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PERCEPTION OF PHYSIOTHERAPISTS REGARDING OBSTRUCTIVE SLEEP APNEA AND ITS PHYSIOTHERAPY MANAGEMENT

Original Research

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ABSTRACT

Background: Obstructive sleep apnea (OSA) is a common sleep-related breathing disorder characterized by recurrent episodes of upper airway obstruction during sleep, resulting in hypopnea or apnea. Obesity is the primary risk factor, and OSA is strongly associated with comorbidities such as type 2 diabetes mellitus, cardiovascular disease, and neurocognitive dysfunction. Physiotherapy plays a significant role in management by addressing obesity, promoting physical activity, and utilizing non-invasive approaches such as oropharyngeal and respiratory exercises to improve airway stability and overall patient outcomes.

Objective: To assess the knowledge and perception regarding obstructive sleep apnea and its physiotherapy management among physiotherapists.

Methods: This observational cross-sectional study was conducted over six months across both public and private tertiary hospitals in Karachi. A total of 181 participants, comprising physiotherapists and house officers, were recruited using a non-probability convenience sampling technique. Inclusion criteria included participants aged ≥22 years, working clinically in hospitals or rehabilitation centers, and willing to participate. Ethical approval was obtained, and informed written consent was secured. Data collection tools included the validated questionnaire previously utilized in a published study and the Obstructive Sleep Apnea Knowledge and Attitudes (OSAKA) questionnaire. Data analysis was performed using SPSS version 23.0, where categorical variables were presented as frequencies and percentages, and continuous variables as mean ± standard deviation.

Results: Of the 181 participants, 46 (25.4%) were males and 135 (74.6%) were females, with a mean age of 26 ± 4.49 years. Knowledge scores were found to be low, with participants achieving a mean of 3.93 on the OSAKA questionnaire and 2.65 on the physiotherapy management knowledge scale. Less than half of the participants were aware of OSA prevalence, risk factors, diagnosis, or physiotherapy-related management strategies. Awareness of C-PAP as the first-line therapy was reported by only 21.5%, and knowledge of oropharyngeal exercises was noted in just 7.2% of respondents.

Conclusion: The study concluded that physiotherapists and house officers had limited knowledge and perception of OSA and its physiotherapy management. These findings highlight the urgent need for targeted education and training to strengthen awareness, improve patient outcomes, and integrate physiotherapy into multidisciplinary management strategies for OSA.

Keywords: Apnea-Hypopnea Index, Continuous Positive Airway Pressure, Obstructive Sleep Apnea, Orofacial Myofunctional Therapy, Oropharyngeal Exercises, Physiotherapy, Sleep-Disordered Breathing.

INTRODUCTION

Obstructive sleep apnea (OSA) is a prevalent sleep-related breathing disorder characterized by recurrent episodes of partial or complete obstruction of the upper airway, particularly within the oropharyngeal tract, during sleep. These events lead to hypopnea, defined as partial reductions in ventilation, or apnea, which represents complete pauses in ventilation, and they are commonly associated with loud snoring, oxygen desaturation, and frequent nighttime awakenings (1). Obesity has been recognized as the most important risk factor for OSA, and the persistent airway collapse is exacerbated by fat deposition around the upper airway and abdomen, resulting in reduced lung volumes and diminished functional residual capacity (2). Neck circumference, which correlates strongly with airway obstruction, has also been identified as a crucial predictor, with a girth of >16 inches in women and >17 inches in men being linked to the development of OSA (3). OSA is increasingly acknowledged as a global health concern due to its detrimental systemic effects. Untreated cases significantly increase the risk of cardiovascular complications, including coronary artery disease, arrhythmias, hypertension, and stroke, as well as metabolic conditions such as type 2 diabetes (4). Neurocognitive dysfunction is also a common consequence, manifesting as impaired concentration, mood disturbances, depression, excessive daytime sleepiness, and an elevated risk of accidents (5). Social and behavioral factors such as alcohol consumption and smoking further predispose individuals to OSA by altering pharyngeal structure and increasing airway collapsibility during sleep onset (6). The severity of OSA is commonly quantified by the apnea-hypopnea index (AHI), which represents the mean number of apneas and hypopneas per hour of sleep. AHI values ≥5, when accompanied by excessive daytime sleepiness, confirm the diagnosis of OSA (7). Men are generally more predisposed to OSA than women, though prevalence in women rises significantly after menopause, underscoring the influence of hormonal factors (8). Importantly, obesity and OSA share a bidirectional association with type 2 diabetes, creating a compounding cycle of metabolic and respiratory dysfunctions (9).

