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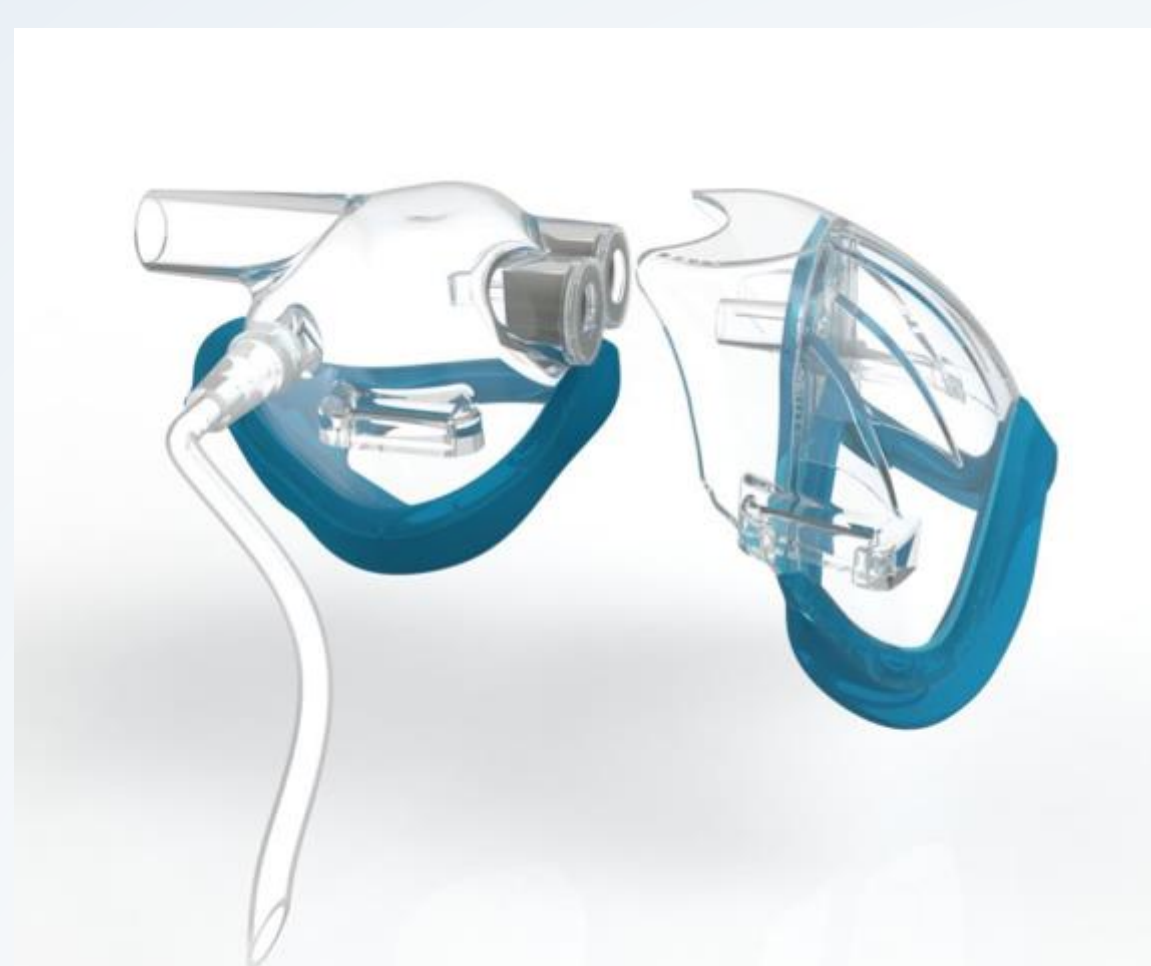
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Recent evidence suggests that nasal mask ventilation may be superior to, or as effective as, full facemask ventilation.¹ Providing nasal ventilation during the “apneic period”, defined as the time between the end of bag-mask ventilation and successful placement of an appropriate airway device, may allow for improved oxygenation throughout the process in which the airway is secured. SuperNOVA™ is a new nasal mask which allows this to occur. The primary objective of this study was to obtain data pertaining to clinical performance, safety, and tolerability of SuperNOVA™ technology (Revolutionary Medical Devices, USA) in a clinical setting.

