ERGONOMICS RISK ASSESSMENT OF MUSCULOSKELETAL DISORDERS (MSD) DURING SIMULATED ENDOTRACHEAL INTUBATION IN HOSPITAL UNIVERSITI SAINS MALAYSIA (HUSM)

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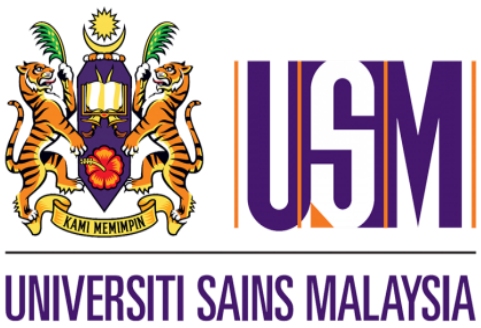
(EMERGENCY MEDICINE)



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ABSTRAK

Pengenalan: Intubasi saluran trachea adalah bentuk prosedur salur pernafasan yang biasanya dilakukan di jabatan kecemasan. prosedur ini dilakukan untuk memastikan salur pernafasan paten semasa serangan jantung. Postur tubuh semasa intubasi saluran tracheal boleh menyebabkan ganguan musculoskeletal, tetapi doktor biasanya tidak menyedari kesan ergonomik keatas kesihatan tubuh badan mereka. Berlaku peningkatan kes ganguan musculoskeletal di kalangan perkerja kesihatan semasa melakukan prosedur ini disebabkan postur badan yang tidak ergonomik. Terdapat sedikit bukti yang mengaitkan di antara aras katil yang optimal dengan postur badan yang ergonmik semasa intubasi.

Objektif: Tujuan kajian ini dijalankan untuk menilai kesan aras katil yang berbeza terhadap postur badan semasa prosedur intubasi dan mencari aras katil yang optimal untuk postur badan yang kurang risiko ganguan musculoskeletal, masa paling cepat dan kadar kejayaan yang tinggi.

Metodologi: Kajian keratan rentas telah dilakukan keatas 80 pelajar sarjana mengunakan metodologi Rapid Entire Body Assessment (REBA). Kajian ini diajalankan di zon resusitasi jabatan Kecemasan dan Trauma, Hospital Universiti Sains Malaysia (HUSM), Kubang Kerian, Kelantan. Semasa kajian dijalankan, peserta diminta melakukan intubasi ke atas patung pada 3 aras katil yg berbeza seperti aras pusat, ari-ari dan bawah tulang sternum. Postur badan, masa yang diambil semasa melakukan prosedur dan kadar kejayaan akan direkod untuk tujuan analisis. Postur badan yang dirakam akan di analisis dan skor

mengunakan borang Rapid Entire Body Assesment (REBA). Purata skor REBA, purata masa yang diambil dan kedar kejayaan akan dibandingkan bagi seetiap aras.

Keputusan: Kajian menunjukkan bahawa kurang risiko ganguan musculoskeletal yang ketara dan masa paling cepat bila prosedur dilakukan pada aras bawah tulang sternum. Walaubagaimanapun, tiada perpezaan yang ketara bagi kadar kejayaan deperhatikan.

Kesimpulan: Kita patut menggalakkan kakitangan kesihatan melakukan prosedur intubasi saluran tracheal pada aras bawah tulang sternum. Kesimpulan yang dicapai sebagai hasil penyiasatan boleh digunakan untuk tujuan pengajaran dan pembelajaran.

Kata Kunci*: Intubasi saluran tracheal, ergonomic,REBA, ganguan muskuloskeletal*

ABSTRACT

Background: Endotracheal intubation is a form of airway procedure usually performed in the emergency department. This procedure is done as a method to secure the airways of patients during cardiac arrest. Body posture during intubation may cause musculoskeletal problems, but doctors usually do not have the awareness on the ergonomic factors and the effects on their health. There is a rise in the prevalence of work-related musculoskeletal disorder (MSD) in medical personnel performing this procedure due to lack of ergonomic postures. There is little evidence on the optimum bed level for intubation in association with ergonomic body posture during tracheal intubation.

