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## Is childhood obstructive sleep apnoea properly taught in medical schools? An assessment of doctors' knowledge of obstructive sleep apnoea

B P Kuti and D K Kuti

### Abstract

Childhood obstructive sleep apnoea (OSA) affects the growth and development of children and may be associated with a wide variety of structural and functional anomalies and complications. This study sets out to assess the knowledge and attitude of locally- and foreign-trained Nigerian doctors on childhood OSA and the factors associated with these levels of knowledge. Newly graduated doctors who came for their council registration assessment at the Obafemi Awolowo University Teaching Hospital Complex, Ile-Ife, Nigeria were required to fill a questionnaire detailing their socio-demographic profile, school, country of study, and level of exposure to childhood OSA in their medical schools. Their knowledge and level of confidence in the recognition and management of children with OSA was assessed using the validated OSAKA-KIDS questionnaire and factors associated with their levels of knowledge determined.

A total of 204 doctors (50.5% foreign trained) participated in the study (male:female ratio, 2:1). Seventy-two (35.3%) had never heard of OSA and 36 (17.6%) had heard about it passively during bed-side teaching. Fifteen (7.4%) doctors felt OSA was not an important clinical disorder and only 48 (23.5%) were confident in recognising and managing it. The mean (SD) score of the 18 questions about the level of knowledge was 9.3 (4.1) and 116 (56.9%) had poor knowledge (<10 questions correct), particularly as related to diagnosis, co-morbidities, and complications. Level of knowledge was not related to country of study, additional qualifications, and the posting where OSA was taught, but was significantly related to having had some formal teaching about OSA and having participated in managing a child with OSA ( $p < 0.05$ ). In conclusion, the level of knowledge about childhood OSA was poor among locally- and foreign-trained Nigerian doctors. We advocate for more exposure of medical students to the fundamentals of childhood OSA to facilitate early diagnosis and prompt treatment/referral of children with the disorder.

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### Introduction

Obstructive sleep apnoea (OSA) in children is a sleep breathing disorder characterised by prolonged partial and/or intermittent complete upper airway obstruction which disturbs ventilation during sleep with day-time consequences.<sup>1</sup> Childhood OSA has been described as a complex, pan-systemic syndrome often characterised by habitual snoring, witnessed apnoea, sleep fragmentation, and diurnal consequences.<sup>1-2</sup> Childhood OSA is believed to occur as a result increased collapsibility of the upper airway during sleep.<sup>3</sup> This results from a complex interaction between the anatomical component and other airway elements such as upper airway tone and respiratory drive.<sup>1-3</sup>

The clinical significance of childhood OSA is not only that it occurs in approximately 1-3% of children,<sup>1,4</sup> but also because it often indicates the presence of underlying structural and/or functional abnormalities.<sup>4,5</sup> Adenotonsillar hypertrophy/enlargement is reported as the most common risk/aetiological factor associated with childhood OSA and this explains the peak age of 2-8 years when lymphoid growth is also at its peak in children.<sup>4,6-7</sup> Other risk/aetiological factors associated with childhood OSA include allergic rhinitis, bronchial asthma, sickle-cell disease, obesity, orthodontic and craniofacial abnormalities such as Pierre Robin sequence, Down's syndrome and neurodevelopmental abnormalities.<sup>1-4</sup> Childhood OSA often requires multidisciplinary management to ensure optimal health and quality of life of both the child and the parents/caregivers.<sup>8,9</sup>

The importance of early recognition and diagnosis of childhood OSA cannot be overemphasised because it is often associated with a wide variety of complications involving many systems.<sup>10</sup> Children with untreated OSA are predisposed to excessive day-time sleepiness, poor concentration, poor academic performance, and poor quality of life.<sup>1-4,10</sup> Other recognised complications of childhood OSA include neurocognitive impairment, behavioural problems, enuresis, and cardiovascular dysfunctions such as cor pulmonale, cardiac arrhythmias, and dyslipidaemia.<sup>10,11</sup>

