https://doi.org/10.5664/jcsm.9544

JCSM | Journal of Clinical Sleep Medicine

SCIENTIFIC INVESTIGATIONS

The association of age with continuous positive airway pressure ventilation acceptance in an outpatient cohort of patients with obstructive sleep apnea

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Study Objectives: This study examined the association between age and continuous positive airway pressure (CPAP) acceptance in a consecutive series of patients with obstructive sleep apnea being managed in a physician-led outpatient CPAP acclimatization program in Canberra, Australia.

Methods: We performed a retrospective consecutive case series analysis of registry data collected from patients attending the Canberra Hospital PAP Acclimatization Clinic between 2011 and 2019. Data on patient demographics, diagnostic polysomnography results, CPAP device download parameters during acclimatization, and overall CPAP acceptance at the end of acclimatization were extracted from the Clinic Registry. Analysis of variance and chi-square were used to assess for associations between patient age, CPAP acceptance, and other clinical characteristics. Univariate and stepwise multiple logistic regression was used to identify predictors of CPAP acceptance.

Results: We found that 1,075 consecutive CPAP trials among 1,043 patients were eligible for inclusion. CPAP acceptance was lower in those aged > 75 years compared with those aged ≤ 75 years (odds ratio: 0.57; 95% confidence interval, 0.36–0.92; $P = .02$). Patients aged > 75 years had lower body mass index, had higher initial and final visit 95th percentile mask leak, and were less likely to be CPAP naïve. Using univariate regression, younger age, severe obstructive sleep apnea, obesity, shorter trial duration, more clinic visits, higher initial visit CPAP usage, and lower final visit mask leak were predictors of CPAP acceptance. In a multiple logistic regression model, younger age, severe obstructive sleep apnea, shorter trial duration, more clinic visits, higher first visit usage, and lower final visit leak predicted acceptance.

Conclusions: Older age is associated with lower CPAP acceptance. The factors contributing to this association are unclear and require further investigation.

Keywords: obstructive sleep apnea, continuous positive airway pressure ventilation, aging

Citation: Han M, Wee R, Shadbolt B, Huang H-CC. The association of age with continuous positive airway pressure ventilation acceptance in an outpatient cohort of patients with obstructive sleep apnea. *J Clin Sleep Med*. 2022;18(1):217–224.

BRIEF SUMMARY

Current Knowledge/Study Rationale: Acceptance of continuous positive airway pressure (CPAP) therapy is the key limiting factor for successful treatment of obstructive sleep apnea. However, while it is established that the prevalence of obstructive sleep apnea increases with age, it is unclear whether an association exists between age and CPAP acceptance, with the few studies in this area reporting conflicting results.

Study Impact: Our study demonstrates that older age is associated with a lower rate of CPAP acceptance among a consecutive series of sleep clinic patients with obstructive sleep apnea. Further research examining the reasons behind this association and potential therapeutic options to improve CPAP acceptance among older patients are required.

INTRODUCTION

Obstructive sleep apnea (OSA) is a common condition characterized by episodic sleep-related upper airway obstructive events, associated with oxygen desaturation and arousals. Untreated OSA is associated with an increased risk of motor vehicle accidents,[1] neurocognitive deficit,[2] systemic hypertension,[3,4] and cardiovascular disease.[5]

Acceptance of long-term continuous positive airway pressure (CPAP) therapy following pressure titration and device acclimatization is an important limiting factor for successful treatment of OSA. The acceptance and subsequent use of CPAP therapy are associated with improved daytime somnolence, cognitive function, and reduced systemic blood pressure among patients with OSA.[6,7] Previously reported rates of CPAP acceptance have varied between 28% and 80%,[8–14] with various factors reported to affect acceptance, including sex, socioeconomic status, financial reimbursement, patient attitudes/beliefs, and CPAP mask type.[9,10,12,13,15–17] However, while it is well established that the prevalence of OSA increases with age,[18,19] the effect of age on patient acceptance of CPAP is unclear. The few studies addressing this area have reported conflicting results, with 1 trial reporting no effect,[8] 1 trial reporting higher acceptance with older age,[9] and 2 trials reporting lower rates of acceptance among older patients.[13,14] These studies have been limited by small sample sizes of between 97 and 371 patients and low overall CPAP acceptance rates between 27% and 45%.[8,9,13,14] Definitions of CPAP acceptance have also varied in previous studies and generally focus on either acceptance of CPAP prescription or duration of CPAP use within the first 2 weeks, which may not necessarily translate to long-term CPAP acceptance.