Objectives: This study was performed to evaluate the effects of different bed levels during endotracheal intubation on ergonomic body postures, intubation time and success rates of procedures and to find the optimum bed level for intubation with lower risk of MSD, shortest time and higher success rate.

Method: This cross-sectional study was performed among 80 master's students using the rapid entire body assessment (REBA) method. This study was carried out at the resuscitation zone of the accident and emergency department in Hospital Universiti Sains Malaysia, Kubang Kerian, Kelantan. During this study, 80 doctors were asked to perform endotracheal intubation using a mannequin at three different bed levels: supra pubic, umbilical and sub-xyphoid levels. At each level, their body posture, intubation time and success rate were recorded. We compared the mean of REBA score, mean of time and success rate for each level.

Result: This study showed that there were significantly lower risks for MSD and shorter intubation time when the procedure was performed at the sub-xyphoid level. However, no significant differences in performance were observed.

Conclusion: Medical personnel should be advised to intubate patients at the sub-xyphoid level. The finding of the study can be used for teaching and learning purposes.

Keywords: *Tracheal intubation, Ergonomics, REBA, Musculoskeletal Disorders*

CHAPTER 1: INTRODUCTION

1.1 Introduction of ergonomic in endotracheal intubation

The respiratory system consists of the lung and a series of the airways that connects the lung to the external environment. Airway can be divided into upper airways and lower airways. Upper airways consist of the nasal cavity, pharynx and the larynx. The lower airway tracts consist of the trachea, bronchi, and lung. In an emergency setting, maintaining airway patency takes priority over the management of all other conditions. The Inadequate airway will cause reduced oxygen delivery to vital organs like the brain, heart, and kidneys. Irreversible brain damage will occur within 4 minutes without oxygen. Inadequate airway is usually caused by soft tissue obstruction, foreign body, and laryngospasm. There are few methods of opening and maintaining the airways patency. First by manual maneuvers like jaw thrust and chin lift. Second is by using airway adjunct like oropharyngeal or nasopharyngeal airway. Lastly is by definitive airway. Definitive airway can be divided into endotracheal intubation and surgical airway. Definitive airway means a tube is placed in the trachea with cuff inflated below the vocal cords. The tube connected to some oxygen enriched assisted ventilation and the airway is secure in place with tape. The criteria for establishing a definitive airway are based on clinical findings which included a) an airway problem in which there is inability to maintain a patent airway by other techniques such as jaw thrust and oropharyngeal airway, with impending or potential airway compromise in conditions like facial fractures, following inhalational injury and retropharyngeal hematoma, b) patient had breathing problems such as the inability to maintain adequate oxygenation by face mask supplementation and presence of apnea, failure oxygenation like severe pulmonary edema and failure to ventilation such as status asthmatics, c) disability

problems such as presence of closed head injury Glasgow coma scale 8 or less requiring assisted ventilation, need to protect the lower airways from aspiration of blood or vomitus or sustained seizures activity. Once it has been decided that the patient requires intubation based on the above mentioned 3 indications, endotracheal intubation is the most reliable way to ensure oxygenation, ventilation, and prevention of aspiration during emergency airway management. The urgency of the situation and the circumstances indicating the need for airway intervention dictate the specific route and method to be used, whether crash intubation or rapid sequence intubation (RSI). Crash intubation is considered when the patient intubated without pre-treatment, induction or paralysis instituted. Usually patients who present cardiorespiratory arrest or are in extremis with agonal efforts, the airway needs to be secured immediately. RSI is the administration, after pre-oxygenate, of potent induction agent followed by a rapidly neuromuscular blocking agent to induce unconsciousness and motor paralysis for endotracheal intubation. In the absence of an identified crash or difficult intubation, RSI is the method of choice for managing the emergency airway. In the adult male, endotracheal tube (ETT) size is usually 8-9mm internal diameter and the female 7-8mm. Endotracheal intubation is usually performed in resuscitation zone, with the patient in the supine position, the clinician used their left hand to hold laryngoscope. Insert it into the right side of the patient mouth and displace the tongue to the left. Follow the base of the tongue until epiglottis is visualized, lift the laryngoscope upwards and forward without using wrist movement. This maneuver should bring the epiglottis into view. Gently insert the ETT through the vocal cord into tracheas. Inflate the cuff until expiratory leak just disappears. Check the placement of ETT and continue bag valve mask tube ventilation. Secure the ETT once intubation had been

