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Assessing Knowledge of Obstructive Sleep Apnoea among 4th Year and 6th Year Medical Students, Internal Medicine Registrars and Medical Consultants at the University of Cape Town.

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In fulfilment of the requirements for the degree of Master of Medicine (MMed) in Medicine Faculty of Health Sciences
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Date of Submission:

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Contents

DECLARATION

I, Bulelwa Priscilla Mbena, hereby declare that the work on which this dissertation/thesis is based on my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part has been, is being, or is to be submitted for another degree in this or any other university.

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Date: 24/04/2022

Abstract

Introduction: Obstructive sleep apnoea (OSA) is not frequently diagnosed, despite being a common medical condition. OSA is associated with increased cardiovascular morbidity. There is no data on the prevalence of OSA in South Africa. We set out to assess knowledge of OSA among students, registrars and consultants in the department of medicine of a large South African university.

Methods: This is a descriptive, cross-sectional study. We distributed an anonymous online survey among 4th and 6th year medical students, registrars and consultants in the Department of Medicine at the University of Cape Town.

Results: We had a 32% response rate to our survey. The mean knowledge score was 13/18. We found a weak but significant association between age and knowledge ($R=0.45$, $p<0.001$), with a weak correlation between age and attitude ($R=0.31$, $p<0.001$), and a weak association between attitude and knowledge ($R=0.3$, $p=0.00022$).

There were significant differences in level of education between undergraduates and consultants ($p=0.002$) as well as between undergraduates and registrars ($p=0.002$).

Our cohort agreed that OSA is an important clinical disorder, but they lacked confidence in their ability to identify and manage patients with OSA.

Conclusion: More teaching time is needed at an undergraduate level to improve the ability of clinicians to recognise and manage OSA.

Acknowledgements

A special thank you to my supervisors, Dr Greg Symons and Dr Richard Raine, for their guidance and patience in the process of compiling this work.

Thank you to Ms Olina Ngwenya for her assistance with analysing the statistics.

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Assessing Knowledge of Obstructive Sleep Apnoea among 4th Year and 6th Year Medical Students, Internal Medicine Registrars and Medical Consultants at the University of Cape Town.

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Obstructive sleep apnoea (OSA) is an important clinical problem that is infrequently diagnosed in South Africa. OSA is defined as the coexistence of unexplained excessive daytime sleepiness with at least five obstructed breathing events (apnoea or hypopnoea) per hour of sleep. Apnoea is defined as breathing pauses ≥10 seconds, while hypopnea is breathing events lasting ≥10 seconds where breathing is continued but peak signal excursion is reduced by ≥30% and pulse oximetry saturation by ≥3% from the previous baselines established during sleep[(1)].

Clinically, OSA is characterised by sleepiness and/or alterations in performance during the day and frequently associated with nocturnal snoring. OSA has multiple adverse consequences with strong associations with hypertension, stroke, arrhythmias, coronary artery disease and diabetes[(2-6)]. There is also an association between OSA and neurocognitive impairment such as poor concentration, fatigue and excessive daytime sleepiness with an increased risk of occupational injuries, motor vehicle

accidents and depression[7]. There is evidence that OSA accelerates cognitive decline associated with ageing[8].

There is little data on the prevalence of OSA in South Africa. It is estimated that OSA affects at least 2-4% of the population in the USA[9]. With the high prevalence of obesity in South Africa, it is likely that there is a high incidence of OSA in this country. A recent analysis using demographic country body-mass index data suggested that 22.8 % of the South African population aged between 30 and 65 years may have an Apnoea Hypopnoea Index ≥15 /hour[10].

As OSA has multiple adverse outcomes, it is crucial that the condition be diagnosed and treated. Unfortunately, this diagnosis is not made commonly in South Africa. Recognition and treatment of OSA could lead to reduced utilisation of health care services and improvement in patient outcomes.

Establishing the baseline of current knowledge of OSA among our participants will allow us to assess how much more teaching is required at the university on the topic. It is hoped that the planned increase in teaching time will in future improve diagnostic accuracy and lead to improved care of patients presenting with OSA and its associated complications.

Studies conducted in Nigeria[11] and Italy[12] indicate that whilst medical practitioners and medical students are aware of the importance of OSA and its clinical consequences, many did not feel confident in making the diagnosis and managing patients with OSA.