This study aimed to examine the association between age and CPAP acceptance among a consecutive series of patients with OSA being managed in an outpatient positive airway pressure (PAP) acclimatization clinic in Canberra, Australia. We hypothesized that rates of CPAP acceptance are lower among older individuals.

METHODS

Study setting

Our study analyzed registry data obtained from a consecutive series of patients who attended Canberra Hospital PAP Acclimatization Clinic between 2011 and 2019. The Canberra Hospital is a 600-bed public teaching hospital and the tertiary referral center for the Australian Capital Territory and surrounding regional New South Wales, serving a population of 650,000 people. Patients are referred to our PAP Acclimatization Clinic for acclimatization to CPAP or bilevel PAP therapy following a diagnosis of sleep-disordered breathing made on diagnostic polysomnography (PSG) and clinical assessment by a sleep physician. The Canberra Hospital Department of Respiratory and Sleep Medicine is staffed by 4 sleep physicians who are also qualified in respiratory medicine as well as 3 further respiratory physicians who do not practice sleep medicine. Our 2-bed sleep laboratory performs approximately 500 attended (type 1) and unattended (type 2) PSGs per annum. The clinic is publicly funded and there is no out-of-pocket cost to patients for physician consultations or attendance of PSG.

Diagnostic PSG

Our registry recorded data obtained from the patients' initial diagnostic PSG. Most sleep studies were performed at Canberra Hospital, with a minority of ambulatory studies performed by external providers. The diagnostic PSG may include either type 1 or type 2 studies at the Canberra Hospital. Both type 1 and type 2 PSGs included full electroencephalography setup, electro-oculography, chin and leg electromyography, electrocardiogram, oximetry, nasal pressure sensors, thermistor, body position sensors, sound detectors, and rib cage/abdominal movement sensors as per American Academy of Sleep Medicine recommendations. Type 1 PSGs may also include transcutaneous carbon dioxide monitoring if requested by the attending sleep physician. At Canberra Hospital, PSG was scored according to the American Academy of Sleep Medicine criteria of 2007, 2012, and 2015 (dependent upon the year the diagnostic PSG was performed). The apnea-hypopnea index (AHI) was calculated as the total number of apnea and hypopnea events per hour of sleep. Severe OSA was defined as patients with AHI greater than 30 events per hour. The arousal index was calculated as the number of arousals per hour of sleep. Sleep efficiency was calculated as the percentage of total recording time that was spent with the patient asleep. Sleep latency was the duration of time from lights out to sleep onset.

