil war (1967-1970) complicated efforts to integrate the Qur'anic and British types of schooling, but eventually yielded a hybrid system, called an 'Integrated system'. As explained by M.A. Yusha'u *et al*:

> Integration is the merging of the two system of education together. i.e. the combination of the western system of education with *Qur'anic* system of education. The establishment of *Almajiri* Integrated Schools (AIS) across the country is one of the governments' intervention strategies to curtail the menace of street begging by children and youth in the name of pursuing *Qur'anic* education. The school is to accommodate the *Almajiri* who are coming to the city from far and near villages for *Qur'anic* knowledge. They mostly arrive without provisions and other essential needs; consequently they move from house to house, street, motor packs, restaurants, and other public places. Gradually they become exposed to child abuse, neglect, health hazard, hawking and other forms of social vices. Many of the *Almajirai* are orphans and vulnerable children. The purpose of the integration of the two system of education is to provide educational opportunities for these categories of children to acquire Traditional *Qur'anic* Education and Basic Western Education so as to improve their living condition and empower the *Almajirai* and their *malams*. (p. 126)[3]

Threats to the Health of Almajiris

Almajiri children are often neglected and exposed to many health hazards incompatible with their tender ages.[10] The school environment

tends to be "unfriendly, overcrowded, and unhygienic" (p. 127).[11] As detailed in 2006, overcrowding leads to neglect, where Mallams[11]:

- typically take on 30–80 boys, more than they can feed or educate;
- provide only crude and crowded sleeping shelter (if any), "… on mats that soon age into tatters …" on bare ground with poor ventilation that allows mosquitoes and the cold harmattan wind to breeze in;[11]
- sever the boys from parental care so early that they lose years of regular emotional and physical contact with their families.[11]

Jimoh Amzat details some of the health threats enumerated in studies published during 2003–2007,[8] including exposures to and use of illicit drugs, cigarettes, and fumes of glue and petrol. Living in the street also exposes them to infectious diseases ("malaria, diarrhea, cold, asthma" plus most likely exposure to STDs including HIV, pp. 63–64) and to food-borne diseases from scavenging food from refuse. They are exposed to injuries (from motorcycles and bigger vehicles that knock into them, from being kicked or beaten, from working conditions in menial jobs as shoe-shiners, nail-cutters, washer-boys, errand boys, house-helps, hawkers, and so on) and to adverse effects on emotional and psychological well-being.[8]

Oral Health

We found little in the literature on the prevalence of oral diseases among school-aged children (caries and periodontitis) in northern Nigeria, nor did we find anything about the oral health of Almajiris or about their oral health knowledge or practices. We see no indication that oral health is included in the limited form of education Mallams offer to Almajiris. Low socio-economic background may negatively affect attitudes to general health—and to oral health status, attitudes, and practices.[12–14] Thus, we undertook a study of 12 to 14-year-old Almajiris, as oral health practices influence initiation and progression of dental caries,[15,16,] especially among school-age children.[17]

Study methods, results, and limitations

Methods

Our descriptive cross-sectional study received ethical clearance by the institutional review board of the Aminu Kano Teaching Hospital, Nigeria.

We conducted it according to the World Medical Association Declaration of Helsinki, obtaining spoken informed consent from the children (mostly illiterate) and from their teachers and legal guardians.

Using multistage sampling, we selected at random two from 13 wards in the Nassarawa local government area. Then using simple random sampling, followed by random selection within Gama and Kawo wards, we selected schools. A list of Qur'anic schools in the two wards served as the sampling frame. We used a sampling fraction of 0.5, 4 of the 8 schools identified in Gama ward and 6 of the 12 identified in Kawo ward. We randomly selected again using simple random sampling. On the basis of the study population in each school, and applying the same sampling fraction as above, 18 students were randomly selected from each of the 4 schools and 19 students from each of the 6 schools. Of the initial 206 recruited, 186 boys met the inclusion criteria. All the 186 consenting 12 to 14-year-old male Almajiris were included in the study.