METHODS

- 30 adult (>18yo) patients scheduled for elective surgery requiring general anesthesia (GA) and tracheal intubation participated in this study.
- Patients were preoxygenated and ventilated with SuperNO₂VA™ nasal mask prior to induction.
- Following IV induction of GA, the anesthesia provider attempted ventilation with the SuperNO₂VA™ nasal mask.
- The Ease of Use of the nasal mask was based on the Han, et al.²² classification scale. (See table 1)
- Recorded measurements to assess the feasibility of the device included:
 - Previous airway status/past medical history
 - Facial features (males), time required for entire airway procedure
 - Lowest oxygen saturation (SpO₂) during the intubation procedure
- Data was summarized as mean ± standard deviation for continuous variables, along with frequency and percentage for categorical variables.



SuperNO₂VA™ Photo taken from:
<http://www.rmdevices.com/products/supernova>

RESULTS

The SuperNO₂VA™ nasal mask provided oxygenation and successful ventilation in 29 of 30 patients, resulting in an overall success rate of 97%. However, one patient was unsuccessfully ventilated with the SuperNO₂VA™ mask and was noted a grade IV (Figure 1), possibly resulting from user error and familiarity with the mask's usage; while one other patient was listed as a grade III. Table 1 and Graphic 2 summarize the patient demographics and other clinical variables between patients with either a ventilation grade I (N=22) or II (N=6) assessment.

Figure 1: Han, et al.² classification scale used for assessment of the SuperNO₂VA™ nasal mask.

GRADE	DESCRIPTION
I	Ventilated by mask
II	Ventilated by mask with oral airway/adjuvant with or without muscle relaxant
III	Difficult ventilation (inadequate, unstable, or requiring two providers) with or without muscle relaxant
IV	Unable to mask ventilate with or without muscle relaxant