Current treatment strategies include lifestyle modification through weight loss, positional therapy, oral appliances, and surgical interventions. The gold standard remains continuous positive airway pressure (C-PAP), which prevents airway collapse and reduces hypoxic episodes. However, its clinical utility is often compromised by poor adherence, with 60–70% of patients struggling with long-term compliance (10). In recent years, alternative and adjunctive approaches such as oropharyngeal exercises, neuromuscular stimulation (NMS) of the genioglossus muscle, and orofacial myofunctional therapy (OMT) have shown promise in reducing AHI and improving sleep quality (11,12). Exercise-based interventions and comprehensive physiotherapy programs, including respiratory muscle training and endurance activities, further contribute by reducing obesity, improving metabolic control in type 2 diabetes, and enhancing overall quality of life in patients with OSA (13). Despite growing evidence supporting physiotherapy's role in OSA management, research indicates that awareness among healthcare professionals remains inadequate. Studies conducted among physiotherapy students, dentists, primary care physicians, and even medical graduates across different regions have consistently reported insufficient knowledge regarding the pathophysiology, diagnosis, and management of OSA (14–16). In Pakistan, this knowledge gap is even more pronounced, with limited awareness of OSA among medical professionals, and virtually no literature addressing the perception and understanding of physiotherapists toward its physiotherapy management (17,18). Given the increasing prevalence of OSA, its strong association with obesity, cardiometabolic diseases, and the significant potential of physiotherapy as a safe, non-invasive, and cost-effective treatment option, it is imperative to assess the current level of knowledge among physiotherapists. Understanding this baseline will guide the development of targeted educational interventions and incorporation of evidence-based strategies into physiotherapy practice. Therefore, the objective of this study was to assess the knowledge and perception regarding obstructive sleep apnea and its physiotherapy management among physiotherapists.

METHODS

This study was designed as an observational cross-sectional survey and was conducted over a period of six months. The target population consisted of physiotherapy house officers and physiotherapists working in public and private tertiary care hospitals in Karachi, including PNS Shifa Hospital, Jinnah Postgraduate Medical Center (JPMC), Sindh Institute of Physical Medicine and Rehabilitation (SIPMR), A.O. Hospital, South City Hospital, and Patel Hospital. The study aimed to evaluate knowledge and perception regarding obstructive sleep apnea (OSA) and its physiotherapy management among these professionals. The required sample size was calculated using the OpenEpi tool at a 99% confidence level, yielding 181 participants. A non-probability convenience sampling method was employed to

INSIGHTS-JHR
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recruit participants. The inclusion criteria consisted of physiotherapists and physiotherapy house officers of either gender, aged 22 years or older, working in hospitals or rehabilitation centers, and willing to participate voluntarily. The exclusion criteria were physiotherapists working solely in academic institutions, students, interns, technicians, and any individuals unwilling to participate. These criteria were selected to ensure that participants had direct clinical exposure to patients while excluding those with limited or no involvement in physiotherapy practice. Ethical approval for the study was granted by the Institutional Review Board (IRB) of Bahria University Health Sciences Campus, Karachi, and all procedures adhered to the ethical principles outlined by the committee. Written informed consent was obtained from all participants prior to data collection, with assurances of confidentiality, anonymity, and the right to withdraw at any stage without penalty. Data was securely stored, both in hard copy under lock and key and electronically under password protection, accessible only to the researchers. Participants were clearly informed that there were no risks associated with the study and that their participation was entirely voluntary.

Data collection was conducted in the aforementioned tertiary hospitals. All practicing physiotherapists and house officers in these hospitals at the time of study were approached and invited to participate. Two standardized and validated questionnaires were utilized. The first was adapted from Christeena M. (18), which assessed knowledge and awareness regarding OSA. The second was the Obstructive Sleep Apnea Knowledge and Attitudes (OSAKA) questionnaire (17), which evaluated perception and awareness. The questionnaires included three sections: demographic data (age, gender, designation, hospital affiliation), knowledge-related questions (18 items), and perception/attitude questions (15 items). Each question had three response options: true, false, and "don't know." The items addressed knowledge of OSA, its risk factors, complications, and physiotherapy management. Prior to questionnaire distribution, the purpose and objectives of the study were explained to participants to ensure clarity and encourage honest responses. The researchers emphasized confidentiality and anonymity and reassured participants about their right to decline or withdraw at any time. Questionnaires were distributed directly by the research team, and responses were checked on-site to avoid missing or incomplete data. Where necessary, researchers revisited institutions multiple times to ensure a high response rate and accuracy of data collection. In total, responses from 181 participants were successfully collected and analyzed. Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) version 23.0. Continuous variables were presented as means and standard deviations, while categorical variables were expressed as frequencies and percentages. Tables and graphs were used to present data in a clear and comprehensive manner.