The participating Almajiris filled semi-structured, pretested, Hausa-translated, self-administered questionnaires with the help of dental therapists/hygienists. The questionnaires consisted of three sections (see Questionnaire in Appendix 1):

- Section A for biodata/educational levels of Almajiris' parents;
- Section B for oral health knowledge/practices; and
- Section C for previous dental experiences

Three dentists assessed oral hygiene using the Simplified Oral Hygiene Index (OHI-S) of Green and Vermillion after ensuring inter-rater reliability. We analyzed data using SPSS version 15.0 and expressed results as simple frequencies and percentages.

Results

The mean age of the 186 respondents was 12.7 (SD 0.86). Most of their parents had never attended school. Eighty per cent of respondents could not identify their parents' occupation (Table 1).

The majority (56 per cent) of respondents practiced oral hygiene measures to prevent mouth odor; only 6 per cent practiced oral hygiene measures for the prevention of dental caries and periodontal disease as well (Table 2). Although 94 per cent of respondents considered

Table 1: Demographic variables of Almajiris

Gender	*Frequency*	*%*
M	186	100
F	0	0
Mother's education		
None	166	89.5
Primary	12	6.45
Secondary	8.0	4.30
Tertiary	0.0	0.00
	186	100
Father's education		
None	166	89.25
Primary	8.0	4.30
Secondary	11	5.91
Tertiary	1	0.54
	18	100

Table 2: Oral hygiene knowledge, attitude, and practice of Almajiris

Variables	*Frequency*	*%*
Reasons for teeth cleaning		
• I don't know	23	12.4
• To prevent diseases	47	25.2
• To prevent mouth odor	104	56.6
• To prevent odor and diseases	12	6.4
	186	100
Knowledge about fluoride use		
• No	181	97.4
• Yes	5	2.6
	186	100
Frequent intake of sugar may cause tooth decay		
• No	63	33.8
• Yes	123	66.2
	186	100
Effect of tooth decay		
• I don't know	13	7.0
• Bothered	160	86.0
• Not bothered	13	7.0
	186	100
Teeth are important as other part of the body		
• No	8	4.3
• Yes	175	94.1
• I don't know	3	1.6
Total	186	100

Table 3: Oral hygiene index scores of Almajiris

Scores	*Status*	*Frequency*	*Percentage*
0–1.2	Good	2	1.0
1.3–2.9	Fair	92	49.5
3.0–6.0	Poor	92	49.5
Total		186	100

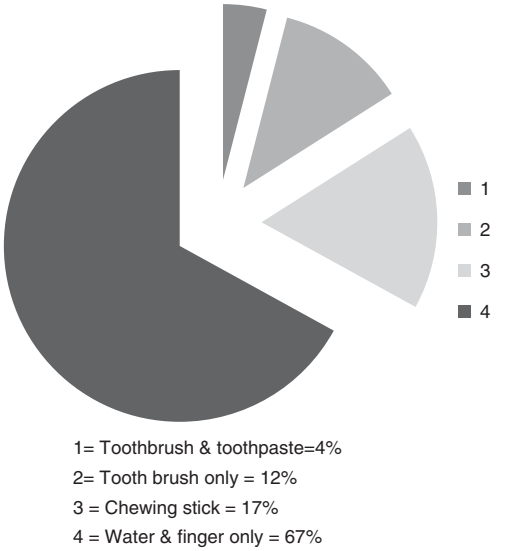

Figure 1: Materials for cleaning teeth among the Almajiris.

teeth important (86 per cent) – being bothered about the effect of tooth decay – only 6.6 per cent were aware of the harmful and cariogenic effect of frequent sugar intake; 97 per cent had no knowledge of the protective effect of fluoride on teeth (Table 2).

Most (84 per cent) of the respondents cleaned their teeth 3-5 times daily after meals (39 per cent) and after prayers (32 per cent). Only 4 per cent of the Almajiris cleaned their teeth with fluoride. Most (67 per cent) cleaned their teeth with finger and water only. Equal proportions (49.5 per cent) had either 'poor' or 'fair' oral hygiene (Table 3, Figure 1).