successfully performed and position confirmed. Proceed with post-intubation management. A failed intubation is defined as 3 failed attempts by experienced physician. It is not a procedure without complication, the most common complication is failed intubation, airways trauma, tube malposition and aspiration gastric content or blood. Endotracheal intubation is a common lifesaving procedure done in an emergency setting, typically performed by a medical assistant, nurse, and doctor. Competency in endotracheal intubation requires significant training and clinical experience. Failure to establish airways patency associated with morbidity and mortality. There is a rise in prevalence of work-related musculoskeletal disorder (MSD) in medical personnel performing any procedure due to lack of physical ergonomic. Ergonomics is an applied science concerned with designing and arranging things people use so that the people and things interact most efficiently and safely, also called biotechnology, human engineering, human factors. Currently, insufficient data is available to describe the physical ergonomic with the effect of patient position (hospital bed level) for successful intubation. Textbooks usually describe how to position of head and neck of the patient and how to insert laryngoscope, but do not provide the best patient position for endotracheal intubation. Improper patient positioning (bed level) forces the health personnel to have awkward body postures while doing the procedure during intubation. The objective of this study is to suggest the optimum bed level for intubation that can reduce the risk of musculoskeletal disorder among healthcare personnel at the emergency department. The Musculoskeletal disorder can be assessed using Rapid Entire Body Assessment (REBA).

1.2 Justification of study

Tracheal intubation is a common procedure in emergency department, failed airway is associated with morbidity and mortality. Despite the important of endotracheal intubation, there has been little research on the ergonomic body postures during intubation. Endotracheal intubation required operator to adopt awkward body posture. These awkward bodies postures carry higher risk of work related MSD. The ergonomic tracheal intubation involves physical interaction between incubators' and working environment. There is a risk of MSD to physician performing this procedure. However, not many studies done to find the best ergonomic body posture for this procedure(1). Endotracheal intubation usually performed at resuscitation area in red zone. This prospective study was done in Hospital Universiti Sains Malaysia (HUSM). HUSM is located at Kuban Kerian. It is a teaching hospital involved undergraduate to the master programmed. Identify best practices in intubation ergonomic can be used for teaching and learning purposed. . The purpose of this study is to evaluate the effect of different bed level during endotracheal intubation on ergonomic body postures, intubation time and success rate of procedures and to find optimum bed level for intubation with less risk of MSD, shortest time and higher success rate. Introducing new position will improve body posture to the physician and reduce the risk of MSD. It also can improve intubation success

CHAPTER 2: STUDY PROTOCOL

2.1 Introduction

Tracheal intubation is a complex procedure which involves a person to view the glottis opening before passage the endotracheal tube (ETT) into trachea. Endotracheal intubation is an emergency procedure usually performed to secure airway in a patient who are unable to protect their airway such as unconscious patient or severely trauma patient(2). It is the gold standard for maintaining airway patency and protection in critically ill patient. This procedure also usually performed in Operation Theater, intensive care unit, in Emergency department and pre-hospital setting.