PAP acclimatization clinic care model

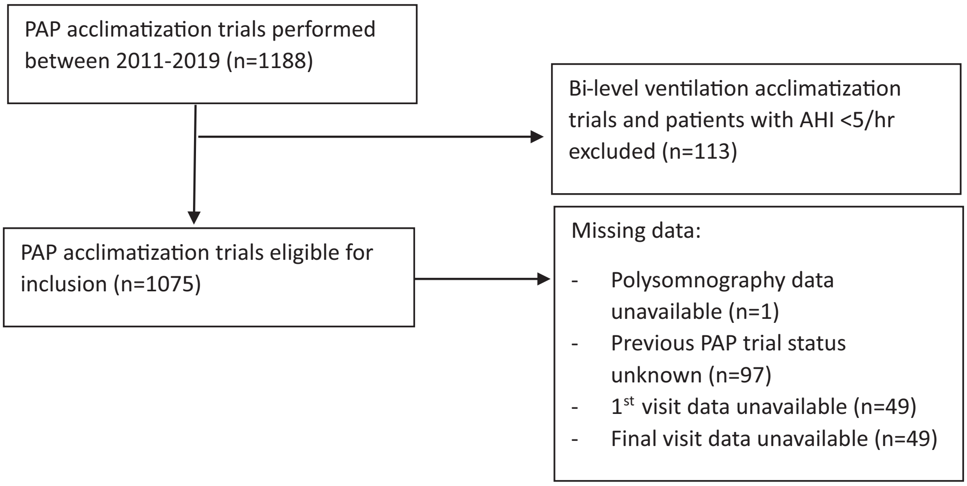
The Canberra Hospital PAP acclimatization clinic is a physician-led multidisciplinary clinic aimed toward rapid acclimatization of adult patients to CPAP or bilevel PAP therapy. Patients were referred by their usual sleep physician following diagnosis of sleep-disordered breathing. After an initial PAP device setup visit with a sleep scientist, patients attended fortnightly appointments with a sleep physician and sleep scientist. Two sleep physicians delivered a PAP acclimatization clinic on a weekly basis throughout this period and physician-patient continuity of care between visits is maintained where possible. The initial CPAP settings are usually determined by the patient's usual sleep physician. Patients typically commenced CPAP acclimatization using home-based auto-titration PAP therapy. Sleep laboratory–based CPAP pressure titration was available at the discretion of the sleep physician to troubleshoot issues that could not be resolved in the clinic setting. Common indications for in-laboratory pressure titration include discrepancy between patient report and device-generated data, a suspicion of failure to auto-titrate, or uncontrolled hypoventilation. Due to therapy cost considerations in Australia, most patients were switched to fixed-pressure CPAP therapy during the acclimatization process after clinical assessment by the sleep physician. Acclimatization was concluded at either the patient's or physician's discretion. Typically, conclusion of acclimatization at the physician's discretion occurred after achieving a fixed CPAP pressure where symptoms of sleep-disordered breathing were adequately controlled and after issues affecting patient comfort and compliance were resolved. Conclusion at patient's discretion typically occurred if the patient no longer wished to pursue CPAP therapy, often due to inability to achieve reasonable CPAP usage to control symptoms of sleep-disordered breathing.

Outcome variables

The primary outcome was the rate of CPAP acceptance at the end of CPAP acclimatization among patients aged ≤ 75 and >75 years. CPAP acceptance was defined as the individual patient's acceptance of a CPAP prescription to pursue long-term CPAP therapy at the conclusion of acclimatization. The choice of the 75-year age cutoff was based on Australian and international recommendations for definition of an "older person" as > 75 years for medical evaluation purposes.[20,21] Differences in baseline demographics, PSG parameters, duration of acclimatization, mask leak during acclimatization, and device usage between the 2 age groups were also studied. Predictors of CPAP acceptance among the entire study sample, as well as those aged ≤ 75 and > 75 years, were assessed.

PAP-naïve status was defined as either patients who self-identified previous PAP usage or those with previous PAP usage recorded in our health network clinical records. Duration of acclimatization was defined as days between initial setup visit and final clinic visit. Mean CPAP usage and 95th

Figure 1—Flow chart for the study cohort.



AHI = apnea-hypopnea index, PAP = positive airway pressure.

percentile mask leak between PAP sequential clinic visits were obtained from CPAP device download data.

Data analyses

Differences in CPAP acceptance, baseline demographics, PSG parameters, and follow-up data between patients aged ≤ 75 and > 75 years were assessed using chi-square for categorical variables and analysis of variance (ANOVA) for continuous variables. Univariate and multiple logistic regression was used to identify predictors of acceptance among the entire sample, and separately among patients aged ≤ 75 and > 75 years. For the multiple logistic regression models, a forward-stepwise method using likelihood ratios was used for the final results. Variables assessed in univariate logistic regression were made available for selection in the multiple regression model. Collinearity was assessed comparing our univariate variables and observing forward and backward entry of variables into the regression models. Statistical analysis was conducted using SPSS version 26 (IBM Corporation, Armonk, NY).

RESULTS

A total of 1,188 PAP acclimatization trials were found in the PAP Acclimatization Registry on 1,155 patients between 2011 and 2019 (**Figure 1**). Of these, 1,075 trials (1,043 patients) were eligible for inclusion in this study (113 bilevel ventilation acclimatization trials were excluded). The age of patients ranged from 21 to 89 years, with 7.8% of the cohort (n = 81) aged > 75 years. Most sleep studies were performed at the Canberra Hospital, whereas 11% were performed by an external provider. PSG data were not available for 1 patient. Although American Academy of Sleep Medicine criteria for sleep study scoring changed over time within our patient sample, AHI did not change significantly over time.