Considering the importance of childhood OSA to the overall health of children and their caregivers, early recognition of the risk factors and prompt diagnosis of the condition is of the utmost importance. Unfortunately overnight, attended, in-laboratory polysomnography (sleep study), which is the gold standard in the diagnosis of this disorder, is not readily available in many centres and particularly in developing countries including Nigeria.<sup>12,13</sup> Children with this disorder are often unrecognised and underdiagnosed leading to the development of complications and associated

Socio-demographic characteristics	Locally trained n=101 (%)	Foreign trained n=103 (%)	Total n=204 (%)	p-value
<b>Sex</b>				
Male	77 (76.2)	59 (57.3)	136 (66.7)	<b>0.004</b>
Female	24 (23.8)	44 (42.7)	68 (33.3)	
<b>Age range</b>				
20–25 years	44 (43.6)	39 (37.9)	83 (40.7)	0.407
25–30 years	49 (48.5)	47 (45.6)	96 (47.1)	0.680
31–35 years	6 (5.9)	14 (13.6)	20 (9.8)	0.066
>35 years	2 (2.0)	3 (2.9)	5 (2.5)	0.666*
<b>Additional qualifications</b>				
Yes	5 (5.0)	15 (14.6)	20 (12.7)	<b>0.020</b>
No	96 (95.0)	87 (85.4)	184 (90.3)	
<b>Aware of childhood OSA</b>				
Yes	89 (88.1)	82 (79.6)	171 (83.8)	0.099
No	12 (11.9)	21 (20.4)	33 (16.2)	
<b>Taught in medical school</b>				
Yes	63 (62.4)	60 (58.3)	123 (60.3)	0.547
No	29 (28.7)	32 (31.1)	61 (29.9)	0.713
Can't remember	9 (8.9)	11 (10.6)	20 (9.8)	0.857
<b>Posting where OSA was taught<sup>#</sup></b>				
Paediatrics	24 (23.8)	27 (26.2)	51 (25.0)	0.686
Passively mentioned	18 (17.8)	18 (17.5)	36 (17.6)	0.942
Pulmonology	9 (8.9)	13 (12.6)	22 (10.8)	0.393
ENT	14 (13.9)	1 (1.0)	5 (7.4)	<b>&lt;0.001*</b>
Physiology	0 (0.0)	4 (3.9)	4 (2.0)	<b>0.019*</b>
Psychiatry	1 (1.0)	0 (0.0)	1 (0.5)	0.235*
Neurology	1 (1.0)	0 (0.0)	1 (0.5)	0.235*
Personal study	0 (0.0)	1 (1.0)	1 (0.5)	0.235
<b>Participated in managing OSA</b>				
Yes	16 (15.8)	10 (9.7)	26 (12.7)	0.189
No	85 (84.2)	93 (90.3)	178 (87.30)	

\*Fisher's Exact test applied.  
<sup>#</sup>83 (40.7%) had no exposure to childhood OSA.  
The figures in parentheses are a percentage of the total in each column.

**Table 1** Participants' socio-demographic characteristics and knowledge of OSA

poor quality of life.<sup>8,9</sup> The poor recognition and delayed diagnosis of this important childhood disorder occur not only because of the absence of facilities to make a definitive diagnosis, but also because primary care physicians, medical interns, and other first-contact doctors who see these children do not often think about the disorder, hence the index of suspicion of the condition is low.<sup>14,15</sup>

Consequently, many studies have been carried out to assess the knowledge and attitude of different categories of doctors to childhood OSA revealing obvious knowledge gaps and variable attitudes towards the disorder.<sup>14–16</sup> The levels of knowledge of physicians are often influenced by duration since graduation from medical school, age, and acquisition of further training.<sup>14–16</sup> Un-

and Dental Council of Nigeria.

All the locally- and foreign-trained Nigerian doctors available for the pre-registration remedial course and assessment over a 3-month period (September to November 2016) were invited to participate in the study. The study participants were approached to voluntarily participate in the study during their remedial course before the pre-registration assessment and those who agreed to participate in the study were asked to independently complete a self-administered questionnaire. This questionnaire, which bears no names or other means of identifying the study participants, took the doctors about 10 minutes to complete and

fortunately, there is paucity of reports from developing countries on this matter. Also the knowledge of newly graduated medical doctors about childhood OSA, which may be a clear reflection of their level of exposure to this disorder in their various medical schools, has been poorly assessed. This study therefore aims to assess the level of knowledge and attitude of newly graduated locally- and foreign-trained Nigerian doctors to childhood OSA and to also determine the factors associated with these levels of knowledge.