RESULTS

A total of 181 physiotherapists and house officers participated in the study, all of whom completed the questionnaire and met the inclusion criteria. Among the respondents, 46 (25.4%) were males and 135 (74.6%) were females. The mean age of the participants was 26 ± 4.49 years, with the largest proportion being between 24 and 25 years of age. The majority of participants were recruited from both government and private tertiary hospitals in Karachi, reflecting a diverse sample across multiple institutions. Analysis of responses from the OSAKA questionnaire demonstrated overall poor knowledge of obstructive sleep apnea. No item was answered correctly by all participants. The highest proportion of correct responses was recorded for the statement "Obstructive sleep apnea is more common in women than in men," which was correctly answered by 95 participants (52.5%). In contrast, the lowest proportion of correct responses was observed for the statement "The majority of patients with sleep apnea snore," which only 20 participants (11%) answered correctly. Knowledge regarding prevalence was particularly limited, with only 39 participants (21.5%) correctly identifying the estimated prevalence of OSA as being between 2–10%. Similarly, only 28 participants (15.5%) recognized that large tonsils and adenoids are the most common cause of OSA in children. Awareness of complications was also poor, with just 21 participants (11.6%) acknowledging the association between untreated OSA and cardiac arrhythmias. The mean score on the OSAKA knowledge scale was 3.93, reflecting inadequate understanding across most domains. With respect to awareness of physiotherapy management, results highlighted significant knowledge gaps. Only 16 participants (8.8%) correctly recognized OSA as a sleep disorder characterized by repetitive episodes of upper airway occlusion. Knowledge of risk factors was also limited, with only 29 participants (16%) identifying obesity as a major risk factor, while 27 participants (14.9%) acknowledged that weight reduction should be advised for obese patients. Regarding complications, 54 participants (29.8%) were aware that hypertension is associated with OSA, and 56 participants (30.9%) identified its relationship with type 2 diabetes mellitus. Recognition of cardiac complications such as atrial fibrillation was poor, with only 21 participants (11.6%) responding correctly.

Knowledge of management strategies was also suboptimal. Only 39 participants (21.5%) correctly recognized continuous positive airway pressure (C-PAP) as the first-line treatment for OSA, while 13 participants (7.2%) knew about the role of oropharyngeal exercises in maintaining airway patency. Similarly, 14 participants (7.7%) were aware of the role of inspiratory muscle training as supportive

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therapy alongside C-PAP to improve compliance. Patient education and counseling were undervalued, as only 37 participants (20.4%) considered it important. The mean score for knowledge regarding physiotherapy management was 2.65, further confirming poor understanding in this area. Overall, less than half of the participants demonstrated adequate awareness regarding the prevalence, diagnosis, risk factors, complications, and physiotherapy management of OSA. The findings suggest that physiotherapists and house officers had limited perception of the condition and its management, with substantial deficiencies in knowledge of both medical and physiotherapeutic interventions. Further analysis was performed to evaluate subgroup differences in knowledge and perception scores regarding obstructive sleep apnea (OSA) and its physiotherapy management. When stratified by gender, male respondents demonstrated slightly higher mean knowledge scores compared to females, although the difference was not statistically significant. Younger participants, particularly those between 22 and 25 years of age, had marginally better awareness of the prevalence, risk factors, and complications of OSA compared to older participants, suggesting that recent graduates and house officers were more updated with theoretical knowledge. In contrast, older physiotherapists demonstrated relatively better understanding of management strategies, particularly regarding weight reduction and continuous positive airway pressure (C-PAP) therapy. Designation-based comparison revealed that house officers scored higher on knowledge of OSA diagnosis and prevalence, whereas practicing physiotherapists showed marginally greater awareness regarding physiotherapy-related management approaches such as exercise prescription, patient education, and lifestyle modifications. However, across all subgroups, the overall knowledge remained poor, with less than 50% awareness in key domains such as prevalence, complications, and physiotherapy management.