Baseline characteristics of the trial participants are summarized in **Table 1**. Patients aged > 75 years were less likely to have obesity (74.8% in the ≤ 75-year-old group, 56.8% in the > 75-year-old group; $P < .001$), had lower sleep efficiency (76.0% ± 15.5% in the ≤ 75-year-old group, 64.2% ± 15.8% in the > 75-year-old group; $P < .001$), and were more likely to have trialed CPAP in the past (7.7% in the ≤ 75-year-old group, 16.9% in the > 75-year-old group; $P = .0.005$). There were no significant differences in baseline AHI, baseline arousal index, and initial CPAP mask type between those aged ≤ 75 years and > 75 years (**Table 1**).

CPAP acceptance

CPAP acceptance was lower among patients aged > 75 years compared with those aged ≤ 75 years (odds ratio: 0.57; 95% confidence interval, 0.36–0.92; $P = .02$). Patients who accepted CPAP therapy were also more likely to have obesity, have severe OSA, and have shorter duration of acclimatization, more clinic visits, higher first visit CPAP usage, and lower final visit mask leak compared with those who did not accept CPAP therapy (**Table S1** in the supplemental material).

During the course of acclimatization, patients aged > 75 years had higher mask leak at the first visit and final visits. Duration of acclimatization, the number of clinic visits, and first visit CPAP usage did not differ significantly between the 2 age groups (**Table 2**).

Predictors of CPAP acceptance

Using univariate logistic regression in the entire study sample, age ≤ 75 years, severe OSA, obesity, shorter trial duration, higher number of clinic visits, higher first visit CPAP usage, and lower final visit mask leak were predictors of CPAP acceptance (**Table 3**). In a multiple logistic regression model, age ≤ 75 years, severe OSA, shorter trial duration, more clinic

Table 1—Baseline demographics and sleep parameters.

	Age ≤ 75 Years (n = 962, 92.2%)	Age > 75 Years (n = 81, 7.8%)	*P* Value
Male	540 (56.1)	46 (56.8)	.91
BMI, kg/m^2	37.1 ± 10.1	32.0 ± 6.9	< .001
Obesity (BMI > 30 kg/m^2)	718 (74.8)	46 (56.8)	< .001
Baseline AHI (events/h)	44.0 ± 29.8	47.7 ± 23.0	.26
Severe OSA (AHI > 30 events/h)	571 (59.4)	56 (69.1)	.08
Arousal index, events/h	40.7 ± 25.9	42.4 ± 23.5	.57
Sleep efficiency, %	76.0 ± 15.5	64.2 ± 15.8	< .001
Sleep latency, min	29.8 ± 38.3	32.9 ± 42.0	.49
SpO_2 nadir	76.1 ± 10.8	75.6 ± 10.2	.73
PAP-naïve	804 (92.3)	64 (83.1)	.005
Full face mask (at setup visit)	453 (50.7)	40 (51.3)	.93

Data are presented as mean ± SD or n (%); n = 1,043. Numbers may not add up to total values because of missing data. AHI = apnea-hypopnea index, BMI = body mass index, OSA = obstructive sleep apnea, PAP = positive airway pressure, SD = standard deviation, SpO_2 = oxygen saturation.

visits, higher first visit usage, and lower final visit mask leak were associated with CPAP acceptance (**Table 3**).

Among those patients aged ≤ 75 years, severe OSA, obesity, shorter trial duration, higher number of clinic visits, higher first visit usage, and lower final visit mask leak were predictors of CPAP acceptance using univariate regression. Severe OSA, shorter trial duration, more clinic visits, higher first visit usage, and lower final visit leak remained predictors in a multiple logistic regression (**Table 4**).

Among patients aged > 75 years, only higher number of clinic visits and first visit CPAP usage were associated with CPAP acceptance in both the univariate and multiple logistic regression model (**Table 4**).

DISCUSSION

Our findings demonstrate lower rates of CPAP acceptance among older patients aged > 75 years. To date, the few observational studies examining the effect of age on CPAP acceptance have reported conflicting results. Rezaie et al[8] examined predictors of CPAP acceptance among a cohort of patients from Iran and found that age was not associated with CPAP acceptance. Simon-Tuval et al[9] reported a higher mean age among CPAP acceptors in a population in Israel. In Taiwanese cohorts, Huang et al[13] found that CPAP acceptance was greater among patients aged < 55 years, while Yang et al[14] found that CPAP acceptance was higher among patients aged < 65 years.