## Methods

This was a cross-sectional study carried out among newly graduated doctors who had had their medical education in Nigeria, other African countries, and other continents. Ethical approval for this study was obtained from the Human Research and Ethical Committee of the Institute of Public Health, Obafemi Awolowo University (OAU), Ile-Ife with approval number IPH/OAU/12/255. The study was carried at the OAU Teaching Hospitals Complex (OAUTHC), Ile-Ife. The OAUTHC is one of the tertiary institutions in Nigeria responsible for assessing foreign-trained doctors for eligibility to be registered by the Medical

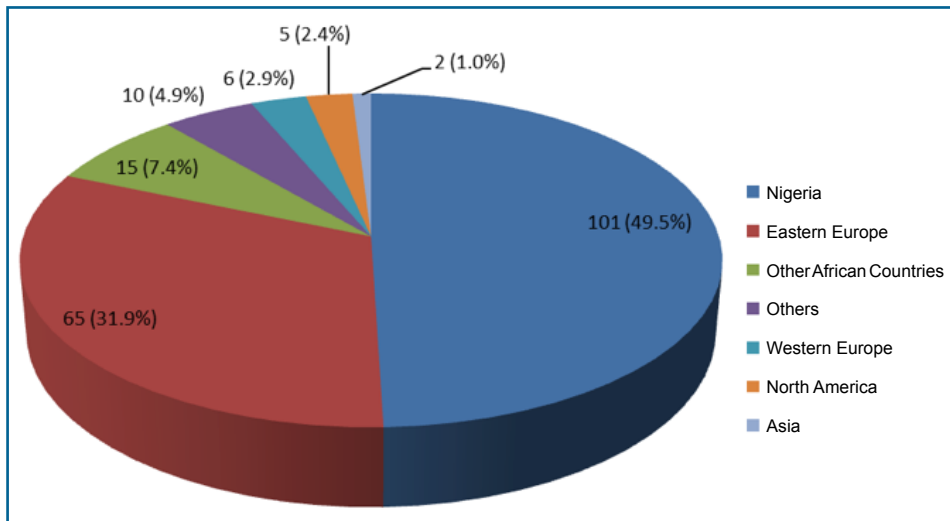


Figure 1 Countries and continents where the study participants received their medical education. 'Others' are St Kitts (8) and Dominican Republic (2)

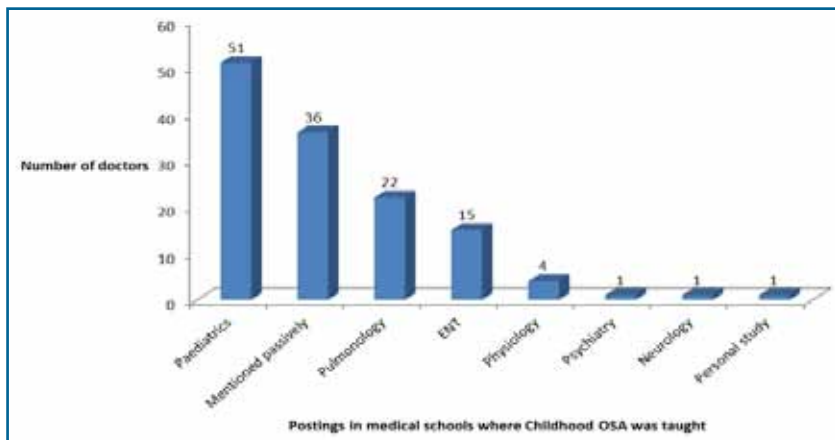


Figure 2 Distribution of the postings where childhood obstructive sleep apnoea was taught in medical schools. ENT: Ear, Nose, and Throat

detailed their age, sex, school, and country where their medical training was obtained; other training/degrees in addition to their medical degree were also noted. The study participants were also assessed for awareness about childhood OSA, whether they were taught about the disorder in medical school and under which posting or subject the disorder was discussed. They were also asked whether they participated in the management of children with OSA in medical school.