The vast majority (97 per cent) were unfamiliar with dental floss and 98 per cent were unaware of the need for regular dental visits and cleaned their teeth mostly after meals and at prayer times 2-5 times daily (Figures 2 and 3). All results were presented as simple frequencies and percentages.

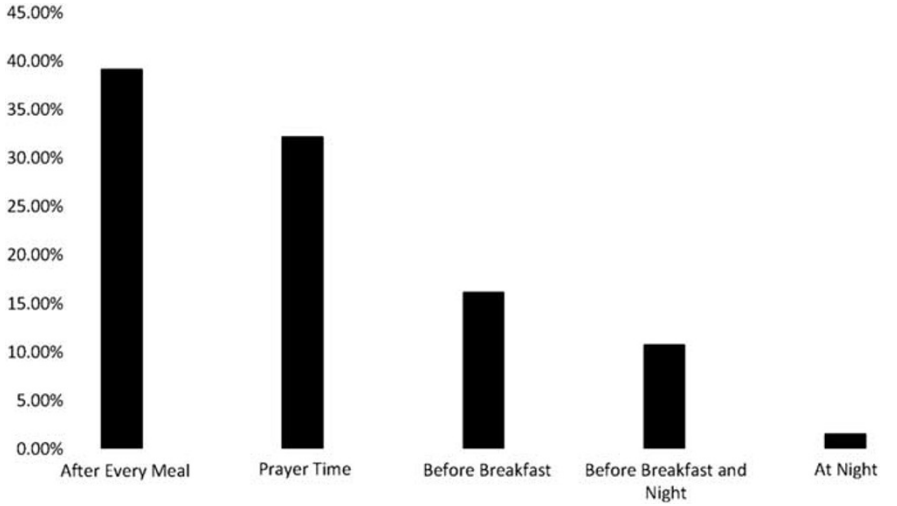

Figure 2: Time of cleaning teeth among Almajiris.

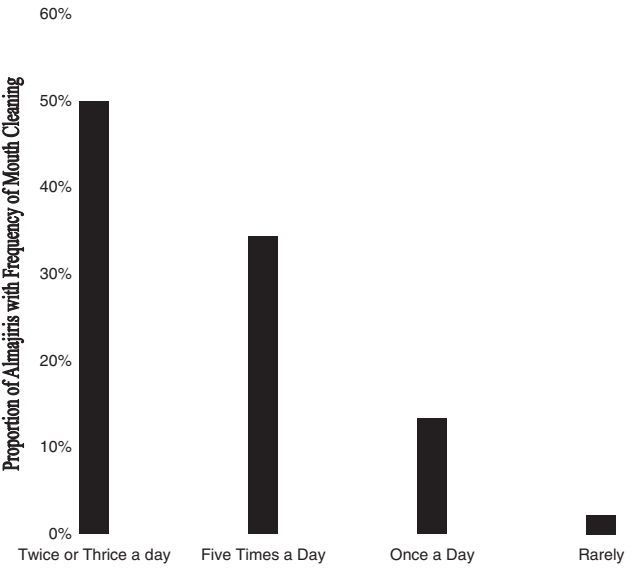

Figure 3: Frequency of mouth cleaning among Almajiris.

Limits

We studied a population limited by gender and age (only males and those 12–14). The scope of our study was also limited. Oral health knowledge

focused only on oral hygiene and tooth caries, not on knowledge of periodontal disease or oral cancer (two other highly common diseases of the oral cavity). We cannot compare male Almajiris with their female counterparts because females were historically excluded from the Almajiri system, supposedly to avoid rape and prostitution.[11] We did not study a comparable group of non-Almajiri children in this region of Nigeria to determine whether their knowledge would differ. We suspect that further research will confirm our concern that oral hygiene of Almajiris is probably worse than that among other children in Nigeria.

How do knowledge and practices of these Almajiris compare with that of other population groups that have been studied?

Because there were no previous studies on Almajiris' oral health, we compared our results with studies of similar populations—those we found to be most like ours in terms of environment, age range, and oral health characteristics.

