UNIVERSITY OF NAIROBI

COLLEGE OF HEALTH SCIENCES

DEPARTMENT OF ANAESTHESIOLOGY

SPEAKING OUT FOR PATIENT SAFETY AND THE ASSOCIATED FACTORS

AMONG ANAESTHESIA TRAINEES IN KENYA

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A Dissertation Presented in Part Fulfillment of the Requirements for the

Degree of Master of Medicine in Anesthesiology, University of Nairobi

DECLARATION

I declare that this proposal is my original work and has not been presented for a degree or any other purpose in any institution. Sections copied in whole or in part from any other source are explicitly identified with detailed, complete and accurate referencing. This work has not been presented for the award of a degree in any other Institution.

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DEDICATION

I dedicate this study proposal to my parents Mr. M. Ambutu and Mrs. J. Ngugi.

LIST OF ABBREVIATIONS

ENT: Ear, Nose and Throat

KNH: Kenyatta National Hospital

KMTC: Kenya Medical Training College

OT: Operating Theatres

OR: Operating Theatre

UON: University of Nairobi

WHO: World Health Organization

DEFINITION OF KEY TERMS

SPEAKING UP: Assertive communication of patient safety concerns through information, questions or opinions where immediate action is needed to prevent conferring harm to the patient(1).

WITHHOLDING VOICE: Intentional behavior not to verbalize ideas, information and opinions for the improvement of patient safety and is considered more than the absence of speaking up(1).

RESPONSIBLE FOLLOWERS: Team members with the inter-personal skills to challenge the decisions of their leaders without contributing to a defensive or risk averse culture(2).

HIGH FIDELITY SIMULATORS: Human manikins can be used to create a physical "patient" on which to learn, demonstrate, and test resuscitation skills. High fidelity simulator manikins can be used for physiological modelling and can recreate breathing patterns, heart sounds, pulse pressures, and airway problems. They can then be placed in an artificial environment replicating the workplace(3).

PATIENT SAFETY: The absence of preventable harm to a patient during the process of health care. [World Health Organization (WHO) Patient safety 2013]

MEDICAL ERROR refers to wrong action or failures in planned care or implementing a wrong care plan to the patient(4).

SAFETY CULTURE refers to the perception of a proactive organizational commitment to safety(4).

TEAMWORK CULTURE refers to the perceived quality of collaboration in the workplace(4)

SITUATIONAL AWARENESS is described as the understanding of the current environment and the ability to accurately anticipate future problems to enable effective actions(5).

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ABSTRACT

Background: Voicing Out Patient safety apprehensions is key to avoid errors being transmitted to the patient and is fundamental in improving the culture of teamwork and safety. Research done in various organizations demonstrates that individuals frequently select the innocuous response of silence, withholding feedback that could be beneficial to others.

Objectives: To determine the speaking out behavior and safety climate among anesthesia trainees (Masters and Higher diploma in Anesthesia students) as well as the perceived barriers to speaking out among these trainees.

Study design: A prospective cross-sectional study design.

Study participants: Anesthesiology residents in the university of Nairobi school of from year 1 to year 4 and students taking higher diploma in Anesthesia at the Kenya Medical Training College in year 1 and year 2.

Data collection tool: Speaking up about patient safety questionnaire (SUPS-Q)' which was developed by the Swiss Patient Safety.

Data analysis: Data obtained was entered into excel sheets and analyzed using descriptive statistics. The participant responses were then classified according to the framework of Okuyama.

Research findings: The prevalence of speaking out behavior was 80.2 and 83.2% among KMTC and UON residents. The speaking out environment for the anesthesia trainees is favorable, as majority of the respondents reported psychological safety and an encouraging environment. Withholding voice behavior was common in our study population, with the withholding information that could benefit the patient being statistically significant $P < 0.05$.

The top 3 barriers to speaking out for patient safety were: Perceived consequences of speaking up (43.8%), individual factors (31.7%) and the perceived efficacy of speaking up.