The level of knowledge of the doctors about childhood OSA was assessed using the Obstructive Sleep Apnoea Knowledge and Attitude in Children (OSAKA-KIDS) questionnaire.<sup>17</sup> This comprises 18 knowledge items and 5 attitude items. The 18 knowledge items assess knowledge about the following: epidemiology (questions 2, 3, and 11); pathophysiology (6 and 7); risk factors (8 and 13); symptoms (1 and 15); diagnosis (5, 9, and 18); complications (4, 10, 12, and 16), and treatment (14 and 17) of childhood OSA.<sup>17</sup> The study participants were required to pick one of three options for each question: 'true', 'false', or 'don't know'. The 'don't know' option was included to discourage guessing. A score of '1' was allocated for every correct answer and '0' for a wrong and 'don't know' response. For the purposes of this study, a score of less than 10 in the 18-item knowledge sec-

tion was considered to be suboptimal (poor) knowledge of childhood OSA.

The doctors' attitude to childhood OSA was assessed using the five attitude items of the OSAKA-KIDS questionnaire to ascertain the level of importance the study participants ascribed to childhood OSA from a scale of 'not important' to 'extremely important'. Also their level of confidence in identifying children at risk of OSA and in managing them, including managing children on continuous positive airway pressure (CPAP) therapy was also assessed.<sup>17</sup>

Data were analysed using the Statistical Programme for Social Sciences (SPSS) software, version 17.0 (SPSS Inc., Chicago 2008, IL, USA).

The sex and age categories of the doctors and other categorical variables were summarised using proportions and percentages, while the scores of the doctors from the OSAKA-KIDS questionnaire were summarised using mean and standard deviations (SDs) for normally distributed variables, and median and interquartile ranges (IQR) for non-normally distributed variables. Differences between continuous variables were analysed using Student's t-test, while categorical variables were analysed using Pearson's chi-square test and Fisher's exact test as appropriate. A p-value of <0.05 was considered to be significant.

## Results

Two hundred and four (81.6%) of the 250 questionnaires distributed to the doctors were returned adequately filled and formed the basis of further analysis. One hundred and one (49.5%) of the participants were trained in Nigeria (locally trained) (Table 1). The majority (63.1%) of the foreign-trained Nigerian doctors were trained in universities in Eastern Europe including Ukraine (51.0%) and Russia (14.6%). Fifteen (14.6) of the foreign-trained doctors were trained in other African countries such as Sudan (7), Egypt (3), and Ghana (1). Ten (9.7%) of the doctors were trained in St Kitts (8) and Dominican Republic (2). Figure 1 highlights the distribution of the places where the study participants received their medical education.

### Socio-demographic and general characteristics of the doctors

Table 1 shows the socio-demographic characteristics of the locally- and foreign-trained doctors and their knowledge of OSA. The doctors were aged between 21 and 44 years, with a mean ( $\pm$ SD) age of  $27\pm 3.7$  years. About half of the doctors were aged 25–30 years. About two-thirds (136) of the study participants were males, with a male:female ratio of 2:1. More males than females were observed among the locally-trained compared with the foreign-trained doctors. Twenty (12.7%) of the study participants had another first degree in addition to their medical degree. None

of the doctors however had a post-graduate degree. Significantly more of the foreign-trained doctors had another first degree in addition to their medical degrees compared with their locally-trained counterparts ( $p=0.02$ ).

The majority (83.8%) of the doctors had heard about childhood OSA, while only 121 (59.3%) responded that they were taught about childhood OSA in medical school. The proportion of doctors who responded that they were taught about childhood OSA in the medical school was not significantly different in the two groups.