Studies have shown no substantial disparity in the oral health knowledge and attitude among girls compared with boys in India,[18] Jordan,[19,20] or China.[21]

The Almajiris' oral hygiene practices compared poorly with that of Saudi Arabian counterparts (6 per cent versus 87 per cent).[22] Only 4 per cent of Almajiris use toothbrush/fluoride-containing toothpaste in contrast to children with better oral hygiene studied in Saudi Arabia,[23,24] Kenya,[25] and Nigeria (orphans in Benin City),[26] and with children at a navy school (in southern Nigeria).[27]

As Muslims, Almajiris' use of water and finger tooth cleaning is an obligation each time they pray – and they may assume another method of tooth cleaning is unnecessary. Prevalence of 'chewing stick' tooth cleaning among Almajiris resembles that among school children in Saudi Arabia.[23,27] Awareness of dental floss among Almajiris reached only 3 per cent, consistent with a previous Saudi Arabian study.[28] Almajiris (98 per cent) had no awareness of the importance of regular dental visits. Unlike male Sudanese secondary school children,[29] the small percentage of Almajiris we studied who visited dentists did so only when they had a problem like a toothache.

On a positive note, 86 per cent of the study population was bothered about the effect of dental diseases on their overall health while 94 per cent were aware that the oral cavity is as important as other parts

of the body. Can this knowledge be used as stepping stones for improvement?

The importance of definitions: Are the Almajiris 'street children'?

Scholars, program managers, child advocates, and others have long debated on how to define 'street children' or 'children of the street'. Our experience suggests that they have not resolved how best to align the definitions with goals of improving the conditions of the many groups of children at risk from a complex variety of street exposures.[8,30,31]

Support for the Almajiris has been shortchanged internationally because their plight is not well understood, and because use of some definitions for 'street children' tend to exclude Almajiris from programs that could improve their lives. In July 2014, for example, we worried that the *Economist* had furthered the misunderstanding with its lead paragraph:

> RAG-CLAD boys, proffering plastic bowls and calling out for cash, line the streets of most big cities in Nigeria's Muslim north. **But they are not street kids**. *[our emphasis]* These are *almajiri* children, students of Islamic schools who have been sent from their homes to learn their religion. *almajiri* means 'immigrant', signifying that the children come from far and wide to imbibe Islamic values.[32]

The article does go on to explain that these boys are the poorest of the poor. A boy has been sent away by his parents to recite the Qur'an in a shabby hut among 100 peers—while spending the rest of the day "on the street begging for scraps, which he takes back to his *mallam*, the teacher now responsible for him". The article notes the painful irony—that even as these children remain 'in school' they are destitute and illiterate, becoming 'easy pickings' as recruits for Boko Haram (the extreme Islamic insurgency whose name means 'Western education is forbidden') or for slave traffickers. Even so, the *Economist*'s lead reinforces an unfortunate distinction between Almajiris and others considered 'street children'.

There are compelling reasons to categorize Almajiris with other groups of 'street children'. As Amzat argues, they "…all share one common feature: negotiating for space and survival on the street" (p. 58).[8] Not only could it reduce the children's exposure to drastic

conditions with Boko Haram or as child slaves, their specific inclusion as, or along with, 'street children' could help protect them from HIV and many other serious health threats. We believe that the WHO could assist Nigeria address the immensity of unmet needs of the Almajiris by clearly including them among the vulnerable children sometimes labeled 'street children'. Almajiris warrant all of the attention and program support accorded to those WHO has so designated, in programs targeting HIV, for example.[33] A WHO HIV program targeting 'street children' included Brazil, Honduras, India, Mexico, the Philippines, and Zambia[34] but not Nigeria, likely because they did not count the huge number of Almajiris as 'street children'.