In emergency setting, maintaining airway patency is the first step of procedure in basic resuscitation. If the airway didn't secure, inadequate oxygen delivery to vital organs and Irreversible brain damage will occurred within 4 minute without oxygen. In Malaysia, not many journals publish on ergonomic during intubation procedure. A study done by Emergency Department Universiti Kebangsaan Malaysia noted, 35.5% intubation done in patient with cardiopulmonary arrest(2).

The decision to intubate are based on clinical assessment that patient unable to maintain their airway such as in cardiac arrest, patient had breathing problem such as inability to maintain oxygenation or failure to ventilate patient. Endotracheal intubation also performed for an anticipated clinical deterioration in patient burn over face or severe maxilla-facial injury.

Once patient required endotracheal intubation based on indication mention before, the urgency of situation and the circumstances indicating the need for securing the airway

dictate the route and method to be used, weather Rapid Sequenced Intubation (RSI) or crash intubation. RSI is the administration, after pre-oxygenate, of potent induction agent following by rapidly neuromuscular blocking agent to induce unconsciousness and motor paralysis for endotracheal intubation. Crash intubation is considered when the patient intubated without drug assisted. Crash intubation usually in patient present with cardio-respiratory arrest or in extremist with agonal effort in which the airway need to secured immediately.

Because it is an invasive procedure, intubation in emergency department usually performed in resuscitation zone. The procedures start with preparation of equipment, drug and patient. Preparation of equipment included ETT, stylet, oro-pharyngeal airway, syringe and bag valve mask. Patient was put in supine position and pre-oxygenate with 100 percent oxygen with non-rebreathing mask for 5 minutes. After that, the patient was given paralytic and induction agent, then the physician using left hand to hold laryngoscope, insert it from corner of right sided patient mouth and displace the tongue to the left until epiglottis visualize, lift the laryngoscope upward and forward without using wrist movement. These maneuvers bring the epiglottis into view, gently the insert the ETT through the vocal cord into trachea. The cuff inflated with 10cc syringe and cuff pressure about 20-30 mmhg. After that, check the ETT placement and secured if placement is confirm and proceed with post intubation care. Competency in endotracheal intubation required significant training and clinical experience.(3) Malaysia journals reported that, the levels of confident in freshly medical graduate are low for this procedure. Failed intubation defined as inability to intubate within 60 second , esophageal intubation or failed after 3 attempts by experience physician(4). Patient intubated in emergency department are at risk of adverse event as

compare intubation done in control setting like Operation Theater due to urgency of situation, hemodynamic and respiratory compromise, present of a full stomach and decrease of physiological reserve(5). It is important had successful intubation on the first attempt in the emergency department because incident of adverse event was 14% as compare to 70% when requiring 3rd attempts(5). In Malaysia, 79.8% of the cases, intubations were successfully on the first attempts(2). The most common complication associated with endotracheal intubation procedure was airway trauma, tube malposition, and aspiration of gastric content, desaturation and hypotension.

Endotracheal intubation causes the physician to bend the neck, trunk and knee. This awkward posture is associated with musculoskeletal disorders (MSD) risk but the physician didn't aware about effects of ergonomic factors on their health. There is increasing prevalence of work related MSD in medical personnel performing any procedure due to lack of physical ergonomic. Ergonomic assessment of work related MSD involved the evaluation of risk injury might developed to muscle, tendon, bone or joint associated with any procedure(6). Currently, little literature available assesses the relationship between physical ergonomic of body posture during intubation with patient position (hospital bed level) for successful intubation. The present study was aimed to determine the optimum patient position for intubation that can reduce risk of MSD among healthcare in emergency department. The risk of MSD can be asses by using Rapid Entire Body Assessment (REBA) tools.

