

Original Article

Knowledge of Sleep Medicine Among Practicing Doctors in A Nigerian Community

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ABSTRACT

Sleep disorders are common medical condition globally including Nigeria. It affects all categories of persons and age groups thereby posing a great burden on the sufferers. Despite this, there is dearth of studies focusing on this specialty as well as low knowledge and under-recognition of sleep disorders among practicing medical professionals. This study was designed to assess the awareness and knowledge of sleep medicine among practicing clinicians in Nigeria. It was cross-sectional hospital-based descriptive study using a convenient sampling method. The knowledge of sleep medicine among practicing doctors in three Nigerian hospitals was assessed with Assessment of Sleep Knowledge in Medical Education (ASKME) instrument. Data was analyzed using SPSS version 21. There were 149 participants that were interviewed. The majority, 94 (63.1%) were males and 55 (36.9%) were females. Professional designations of the participants were: 67 (45.0%) House officers, 32 (21.5%) Medical officers, 35 (23.5%) Resident doctors and 15 (10.1%) were Consultants (Specialist). Most physicians, 96 (64.4%) had low level of knowledge while 53 (35.6%) had high level of knowledge. There was no correlation between level of knowledge and years of medical practice. Most respondents 69 (46.3%) advocated the introduction of sleep medicine in undergraduate medical curriculum. Knowledge and awareness of sleep medicine among practicing clinicians is low and does not correlate with the number of years of practice. There is the need to integrate sleep medicine into medical training and in continuous medical education and to promote specialization in the field in Nigeria.

Keywords: Awareness, Knowledge, Medical Training, Nigeria, Sleep Disorders, Sleep Medicine

INTRODUCTION

Sleep is an important physiological process that is necessary for the normal functioning of the human body. Adequate sleep helps to improve memory, regulate body metabolic functions, helps tissue regeneration, regulate the immune system, improve cardiac activity and enhance reproduction.^{1, 2} Sleep disorders are common medical conditions globally that affects all categories of persons and age groups thereby posing a great burden to the health care system³

There appears to be a high prevalence of sleep disorders in Africa including Nigeria.⁴ This has been attributed to an increase in the prevalence of some risk factors for sleep disorders such as advancing age, family history of insomnia, female sex, lifestyle like drug abuse, work schedule, stress, anxiety, depression and presence of comorbidities.^{5,6,7} Sleep disorders impact negatively on the health and well-being of the sufferers.⁶ Some previous researchers in Nigeria have reported high prevalence of sleep disorders among different patient population like

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pregnant women, HIV positive patients and stroke survivors^{8,9,10}

It has been reported that sleep disorders are mostly unrecognized by both the public and practicing clinicians. This has been attributed to lack of education and training in sleep medicine during undergraduate medical training.¹¹ Hence, practicing clinicians may have difficulty in diagnosing and properly managing patients presenting with sleep disorders. A Survey across 12 countries namely Australia, India, Indonesia, Japan, Malaysia, New Zealand, Singapore, South Korea, Thailand, United States, Canada and Viet Nam showed that there was limited attention given to sleep medicine during medical school education. It revealed that the average time spent on sleep education was about 2.5 hours.¹²

Some studies that utilized the ASKME questionnaire in Saudi Arabia and Egypt among medical students consistently reported poor sleep knowledge with 94.8%, 95.4% and 91.0% respectively.^{11,13,14,15}

Very few studies have assessed knowledge and awareness of sleep medicine in Nigeria. Olorunmoteni et al in their study also looked at sleep knowledge among Nigerian medical and dental students and that 77.0% had poor knowledge. Haq and colleagues in a tertiary care centre in Qatar assessed the knowledge of physicians and noted that 63.95% had poor knowledge about sleep medicine.¹⁶

Our study was designed to assess the level of awareness and knowledge about sleep medicine among practicing doctors in three tertiary hospitals in Nigeria. It is intended to serve as a resource for advocacy on the need for enhanced training on sleep medicine both at the undergraduate and postgraduate levels.