Conclusion: Our study demonstrates high prevalence of speaking up. Withholding voice is common despite the favorable safety climate. The most commonly identified barrier to speaking up for patient safety was the perceived consequences of speaking up.

CHAPTER 1: INTRODUCTION

Taking part in patient safety initiatives is one solid expression of the basic principles of medical ethics: do no harm (non-maleficence). Being an ethical professional entails taking action to preclude injury getting to patients in hospitals (6).

Refusal to challenge flawed decision making contributes to the rise of preventable morbidity and mortality (2). Medical experts speak up when they bring out issues of concern for the good of the patient, either to the individuals themselves or through a reporting system, upon identifying a dangerous or wanting action of others (7). Examples may include overlooked diagnosis, poor clinical judgement, lapses, breaking rules or regulations and failure to observe standardized code of behavior (8).

Even though as many as 75% of clinicians can remember when speaking up prevented an adverse outcome, there are still countless times when they remained quiet (7). The whys and wherefores behind the decision to maintain silence are multifactorial. Okuyama et al came up with a framework for obstacles to speaking out adapted from Morrison's model for organizations (8). The common themes outlined in the Okuyama framework include: low incentive to speaking up due to little apparent risk, contextual factors of the organization, individual factors, perceived value of speaking up, perceived personal safety of speaking up and the strategies and goals of how and with whom to speak up to.

Forefront staff such as medical residents and nurses are well placed to observe initial indicators of precarious conditions in the delivery of care and report them. Research has shown that separately every team member has distinctive reasons for silence therefore, the trainees are expected to have their own unique barriers(9)(10). Few studies have considered reasons why trainees remain hushed. This study aimed at: characterizing the speaking out behavior of trainees in anaesthesia, assessing the safety climate, and analyzing perceived barriers to speaking out.

CHAPTER 2: LITERATURE REVIEW

2.1 WHAT IS SPEAKING UP?

There are diverse descriptions of speaking up. Speaking up can be defined as communicating with other team members about alternative views or the problems likely to stem from the planned course of action in medical care (2). It may also be thought of as raising concerns for the good of patient safety once hazardous or wanting action of others are identified(7) or the assertive communication on patient safety concerns through provision of information, queries or expressing divergent opinions where urgent action is required to avoid conferring harm to the patient. Moreover, it can be defined as open communication between healthcare workers about health care delivery concerns (13). This type of voice is centered on the problem and has to be differentiated from the suggestion focused voice(1).

In studies done on patient safety, the terms speaking up and withholding voice are viewed as opposite ends of a single-dimensional construct, meaning that speaking up is equal to not withholding voice and vice versa. Other studies also define withholding voice as the deliberate behavior not to express ideas, facts and individual views for the betterment of patient safety and is thus considered more than the mere absence of speaking up alone (14).

Voicing out behaviors are directly connected to particular preceding events thus voicing out behaviors are highly context specific (15). In health care, not much is known about the different varieties of safety voicing behaviors.

In hierarchical organizations like healthcare, challenging the opinions of other colleagues means taking a risk on the part of those who speak up (2). Situations where speaking out is key include: medical errors like missed diagnosis and poor clinical judgement, lapses, breaking rules and the failure to follow standardized protocols(8). Effective speaking out requires good interpersonal skills that prevent the promotion of defensiveness or risk-averse culture (2).

2.2 SCALE OF THE PROBLEM (COMMUNICATION ERRORS)

In healthcare, slip-ups that are hypothetically injurious or fatal to patients are frequently the product of poor communication between team members. This is crucial in high-risk hospital sections such as operating theatres or during procedures(16).

In a clinical vignette study done in 2008, the respondents reported communication problems as the 3rd most common source of error in the OR after medication and equipment errors. Further, the respondents' top two recommendations for improving patient safety included improving team communication(17).

Communication is a vital part of proper team effectiveness and it often goes wrong. A study done in America found that the majority (70 – 80%) of root cause analyses alluded to communication failure as one of the causal factors for adverse events or near-miss reports(18).