2.2 Literature review

Endotracheal intubation is common procedure done in emergency department. It is an important skill as failed airway associated with high risk of morbidity and mortality(7). One study done in 2013 in emergency department, the found that only 83% success rate on first attempt of intubation. The factor associated with success rate on first attempt was non-difficult airway, senior physician and method of intubation was RSI(8). Numerous study have focused on patient factor as caused of difficult intubation, but few study done on physician ergonomic and risk MSD might occurred(9, 10). Medical textbook usually describe the step of intubation procedures such as how to insert laryngoscope, to position head and neck and how to assess difficult airway but we could not find the optimum level or patient position for intubation associated with ergonomic body postures. Improper bed level forces the operator to awkward body postures while doing the procedure, this will add addition source of stress to physician. Although the physician can adapt any situation associated various level of patient position, but it is non-ergonomic to physician that carried high risk of MSD. Despite no significant difference in the performance of the tracheal intubation at difference bed level, physician claim lower position associated with back pain , more difficult and poor laryngeal view(11). Proper patient positioning was associated with lower risk MSD, shorter duration for tracheal intubation and reduce task related error or complication(10). 0h Je Hyeok suggest that patient head should be located higher level because it is associated with higher success rate and less complication(11). Another study also suggests that patient bed level around sternum can provide better laryngeal view and less discomfort to operator(12). However both studies are based on clinical experience of

the participant. There is no objective measurement about level of discomfort or injury experience by participant.

MSD associated procedure at workplace among the most prevalent occupational problem for developed and developing country(13). MSD are any kind of injury involved bone, soft tissue and joint which are usually occurred when working in awkward posture, repetitive task and carrying heavy load(6). Awkward body posture is one of the most important factors in these injuries. MSD had profound impact on workers daily life, productivity lost, treatment cost, time lost and most important impaired business operation(14). In US, about 1 million people absent from work annually because of MSD treatment and rehabilitations. MSD are costly in economic terms, the cost of compensation is estimated about 13 billion dollar. About 30% of all occupational injury and disorders associated with MSD(15). The risk of MSD during intubation can be asses by using REBA score system.

Research showed REBA's score system convenience for ergonomic assessment of MSD related procedure in numerous professional setting including health care system(6). Numerous study which involve assessment MSD using REBA's score system due to easy to use and can be done quickly. The investigator doesn't require credentialing and degree in ergonomics to study body posture in any work task. It's required only little practice and training before using it. REBA's score system also didn't required expensive tools like electromyography; it's only used papers and pen. REBA's assessment is suitable for whole body evaluation whether in static or dynamic positions(16). This REBA score also provide REBA action level in which action need to be taken immediately or not.

Table 1. REBA action levels REBA action levels

Action level	REBA score	Risk level	Action
0	1	Negligible	None necessary
1	2-3	Low	May be necessary
2	4-7	Medium	Necessary
3	8-10	High	Necessary soon
4	11-15	Very high	NOW

According to this REBA action level, we can know level of risk for each task and urgency of action need to be taken.