Graphic 1. Ventilation Parameters at Different Times

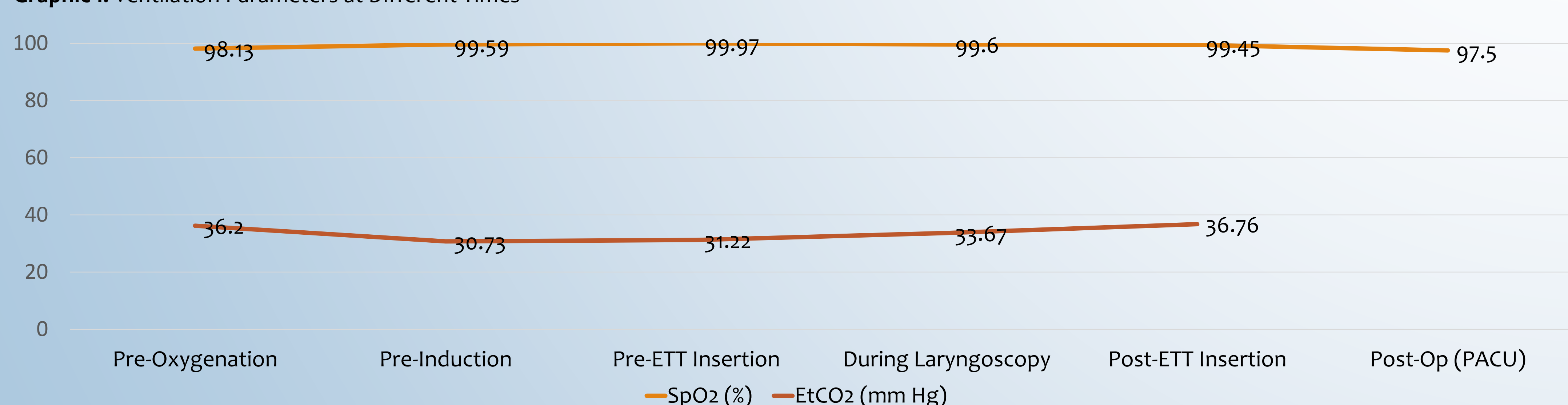


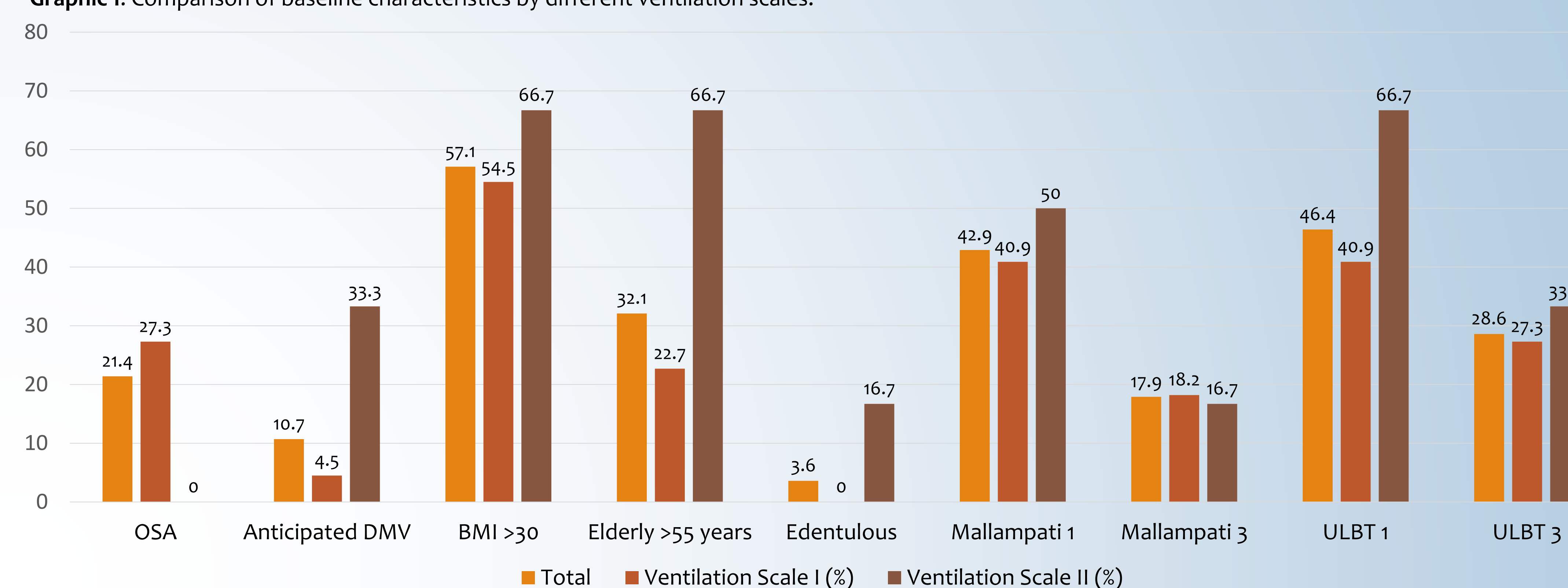
Table 1: Comparison of baseline characteristics by different ventilation scales.