The Joint Commission identified communication breakdown as the most common factor implicated in more than 4,000 adverse events. Improving the effectiveness of communication among caregivers was then recommended as a key patient safety goal(19).

A study done in 2004 revealed that communication break-down in the operating room (OR) featured prominently. They were estimated to occur in approximately a third of team exchanges and 30% of these endangered the patient's safety by rising cognitive load, interrupting routine, and contributed to increasing tension in the OT(20).

In this study, communication failures were classified as follows(20):

- **Occasion failures:** Problems in the context of the event necessitating communication
- **Content failures:** Inadequacy or inaccuracy of the information being relayed
- **Audience failures:** Gaps identified in the constitution of the group involved in the reception of the information.
- **Purpose failures:** Communication which lacks clarity, whose purpose is not achieved, or even inappropriate

2.3 WHAT ARE WE NOT SPEAKING ABOUT

Martinez et. al. (13) in a study reported that speaking up to unprofessional behavior was less common (46%) than speaking up about patient safety (71%). This professional related misbehavior included falsifying documents, covering up an error insulting colleagues amongst others. Further, 65% reported encouragement to speak up about patient safety issues as compared to 36% who reported been encouraged to speak up about unprofessional behavior.

2.4 BENEFITS OF SPEAKING UP

It can be disastrous when health care professionals do not raise safety concerns as this may endanger the life of the patient (36).

Checklists, as well as time-outs, are commonly used patient safety tools. Although their use supports ethical practice, recent research has brought out their shortcomings and has underscored the relevance of interpersonal collaboration in developing and putting into practice these patient safety tools(6).

Communication among the members of a surgical team, represented by the time-out feature of a checklist, is in itself a significant ethical activity, including both the obligation to "speak up" on potential harm to a patient and the obligation to listen and respond aptly to the concern raised(6).

Speaking out is anticipated to have an immediate protective effect on human errors or to improve the system and technical deficiencies (8). Failure to put to task flawed decisions has been found to contribute to additional morbidity and mortality(2).

2.5 FACTORS AFFECTING SPEAKING UP

Factors affecting speaking out have been evaluated both qualitatively and quantitatively and they have been found to be multifactorial. To improve training on this matter, it is important to identify interpersonal skills that are effective and possible obstacles to challenging seniors (2). Factors affecting speaking up can be categorized as relating to motivation and clinical context, general context, personal or individual factors, the perceived safety and efficacy of speaking up (8). The decision to voice safety concerns entails complex deliberation and trade-offs. The most important component, which is the potential of patient harm associated with an error or rule violation is assessed and the 'calculation' then starts. On the other end of this calculation, participants tried to anticipate deleterious outcomes to the patient, the actor and themselves. To calculate the potential cost of speaking up, predicting the actor's response is mandatory. The predictability of the senior's response to the participants voicing behavior was found to be a concern for nearly 50% of the interviewees in one study. Speaking up to known co-workers

was considered much easier while not knowing the actor at a personal level increases would-be costs of speaking up (15).

2.6 CONCEPTUALIZING THE DECISION TO SPEAK UP

The power of the impetus to voice concerns is grounded on an assessment of the potential damage to the patient. The greater the potential for harm, the stronger (*ceteris paribus*) the incentive to speak up. The perceived value of speaking up is counteracted by an assortment of fears pegged on projected adverse outcomes relating to the actor (senior), patient or the self(15).