In light of the results of the studies from Nigeria[11] and Italy[12], we set out to assess knowledge of OSA in medical students and medical practitioners in Cape Town, South Africa

Aims

The primary aim of the study was to assess knowledge of OSA of 4th and 6th year medical students, registrars and consultants in the Department of Medicine, University of Cape Town.

The secondary aims were to:

- Assess whether there is any relationship between knowledge of OSA and the attitudes of health practitioners regarding the importance of the condition,
- Participants' confidence in diagnosing and managing OSA
- Improve the care of this growing patient population in our country.

Methods

Study Design

This was a descriptive, cross-sectional study. An anonymous online survey was conducted among 4th and 6th year medical students, registrars and consultants in the Department of Medicine at the University of Cape Town.

The inclusion criteria for this study are:

- Undergraduate medical students enrolled for the 4th and 6th year of study at the University of Cape Town medical school.
- All medical registrars and consultants within the Department of Medicine at the University of Cape Town.

The exclusion criteria are:

- Consultants who work within the Division of Pulmonology were excluded from this study.

Data Collection

This survey was based on the Obstructive Sleep Apnoea Knowledge and Attitude (OSAKA) questionnaire, which is a validated tool developed to assess physician knowledge and attitudes regarding OSA[13, 14]. The OSAKA questionnaire consists of 18 questions that assess knowledge and 5 questions that assess attitude. The English version of the questionnaire

was used, as this is the medium of instruction at UCT. We also gathered demographic information, such as age, gender and level of education.

The questionnaire was converted into an online survey on the Research Electronic Data Capture (RedCap) platform. RedCap is a web-based application developed by Vanderbilt University to capture data for clinical research. We obtained permission to access students' and staff email addresses from the Faculty of Health Sciences Human Research Ethics Committee and the director of the Department of Student Affairs at UCT. To ensure the anonymity of participants, RedCap created a unique identifier number for each record in the project. The data gathered is stored on secure RedCap servers and access to this project is password protected.

A link to the survey was e-mailed to all medical students in their 4th and 6th year of study, medical registrars and medical consultants. We acquired the students' UCT email addresses from the respective course convenors offices. We had a list of 204 4th year and 211 6th year medical students. We emailed the students only after they completed a rotation in Internal Medicine. The email addresses for the registrars and consultants were obtained from the secretary of the Department of Medicine. We had a list of 69 medical registrars and 86 consultants. We excluded consultants from the Pulmonology Division and registrars who had left the University on completion of their training. In total, we sent the survey link to 557 people.

Informed consent was obtained from all the participants. The first page of the survey provided participants with a brief description of this research project and informed that should they continue with the survey, they were granting consent to be participants. Participation in this study was voluntary.

Participants were sent weekly reminders to complete the survey. After 5 weeks, no further reminders were sent. The reminders stopped upon completion of the survey. Data was collected from January 2018 until August 2019. During this period, we received 182 responses. The survey was closed to participants in October 2019.

The knowledge questions covered epidemiology, presenting complaints, diagnosis and management of OSA. The knowledge questions were

marked out of a total score of 18. Each question had 3 categorical options: “True”, “False” and “Don’t know”. The correct response was given 1 point, the incorrect answer and “Don’t know” were given a score of 0. The first 2 attitude questions assessed the importance of OSA. The questions were graded on a 5-point ordinal scale (1=not important, 5=extremely important). The remaining attitude questions were focused on how confident participants felt with the management of OSA patients.

Data analysis

Statistical analysis was performed using the R statistical package (version 4.1.0). Exploratory data analysis was performed to gain insight about the data. Spearman's rank correlation coefficient was used to measure the association between variables.

The results were analysed for the level of education, attitudes and knowledge about OSA.

Analysis of variance (ANOVA) was used to determine whether there were any statistically significant differences between the education groups’ mean scores. The Tukey test, a single-step multiple comparison statistical test, was used to find if means between different education levels were significantly different from each other.

Ethics

Ethics approval was obtained from the University of Cape Town Human Research Ethics Committee (HREC/REF:606/2016).

This research project is compliant with POPIA regulations. Informed consent was sought from all participants. The data collected for this project will not be shared with any other entity. Data was anonymized by assigning a unique identifier for each record. The data for this project is stored on secure UCT RedCap servers. Access to the RedCap site for this project is password protected.

Results

A link to the survey was emailed to 557 people. There were 182 respondents (32.6% response rate). Data was collected over a 20-month period.

The majority of participants were female (98/182, 53.8%), 42.3% (77/182) were male and 4% (7/182) did not select a gender. The mean age of participants was 30 years. The youngest participant was 20 years old and the eldest 64 years old.