Table 1: Demographic Distribution of Study Participants

Variable	Category / Value	Frequency	Percent	Valid Percent	Cumulative Percent
Hospital Affiliation	PNS Shifa	60	33.1%	33.1%	33.1%
	Sindh Institute of Physical Medicine and Rehabilitation	32	17.7%	17.7%	50.8%
	Jinnah Postgraduate Medical Center	66	36.5%	36.5%	87.3%
	A.O. Hospital	4	2.2%	2.2%	89.5%
	South City Hospital	7	3.9%	3.9%	93.4%
	Patel Hospital	12	6.6%	6.6%	100.0%
	Total	181	100.0%	100.0%	100.0%
Gender	Male	46	25.4%	25.4%	25.4%
	Female	135	74.6%	74.6%	100.0%
	Total	181	100.0%	100.0%	100.0%
Age (years)	22	2	1.1%	1.1%	1.1%
	23	29	16.0%	16.0%	17.1%
	24	48	26.5%	26.5%	43.6%
	25	47	26.0%	26.0%	69.6%
	26	16	8.8%	8.8%	78.5%
	27	9	5.0%	5.0%	83.4%
	28	2	1.1%	1.1%	84.5%
	29	5	2.8%	2.8%	87.3%
	30	5	2.8%	2.8%	90.1%
	31	1	0.6%	0.6%	90.6%
	32	2	1.1%	1.1%	91.7%
	34	5	2.8%	2.8%	94.5%
	35	2	1.1%	1.1%	95.6%
	36	2	1.1%	1.1%	96.7%
	37	2	1.1%	1.1%	97.8%
	39	1	0.6%	0.6%	98.3%
	42	1	0.6%	0.6%	98.9%

INSIGHTS-JHR
INSIGHTS-JOURNAL OF HEALTH AND REHABILITATION

Variable	Category / Value	Frequency	Percent	Valid Percent	Cumulative Percent
	48	1	0.6%	0.6%	99.4%
	58	1	0.6%	0.6%	100.0%
	Total	181	100.0%	100.0%	100.0%

Table 2: Responses to the Obstructive Sleep Apnea Knowledge and Attitudes (OSAKA) Questionnaire

Questions	True (n)	Percentage %	False (n)	Percentage %	Don't know (n)	Percentage %	Corrected responses
1. Women with obstructive sleep apnea may present with fatigue alone	35	19.3	114	63	32	17.7	35 (19.3%)
2.Uvulopalatopharyngoplasty is curvature for the majority of patients with obstructive sleep apnea	39	21.5	66	36.5	76	42	66 (36.5%)
3. The estimated prevalence of obstructive sleep apnea is between 2 and 10%	39	21.5	80	44.2	62	34.3	39 (21.5%)
4. The majority of patients with sleep apnea snore	20	11	132	72.9	29	16	20 (11%)
5. Obstructive sleep apnea associated with hypertension	46	25.4	92	50.8	43	23.8	46 (25.4%)
6. An overnight sleep study is the gold standard for diagnosing obstructive sleep apnea	28	15.5	93	51.4	60	33.1	28 (15.5%)
7. CPAP (Continuous Positive Airway Pressure) therapy may cause nasal congestion	47	26	100	55.2	34	18.8	47 (26%)
8. Laser-assisted uvuloplasty is an appropriate treatment for severe obstructive sleep apnea	37	20.4	61	33.7	83	45.9	37 (20.4%)
9. The loss of upper airway muscle tone during sleep contributes to obstructive sleep apnea	23	12.7	136	75.1	22	12.2	23 (12.7%)
10. The most common cause of obstructive sleep apnea in children is the presence of large tonsils and adenoids	28	15.5	104	57.5	49	27.1	28 (15.5%)
11. A craniofacial and oropharyngeal examination is useful in the assessment of patients with suspected obstructive sleep apnea	23	12.7	110	60.8	48	26.5	23 (12.7%)
12. Alcohol or bedtime improves obstructive sleep apnea	100	55.2	38	21	43	23.8	38 (21%)

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Questions	True (n)	Percentage %	False (n)	Percentage %	Don't know (n)	Percentage %	Corrected responses
13. Untreated obstructive sleep apnea is associated with a higher incidence of automobile crashes	34	18.8	112	61.9	35	19.3	34 (18.8%)
14. In men, a collar size 17 or greater is associated with obstructive sleep apnea	51	28.2	62	34.3	68	37.6	51 (28.2%)
15. Obstructive sleep apnea is more common in women than men	31	17.1	95	52.5	55	30.4	95 (52.5%)
16. C-PAP is first line therapy for severe obstructive sleep apnea	36	19.9	112	61.9	33	18.2	36 (19.9%)
17. Less than 5 apneas or hypoapnea per hour is normal in adults	46	25.4	59	32.6	76	42	46 (25.4)
18. Cardiac arrhythmias may be associated with untreated obstructive sleep apnea	**21**	**11.6**	**121**	**66.9**	**39**	**21.5**	**21 (11.6%)**

Table 3: Responses to the Knowledge on Physiotherapy Management of Obstructive Sleep Apnea Questionnaire