2.7 PROMOTERS TO SPEAKING UP

Promoters or motivators of speaking up are varied. Studies have identified the following factors:

a) **Perception of risk:** The level of perceived risk for both the patient and organization has been found to be a major pre-requisite for speaking up (12).

b) **Clarity or vagueness of the clinical context:** a clear clinical situation is a major contributor to confidence to voice out concerns and speaking up behavior in general (12).

c) **Contextual factors:**

Studies have recognized some context-specific issues that impact speaking up such as administrative structure(21) (22), psychological safety (23)(24)*,* and supervisor behavior (24)*.*

A strong and visible hospital administrative support enhances speaking out behavior (13)(6). Teamwork and the individual's relationships with team members, particularly the attitude of the team leader has been shown to affect speaking (25)(26)(27) (28). Tutoring by team front-runners aids members to learn from teething troubles and mistakes(23)

d) **Personal (individual) factors:**

Individuals who confidently voice their concerns are by and large more contented with their effort and display more unrestricted efforts to speak up (29), the extent of identification with their part as experts, prior encouraging experiences after speaking out, the capability to use

self-assured and critical language increases confidence. The degree of literacy has also been shown to play a role in speaking out behavior among nurses.

e) Perceived efficacy of speaking up: autonomy and having an impact at the workplace increases speaking out (8).

f) Training

Enlightening staff members increases cognizance, develops communication expertise, and raises empowerment(5). In a study by H Johnson ET. Al. involving more than 800 health care professionals, ranging from physician level to allied health care staff, established that the perioperative team training safety course provided participants with fundamental tools to enrich communication in the perioperative setting. By using a range of teaching modalities, team members taught audience participants the significance of communication, as well as relevant circumstances in which to apply improved communication techniques(5).

2.8 BARRIERS TO SPEAKING UP

In a summary of the literature on barriers to challenging authority, it was noted that they were complex, contradictory and still poorly understood(2). Some of the barriers identified in other studies include:

a) Low perception of risk (12)

b) General context: perceived pressure from senior colleagues adversely affects speaking up among up for junior colleagues(30)

c) Individual factors: perception of absence of enough knowledge is a hindrance to good voicing out behavior as healthcare workers lean towards not speaking up when they feel they are not sufficiently knowledgeable in an area of concern (12) (30)

d) Apparent safety of speaking up: fear of conflict within the healthcare system and the fear of punishment and the concerns of appearing incompetent from the addressed person(31)(12).

e) Apparent efficacy of speaking up: the view that no reformative action will be taken about the raised issues (32)(33).

f) Hierarchy in health care systems

Questioning the status quo in a group involves interpersonal risk—particularly in hierarchically organized groups like health care teams. For instance, individuals fear that they may be reprimanded or lose face when they express apprehensions to those in authority and thus abstain from speaking up(10).

2.9 STUDIES ON BARRIERS TO SPEAKING OUT

Beament e.t. al in 2016, did a mixed-methods study incorporating simulation and focus groups, using a sample size of 25, to identify barriers and protective factors to speaking out in the clinical environment. The commonly identified barriers were the concern of maintaining good work relationships and the role of the risk versus cost-benefit during decision making. The prominent protective factor when speaking up was emotional intelligence.

In the same year, 2016, Landgren et, al. did a cross-sectional study using short answer questionnaires among 95 participants and found that perceived personal safety, perceived efficacy, and workplace policies played a major role in the decision to speak out on patient safety concerns.

In 2014, Okuyama et, al, did a systematic review of articles from 26 studies and came with a framework that classified the barriers into general contextual factors, individual factors like the cost versus safety benefit, motivation to help the patient and voice targets versus tactics such as the behavior of seniors in terms of how friendly or hostile they are and the availability of formal training on the subject of interest to empower the person intending to speak out.

Pian Smith did a simulation-based random control experiment involving 71 practicing anesthesiologists and found that the main factors influencing the decision to speak up were assumed hierarchy, fear of reprisal and embarrassment, endangering ongoing relationships, the natural evasion of conflict as well as the concern for repute.

2.10 LESSONS FROM THE AVIATION INDUSTRY

2.10.1 Introduction

Aviation safety has evolved over time and has accomplished astonishing results. Putting into practice some of the lessons learned may help make healthcare safer(34).

The aeronautics industry safety profile has changed over more than a century and has achieved remarkable results. Applying some of the lessons learned may help make health care safer(34).