Eleven participants (6%) were consultant physicians, 83 (46%) were undergraduate students in their 4th and 6th year of study and 52 (29%) were medical registrars. 36 (20%) participants did not indicate their level of education.

The mean knowledge score was 13/18 (SD +/-3.66). The median knowledge score was 15 (interquartile range 12-17). The minimum score was 1 and the maximum score was 18. The correct response rates for the knowledge questions are outlined in Table 1.

One participant had a knowledge score of 1 and 139 (76%) participants had a knowledge score of 9 (50%) and above. 30 participants had a score of 18 (100%) on the knowledge questions.

We found a weak but significant association between age and knowledge ($R=0.45$, $p<0.001$) (figure 2).

The highest percentage of correct responses (>85%) was for questions 4, 5, 6, 9, 10 and 12 (see table 1). The lowest scores were achieved for questions 7, 8 and 17, which respectively deal with CPAP as a cause of nasal obstruction, laser-assisted uvuloplasty as a treatment for OSA and the number of hypopneas that are acceptable in adult patients.

In our cohort, 96% of the participants considered OSA to be important as a clinical disorder. 96.7% of the participants considered identifying patients with OSA as important. Only half (53.3%) of our cohort felt confident in their ability to identify patients with OSA and even fewer (22.6%) felt

confident in their ability to manage patients with OSA. Only 14.7% of our cohort felt confident in their ability to manage a patient on CPAP therapy.

We found a weak correlation between age and attitude ($R=0.31$, $p<0.001$) - see figure 1. There was a weak association between attitude and knowledge ($R=0.3$, $p=0.00022$) (figure 3).

There were significant differences in level of education between undergraduates and consultants ($p=0.002$) as well as undergraduates and registrars ($p=0.002$). Other comparisons showed no significant differences.

There is a significant difference in attitude scores between undergraduates and registrars ($p=0.004$). Other comparisons showed no significant differences.

Table 1: Number of correct responses to each question in OSAKA

Question	Correct response, n (%)
1. Women with obstructive sleep apnoea may present with fatigue only.	127 (83.0%)
2. Uvulopalatopharyngoplasty is curative for a majority of people with obstructive sleep apnoea.	77 (50.3%)
3. The estimated prevalence of obstructive sleep apnoea among adults is between 2% and 10%.	86 (56.2%)
4. Most patients with obstructive sleep apnoea snore.	131 (85.6%)
5. Obstructive sleep apnoea is associated with hypertension.	129, 85,4%
6. An overnight sleep study is the gold standard for diagnosing obstructive sleep apnoea.	133, 87,5%
7. CPAP (continuous positive airway pressure) therapy may cause nasal obstruction.	(59, 38,8%)
8. Laser-assisted uvuloplasty is an appropriate treatment for severe obstructive sleep apnoea.	40, 26,3%)
9. The loss of upper airway muscle tone during sleep contributes to obstructive sleep apnoea.	128, 85,3%
10. The most common cause of obstructive sleep apnoea in children is the presence of large tonsils and adenoids.	132, 86,8%
11. A craniofacial and oropharyngeal examination is useful in the assessment of patients with suspected obstructive sleep apnoea.	123, 81,5%
12. Alcohol at bedtime improves obstructive sleep apnoea.	132, 86,8%

13. Untreated obstructive sleep apnoea is associated with a higher incidence of automobile crashes.	119, 78,3%
14. In men, collar size 17 (43.18cm) inches or greater is associated with obstructive sleep apnoea.	82, 54,7%
15. Obstructive sleep apnoea is more common in women than in men.	103, 68,2%
16. CPAP is the first-line therapy for severe obstructive sleep apnoea.	84, 55,3%
17. Fewer than 5 apnoeas or hypopneas per hour is normal in adults.	38, 25,2%
18. Cardiac arrhythmias may be associated with untreated obstructive sleep apnoea.	123, 80,9%

Table 2: Responses to attitude questions

Attitude questions	**Mean score SD**
Importance questions (questions are answered from multiple choices: not important = 1, somewhat important = 2, Important = 3, very important = 4, extremely important = 5)	
Importance of obstructive sleep apnoea as a clinical disorder	3.78 ± 0.86
Importance of identifying patients with possible obstructive sleep apnoea	3.83 ± 0.86
Confidence questions (questions are answered from multiple choices: strongly disagree = 1, disagree = 2, neither agree nor disagree = 3, agree = 4, strongly agree = 5)	
Confident in identifying patients at risk for obstructive sleep apnoea	3.34 ± 1.04
Confident in ability to manage patients with obstructive sleep apnoea	2.5 ± 1.05
Confident in ability to manage patients on CPAP therapy	2.24 ± 0.99

