

Letter to the Editor

Infant mask ventilation quality evaluation from various viewpoints by medical students

Dear Editor,

Airway management is considered an essential element of both in-hospital and pre-hospital cardiopulmonary resuscitation for infants, with manual mask ventilation being a primary and essential component of infant rescue airway management for medical professionals.¹ An essential consideration for infant mask ventilation safety is whether

sufficient ventilation has been achieved or not.¹ Here, we conducted a survey on the subjective difficulty of evaluating the quality of mask ventilation by medical students, from various viewpoints.

Ethical approval was deemed unnecessary by the Research Ethics Committee of Osaka Medical College. On November 2019, we conducted a simulation-based cross-

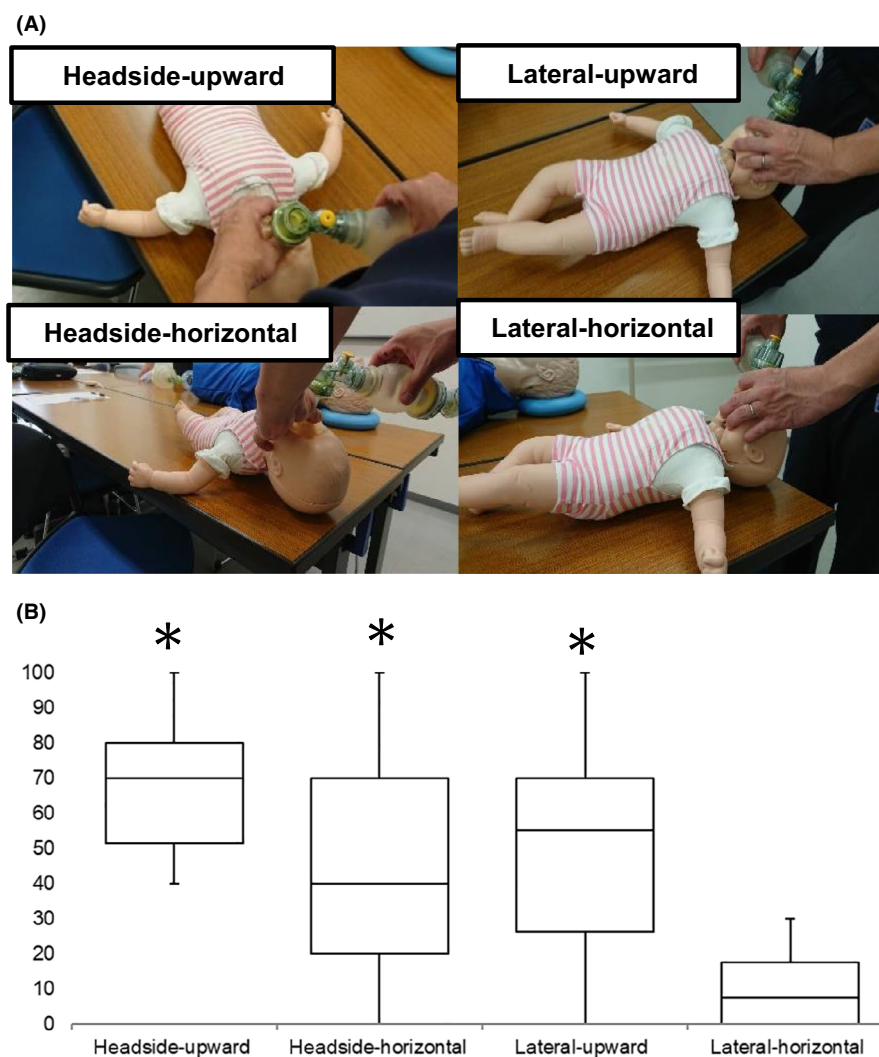


Fig. 1. A, Four viewpoints for evaluating the quality of infant manual mask ventilation. B, Comparison of the subjective difficulty of evaluating the quality of infant mask ventilation from four viewpoints. * $P < 0.05$ compared to lateral-horizontal.

over trial with 18 3rd year medical students who had no experience with infant resuscitation. The Baby Anne (Laerdal, Sentrum, Stavenger, Norway) manikin was used to perform mask ventilation. Students visually evaluated the quality of manual standard mask ventilation conducted by the resuscitation instructor (NK), from four different viewpoints: headside-upward, headside-horizontal, lateral-upward, and lateral-horizontal (Fig. 1A). The resuscitation instructor performed bag-valve-mask ventilation five times (approximately 30s for each attempt) in each viewpoint according to the current guideline.¹ The ventilation time was determined according to a preliminary study. The order of viewpoint was randomized by a random number table. After being taught the evaluation method, students rated the difficulty of evaluating the quality of ventilation by the same instructor from the four viewpoints on a visual analog scale, which ranged from 0 (extremely easy) to 100 (extremely difficult).² Results obtained from each trial were compared using the Kruskal–Wallis test. $P < 0.05$ was considered statistically significant.

The subjective difficulty of evaluating the quality of ventilation from the lateral-horizontal viewpoint was significantly lower compared to the other three viewpoints ($P < 0.001$ compared to headside-upward, $P = 0.005$ compared to headside-horizontal, and $P = 0.007$ compared to lateral-upward) (Fig. 1B). There were no significant differences in subjective difficulty among headside-upward, headside-horizontal, and lateral-upward viewpoints.

One limitation of this study is that there are some confounders, such as height of medical student. Further

standardization is warranted in future studies. Our results indicate that the lateral-horizontal viewpoint is the most effective for evaluating the quality of infant manual mask ventilation by medical students.

DISCLOSURE





Approval of the research protocol: Deemed unnecessary by the Research Ethics Committee of Osaka Medical College.

Informed consent: N/A.

Registry and the registration no. of the study/trial: N/A.

Animal studies: N/A.

Conflict of interest: None.

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