2.10.2 Aviation and anesthesiology: The importance of training

Human influences and team effort letdowns in the airline industry before the mid-1970s led to the beginning of "Cockpit Resource Management" training, partly, to embolden cockpit crews to "speak up" when safety alarms arose(28).

The saying – "Hours of boredom and moments of terror" typifies an anesthetist's work. It is the moment of terror that demands extraordinary skills and attentiveness, similar to flying an airplane (35).

"The two-challenge rule permits one crew member to automatically take up the duties of another crew member who does not respond to two consecutive challenges on air(28).

The concept of the two-challenge rule introduced to healthcare in the Med-Teams program and the Air Force's Medical Team Management program(28).

In the United States, both industries have exemplary safety records, but that was not always the case. In 1929, there were 51 fatal commercial airline accidents; today, that would equate to about 7,000 fatal accidents per year. The actual incidence of fatal accidents in commercial airlines today is about one in 1 million. Similarly, anesthesia-related mortality has dropped from one death per 1,000 anesthesia procedures in the 1940s, to one in 100,000 procedures in the 21st century. In its 1999 report, the Institute of Medicine recognized anesthesiology as the only medical specialty to decrease medical blunders and intensify patient safety.

In both aviation and anesthesiology, the observed improvement in patient safety resulted from multiple factors, including improvements in:

1. Technology

2. Safety Science: process standardization (i.e., Six Sigma methodology) and use of checklists that reduce the likelihood of human error

3. Continuous Quality Improvement: Systematic review of processes, implementation of changes and measurement of improvements

4. Education and training

2.11 CONCEPTUAL FRAMEWORK

2.11.1 CONCEPTUAL FRAMEWORK NARRATIVE

Numerous factors have an impact on speaking up among health care staff. These factors are classified using a thematic framework into general background factors, individual factors, motivation and clinical context, apparent safety of speaking up and efficacy of speaking up. Research exploring the association between speaking out behavior of healthcare professionals and patient safety outcomes show that reluctance to speak can be a significant factor giving rise to communication slips and/ adversative events. The majority of healthcare workers, their rank notwithstanding, have some familiarity with the hesitation to speak out even when there are clear risks involved(36).
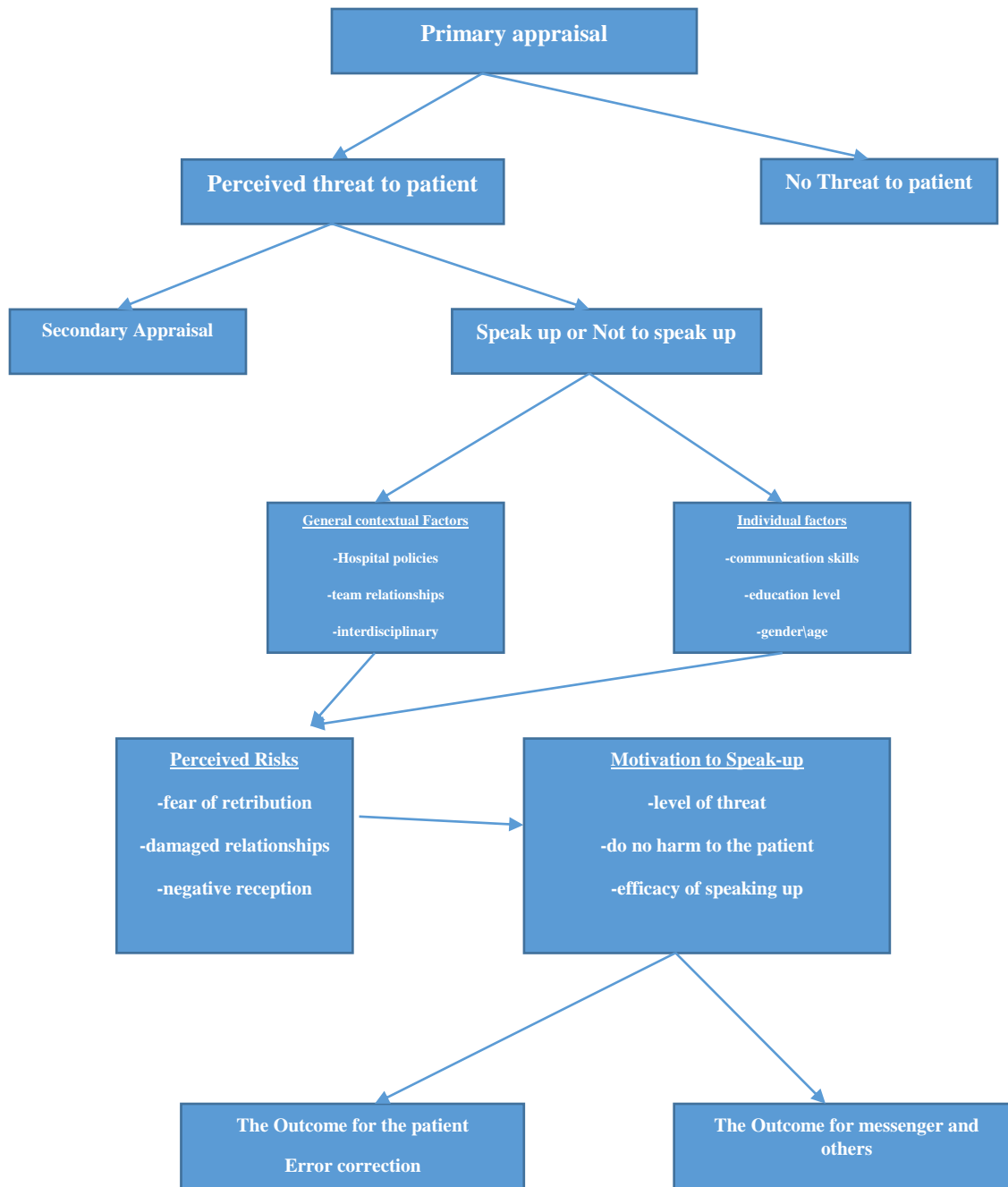
Figure 1: Conceptual framework schematic