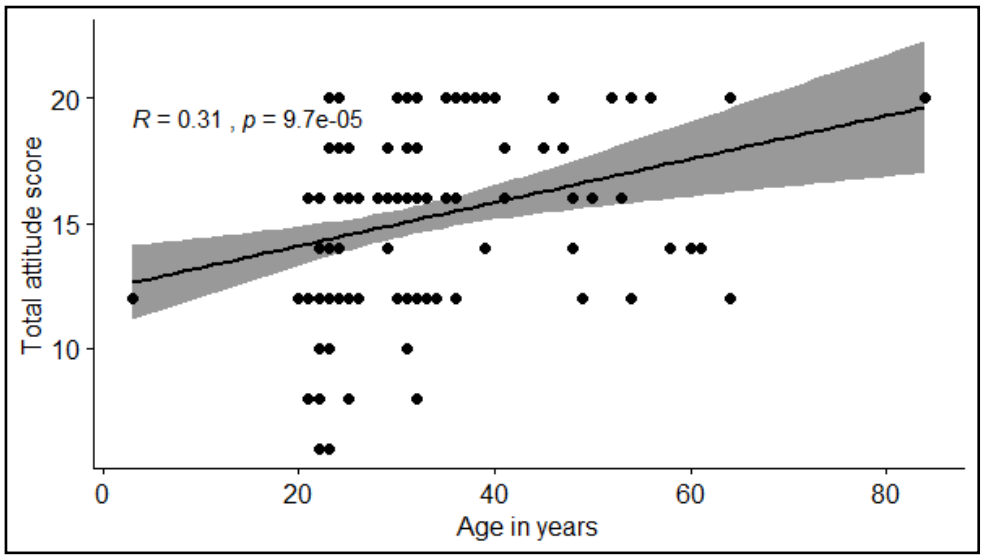

Figure 1: Relationship between total attitude score and age

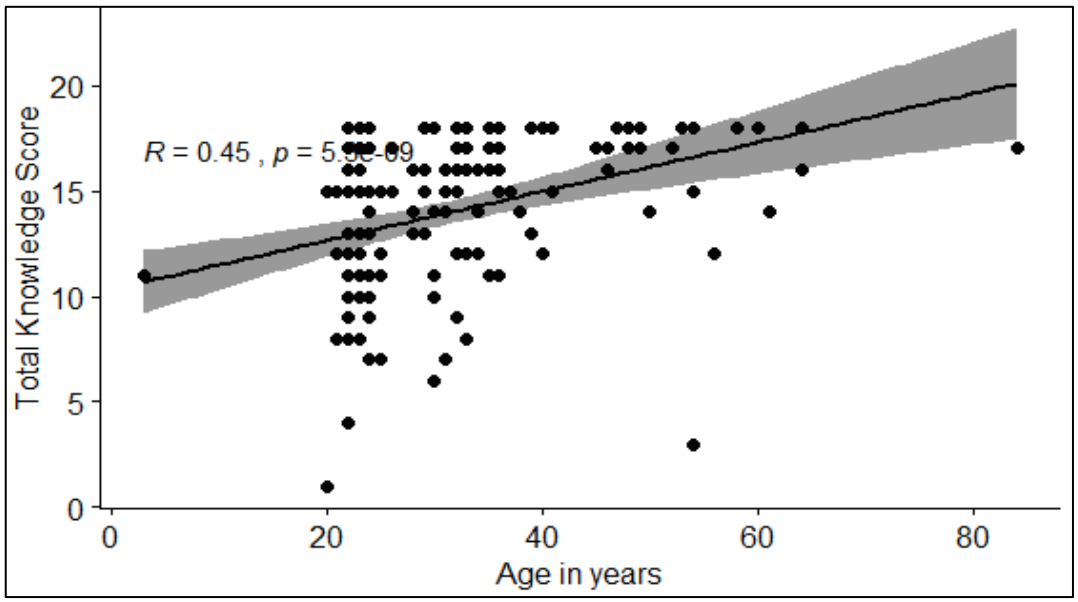

Figure 2: Relationship between total knowledge score and age

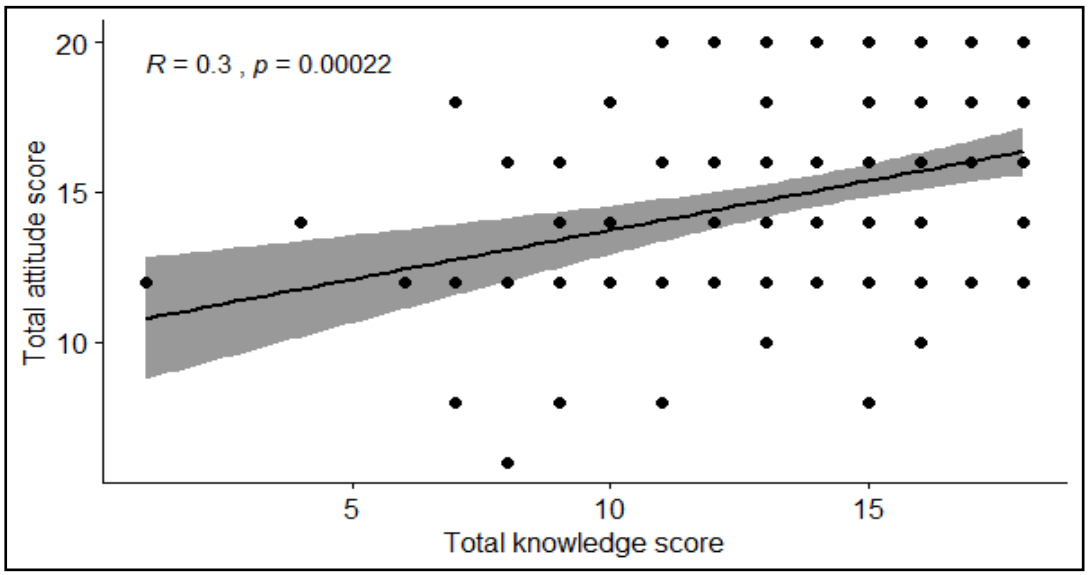