UNICEF does make this important designation. In its support for government initiatives under the Strategic Education Sector Plan it notes that:

> The country programme will also support the governments' initiatives under the Strategic Education Sector Plan. This includes strategies targeting vulnerable children, **including mainstreaming the Almajiri** [*our emphasis*] (children who live or work on the street) and out-of-school children into formal school systems; expanding and harmonizing conditional cash transfer programmes; developing 'second chance' education initiatives; and improving schools for children of nomadic families.[35]

Another UNICEF document mentioned a 'Special Intervention Fund **for Ajmajiri Education** [our emphasis] from MDG/FGN'.[36]

Perhaps the United Nations organizations dealing with education are more aware of Almajiris' needs than those dealing with health. We call on those concerned with health to join together to insist that the health of these children take its place on the international agenda – as well as on Nigeria's.

Conclusion and Recommendations

Nigeria's emphasis on primary oral health will remain incomplete without planning for this huge and neglected population of Almajiri children. Efforts to improve education and some other aspects of Almajiri life have been underway, but there are too few for health, and none for oral health.

So far, no groups with a potentially positive influence have acted to improve Almajiri children's oral health. Perhaps there would be progress if we are able to:

1. convince all international organizations, including the WHO, to ensure that Almajiris enjoy comparable emphasis when targeting especially 'at risk' children;
2. entice the Nigerian government and non-governmental organizations (NGOs) to lead efforts to improve the oral health of Almajiris;
3. engage public health workers, especially those of similar faith, to direct intensive educational campaigns with this group and to help incorporate oral health into the Almajiri Integrated School system;
4. call on opinion leaders in mosques and people who share the same faith of Almajiris and their Mallams to reach out to promote oral health education;
5. encourage the chewing stick as a method of tooth cleaning because it is more effective than using finger/water, and is also cheap and readily accessible;
6. employ mobile dental clinics to reach these children.

The Almajiris need attention in all aspects of their lives. The total absence of attention to oral health is a symptom of the larger set of problems.

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Appendix

QUESTIONNAIRE

A. Bio data

Name	Age	Institution
		Quranic ☐

Mothers Educational level O,1,2,3 ☐

Fathers Educational level O,1,2,3 ☐

B. Oral Health (Awareness) attitude and behavior

1. How often do you clean your mouth?
   - ❖ Once a day
   - ❖ 2-3 times a day
   - ❖ Once per week
   - ❖ Rarely
2. Time of tooth cleaning?
   - ❖ Before break fast
   - ❖ After each meal
   - ❖ At night
   - ❖ Before break fast and night.
3. What do you use for cleaning your mouth?
   - ➢ Fluoride containing tooth paste and brush
   - ➢ Mouth rinsing agents-chlorhexidine solution
   - ➢ Chewing stick
   - ➢ Tooth brush alone
   - ➢ Charcoal
   - ➢ Salt and cotton wool
   - ➢ Water/finger
   - ➢ Others

4. Why do you clean your mouth?
    - To prevent infection such as caries
    - To prevent mouth odors
    - The two above
    - I don't know
5. Have you heard of dental floss?
    - Yes
    - No
6. If yes, have you used it before?
    - Yes
    - No
7. Have you heard of fluoride?
    - Yes
    - No
8. If yes, is fluoride needed for healthy teeth?
    - Yes
    - No
9. Frequent sugar intake can cause my tooth to decay?
    - Yes
    - No
10. Effect of dental caries?
    - Bothered
    - Not bothered
    - Don't know
11. Teeth are important as other parts of the body.
    - Yes
    - No
    - I don't know
12. Pains and dental caries to me is;
    - Normal
    - Abnormal
    - I don't know

C. Dental History

13. Is it necessary to visit Dentist?
    - Yes
    - No
14. Previous dental visit
    - Yes
    - No
15. If yes, reason for visit (check up (1) pain (2) cavity (3) swellings (4) othe5) ☐

16. Treatment given:- prophylactics [S&P] (1) Medications (2) extraction (3) surgery (4) filling (5) other ☐

17. Appointment given?

- Yes
- No

18. If Yes, was appointment kept?

- Yes
- No

D. Oral Examination

19. Teeth Present

18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38

DMFT

D - Decayed ☐

M - Missing ☐ Total ☐

F - Filled ☐

Simplified Oral Hygiene Index

Debris/calculus Index 0,1, 2, 3 ☐

Index Teeth 61 6 6 16