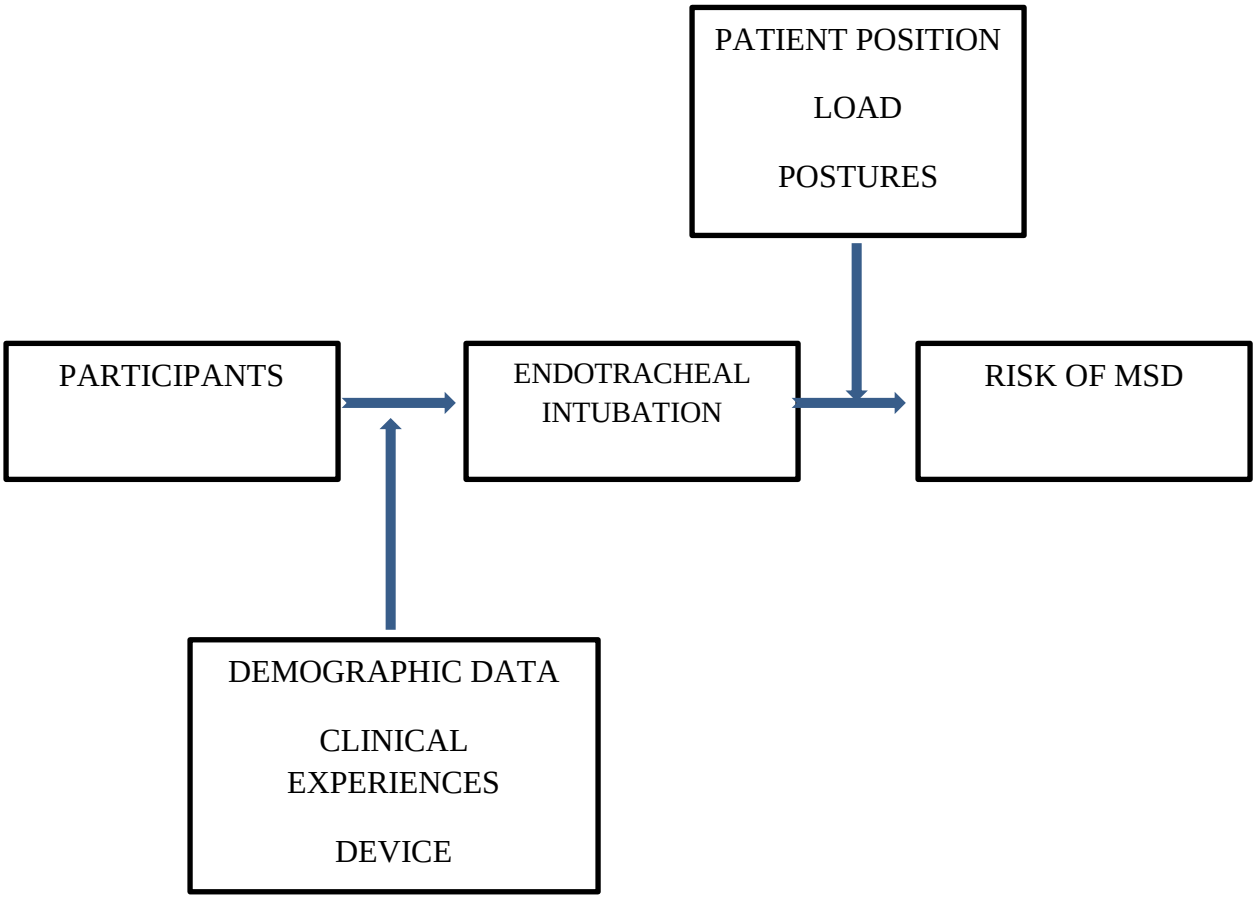
2.3 Research justification and benefit

Tracheal intubation is a common procedure in emergency department, failed airway is associated with morbidity and mortality. Despite the important of endotracheal intubation, there has been little research on the ergonomic body postures during intubation. Endotracheal intubation required operator to adopt awkward body posture. These awkward bodies postures carry higher risk of work related MSD. The ergonomic tracheal intubation involves physical interaction between incubators' and working environment. There is a risk of MSD to physician performing this procedure. However, not many studies done to find the best ergonomic body posture for this procedure(1). This prospective study was done in Hospital Universiti Sains Malaysia (HUSM). HUSM is located at Kuban Kerian. It is a teaching hospital involved undergraduate to the master programmed. The purpose of this study is to evaluate the effect of different bed level during endotracheal intubation on ergonomic body postures, intubation time and success rate of procedures and to find

optimum bed level for intubation with less risk of MSD, shortest time and higher success rate. Introducing new position will improve body posture to the physician and reduce the risk of MSD. It also can improve intubation success rate and reduce ventilation time. Identify best practices in intubation ergonomic can be used for teaching and learning purposed.

In Malaysia, a study done on 2008 showed 97.8% intubations were done by emergency doctor, from this, only 79% of the cases successful on the first attempts(2).