Figure 3: Relationship between total attitude score and total knowledge score

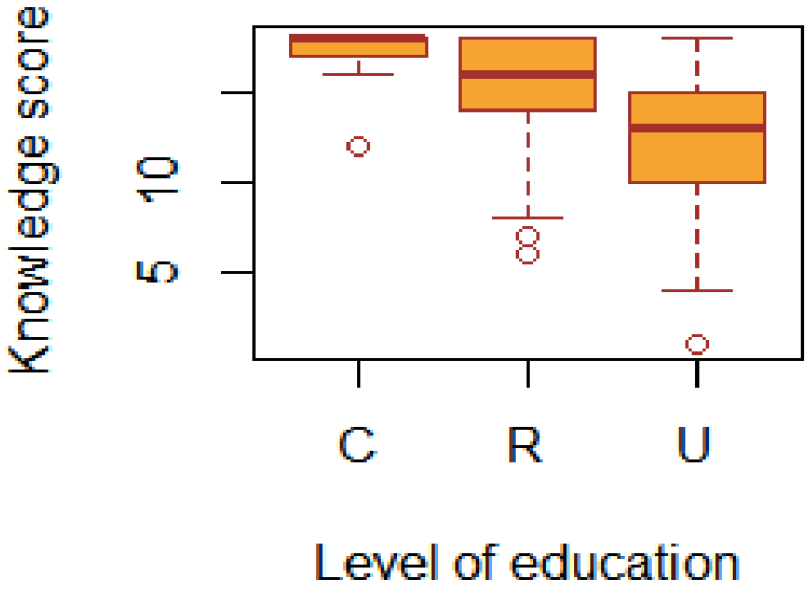

Figure 4: Comparison of knowledge scores by level of education. C=consultants, R=registrars, U=undergraduates.

