

ORIGINAL ARTICLE

## Evaluating the Correlation between Intratracheal Intubation Difficulty Scoring Systems and Anthropometric Factors of Individuals' Body; an Epidemiologic Study

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### Abstract

**Introduction:** The aim of this study was to evaluate the correlation between malampathy score, upper lip bite test and 3-3-2 maneuver with anthropometric factors of body in people. **Methods:** This cross-sectional study was carried out during 2014-2015 in Yazd, Iran. Samples were selected from the whole population using simple randomization and were included in the study after giving informed consent. Baseline and demographic data including age, sex, and anthropometric factors of their body such as weight, height, neck circumference, waist circumference, hip circumference, body mass index (BMI), and waist to hip ratio were gathered in a pre-designed checklist. Then malampathy score, upper lip bite score, and 3-3-2 maneuver were evaluated and recorded by the researcher. **Results:** 498 people with the mean age of  $42.1 \pm 16.1$  were studied (51% female). In total, 168 (69%) of the studied men and 182 (72%) of the studied women had a BMI higher than 25. 74 (39%) of the men had a waist to hip ratio over 0.93 and 152 (60%) of the women had a waist to hip ratio over 0.81. Results of the upper lip bite test was a score of 3 in 10 (2%) people, result of malampathy test was a score of 3 or 4 in 152 (31%) participants and result of 3-3-2 maneuver showed an abnormal condition in 20 (4%), which indicate the probability of difficult intubation. With an increase in age, based on all 3 methods, the probability of difficult intratracheal intubation rises ( $p < 0.001$ ). However, none of the 3 evaluation methods showed a significant correlation between difficult intratracheal intubation and sex ( $p > 0.05$ ). There was a significant correlation between malampathy score and upper lip biting with all anthropometric factors of the body. 3-3-2 rule also significantly correlated with weight, height, waist circumference, hip circumference, and BMI, but not with neck circumference ( $p = 0.328$ ) or waist to hip ratio ( $p = 0.121$ ). **Conclusion:** It seems that with an increase in age, based on all 3 methods, the probability of difficult intratracheal intubation rises. However, none of the 3 methods of intratracheal intubation difficulty evaluation have a significant correlation with sex. In addition, according to the results of the current study, a significant correlation exists between upper lip biting and malampathy score with all anthropometric factors of the body assessed in this study. Yet, 3-3-2 maneuver does not have a significant correlation with neck circumference or waist to hip ratio.

**Keywords:** Emergency Medicine; Airway Management; Intubation, Intratracheal; Obesity; Body Mass Index

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