2.4 Conceptual framework



2.5 Objectives

2.5.1 General objectives

-To determine the ergonomics body posture in medical personnel during simulated endotracheal intubation at 3 different patient positions

2.5.2 Specific objectives

-To compare mean REBA score with 3 difference patient position

-To compare mean of time for intubation with 3 difference patient position

-To compare intubation success rate with 3 difference patient position

2.5.3 Research question

- Which patient positioning (hospital bed level) associated with better ergonomic body posture and lower risk of MSD during endotracheal intubation?

2.5.4 Research hypothesis

2.5.4.1 Null hypothesis

- there is no association between ergonomic body posture during intubation with 3 difference patient position

2.5.4.2 Alternative hypothesis

- there is association between ergonomic body posture during intubation with 3 difference patient position

2.6 Methodology

2.6.1 Study design

This is prospective cross-sectional study involving master student performing intubation on airway mannequin at 3 difference bed level.

2.6.2 Study location

This study was conducted at resuscitation zone Emergency and Trauma Department Hospital Universiti Malaysia (HUSM), Kubang Kerian, Kelantan

2.6.3 Study duration

The study duration was from JUN 2017 until MAY 2019

2.6.4 Subject population

All emergency master students in HUSM

2.6.5 Subject criteria

Master student that fulfilled the inclusion and exclusion criteria were eligible for the study. The subject details were collected as in research Performa.

2.6.6 Inclusion criteria

All master students in emergency department

2.6.7 Exclusion criteria

- Student who not consented for study
- Student who had musculoskeletal problem
- Underlying prolapse intervertebral disc
- History of fracture of spine or long bone
- Pregnancy

2.6.8 Operational definitions

-Intubation time: time taken between introduction of laryngoscope until secure placement of the endotracheal tube

-Fail intubation: endotracheal tube in placed after 3 attempt or intubation time more than 60 second

-Musculoskeletal disorders (MSD) - an injury or disorder of the muscles, nerves and tendon joints, cartilage and spinal disc

-Patient position: bed level during intubation procedure

2.6.9 Sample size

The sample size required for the present study was estimated from a pilot study(17). 30 sample performed intubation at 3 difference bed level which is sub-xyphoid, umbilical and supra-pubic level. The time for intubation was recorded and body posture for each level was measure using REBA score system.

Sample size was calculated by using G*Power for repeated measures ANOVA within factors. G*Power output:

F tests - ANOVA: Repeated measures, within factors

Analysis: A priori: Compute required sample size

Input:	Effect size f	=	0.25 (Cohen, 1988)
	α err prob	=	0.05
	Power (1-β err prob)	=	0.80
	Number of groups	=	1
	Number of measurements	=	3
	Corr among rep measures	=	0.6 (pilot study)

Nonsphericity correction ε = 1

Output: Noncentrality parameter λ = 10.7812500

Critical F = 3.2092780

Numerator df = 2.0000000

Denominator df = 44.0000000

Total sample size = 23

Actual power = 0.8179781

From pilot study, correlation among repeated measures was approximately 0.6. Effect size was set to medium = 0.25 (Cohen, 1988), significance level = 0.05 and power of test = 0.80. Required sample size to compare mean of REBA score between three positions was 23 samples. When considering 20% of anticipating drop-out rate, sample need for the objective was 28 samples.

Objective 2

Sample size was calculated by using G*Power for repeated measures ANOVA within factors. G*Power output:

F tests - ANOVA: Repeated measures, within factors

Analysis: A priori: Compute required sample size

Input:	Effect size f	=	0.25 (Cohen, 1988)
	α err prob	=	0.05
	Power (1-β err prob)	=	0.80
	Number of groups	=	1
	Number of measurements	=	3
	Corr among rep measures	=	0.6 (pilot study)
	Nonsphericity correction ε	=	1
Output:	Noncentrality parameter λ	=	10.7812500

Critical F	=	3.2092780
Numerator df	=	2.0000000
Denominator df	=	44.0000000
Total sample size	=	23
Actual power	=	0.8179781

From pilot study, correlation among repeated measures was approximately 0.6. Effect size was set to medium = 0.25 (Cohen, 1988), significance level = 0.05 and power of test = 0.80. Required sample size to compare mean of time between three positions was 23 samples. When considering 20% of anticipating drop-out rate, sample need for the objective was 28 samples.