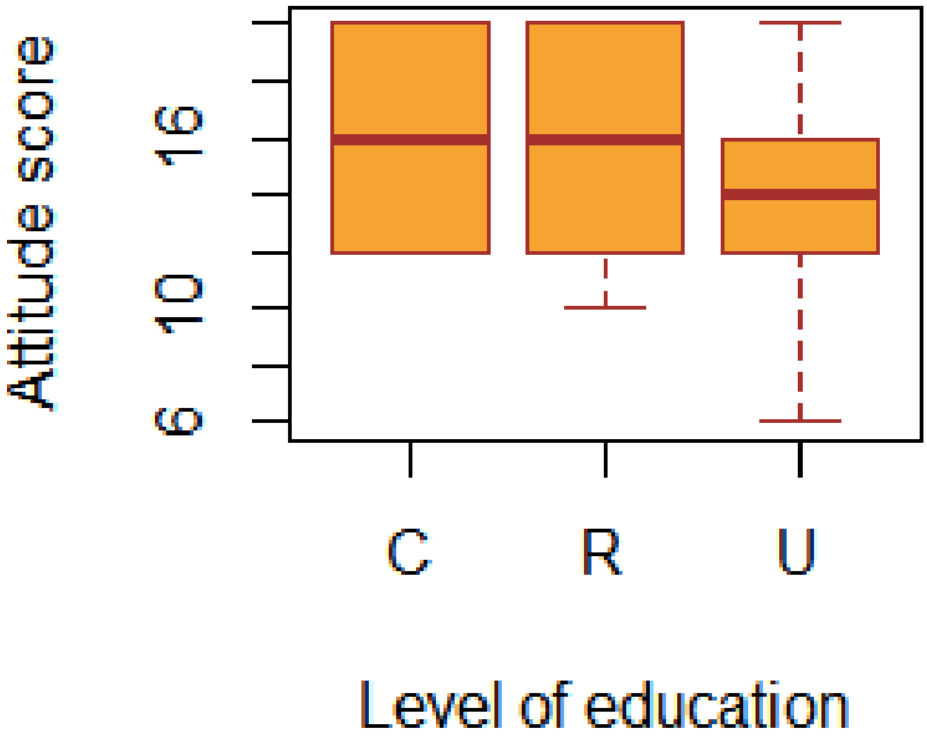

Figure 5: Comparison of attitude scores by level of education. C=consultants, R=registrars, U=undergraduates

Discussion

OSA is thought to affect 2-4% of the population in the United States of America[9]. The prevalence in South Africa is not currently known. OSA remains under-diagnosed in South Africa. Patients with OSA are likely to be presenting to doctors in different specialties across the country.

In this study we found that participants had a moderate amount of knowledge regarding OSA (mean score of 72%). Of concern is that one participant had a knowledge score of 1 and 30 participants answered all knowledge questions correctly.

96% of participants acknowledged the importance of OSA as a clinical disorder. Participants also recognised that it is important to identify patients with OSA (97%). We did however find that while over half the

participants were confident in their ability to identify patients with OSA, they were not confident in their ability to manage patients with OSA. Only just over a fifth of participants felt confident in their ability to manage these patients and close to 60% were equally not confident of their ability to manage patients on CPAP. This is important as clinicians need to have some confidence in their ability to manage patients in order to identify affected patients.

We found a weak correlation between age and knowledge, and between age and attitude. This implies participants may have received little further training after their undergraduate years. We found a weak correlation between attitude and knowledge, and this illustrates that those who considered OSA important may have further educated themselves on the condition.

We further stratified our cohort by level of education. We grouped the participants as undergraduates, registrars and consultants. As expected, we found a significant difference in knowledge scores between undergraduates and consultants. We also found a significant difference in knowledge scores between undergraduates and registrars. We found no significant difference between registrars and consultants.

There was a significant difference in attitude scores between undergraduates and registrars. There was no statistical difference between attitude scores of consultants and undergraduates. The small number of consultants included in the analysis may be a confounding factor.

We compared our cohort to those in other studies where the OSAKA questionnaire was used to gather similar data. Compared to a cohort of graduating medical students from a Nigerian University[11], our cohort compared favourably in terms of knowledge scores (mean score 13 vs 7.6). The findings on the attitude component of the questionnaire were similar, both cohorts considered OSA an important clinical entity. Similarly, both cohorts lacked confidence in managing patients with OSA and patients on CPAP. A cohort of graduating medical students in Ecuador[15] had a mean score of 9.63.

Our cohort was on par with similar studies conducted in Latin America on primary care physicians[16] and cardiologists in the USA[17]. They scored similarly on the knowledge and attitude scores.

The moderate knowledge scores and low confidence levels in managing patients with OSA alert us to the need for more focused teaching on sleep disorders at undergraduate and post graduate level. Teaching should be focused on helping students understand the physiology of sleep and the pathophysiology of sleep disordered breathing. Training needs to emphasise the consequences of untreated OSA on patients and expound on available treatment options. This will empower clinicians at all levels of care to recognise and refer patients promptly to the appropriate level of care. These changes to the curriculum would necessitate that students spend more time within the specialised units, such as the respiratory unit.