CHAPTER 3: RESEARCH QUESTION, OBJECTIVES AND JUSTIFICATION

3.1 RESEARCH QUESTION

What is the current speaking up for patient safety behavior and what are the factors influencing the decision to speak up among anesthesia trainees (University of Nairobi residents and higher national diploma students from KMTC)?

3.2 BROAD OBJECTIVE

To determine the speaking up for patient safety, safety climate and perceived barriers among trainees in anesthesia (residents and higher national diploma students).

3.3 SPECIFIC OBJECTIVES

1) To determine speaking up behavior among trainees in anesthesia (residents and higher national diploma students).

2) To determine the safety climate among the trainees in anesthesia (residents and higher national diploma students).

3) To identify the perceived barriers to speaking up among the trainees in anesthesia (residents and higher national diploma students).

3.4 STUDY JUSTIFICATION

Voicing outpatient safety concerns among healthcare workers has received substantial recognition as a central resource for improving the quality of care. Reluctance to speak up or the failure to do so often results in increased morbidity and mortality. Teaching safety theory and team training alone may not be adequate to enable the healthcare professional to voice their concerns. Understanding the speaking up behavior and related factors are useful to provide improvement initiatives that lead to lasting behavior change and safety outcomes.

CHAPTER 4: STUDY METHODOLOGY

4.1 STUDY DESIGN

This was a prospective cross-sectional study

4.2 STUDY SITE

The study was conducted at the Kenyatta National Hospital operating theatres. These include the main theatre, trauma theatre and the satellite theatres (Ophthalmology, ENT, Burns and Dental school theatre). These are some of the areas the anesthesia trainees undergo their training.

4.3 STUDY POPULATION

Anesthesia residents from the University of Nairobi (years 1 to 4) and the higher national diploma in Anesthesia students (years 1 and 2) from the Kenya Medical Training College (KMTC) rotating in the Kenyatta National Hospital operating theatres.