The postings under which the topic was taught in medical schools are highlighted in Figure 2. In both groups, most of the study participants encountered childhood OSA during the paediatric posting. Thirty-six (29.3%) of the doctors said that the topic was only mentioned passively during bed-side teaching in the medical school. The locally trained doctors encountered childhood OSA more during Ear, Nose and Throat (ENT) postings than the foreign-trained doctors, who encountered it more during physiology postings (Table 1). Only 26 (12.7%) of the study participants, however, had participated

Questions	Answer	Correct n=204	Percentage (%)
1. Children with OSA may present with hyperactivity.	True	118	57.8
2. Approximately 10% of children snore on a regular basis.	True	111	54.4
3. Nearly 2% of children have OSA.	True	104	51.0
4. OSA in children may be associated with pulmonary hypertension.	True	113	55.4
5. A polysomnogram is needed to differentiate primary snoring from OSA in children.	True	113	55.4
6. The degree of snoring (i.e. mild to severe) correlates with the severity of obstructive apnoea in children.	False	40	19.6
7. Excessive upper airway muscle tone loss during sleep contributes to OSA in children.	True	117	57.4
8. Enlarged tonsils and adenoids are the most frequent contributing factor to OSA.	True	149	73.0
9. Children with suspected OSA should have a thorough head and neck and oropharyngeal examination.	True	164	80.4
10. Children with untreated OSA may have learning deficits.	True	118	57.8
11. Snoring is most frequently reported at ages 2–8 years.	True	89	43.6
12. Cardiac arrhythmias may be associated with untreated OSA.	True	96	47.1
13. Children with sickle cell disease are at increased risk of OSA.	True	49	24.0
14. Children younger than 2 years should have a polysomnogram prior to surgical intervention for presumed OSA.	True	97	47.5
15. Significant OSA can occur without snoring in children.	True	89	43.6
16. Failure to thrive is a frequent complication of OSA.	True	133	65.2
17. Children with severe OSA may have transient worsening of respiratory symptoms following tonsillectomy and/or adenoidectomy.	True	106	52.0
18. A cardiorespiratory monitor can reliably detect both central and obstructive apnoea in infants.	False	38	18.6

Table 2 The number of correct responses by doctors to questions about childhood OSA

in the management of children with OSA or suspected OSA in medical school and the difference was not significant among locally- and foreign-trained doctors. (Table 1).

#### Level of knowledge about childhood OSA among the doctors

The scores of the doctors in the 18-item OSAKA-KIDS questionnaire ranged from 0 to 18 (0 to 100.0%) with a mean ( $\pm$ SD) score of

9.3±4.1, equivalent to 51.7±2.2%. The item with the lowest correct score was question 18, with 38 (18.6%) correct answers; the item most often answered correctly answered was item 9, with 164 (80.4%) correct answers (Table 2); 116 (56.9%) of the doctors had a suboptimal score (<10 correct answers out of the 18 questions).

Importance questions	Not important	Somewhat important	Important	Very important	Extremely important	No Response
19. As a clinical disorder, OSA is:	5 (2.5%)	10 (4.9%)	56 (27.5%)	73 (35.8%)	45 (22.1)	15 (7.4)
20. Identifying children with possible OSA is:	0 (0.0%)	9 (4.9%)	49 (24.0%)	81 (39.7%)	49 (24.0%)	16 (7.8%)
<b>Confidence questions</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Neither agree nor disagree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>No response</b>
21. I feel confident identifying children at risk of OSA	13 (6.4%)	31 (15.2%)	33 (16.2%)	77 (37.7%)	24 (11.8%)	26 (12.7%)
22. I am confident in my ability to manage children with OSA	16 (7.8%)	58 (28.4%)	52 (25.5%)	37 (18.1%)	1 (0.5%)	30 (14.7%)
23. I am confident in my ability to manage children receiving CPAP therapy	19 (9.3%)	57 (27.9%)	54 (26.5%)	34 (16.7%)	4 (2.0%)	36 (17.6%)

Table 3 Responses of the study participants to questions related to attitude toward childhood OSA

## Attitude of the doctors to childhood OSA

This was assessed using the five-item attitude assessment scales of the OSAKA-KIDS questionnaire. Fifteen (7.4%) of the doctors felt that childhood OSA was not an important clinical disorder, and 101 (49.5%) doctors were confident in their ability to identify children at risk of having OSA. However, only 38 (18.6%) of the doctors were confident in managing children with OSA, including managing CPAP in these children (Table 3).