In future, we could set up a study to measure the impact of these interventions.

There is a concern of bias on this study, as those who answered the survey may have an interest in OSA and thus our scores are falsely elevated. Participants completed the survey remotely over an extended period of time, therefore it is possible that some may have looked up some answers.

This study is limited by the small sample size and, as well as being limited to those studying and working at the University of Cape Town, thus the results may not be applicable to a broader medical community. This study provides us the opportunity to improve undergraduate and post graduate education by dedicating more teaching time to sleep disorders.

Conclusion

We found our cohort to have a moderate amount of knowledge of OSA. They had low confidence levels in their ability to manage patients with OSA.

More teaching time is needed at an undergraduate level to improve clinician's ability to recognise and manage OSA. Not all healthcare workers will further their studies beyond the undergraduate level, therefore we need to educate and empower young graduates to adequately care for patients with OSA.

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Appendices

Appendix A: Instructions for authors: South African Medical Journal

General article format/layout

Accepted manuscripts that are not in the correct format specified in these guidelines will be returned to the author(s) for correction, which will delay publication.

General:

- Manuscripts must be written in UK English.

- The manuscript must be in Microsoft Word format. Text must be single-spaced, in 12-point Times New Roman font, and contain no unnecessary formatting (such as text in boxes).
- Please make your article concise, even if it is below the word limit.
- Qualifications, ***full*** affiliation (department, school/faculty, institution, city, country) and contact details of ALL authors must be provided in the manuscript and in the online submission process.
- Abbreviations should be spelt out when first used and thereafter used consistently, e.g. 'intravenous (IV)' or 'Department of Health (DoH)'.
- Include sections on Acknowledgements, Conflict of Interest, Author Contributions and Funding sources. If none is applicable, please state 'none'.
- Scientific measurements must be expressed in SI units except: blood pressure (mmHg) and haemoglobin (g/dL).
- Litres is denoted with an uppercase L e.g. 'mL' for millilitres).
- Units should be preceded by a space (except for % and ºC), e.g. '40 kg' and '20 cm' but '50%' and '19ºC'.
- Please be sure to insert proper symbols e.g. μ not u for micro, a not a for alpha, b not B for beta, etc.
- Numbers should be written as grouped per thousand-units, i.e. 4 000, 22 160.
- Quotes should be placed in single quotation marks: i.e. The respondent stated: '...'
- Round brackets (parentheses) should be used, as opposed to square brackets, which are reserved for denoting concentrations or insertions in direct quotes.
- If you wish material to be in a box, simply indicate this in the text. You may use the table format –this is the *only* exception. Please DO NOT use fill, format lines and so on.

SAMJ is a generalist medical journal, therefore for articles covering genetics, it is the responsibility of authors to apply the following:
- Please ensure that all genes are in italics, and proteins/enzymes/hormones are not.
- Ensure that all genes are presented in the correct case e.g. TP53 not Tp53.
**NB: Copyeditors cannot be expected to pick up and correct errors wrt the above, although they will raise queries where concerned.
- Define all genes, proteins and related shorthand terms at first mention, e.g. '188del11' can be glossed as 'an 11 bp deletion at nucleotide 188.'

- Use the latest approved gene or protein symbol as appropriate:
    - Human Gene Mapping Workshop (HGMW): genetic notations and symbols
    - HUGO Gene Nomenclature Committee: approved gene symbols and nomenclature
    - OMIM: Online Mendelian Inheritance in Man (MIM) nomenclature and instructions
    - Bennet et al. Standardized human pedigree nomenclature: Update and assessment of the recommendations of the National Society of Genetic Counselors. J Genet Counsel 2008;17:424-433: standard human pedigree nomenclature.

Research
Guideline word limit: 4 000 words

Research articles describe the background, methods, results and conclusions of an original research study. The article should contain the following sections: introduction, methods, results, discussion and conclusion, and should include a structured abstract (see below). The introduction should be concise – no more than three paragraphs – on the background to the research question, and must include references to other relevant published studies that clearly lay out the rationale for conducting the study. Some common reasons for conducting a study are: to fill a gap in the literature, a logical extension of previous work, or to answer an important clinical question. If other papers related to the same study have been published previously, please make sure to refer to them specifically. Describe the study methods in as much detail as possible so that others would be able to replicate the study should they need to. Results should describe the study sample as well as the findings from the study itself, but all interpretation of findings must be kept in the discussion section, which should consider primary outcomes first before any secondary or tertiary findings or post-hoc analyses. The conclusion should briefly summarise the main message of the paper and provide recommendations for further study.