4.4 ELIGIBILITY CRITERIA

4.4.1 Inclusion criteria

Anesthesia residents from the University of Nairobi and the higher national diploma students from the Kenya Medical Training College who gave consent to take part in the study were included in the study.

4.4.2 Exclusion criteria

Questionnaires that are partially filled were excluded from the study.

4.5 SAMPLE SIZE CALCULATION

The minimum sample size was calculated using Daniels formula with modification for small known population.

- $n' = NZ^2 P(1-P) / d^2 (N-1) + Z^2 P(1-P)$

- Where;

    - n' = calculated sample size

    - N = Population size=95 (51 university of Nairobi residents, 44 HND anesthesia students from KMTC)

    - Z = Z statistic for a level of confidence=1.96

    - P = Expected proportion (in a proportion of one) Schwappach study 71.7%

    - d = Precision 5%

- **$n' = 95 \times 1.96^2 \times 0.717(1-0.717) / 0.05^2 (95-1) + 1.96^2 \times 0.717 (1-0.717)$**

- **Sample size =76**

N= Total anesthesia Trainees

- **U.O.N**- 51
- **K.M.T.C-** Country wide – 89 (Nairobi 49, Kisumu 10, Eldoret 14, Nakuru 16). Note that these students undertake their clinical rotations in KNH, as part of their training in anesthesia. However, due to the delayed enrollment of new students this year, only half were available to take part in the study.

4.6 ANESTHESIA TRAINEES SAMPLING METHOD

The total population sample was taken from the anesthesia residents in the University of Nairobi and the Higher National Diploma in anesthesia students at the Kenya Medical Training College. Enrollment was by consecutive sampling. Consent was sought. The residents who gave

consent took part in filling the validated self-administered questionnaire in soft copy. The principal investigator was available for any clarifications required.

4.6.1 ANAESTHESIA TRAINEE RECRUITMENT PROCEDURE
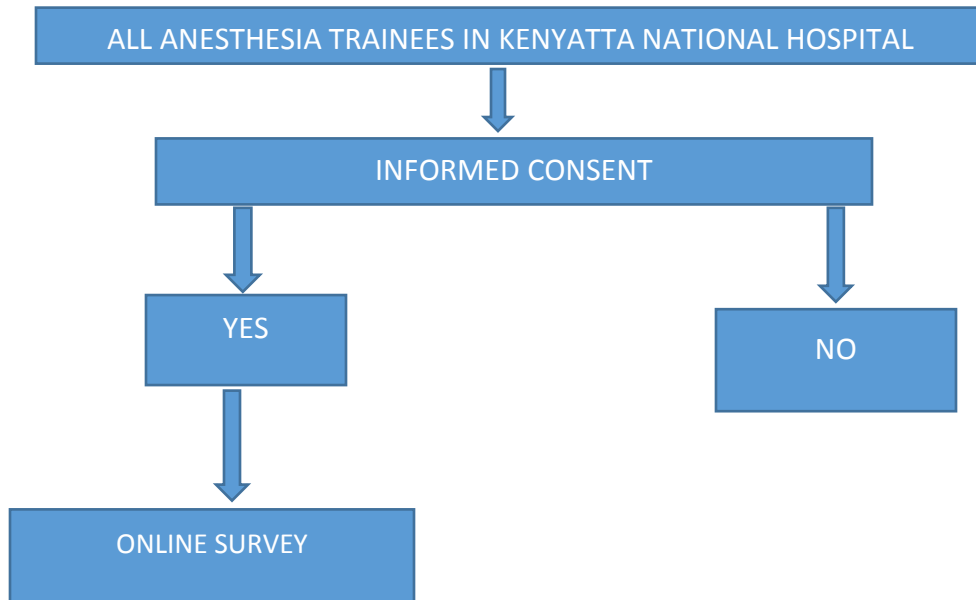
Figure 1: Recruitment procedure.

4.7 DATA COLLECTION TOOLS

4.7.1 Study Pro-Forma

This was used to obtain the anesthesia trainees' demographic information. Information was obtained concerning their age, gender, site of training and the year of residency.