MATERIALS AND METHODS

Study design and participants: This was a cross-sectional descriptive study involving three centers in Nigeria. The centers were Benue State University Teaching Hospital (BSUTH), Makurdi, Benue State; Federal Medical Centre (FMC) Makurdi, Benue State and Federal Medical Centre Owerri (FMC), Imo State from February 2017 to August 2019. Practicing physicians who were working in these

hospitals within the period of the study were recruited after obtaining informed consent using convenience sampling method.

Study instruments: We used a structured questionnaire to obtain their socio-demographic information while the knowledge of sleep medicine among practicing clinicians in Nigeria was assessed using the validated ASKME instrument. Scores were categorized into two groups; high ($\geq 60\%$) and low ($< 60\%$) based on the ASKME¹³ instrument.

Ethical considerations: Approval for the study was obtained from the Health Research Ethical Committees of BSUTH Makurdi and FMC Owerri. Informed consent was obtained from each participating medical doctor and confidentiality of the information obtained was assured to participants.

Data Analysis: Data was analyzed using the Statistical Package for Social Sciences (SPSS) software (version 21; IBM SPSS Statistics). Descriptive statistics was used to compute range, mean and standard deviation for quantitative variables as well as frequencies. Data was presented in tables and figures where appropriate. Relationship between categorical variables was determined using chi-square test. A p-value of less than 0.05 was used to determine statistical significance at 95% confidence level.

RESULTS

Socio-demographic characteristics

A total of 149 medical doctors participated in the study with a mean age \pm SD of 33.6 ± 7.2 years with range age of 36 (24 -60) years. Ninety-four (63.1%) were males and 55 (36.9%) were females. Most of the participants were house officers 67(45.0%) and medical officers, 32 (21.5%) as shown in Table 1 below. The mean \pm SD and range years of medical practice were 5.43 ± 6.64 and 33.84 (0.16 – 34) years respectively.

Awareness and Knowledge about Sleep Medicine

The participants were categorized based on their knowledge of sleep medicine into low and high level. The majority of them, 96 (64.4%) had low

level of knowledge and 53 (35.6%) had high level of knowledge as shown in Figure 1 below. The scatter diagram showed that medical practitioners with fewer years of practice appeared to have higher level (>60%) of knowledge about sleep medicine than those with longer years of practice as shown in Figure 2 below.

About half of the doctors 75(50.3%) reported that sleep medicine was not part of their undergraduate medical curriculum and majority did not often encounter patients with sleep disorder in their daily practice 62 (41.6%). However, most of the doctors suggested the need for sleep specialists, 130 (87.2%) and the need for introduction of sleep medicine in the medical undergraduate curriculum 115 (77.2%). The doctors' awareness of the different forms of sleep disorders were as follows: insomnia 138 (92.6%), narcolepsy 96 (64.4%), circadian rhythm abnormalities 90 (60.4%), obstructive sleep apnea 93 (62.4%) and periodic leg movement of sleep 24 (16.1%) as in Table 2 below.

Relationship of sleep medicine knowledge with socio-demographic characteristics

There was no significant difference between the level of knowledge of sleep medicine among the medical doctors and their socio-demographic characteristics such as gender, religion, marital status and professional designation ($p > 0.05$) as shown in Table 3.

Relationship between sleep medicine awareness and knowledge among medical doctors

A significant proportion 79 (60.2%) of those with low level of knowledge about sleep medicine felt the need for sleep specialist in Nigeria ($\chi^2=6.011$; $p=0.050$). There was however no significant relationship between the level of knowledge of sleep medicine and frequency of encountering patients with sleep disorder in medical practice, if sleep medicine is currently in the medical school curriculum and whether sleep medicine should be included in the curriculum ($p > 0.05$) as in Table 4 below.