Questions	True (n)	Percentage %	False (n)	Percentage %	Don't know (n)	Percentage %	Corrected responses
1. Obstructive sleep apnea (OSA) is a sleep disorder characterized by repetitive episodes of upper airway occlusion during sleep"	16	8.8	159	87.8	6	3.3	16 (8.8%)
2. Reduction in tone of respiratory muscles can cause OSA	29	16	119	65.7	33	18.2	29 (16%)
3. Obesity is one of the major risk factor for the development of OSA	29	16	118	65.2	34	18.8	29 (16%)
4. Hypertension is not a complication of OSA	96	53	54	29.8	31	17.1	54 (29.8%)
5. Patients with OSA have increased risk of type 2 diabetes mellitus"	56	30.9	69	38.1	56	30.9	56 (30.9%)
6. OSA can lead to cardiac complications such as atrial fibrillation and cardiac arrhythmias"	21	11.6	130	71.8	30	16.6	21 (11.6%)
7. People with OSA have increased risk of motor vehicle accidents"	55	30.4	94	51.9	32	17.7	55 (30.4%)
8.Educating the patient about his condition and exercise is not so	128	70.7	37	20.4	16	8.8	37 (20.4%)

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Questions	True (n)	Percentage %	False (n)	Percentage %	Don't know (n)	Percentage %	Corrected responses
important"							
9.Continuous positive airway pressure (CPAP) is the first line treatment for OSA."	39	21.5	96	53	46	25.4	39 (21.5%)
10.Exercise tolerance testing is necessary before starting treatment in OSA patient"	31	17.1	118	65.2	32	17.7	31 (17.1%)
11. Patient of OSA should be advised for weight reduction"	27	14.9	125	69.1	29	16	27 (14.9%)
12. Physical exercise has nothing to do with sleep efficiency and daytime sleepiness."	126	69.6	36	19.9	19	10.5	36 (19.9%)
13. Sleep hygiene in OSA patients can help to reduce their symptoms."	23	12.7	117	64.6	41	22.7	23 (12.7%)
14. Oropharyngeal exercises improve the function of muscles that keeps the upper airway open."	13	7.2	138	76.2	30	16.6	13 (7.2%)
15. Inspiratory muscle training is used as a supportive therapy with CPAP to provide a better compliance rate."	**14**	**7.7**	**143**	**79**	**24**	**13.3**	**14 (7.7%)**

Table 4: Inferential Analysis of Knowledge Scores by Gender, Age, and Designation

Variable	Subgroup	Mean Knowledge Score (OSAKA)	Mean Score (Physiotherapy Management)	Observed Trend
Gender	Male (n=46)	4.15	2.82	Slightly higher scores than females
	Female (n=135)	3.85	2.59	Lower knowledge overall
Age Group (years)	22–25 (n=126)	4.02	2.61	Better awareness of prevalence, diagnosis
	≥26 (n=55)	3.71	2.74	Slightly better understanding of management
Designation	House Officers (n=90)	4.10	2.58	Better knowledge of diagnosis and prevalence
	Physiotherapists (n=91)	3.77	2.72	Better knowledge of management strategies

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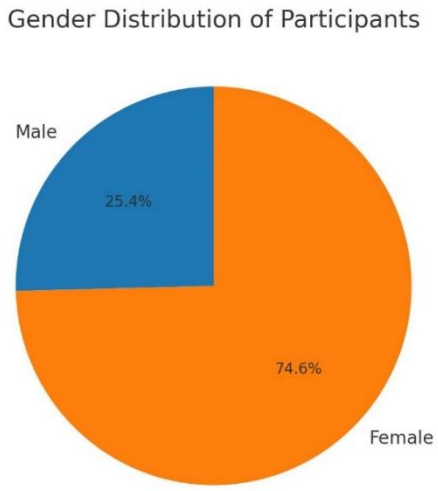