Select figures and tables for your paper carefully and sparingly. Use only those figures that provided added value to the paper, over and above what is written in the text.

Do not replicate data in tables and in text .

Structured abstract

- This should be 250-400 words, with the following recommended headings:
    - **Background:** why the study is being done and how it relates to other published work.
    - **Objectives:** what the study intends to find out
    - **Methods:** must include study design, number of participants, description of the intervention, primary and secondary outcomes, any specific analyses that were done on the data.
    - **Results:** first sentence must be brief population and sample description; outline the results according to the methods described. Primary outcomes must be described first, even if they are not the most significant findings of the study.
    - **Conclusion:** must be supported by the data, include recommendations for further study/actions.
- Please ensure that the structured abstract is complete, accurate and clear and has been approved by all authors.
- Do not include any references in the abstracts.

Appendix B: OSAKA questionnaire

Obstructive Sleep Apnea Knowledge and Attitudes (OSAKA)

Please answer the following questions true, false, or don't know (DK):

True	False	DK	
❑	❑	❑	1. Women with obstructive sleep apnea may present with fatigue alone.
❑	❑	❑	2. Uvulopalatopharyngoplasty is curative for the majority of patients with obstructive sleep apnea.
❑	❑	❑	3. The estimated prevalence of obstructive sleep apnea among adults is between 2 and 10%.
❑	❑	❑	4. The majority of patients with obstructive sleep apnea snore.
❑	❑	❑	5. Obstructive sleep apnea is associated with hypertension.
❑	❑	❑	6. An overnight sleep study is the gold standard for diagnosing obstructive sleep apnea.
❑	❑	❑	7. CPAP (continuous positive airway pressure) therapy may cause nasal congestion.
❑	❑	❑	8. Laser-assisted uvuloplasty is an appropriate treatment for severe obstructive sleep apnea.
❑	❑	❑	9. The loss of upper airway muscle tone during sleep contributes to obstructive sleep apnea.
❑	❑	❑	10. The most common cause of obstructive sleep apnea in children is the presence of large tonsils and adenoids.
❑	❑	❑	11. A craniofacial and oropharyngeal examination is useful in the assessment of patients with suspected obstructive sleep apnea.
❑	❑	❑	12. Alcohol at bedtime improves obstructive sleep apnea.
❑	❑	❑	13. Untreated obstructive sleep apnea is associated with a higher incidence of automobile crashes.
❑	❑	❑	14. In men, a collar size 17 inches or greater is associated with obstructive sleep apnea.
❑	❑	❑	15. Obstructive sleep apnea is more common in women than men.
❑	❑	❑	16. CPAP is the first line therapy for severe obstructive sleep apnea.
❑	❑	❑	17. Less than 5 apneas or hypopneas per hour is normal in adults.
❑	❑	❑	18. Cardiac arrhythmias may be associated with untreated obstructive sleep apnea.

Using the choices provided for each item below, please check the box that best describes your response:

A. As a clinical disorder, obstructive sleep apnea is:

Not important	Somewhat important	Important	Very important	Extremely important
❑	❑	❑	❑	❑

B. Identifying patients with possible obstructive sleep apnea is:

Not important	Somewhat important	Important	Very important	Extremely important
❑	❑	❑	❑	❑

C. I feel confident identifying patients at-risk for obstructive sleep apnea.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
❑	❑	❑	❑	❑

D. I am confident in my ability to manage patients with obstructive sleep apnea.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
❑	❑	❑	❑	❑

E. I am confident in my ability to manage patients on CPAP therapy.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
❑	❑	❑	❑	❑

We are interested in any demographic factors that help predict obstructive sleep apnea knowledge. Please answer the following questions about yourself:

Gender: ❑ Male ❑ Female

Age: ___ ___ years

Degree: ❑ M.D. ❑ D.O.

Year of medical school graduation: 19___ ___

Type(s) of residency training Specify: _____

In what year(s) did you complete your residency training?: ___ ___ ___ ___, ___ ___ ___ ___

Any subspecialty training: ❑ Yes ❑ No

Specify type(s) _____

In what year(s) did you complete your subspecialty training (if applicable): ___ ___ ___ ___, ___ ___ ___ ___

Board certification: ❑ Yes ❑ No

Specify type(s) _____

Years in practice: ___ ___ years