Our study had several strengths compared with previous observational studies. Our study sample was a consecutive series of patients referred from a sleep clinic following a diagnosis of OSA, minimizing risk of selection bias. Ours is the largest study to date examining the association between age and CPAP acceptance, with previous study samples ranging between 97 and 371 patients.[8,9,13,14] Our overall acceptance rate of 74.5% is also higher than in previous studies, which reported acceptance rates ranging between 27% and

Table 2—CPAP outcomes by age group.

	Age ≤ 75 Years (n = 992, 92.3%)	Age > 75 Years (n = 83, 7.7%)	*P* Value
CPAP acceptance	748 (76.2)	53 (64.6)	.02
Duration of acclimatization, d	53.1 ± 33.0	56.7 ± 30.6	.34
Number of clinic visits	1.87 ± 0.34	1.83 ± 0.38	.36
First visit CPAP usage, h	4.34 ± 2.48	3.87 ± 2.67	.11
Final visit CPAP usage, h	4.53 ± 2.42	4.38 ± 2.55	.59
First visit 95th percentile mask leak, L/min	17.9 ± 20.3	28.6 ± 27.9	< .001
Final visit 95th percentile mask leak, L/min	15.4 ± 18.6	25.4 ± 27.4	< .001

Data are presented as mean ± SD or n (%). Numbers may not add up to total due to missing values. CPAP = continuous positive airway pressure, SD = standard deviation.

Table 3—Demographic and CPAP trial factors associated with CPAP acceptance.

	Univariate		Multiple Logistic Regression	
	Odds Ratio (95% CI)	*P* Value	Adjusted Odds Ratio (95% CI)	*P* Value
Age > 75 y	0.57 (0.36–0.92)	.02	0.51 (0.28–0.94)	.03
Male sex	0.97 (0.73–1.28)	.81		
Non-PAP-naïve	0.96 (0.57–1.64)	.89		
Severe OSA	1.48 (1.12–1.96)	.01	1.52 (1.04–2.22)	.03
Obesity	1.80 (1.33–2.43)	< .001		
Trial duration	1.00 (0.99–1.00)	.02	0.99 (0.98–0.99)	< .001
Number of visits	1.77 (1.53–2.05)	< .001	2.07 (1.70–2.50)	< .001
Full face mask	0.91 (0.68–1.23)	.55		
First visit usage	1.56 (1.44–1.68)	< .001	1.56 (1.43–1.70)	< .001
First visit 95th percentile mask leak	1.00 (0.99–1.00)	.17		
Final visit 95th percentile mask leak	0.99 (0.98–1.00)	.01	0.99 (0.98–1.00)	.02

n = 878. Logistic regression results showing odds ratios and associated 95% CIs. Univariate refers to a series of regressions with only a single factor entered in the model. Multiple logistic regression refers to a stepwise likelihood ratio regression model. The reported odds ratios are as follows: odds ratio per day of trial participation for "Trial duration," odds ratio per hour of usage for "First visit usage," and odds ratio per L/min of leak for "First visit 95th percentile mask leak" and "Final visit 95th percentile mask leak." CI = confidence interval, CPAP = continuous positive airway pressure, OSA = obstructive sleep apnea, PAP = positive airway pressure.

45%.[8,9,13,14] A larger sample size and higher overall rate of CPAP acceptance may better detect associations between age and CPAP acceptance. Finally, definitions of CPAP acceptance have varied in these previous studies and generally focus on either acceptance of CPAP prescription or duration of CPAP use in the first 2 weeks. Previous research within our acclimatization clinic has shown a 23% fall in rates of CPAP acceptance between the initial clinic visit at 2 weeks and the conclusion of acclimatization.[22] Thus, we defined CPAP acceptance at the conclusion of acclimatization, which we hypothesize may better predict long-term CPAP use.