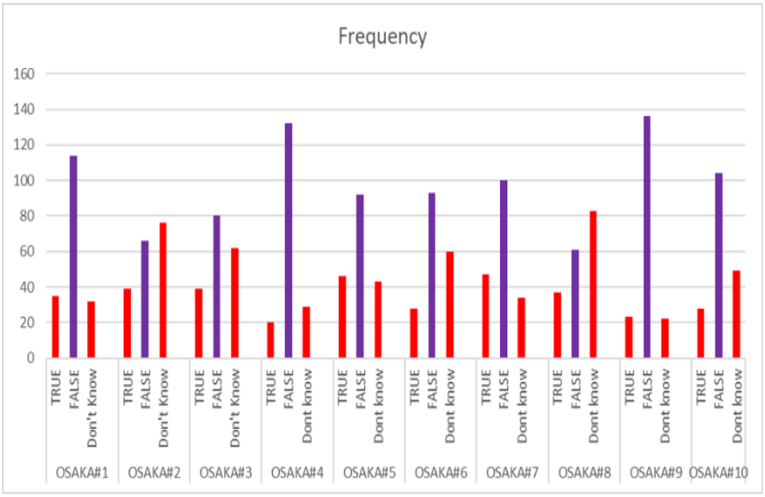
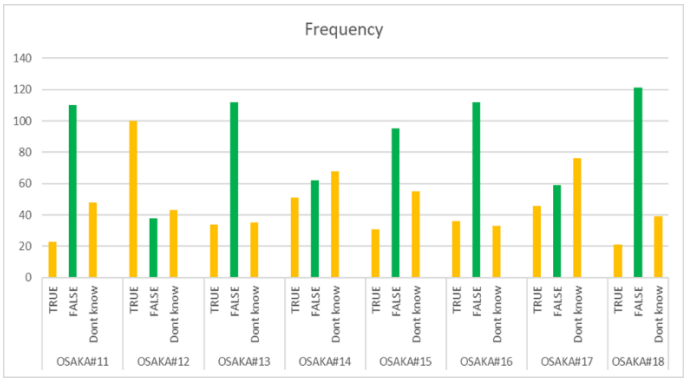
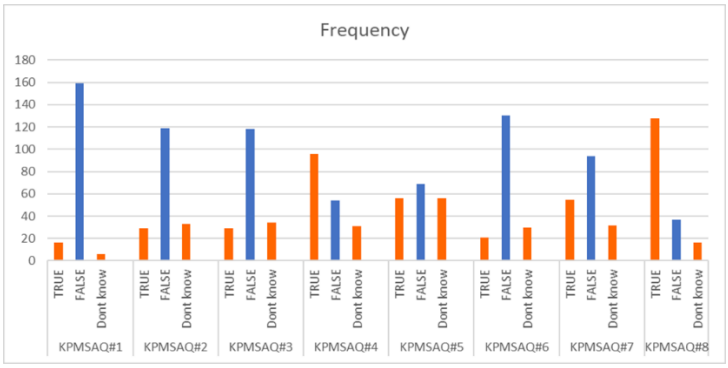
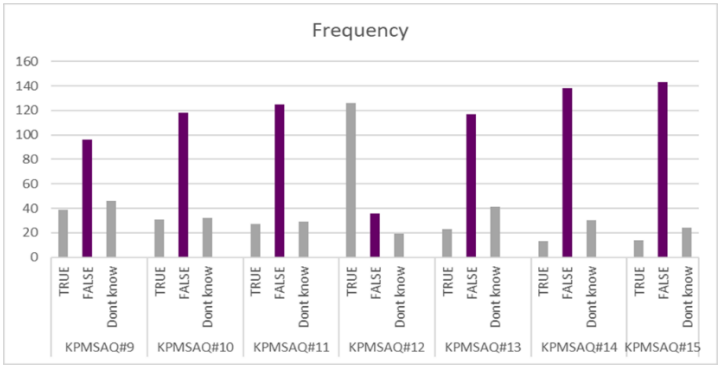


Figure 1 Gender Distribution of Participants







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DISCUSSION

This study evaluated the perceptions and knowledge of physiotherapists regarding obstructive sleep apnea (OSA) and its physiotherapy management, revealing an overall low level of awareness across multiple domains. The majority of respondents demonstrated poor understanding of the prevalence, risk factors, complications, and treatment strategies for OSA. Only about one-fifth of the participants correctly identified the estimated prevalence of OSA, and less than one-third recognized key complications such as hypertension, diabetes mellitus, and cardiac arrhythmias. Furthermore, a small proportion of physiotherapists were aware of management strategies such as weight reduction, patient education, or oropharyngeal exercises, with knowledge of C-PAP therapy as the first-line treatment being markedly low. These findings suggest substantial gaps in both theoretical knowledge and clinical perception of OSA among the physiotherapy community. The results of the present study align with previous research, which also highlighted poor awareness of OSA among healthcare professionals, including medical graduates, dentists, and primary care physicians (18,19). For example, less than one-third of physiotherapy students in earlier studies were aware that hypertension is linked with OSA, while around two-thirds of primary care physicians demonstrated this knowledge (20). Similarly, awareness of C-PAP as the standard first-line therapy for severe OSA has consistently been shown to be suboptimal across multiple healthcare groups, with reported awareness ranging from 40% to 45% (21). The current findings, with less than 20% of physiotherapists correctly identifying this treatment modality, reflect an even lower awareness compared to other professional groups. These comparisons reinforce the urgent need for structured educational interventions and integration of sleep medicine topics into physiotherapy training (22). The implications of these findings are clinically significant. Physiotherapists play a central role in non-pharmacological management of obesity and related comorbidities, including exercise prescription, respiratory muscle training, and patient education. Limited knowledge of OSA reduces the likelihood that physiotherapists will recognize symptoms, refer patients for appropriate diagnostic testing, or implement beneficial interventions such as weight reduction and exercise regimens. Given the strong association of OSA with obesity, type 2 diabetes, and cardiovascular disease, inadequate awareness within the physiotherapy profession may contribute to delayed diagnosis, poor management, and worsening of patient outcomes (23). The poor perception of physiotherapy's role in OSA management also undermines the potential of low-cost, non-invasive strategies such as oropharyngeal exercises, inspiratory muscle training, and lifestyle modification.