VARIABLE	TOTAL	VENTILATION GRADE 1	VENTILATION GRADE 2
Neck Circumference (cm) (mean ± SD)	42.9 ± 5.9	41.7 ± 5.3	46.1 ± 7.3
Inter Incisor Gap Distance (cm) (mean ± SD)	4.3 ± 0.7	4.2 ± 0.6	4.7 ± 1.1
Thyromental Distance (cm) (mean ± SD)	7.9 ± 1.3	7.9 ± 1.1	7.3 ± 2.1
Sternomental Distance (cm) (mean ± SD)	14.2 ± 1.9	14.4 ± 2.0	13.0 ± 1.9

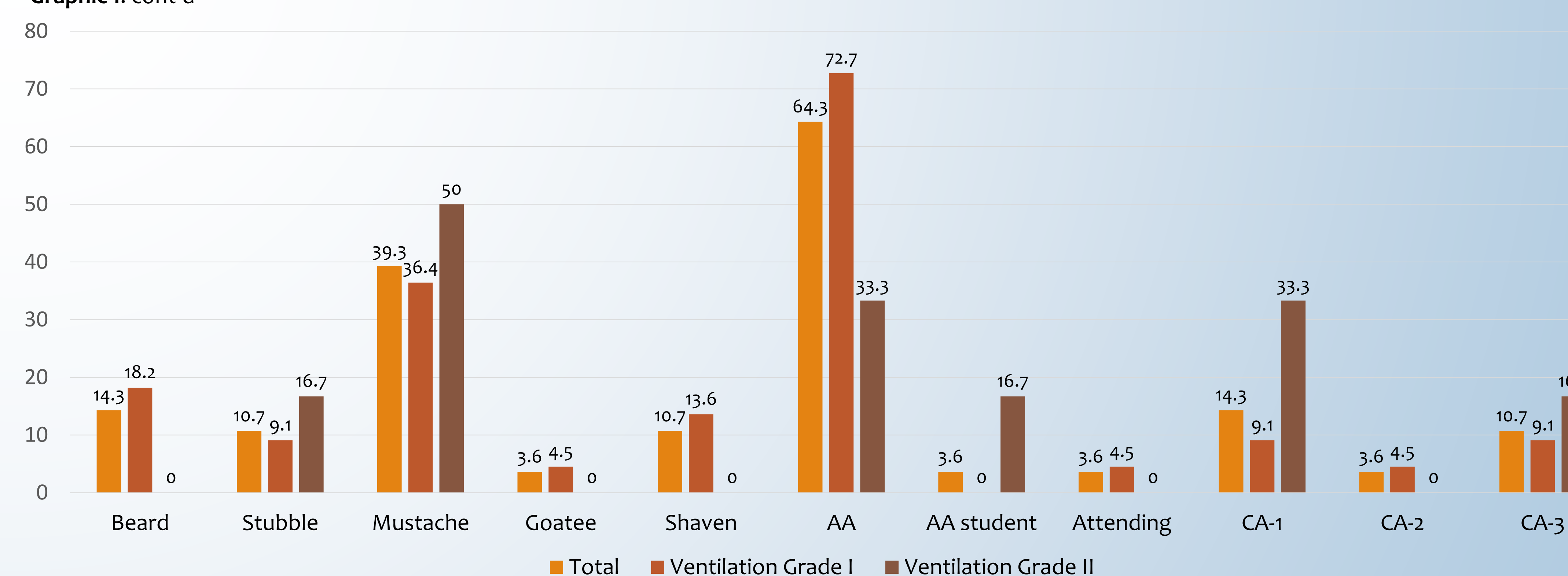
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Graphic 1: Comparison of baseline characteristics by different ventilation scales.



Graphic 1: cont'd



DISCUSSION

Difficult mask ventilation (DMV) has been reported in at least 5% of the population and has also been associated with difficult intubation (DI).³ DI may lead to prolonged apneic periods and possibly hypoxemia, hypercarbia and hemodynamic instability.⁴ Nasal mask ventilation has been proven to remove more carbon dioxide, require lower PIP to effectively ventilate, and generate higher tidal volume than combined oral-nasal mask ventilation.⁵ The use of nasal mask ventilation in patients with suspected DMV/DI could potentially reduce complication associated and improve patient safety.

CONCLUSIONS

- The SuperNO₂VA™ nasal mask facilitates non-invasive positive pressure ventilation, while allowing adequate oxygenation and ventilation during the process of securing the airway.
- Further research is warranted to determine its usefulness in patients with known or predicted difficult airways.