Table 1: Socio-demographic characteristics of study participants

Variables	Frequency (n=149)	Percentage (%)
Gender		
Females	55	36.9
Males	94	63.1
Religion		
Christianity	144	96.7
Islam	5	3.4
Marital status		
Married	76	51.0
Single/divorced	73	49.0
Professional designation		
Consultants	15	10.1
Residents	35	23.5
Medical Officers	32	21.5
House Officer	67	45.0

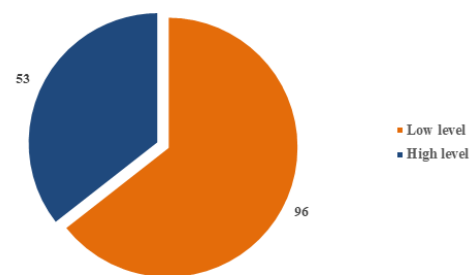


Figure 1: Level of sleep medicine knowledge among medical doctors

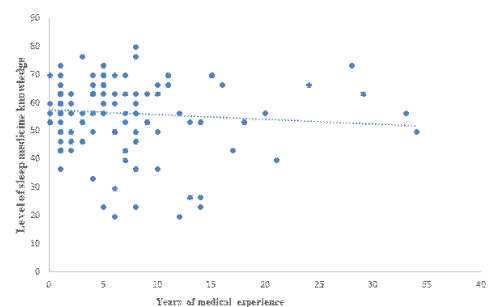


Figure 2: Distribution of relationship between level of sleep medicine knowledge and years of medical practice.

Table 2: Sleep medicines awareness among medical doctors

Variables	Frequency (n)	Percentage (%)
Was sleep medicine in the curriculum during medical school training		
Yes	74	49.7
No	75	50.3
Encounter of patient with sleep disorder		
Often	39	26.1
Not often	62	41.6
Rarely	47	31.5
Need for sleep specialist in Nigeria		
Yes	130	87.2
No	19	12.8
Sleep medicine should be introduced in medical schools		
Yes	115	77.2
No	34	22.8
Aware of insomnia as a sleep disorder		
No	11	7.4
Yes	138	92.6
Aware of Narcolepsy as a sleep disorder		
No	52	34.9
Yes	96	64.4
Aware of circadian rhythm abnormalities		
No	90	60.4
Yes	57	38.3
Aware of obstructive sleep apnea		
No	55	36.9
Yes	93	62.4
Aware of PLEMS as a sleep disorder		
No	125	83.9
Yes	24	16.1

PLEMS = Periodic leg movement of sleep

Table 3: Relationship of sleep medicine knowledge with socio-demographic characteristics of study participants

Variables	Level of sleep medicine knowledge		Total
	Low knowledge n (%)	High Knowledge n (%)	
Gender			
Female	36 (65.5)	19 (34.5)	55 (100.0)
Male	60 (63.8)	34 (36.2)	94 (100.0)
		$p = 0.84$	
Marital status			
Married	50 (65.8)	26 (34.2)	76 (100.0)
Single	45 (62.5)	27 (37.5)	72 (100.0)
Divorced	1 (100.0)	0 (0.0)	1 (100.0)
		$p = 0.69$	
Professional designation			
Consultant	9 (60.0)	6 (40.0)	15 (100.0)
Resident	20 (57.1)	15 (42.9)	35 (100.0)
Medical officer	21 (65.6)	11 (34.4)	32 (100.0)
House officer	46 (68.7)	21 (31.3)	67 (100.0)
		$p = 0.69$	

Table 4: Relationship between sleep medicine notions and knowledge among medical doctors