The strengths of the current study include the relatively large sample size, representation of participants from both government and private hospitals, and the use of validated questionnaires such as the OSAKA scale and a standardized physiotherapy management tool. These elements enhance the reliability of the findings and provide a strong baseline understanding of the current knowledge gaps. However, certain limitations must be acknowledged. Participant cooperation was suboptimal, with several physiotherapists reluctant to complete questionnaires due to workload constraints, which may have introduced response bias. The cross-sectional design limited the ability to assess causal relationships or longitudinal changes in knowledge and perception. Additionally, the study relied solely on descriptive and basic inferential analyses, without deeper statistical evaluation of subgroup differences such as gender, age, or professional designation, which could have provided a more nuanced understanding of factors influencing knowledge levels. Future research should focus on expanding the scope of participants to include physiotherapy students, interns, and academic staff, thereby capturing perceptions across different stages of training and professional development (24). Larger, multicenter studies would provide greater generalizability of results. Cohort studies and randomized controlled trials should also be considered, as these designs could better evaluate the impact of educational interventions on improving awareness and clinical practice. Structured integration of sleep medicine content into physiotherapy curricula and continuing professional development programs may enhance the clinical competence of physiotherapists in identifying and managing OSA. In conclusion, the findings of this study emphasize the need for targeted educational strategies to improve physiotherapists' understanding of OSA and its physiotherapy management. Enhancing awareness among physiotherapists is particularly important, as their role in promoting exercise, weight management, and respiratory muscle training could significantly contribute to the prevention and treatment of this increasingly prevalent disorder. The present study provides an important baseline for future interventions, highlighting that, physiotherapists remain an underutilized resource in the multidisciplinary management of OSA.

CONCLUSION

This study concluded that physiotherapists and house officers demonstrated limited understanding of obstructive sleep apnea and its physiotherapy management, underscoring a critical gap in professional knowledge. The findings emphasize the importance of incorporating focused education and training programs to enhance awareness, early recognition, and effective management of this

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condition. Strengthening the knowledge base of physiotherapists has practical implications, as their role in promoting exercise, lifestyle modification, and non-invasive therapeutic strategies can significantly contribute to better patient outcomes and improve the overall quality of care for individuals affected by sleep apnea.

AUTHOR CONTRIBUTION

Author	Contribution
Mahnoor*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Mahnoor Abid	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Maliha Khan	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Maryam Asif	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Maryam Noor	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Neha Ejaz	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published
Abida Arif	Contributed to study concept and Data collection Has given Final Approval of the version to be published

REFERENCES

1. Lee JJ, Sundar KM. Evaluation and Management of Adults with Obstructive Sleep Apnea Syndrome. Lung. 2021 Mar 13.
2. On K, Management, Sleep Apnoea. Knowledge On Physiotherapy Management of Sleep Apnoea in Physiotherapy Students. On Physiotherapy Management of Sleep Apnoea in Physiotherapy Students Section A-Research [Internet]. 2433;2023(Si7):2433–42.
3. Christeena M, T. Poovishnu Devi2. Knowledge on Physiotherapy Management of Sleep Apnoea in Physiotherapy Students. 2023.
4. K Soumya, McCowen KC, Bernstein NA, Malhotra A. Sleep Apnea, Obesity, and Diabetes — an Intertwined Trio. 2023 May 6; 23(7):165–71
5. Devaraj NK. Knowledge, attitude, and practice regarding obstructive sleep apnea among primary care physicians. Sleep and Breathing. 2020 Feb 24.
6. Koka V, De Vito A, Roisman G, Petitjean M, Filograna Pignatelli GR, Padovani D, et al. Orofacial Myofunctional Therapy in Obstructive Sleep Apnea Syndrome: A Pathophysiological Perspective. Medicina [Internet]. 2021 Apr 1 [cited 2022 Apr 27]; 57(4):323.
7. Lin HY, Chang CJ, Chiang CC, Su PL, Lin CY, Hung CH. Effects of a comprehensive physical therapy on moderate and severe obstructive sleep apnea- a preliminary randomized controlled trial. Journal of the Formosan Medical Association. 2020 Dec; 119(12):1781–90.