## Factors associated with the level of knowledge of doctors about childhood OSA

No significant association existed between the gender and age categories of the study participants and their level of knowledge about childhood OSA (Table 4). The level of knowledge (good or poor) was not significantly associated with country of study (local or foreign) or the acquisition of additional qualifications. Significantly more of the newly graduated doctors who had had formal teaching or heard about childhood OSA in their medical schools had better knowledge of the condition. Likewise those who participated in managing children with OSA had better knowledge about the condition than those who did not manage a child with OSA in medical school (84.0% vs 37.6%;  $\chi^2 = 17.204$ ;  $p < 0.001$ ).

## Discussion

This study revealed suboptimal levels of knowledge about childhood OSA among locally- and foreign-trained Nigerian doctors which is a reflection of their poor exposure to the subject in medical schools. The level of knowledge about childhood OSA was suboptimal among the study participants, with a mean total knowledge score of 51.7% in the 18-item questionnaire about childhood OSA. This score was low compared with a mean total knowledge score of 72.2% reported by Cayir et al<sup>14</sup> among family physicians and a mean total knowledge score of 66.7% reported by Tamay et al<sup>15</sup> among paediatricians, family physicians, and pulmonologists in Turkey using the same (OSAKA-KIDS) questionnaire. The relatively poor mean total knowledge score observed in this study may be because the study participants were newly graduated doctors with no post-graduate qualifications and experience, unlike the reports of Cayir et al<sup>14</sup> and Tamay et al<sup>15</sup> which were carried out among doctors with post-graduate and sub-specialties experiences.

In the present study about one-third of the newly graduated locally- and foreign-trained doctors said they were not taught about childhood OSA in medical school, and about one-sixth of them asserted that they had never heard of the condition. Even among those taught about the condition, only 12.7% had participated in the management of a child with OSA in medical school. This corroborated the findings from other studies of deficits in knowledge of and exposure to childhood OSA among all categories of doctors.<sup>14-17</sup> These deficits in knowledge could actually be from poor exposure to the condition during undergraduate and even post-graduate training.<sup>18</sup> A survey of selected medical schools in the USA revealed that very little time is allocated to the teaching of sleep medicine during clinical postings and recommended the allocation of more time to the teaching and training of doctors on sleep medicine.<sup>18</sup>

Concerning the assessment of attitudes and confidence levels of the study participants regarding childhood OSA, the majority of

Variables	Poor knowledge n=116 (%)	Good knowledge n=88 (%)	p-value
<b>Sex</b>			
Male	72 (62.1)	64 (72.7)	0.110
Female	44 (37.9)	24 (27.3)	
<b>Age</b>			
20–25 years	46 (39.7)	37 (42.0)	0.731
26–30 years	54 (46.6)	42 (47.7)	0.868
31–35 years	13 (11.6)	7 (8.0)	0.439
>35 years	3(2.6)	2 (2.3)	0.886
<b>Country of study</b>			
Local	55 (47.4)	46 (52.3)	0.492
Foreign	61 (52.6)	42 (47.7)	
<b>Additional qualifications?</b>			
Yes	9 (7.8)	11 (12.5)	0.259
No	107 (92.2)	77 (87.5)	
<b>Aware of OSA?</b>			
Yes	85 (73.3)	86 (97.7)	<b>&lt;0.001</b>
No	31 (26.7)	2 (2.3)	
<b>Was childhood OSA taught in medical school?</b>			
Yes	55 (47.4)	68 (77.3)	<b>&lt;0.001</b>
No	44 (37.9)	17 (22.7)	
<b>Postings where childhood OSA was taught</b>			
Paediatrics	24 (20.7)	27 (30.7)	0.103
Pulmonology	13 (11.2)	9 (10.2)	0.823
Bed-side teaching	18 (15.5)	18 (20.5)	0.360
Physiology	3 (2.6)	1 (1.1)	0.446#
ENT	6 (5.2)	9 (10.2)	0.146
Others*	2 (1.7)	1 (1.1)	0.732#
<b>Participated in managing childhood OSA?</b>			
Yes	5 (4.3)	21 (23.8)	<b>&lt;0.001</b>
No	111 (95.7)	67 (76.1)	

