

A BLENDED LEARNING PROGRAMME IN AIRWAY CRISIS MANAGEMENT FOR ANAESTHESIA NURSES

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Introduction

Prompt recognition and management of airway crises by the anaesthetic team is fundamental to safe anaesthetic practice. Anaesthesia nurses have an integral role in the provision of anaesthetic care in difficult airway crises. In our institution, KK Women's and Children's Hospital (KKH), a tertiary women's and children's hospital in Singapore, we conducted a survey to identify learning structures in airway management. Survey participants cited that more than 70% of their knowledge and skills on managing patient's airway comes from in-service training, preceptor nurse and ad-hoc training by anaesthetists. The aim of this educational quality improvement project is to develop a blended learning programme in airway crisis management for anaesthesia nurses.

Methods

39 anaesthesia nurses in KKH major operating theatre were recruited in this study. An online survey was conducted to gather information about the participant's background pertaining to anaesthetic knowledge, experience and their perception of their competency in airway management. Participants were also asked to complete 14 multiple choice questions (MCQ) relating to general airway topics. Information gathered from the survey facilitated the development of the curriculum. The curriculum included basic airway management, advanced paediatric, adult and obstetric airway management, airway equipment and effective communication in crisis management. Our blended learning programme consisted of pre-workshop online learning and a 2-day workshop consisting of a Zoom case-based discussion, practical skill stations, and simulation sessions for paediatric, obstetric and adult airway scenarios. At the end of the course, participant's competency was determined through completion of the same MCQ questions and confidence surveys as what was administered pre-programme. We used a 4 point Likert scale (strongly disagree=1, disagree=2, agree=3, strongly agree=4) to ask participants if they agreed or disagreed with statements in the same surveys given to anaesthesia nurses pre-programme and postprogramme regarding difficult airway skills, management and knowledge. Using the above scoring system, a Mann-Whitney U test was conducted on both results and the p values derived reflected statistically significant change.

Results

Majority of our participants were degree holders (46.2%) and senior staff nurses (53.8%), who worked in both women's anaesthesia and paediatric anaesthesia departments(28.2%) for an average of 9 years, and have attended at least 1 airway code in KKH. Our programme showed statistically significant improvement in MCQ scores of 14.3% (from 57.1% to 71.4%, p=0.02), and of participant's agreement in the statement "I know the difficult airway algorithm for paediatric patients" (score 2.5 to 3, p=0.04). For the statement "I know how to set up and operate the fiberoptic bronchoscope available in the operating theatre", a statistically significant increase in interquartile range (IQR) was seen (2-3 to 3-3.25, p value=0.03), even though the median remained the same (median score of 3).

Conclusion

Our blended learning programme showed improvement in the participants' knowledge and skills needed in airway crisis as evidenced by a 14.3% improvement in MCQ scores. This programme can be potentially applied in other clinical settings where airway management is needed. Future studies will look into subgroup trends to better tailor training programmes and cohort efficiency.

Table 1: Baseline characteristics of anaesthesia nurses at KKH and results of airway MCQ test and surveys administered pre- and post-programme

Baseline characteristics of anaesthesia nurses at KKH			
Highest nursing qualifications		n (%)	
Diploma		15 (38.5)	
Advanced diploma		6 (15.4)	
Degree		18 (46.2)	
Nursing designation			
Staff nurse		15 (38.5)	
Senior staff nurse		21 (53.8)	
Assistant nurse clinician		3 (7.7)	
I work in			
Paediatric anaesthesia		8 (20.5)	
Women's anaesthesia		20 (20.5)	
Paediatric and Women's anaesthesia		11 (28.2)	
Airway code			
Average number of airway code attended in KKH		1.8	
Experience as an anaesthesia nurse			
Average number of years working as an anaesthesia nurse		9.3	
Results of airway MCQ test and surveys administered pre- and post-programme			
	Pre-programme median (IQR)	Post-programme median (IQR)	P-value
14 MCQ scores	57.1%(57.1 – 71.4)	71.4%(64.3 – 78.6)	0.02
I am confident in identifying a potentially difficult airway	3 (3 – 3)	3 (3 – 3)	0.56
I know how to assess a patient's airway	3 (3 – 3)	3 (3 – 3)	0.27
I know the difficult airway algorithm for adults	3 (3 – 3)	3 (3-3.25)	0.08
I know the difficult airway algorithm for paediatric patients.	2.5 (2 – 3)	3 (3 – 3)	0.04
I know the anatomical and physiological differences between the paediatric and adult airway.	3 (2 – 3)	3 (3 – 3)	0.07
I am confident in assisting in a difficult airway.	3 (3 – 3)	3 (3 – 3.25)	0.39
I have the necessary skills required to assist in management of a difficult airway.	3 (3 – 3)	3 (3 – 3)	0.29
I know where the difficult airway equipment is kept in the operating theatre.	4 (3 – 4)	4 (3 – 4)	0.96
I know how to set up and operate the fiberoptic bronchoscope available in the operating theatre	3 (2 – 3)	3 (3 – 3.25)	0.03
I am likely to speak up if I know something is wrong during a difficult airway management	3 (3 – 4)	3 (3 – 4)	0.47