2.7 Data collection method

We are using all emergency master students available during study period including out campus students who meet the inclusion criteria. Every participant were given information sheets and required to sign an informed consent. Subject recruitment based on voluntary basis. The participant was checked if they fulfilled the inclusion criteria. The objectives and process of the research are explained to the eligible participants prior to obtaining their consent. The risks of musculoskeletal injury and duration of study about 1 hour also explain to participant prior to get consent. Informed consent were obtained from the

participant before proceed with the study. Each participant require to intubate the trachea of a mannequin using a size 3 Macintosh blade and endotracheal tube (ETT) size 8 with styled inside. The mannequin was placed over adjustable hospital bed. Participant was required to perform a procedure at 3 difference bed levels which is level 1 supra-pubic, level 2 umbilical and level 3 sub-xyphoid. The procedure was recorded using video camera put on left sided of participant. A trial is finish after the cuff of the ETT was inflated, the laryngoscope is removed and mannequin successfully ventilated. Video recording is put on left sided due to laryngoscope is always hold with the left hand, upper arm and wrist measurement always refer to the left side of a participant. All filming was canon camcorder placed on tripod in a standard position. A video image was capture at the moment of intubation and the images put as anonymous and coded. From the images capture, the worse body posture was taken for each level. From that posture selected, the degrees of joint flexion (angles) is measure using protractor from the line perpendicular to the long axis of the arm, neck, lower back and leg and scores it into REBA work sheet. The time taken and success rate for intubation also record

2.8 Research tools

Rapid Entire Body Assessment (REBA)

2.9 Statistical analysis

Data will be entered and analyzed using Statistical Package for Social Science (SPSS) for windows, version 24.0. Descriptive statistics will apply for analysis of the demographic data and to compare patient position with intubation success rate. Repeated measure anova was used to compare mean REBA score with 3 difference patient position and to compare mean of time for intubation with 3 difference patient position.

2.10 Dummy tables

Table 1: socio demographic characteristic of study sample

Variables	**(Mean± sd)**	**N(80)**
Demographic		
Age ,mean ± SD		
Gender		
Male		
Female		
Weight		
Height		
BMI		
Years of practice		

Table 2: Mean REBA score of participant performing endotracheal intubation at 3 different positions:

Variables	(Mean± sd)	N(80)
Supra-pubic level		
Umbilical level		
Sup-xyphoid		

Table 3: Success rate participant performing endotracheal intubation at 3 different positions

Variables	Success	Non-success
Supra-pubic level		
Umbilical level		
Sup-xyphoid		

Table 4: Mean of time participant performing endotracheal intubation at 3 different positions:

Variables	(Mean± sd)	N(80)
Supra-pubic level		
Umbilical level		
Sup-xyphoid		

2.11 Ethical issue

During the study, all data involving the video will be held confidential and will be only accessible to the investigator and his team. The investigator also declared no conflict of interest with regard to this study. Participant's safety and right will not be jeopardized and will always be prioritize over this study. No patient will involve in this study. All subjects are told that we wish to film them as part of a study and that is not part of any assessment of them. Performance of participant will be held confidential. This study will benefits the university by introduce ideal patient position for intubation which can be used for teaching and learning purpose. Token of appreciation will be given to all responders. Ethical approval for the study was received on

2.12 Conflict of interest

There is no conflict of interest during duration of this study by investigator

2.13 Flow chart