Table 4 Socio-demographic characteristics and general information of the doctors in relation to their knowledge of childhood OSA

the doctors believed that childhood OSA is an important clinical disorder. This is in keeping with previous reports.<sup>14–17</sup> However, important as the condition may be, more than one-half of the doctors had no confidence in identifying risk factors and managing this condition. Lack of confidence in the recognition of children at risk of OSA and in the management of the condition among various categories of doctors and specialists was also reported by Cayir et al<sup>14</sup>, Tamay et al<sup>15</sup>, and Uong et al.<sup>17</sup> This again may be related to poor exposure of clinicians to paediatric sleep medicine coupled with non-availability of facilities for proper assessment of children with sleep breathing disorders in many centres, particularly in developing countries.<sup>12,13</sup> The results underscore the need for increased awareness about childhood OSA among general

practitioners and doctors to facilitate early diagnosis and prompt treatment/referral of children to improve prognosis.

The majority (>70%) of the newly graduated doctors in this study appreciated the fact that adenotonsillar enlargement was a major contributing factor to childhood OSA and the need for thorough head, neck, and oropharyngeal examinations in the evaluation of children for OSA. However, their knowledge about the pathogenesis of OSA and details regarding further evaluations and management of the disorder is grossly deficient. For instance, more than 80% of the respondents did not know that the degree of snoring does not correlate with the severity of childhood OSA (question 6) and that a cardiorespiratory monitor cannot reliably detect central and obstructive apnoea in infants (question 18). These deficits in knowledge in specific areas of childhood OSA relating to pathogenesis and evaluation of the condition were

also reported by other workers.<sup>14–17</sup> This is particularly important because up to 10% of the paediatric age group have been estimated to have habitual snoring which may not be related to gas exchange abnormalities, sleep disruption, and other morbidities.<sup>19,20</sup> However 2–3% of children have OSA with its associated gas exchange abnormalities, co-morbidities, risk factors, and complications.<sup>1–4</sup> The earlier the medical interns and general practitioners are able to identify children likely to have OSA and proceed with further evaluation and management, the better the prognosis and quality of life of the child and the caregivers.<sup>8,9</sup> Hence the need for adequate exposure and knowledge of doctors about childhood OSA cannot be overemphasised.

In terms of knowledge and confidence about the treatment

of childhood OSA, it is not surprising that only about 17% of the doctors were confident about managing children with OSA, including the management of CPAP. This low confidence level was also reported in studies.<sup>14-17</sup> Even the ability to know who to refer the children to will be impaired, often leading to poor detection, development of preventable complications, and poor quality of life among the patients.<sup>9,10</sup>

It is noteworthy from this study that the level of knowledge of the newly graduated doctors was not significantly related to their gender, age, or country/continent of study, or the acquisition of other qualifications before their medical training. The study participants were recently graduated doctors, and therefore their level of knowledge and confidence about childhood OSA is mostly influenced by the level of exposure to the subject in medical schools. The fact that the level of knowledge of locally trained doctors was not significantly different from their foreign-trained counterparts speaks volumes of the inadequacy of exposure to the disorder during training in most medical schools all over the world. Even among paediatricians and child neuro-psychiatrists, the level of knowledge about childhood sleep and sleep disorders has been described as suboptimal.<sup>16</sup> Medical and postgraduate curricula should be updated to provide better exposure of doctors and students at all levels to sleep disorders in children, and particularly OSA.

The relatively small sample size studied in this report means that the results may not be generalisable to the entire population of interest. Nevertheless, this study has exposed a dearth of basic exposure and knowledge about childhood OSA among Nigerian doctors. It has also stressed the need for more training of doctors in the relatively new but fast-growing field of paediatric sleep medicine.

In conclusion, this study has highlighted suboptimal knowledge and confidence about the recognition, diagnosis, and management of childhood OSA among newly graduated Nigerian doctors both locally and foreign trained. This is believed to be a reflection of the lack of exposure to the condition in medical schools. Doctors who had formal training about the condition and who participated in the management of childhood OSA in medical school had relatively better knowledge and confidence about the condition. We advocate for more exposure and training of doctors in the field of paediatric sleep medicine to facilitate early recognition and prompt referral/treatment of children with this condition.

## Author declaration

Competing interests: none.

Any ethical issues involving humans or animals: none.

Was informed consent required: yes - documentation on file.

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