Variables	Level of sleep medicine knowledge		Total
	Low knowledge n (%)	High Knowledge n (%)	
Was sleep in curriculum during medical school days?			
Yes	40 (58.0)	29 (42.0)	69 (100.0)
No	56 (69.3)	24 (29.7)	80 (100.0)
Have you ever encountered a patient with sleep disorder?			
Very often	5 (83.3)	1 (16.7)	6 (100.0)
Often	22 (66.7)	11 (33.3)	33 (100.0)
Not often	40 (64.5)	22 (35.5)	62 (100.0)
Rarely	28 (59.6)	19 (40.4)	47 (100.0)
		$p = 0.158$	
Is there a need for sleep specialist in Nigeria?			
Yes	79 (60.2)	51 (39.2)	130 (100.0)
No	17 (88.9)	2 (11.1)	19 (100.0)
		$p = 0.050$	
Should sleep medicine should be included in the curriculum?			
Yes	69 (60.0)	46 (40.0)	115 (100.0)
No	25 (78.1)	7 (21.9)	32 (100.0)
		$p = 0.145$	

DISCUSSION

The purpose of this study was to uncover knowledge gap in sleep medicine among different categories of doctors working in three tertiary institutions in Nigeria and to highlight the need to step up sleep education among the medical doctors. Most of the participants had significantly poor sleep medicine knowledge. In relating sleep medicine knowledge to the years of practice, an interesting trend was uncovered in which younger physicians appeared to have better knowledge compared with participants who had been in practice for longer time. Although this inverse correlation was not statistically significant, it could be hypothesized that more recent graduates of medicine are more likely to write foreign examinations to enable them to migrate to the developed countries where sleep medicine may be part of the curriculum for licentiate examination

Information on sleep medicine education worldwide is limited and its under recognition among both clinicians and medical students might probably be due to low priority in the medical education curriculum¹⁴. For instance, in a cross-sectional survey of seven medical schools in Saudi Arabia to assess the knowledge of sleep and sleep disorders using this same validated 30-item ASKME instrument, report showed that more than 80% of the study participants had rated that their sleep medicine knowledge low¹⁴. The study also showed that less emphasis on sleep medicine during undergraduate training and crowded undergraduate medical curriculum, not allowing incorporation of sleep medicine topics, were the major reasons for the participants' poor sleep medicine knowledge. Similarly, our study revealed that two-thirds of our study participants also demonstrated poor knowledge of sleep medicine using ASKME questionnaire. Further to this, another study conducted in Qatar among 250 practicing physicians regarding their knowledge of sleep medicine concluded that health care providers had reduced awareness and knowledge about sleep medicine¹⁶. The authors also opined that reduced emphasis on sleep disorders during medical school and post graduate training probably accounted for this observation. In a similar study conducted in Egypt

among 726 medical students drawn from seven medical faculties, only 8.5% of the participants possessed good knowledge of sleep medicine¹⁷, a trend that was in keeping with our findings, although our study focused on clinicians only. Inadequate sleep medicine knowledge clinicians during undergraduate education and even in the postgraduate training period appears to be the reason for the clinicians' poor knowledge level in our study. This further highlights the need for education on sleep and sleep disorders during undergraduate medical education¹⁸

Increasing awareness regarding sleep medicine among non-specialist clinicians will encourage early detection and treatment of sleep disorders which might help reduce associated morbidities. Sleep disorders are common among the out-patient population, but patients often downplay their severity preferring to report other more distressing ailments to their doctors. But the fact remains that lack of, or inadequate restorative sleep disrupts the normal physical, mental, social, and emotional functioning of an individual and can affect overall health, safety and quality of life.¹⁹ In a case-controlled study involving 261 individuals with insomnia and 101 normal controls, insomnia was significantly associated with reduced quality of life using Short Form (SF)-36 assessment tool.²⁰ There is strong evidence that supports a link between sleep disorders, disturbed sleep, and adverse brain health, ranging from stroke to subclinical cerebrovascular disease to cognitive outcomes.²¹

Unfortunately, sleep medicine is rarely part of the undergraduate medical curriculum, especially in Nigeria. And many clinicians graduate, delve into clinical practice not having the basic knowledge of sleep medicine. Currently, there is no formal professional certification program for sleep medicine in Nigeria. A few sleep medicine specialists available in Nigeria did not train locally, and they are mostly psychiatrists and a few respiratory physicians. The recent inauguration of the Nigerian Society of Sleep Medicine (NSSM) is a huge boost to the advancement of sleep medicine in Nigeria. In partnership with the African Sleep Network, NSSM organizes regular online webinars

on sleep-related topics, and this effort will hopefully create more awareness about sleep medicine among health workers.