Our higher CPAP acceptance rate may be secondary to our intensive sleep physician–led multidisciplinary acclimatization program. Within Australia, a range of care models for CPAP acclimatization exist dependent upon cost and local resource availability. Such models include intensive inpatient acclimatization in selected high-risk patients, outpatient acclimatization by commercial CPAP providers following a pressure titration PSG, and outpatient acclimatization in sleep or general respiratory clinic settings. Few institutions undertake a program of intensive PAP acclimatization in a multidisciplinary clinic like within our program. Several studies have demonstrated the benefit of intensive monitoring and early troubleshooting during CPAP initiation and acclimatization, in terms of both CPAP acceptance and compliance.[23–25] Within our older patient group, an intensive acclimatization program produced higher rates of CPAP acceptance than previous observational studies of older patients with OSA.[13,14] Whether an early period of intensive monitoring and troubleshooting during CPAP acclimatization improves overall CPAP acceptance among older patients requires further validation in a clinical trial setting.

There are several potential reasons for the lower rates of CPAP acceptance among older patients. In our study, more patients in the > 75-year age group had a previous unsuccessful CPAP trial. Negative patient experiences from previous unsuccessful CPAP trials or intrinsic patient-related factors affecting CPAP tolerance may affect CPAP uptake in subsequent trials. However, within our cohort, the proportion of CPAP-naïve patients did not differ significantly between CPAP acceptors and nonacceptors, and previous CPAP use was not predictive of acceptance in univariate and multiple logistic regression analyses. A previous study by Yang et al[14] hypothesized that reduced OSA severity and subsequent symptom burden among elderly patients may contribute to lower CPAP acceptance. In our cohort, while severe OSA was a predictor of CPAP acceptance in univariate and multiple logistic regression analyses, AHI and rates of severe OSA did not differ significantly between the ≤ 75- and > 75-year age groups. We found that patients aged > 75 years experienced more mask leak throughout acclimatization, which is in keeping with findings from previous cohorts,[26] and hypothesize that higher leak may affect CPAP comfort and subsequently rates of CPAP acceptance. This hypothesis is supported by our findings in univariate and multiple logistic regression analyses of the entire patient sample and the ≤ 75-year age group, where final visit, but not initial visit, mask leak predicted CPAP acceptance.

In univariate and multiple logistic regression analyses in the > 75-year-old group, only higher initial CPAP usage and higher total number of clinic visits were associated with CPAP acceptance, although this result may be affected by the small sample size of the older age group (7.8% of the total study sample). The finding of early CPAP usage predicting overall acceptance has

Table 4—Demographic and CPAP trial factors associated with CPAP acceptance by age group.[1]

	Univariate		Multiple Logistic Regression	
	Odds Ratio (95% CI)	*P* Value	Adjusted Odds Ratio (95% CI)	*P* Value
Age ≤ 75 y (n = 804)				
Male sex	0.98 (0.73–1.32)	.91		
Non-PAP-naïve	0.88 (0.50–1.56)	.66		
Severe OSA	1.66 (1.24–2.23)	.001	1.68 (1.12–2.51)	.01
Obesity	1.89 (1.37–2.60)	< .001		
Trial duration	0.99 (0.99–1.00)	.01	0.99 (0.98–0.99)	< .001
Number of visits	1.79 (1.53–2.01)	< .001	2.10 (1.71–2.58)	< .001
Full face mask	0.92 (0.67–1.25)	.59		
First visit usage	1.59 (1.47–1.73)	< .001	1.61 (1.46–1.77)	< .001
First visit 95th percentile mask leak	1.00 (0.99–1.00)	.19		
Final visit 95th percentile mask leak	0.99 (0.98–1.00)	.01	0.99 (0.98–1.00)	.01
Age > 75 y (n = 74)				
Male sex	0.79 (0.32–1.97)	.62		
Non-PAP-naïve	2.22 (0.56–8.85)	.26		
Severe OSA	0.53 (0.19–1.45)	.21		
Obesity	0.92 (0.37–2.30)	.86		
Trial duration	1.01 (0.99–1.02)	.52		
Number of visits	1.77 (1.17–2.68)	.01	1.57 (1.02–2.41)	.04
Full face mask	0.86 (0.34–2.18)	.75		
First visit usage	1.29 (1.06–1.56)	.01	1.26 (1.03–1.55)	.03
First visit 95th percentile mask leak	1.00 (0.99–1.02)	.71		
Final visit 95th percentile mask leak	1.01 (0.99–1.02)	.57		