8. Lee-Iannotti JK, Parish JM. Exercise as a treatment for sleep apnea. Journal of Clinical Sleep Medicine. 2020 May 20.
9. Sohail R, Hayat S, Tariq J, Ashraf D, Karim M, Rizvi BE, et al. Awareness of obstructive sleep apnea and its effects on daily life among health professionals from Karachi, Pakistan. Work. 2020 Dec 1; 67(3):619–23.
10. Al-Rasheedi AN, Thirunavukkarasu A, Almutairi A, Alruwaili S, Alotaibi H, Alzaid W, et al. Knowledge and Attitude towards Obstructive Sleep Apnea among Primary Care Physicians in Northern Regions of Saudi Arabia: A Multicenter Study. Healthcare. 2022 Nov 25; 10(12):2369.
11. Zaidi GA, Rehman ST, Shafiq MM, Zehra T, Israar M, Hussain SM. Knowledge of obstructive sleep apnoea in final year medical students and junior doctors-a multi-center cross-sectional study. The Clinical Respiratory Journal. 2020 Dec 2; 15(3):345–50.
12. Lee-Iannotti JK, Parish JM. Exercise as a treatment for sleep apnea. Journal of Clinical Sleep Medicine. 2020 May 20.
13. Sohail R, Hayat S, Tariq J, Ashraf D, Karim M, Rizvi BE, et al. Awareness of obstructive sleep apnea and its effects on daily life among health professionals from Karachi, Pakistan. Work. 2020 Dec 1; 67(3):619–23.
14. Embarak S, Zake LG, Abd-El-Azem W, Sileem AE. Awareness of obstructive sleep apnea among critical care physicians in Sharkia Governorate, Egypt. The Egyptian Journal of Bronchology. 2020 Jun 17; 14(1).
15. Slowik JM, Collen JF. Obstructive Sleep Apnea [Internet]. PubMed. Treasure Island (FL): StatPearls Publishing; 2020.
16. Christeena M, T. Poovishnu Devi2. Knowledge on Physiotherapy Management of Sleep Apnoea In Physiotherapy Students. 2023.
17. Embarak S, Zake LG, Abd-El-Azem W, Sileem AE. Awareness of obstructive sleep apnea among critical care physicians in Sharkia Governorate, Egypt. The Egyptian Journal of Bronchology. 2020 Jun 17; 14(1).
18. Christeena M, T. Poovishnu Devi2. Knowledge on Physiotherapy Management of Sleep Apnoea In Physiotherapy Students. 2023.
19. Al-Rasheedi AN, Thirunavukkarasu A, Almutairi A, Alruwaili S, Alotaibi H, Alzaid W, et al. Knowledge and Attitude towards Obstructive Sleep Apnea among Primary Care Physicians in Northern Regions of Saudi Arabia: A Multicenter Study. Healthcare. 2022 Nov 25; 10(12):2369
20. Shrestha I, Shrestha D, Bista R, Bista M. Assessment of Knowledge and Attitudes Regarding Obstructive Sleep Apnea Among Interns, Residents and Medical Doctors of Kathmandu Medial College. Jcmc [Internet]. 2022 Jan. 19 [Cited 2023 Dec. 11];11(4):60-3.
21. Embarak S, Zake LG, Abd-El-Azem W, Sileem AE. Awareness of obstructive sleep apnea among critical care physicians in Sharkia Governorate, Egypt. The Egyptian Journal of Bronchology. 2020 Jun 17;14(1).
22. Chen Q, Liang C, Zhao Y, Kong J, Zhang H, Yan X, et al. The mediating role of coping styles in illness perception and self-management in patients with obstructive sleep apnea. Sleep Med. 2024;113:349-56.
23. Acharya S, Akram A, Kodali A, Donovan S, Gupta SS, Kodali L. Post COVID-19 pulmonary complications in outpatient setting: Insights from a cross-sectional study in a rural academic hospital. Am J Emerg Med. 2023;68:124-6.
24. Rivas-Echeverría CA, Thirlwell C, Molina LI, Rivas FI, Sánchez RE, González SB, et al. Sleep apnea, "the Ugly Duckling of the Cinderellas" in cardiovascular prevention and rehabilitation. Panminerva Med. 2021;63(2):133-45.