Insomnia was the commonest type of sleep disorder recognized by the participants, followed by narcolepsy, circadian rhythm disorder abnormality and obstructive sleep apnea in that order. However, periodic leg movement of sleep was the least recognized. Sleep disorders exist in varying proportions across different climes, depending on the study methodology, either as primary conditions or in association with other illnesses. Obstructive sleep apnea is a common sleep disorder as demonstrated by the response pattern of our participants, and perhaps one of the most researched globally, its link with cardiovascular diseases is increasingly gaining recognition among different subspecialties.^{10,22,23} In a hospital-based cross-section survey in the North Central region of Nigeria, frequency of sleep disordered breathing among stroke survivors was found to be 4.5%.¹⁰ The relationship between stroke and obstructive sleep apnea may be complex. While it is not listed as one of the traditional risk factors for stroke, its interaction with other vascular risk factors in triggering a cerebrovascular accident is well known.

The relationship between professional designation and sleep medicine knowledge level was not significant in this study. However, there appears to be an inverse trend between number of years in practice and sleep medicine knowledge, with the more recent graduates appearing to have better knowledge than those that have been in practice for a longer time. This could possibly be as a result of their involvement in foreign examinations which may have sleep medicine related modules. This might enhance their overall knowledge of rare topics, such as sleep medicine, that are not usually part of the undergraduate medical curriculum in Nigeria. This study did not find any significant relationship between gender and marital status to sleep medicine knowledge among the studied participants.

The multicenter nature of our study is considered a strength due to the fact that participants were drawn from multiple institutions, and their responses were more likely to capture the reality about sleep

medicine knowledge gap in Nigeria. However, a major limitation to our study was that the participants were skewed with the house officers comprising approximately half of the study population, and this might have swayed overall responses of the participants.

Again, the relationship between subspecialty categories and sleep medicine knowledge was not explored. For instance, medical doctors in anesthesia, neurology, pulmonology and psychiatry are more likely to have a better knowledge of sleep medicine due to the peculiarity of their practice. Despite the above outlined limitations, our study has at least provided data on sleep medicine knowledge gap in a Nigeria population, which hopefully might help stimulate more research in this subject matter.

CONCLUSION

The implication of our study is that poor sleep medicine knowledge and awareness among practicing medical doctors remains a huge gap which needs to be filled considering the rising incidence of sleep-related disorders, and their contributions to cardiovascular health in our society. Thus, there is a need to integrate sleep medicine into both undergraduate and postgraduate medical training curriculum. More medical doctors should also be encouraged to consider specializing in sleep medicine in Nigeria.

RECOMMENDATIONS

Overall, our study has highlighted a huge knowledge deficit in sleep medicine knowledge among medical doctors and the need to upscale training in this area starting from medical school. Lifelong learning through continuous medical education should also be considered as a strategy to enhancing sleep medicine knowledge uptake and promoting healthy learning attitude among medical doctors. It is also important to develop a structural framework for clinical experience, sleep education, conduct, and interpretation of sleep studies in relevant subspecialties. More instruction time may help bridge the gap between sleep medicine knowledge and the limited exposure to sleep medicine teachings and trainings that an average trainee or consultant receives at both the undergraduate and post graduate

levels. At the undergraduate level, integrating information on sleep and sleep disorders into the existing medical school curriculum could help, whereas at the postgraduate level, introduction of sleep modules and structured sleep medicine training programs may enhance knowledge of screening, diagnosis, and treatment of sleep disorders.

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