Logistic regression results showing odds ratios and associated 95% CIs. Univariate refers to a series of regressions with only a single factor entered in the model. Multiple logistic regression refers to a stepwise likelihood ratio regression model. The reported odds ratios are as follows: odds ratio per day of trial participation for "Trial duration," odds ratio per hour of usage for "First visit usage," and odds ratio per L/min of leak for "First visit 95th percentile mask leak" and "Final visit 95th percentile mask leak." CI = confidence interval, CPAP = continuous positive airway pressure, OSA = obstructive sleep apnea, PAP = positive airway pressure.

been demonstrated previously and likely underlines the impact of intrinsic patient-related factors affecting CPAP acceptance.[27] A higher number of clinic visits among CPAP acceptors in the older age group may be an indicator of either physician-driven efforts to address the higher mask leak in this group or an indication of patient motivation to pursue CPAP therapy; in regression analyses of our entire study sample, CPAP acceptance was associated with shorter duration of acclimatization in addition to more clinic visits, supporting this hypothesis.

Our study has several potential limitations. Our registry does not include data on pre-existing comorbidities. It is known that older age is associated with increased comorbidities, which may affect rates of CPAP acceptance. Furthermore, most of our patients in the older age group are no longer in paid employment and symptomatic improvement in OSA may be a less valued factor in determining CPAP acceptance. Our registry does not collect qualitative information on patient-reported factors for nonacceptance, which may have provided greater insight into reasons for nonacceptance among the older age group, such as perceptions of limited clinical benefit as hypothesized by Yang et al.[14] It should also be noted that our study population underwent an intensive CPAP acclimatization program delivered by sleep physicians and scientists, which may not be available in other clinical settings. Finally, our cohort of patients aged > 75 years was relatively small, comprising 7.8% of the overall study sample. A previous study by Huang et al[13] utilized an age cutoff of 55 years and selected this cutoff based on the plateau of OSA prevalence after this age. A further study by Yang et al[14] using an age cutoff of 65 years did not justify their choice of this age. In the context of our aging population and changing definitions of the "older patient,"[20,21] we utilized an age cutoff of 75 years to specifically study a clinically relevant high-risk patient group in whom previous research is limited, albeit at the cost of a relatively smaller sample size of patients above this age.

Overall, our findings demonstrate the need for further research into factors affecting lower CPAP acceptance among the older population, as well as potential interventions to improve acceptance in this group. We report high acceptance rates in both the younger and older age groups following a program of intensive acclimatization. Given our older age group was shown to develop more issues with CPAP therapy, especially in terms of mask leak, further investigation into the role of intensive acclimatization and early troubleshooting of CPAP-related issues is required among older patients with OSA in a trial setting. Research is also required to look at age-related differences in perceptions of symptomatic improvement and long-term health benefit with CPAP therapy, as well as underlying patient motivation to pursue therapy.

Interpretation

Our study shows that older age is associated with lower rates of CPAP acceptance. The factors contributing to this association are unclear and further investigation is required.

ABBREVIATIONS

AHI, apnea-hypopnea index
CPAP, continuous positive airway pressure
OSA, obstructive sleep apnea
PAP, positive airway pressure
PSG, polysomnography/polysomnogram

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ACKNOWLEDGMENTS

The authors acknowledge the work of the past and current sleep scientists in the Canberra Hospital Sleep Service for their contribution in data acquisition in the PAP Acclimatization Clinic. Author contributions—study design: H.-C.C.H., R.W., B.S., M.H.; data acquisition: H.-C.C.H., R.W.; data analysis and interpretation: H.-C.C.H., M.H., B.S.; manuscript preparation: H.-C.C.H. and M.H.; B.S. was the statistician for this study and assisted in the design of the PAP Acclimatization Clinic Registry. All authors approved the final version to be submitted.

SUBMISSION & CORRESPONDENCE INFORMATION

Submitted for publication December 2, 2020
Submitted in final revised form July 6, 2021
Accepted for publication July 6, 2021

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DISCLOSURE STATEMENT

All authors have reviewed and approved this manuscript. The authors report no conflicts of interest.