4.7.2 Questionnaire

This questionnaire covers an individual's past speaking up behavior (in the last 4 weeks) and awareness of the speaking up climate. The incidence of speaking up behaviors consists of 3 scales: perceived concerns scale (3 questions), withholding voice scale (4 questions) and the speak upscale (4 questions) with the options for being the number of times the trainee spoke up: never (0), rarely (1-2), sometimes (3-5), often (6-10) and very often (> 10 times).

The speaking up climate was evaluated using 11 questions from 3 subscales namely: psychological safety for speaking upscale (5 questions), encouraging environment for speaking upscale (3 questions) and resignation scale (3 questions). These were answered using a 5-point Liker scale with responses stretching from strongly agree to strongly disagree. A lower score range 1-5 indicates a lower perceived psychological safety in the work, greater levels as identifying the workplace as reassuring to speaking up and a greater resignation with speaking up respectively. Barriers were determined using a hypothetical multiple-choice case vignette.(14)

4.8 STUDY OUTCOME VARIABLES

Speaking up behavior (perceived concerns, withholding voice, speaking up)

Safety climate (psychological safety, reassuring environment and resignation.)

Apparent barriers to speaking up

4.9 DATA MANAGEMENT AND ANALYSIS

4.9.1 Data collection and rationale

Data was collected by the primary investigator every morning from Monday to Friday. Data was collected using a study Pro-forma and a self-administered validated questionnaire to interview the anesthesia trainees

The quality of data was assured at all levels by performing data cleaning during data collection and entry. Cleaned data was then exported to SPSS version 23.0 software for statistical analysis.

4.9.2 Data analysis

Data obtained was analyzed using the 23.0 version of SPSS software. Descriptive statistics were used to represent the resident demographics. From the hypothetical scenario, thematic barriers were classified together based on the Okuyama framework.

Descriptive statistics were applied to obtain the data from questionnaires. For easier interpretation, responses from behavior items will be dichotomized.

4.9.3 Data presentation
Data obtained was presented using tables and graphs.

4.10 Data storage

The hard copies of the questionnaires collected were stored in a locked cabinet within a room with restricted access and kept confidential. The key to this cabinet was the sole responsibility of the primary investigator. The information obtained was used for purposes of the study alone and for quality improvement in the anesthesia department. The derived secondary data was secured using a password that only the principal investigator will be privy to. The soft copy of the secondary data will be stored for 5 years and thereafter destroyed by permanently erasing the records while the primary data in hard copy will also be kept for 5 years and destroyed by shredding thereafter.

4.11 Quality control and assurance

The quality assurance was run intermittently as data entry is ongoing. The role of the primary investigator was to ensure that the written informed consent is signed, completeness of the filled questionnaires, training the research assistant on how to use the data collection tools as well as clarifying information as requested by the study participants. The research assistant helped in data collection by handing the questionnaires to the study participants in the various theatres as well as checking the questionnaires for completeness.

4.12 Control of errors and bias

Coding the self-administered questionnaires with numbers to ensure the questionnaires are answered anonymously with no victimization. Use of validated SUP-Q questionnaires were assessed for completeness of data by the principal investigator. The principal investigator oversaw the data collection, entry, and analysis.

4.13 Ethical considerations

Enrollment residents was voluntary after obtaining informed consent. Each study participant was assigned a number at enrollment for identification and to help in data analysis. Confidentiality was upheld, and anonymity was ensured. The anaesthesia trainees did not incur any additional costs by participating in the study. Secure storage of the written and digital data was ensured to protect that information from any unofficial access, usage, release, amendment, loss or theft.

The study was conducted after getting full approval from the Department of Anesthesia and the Kenyatta National Hospital / University of Nairobi Ethics and research committee.

4.14 Outcomes, impact and result dissemination plan

We will disseminate the findings to the stakeholders, KNH management, local and international meetings and publish the data in journals.

CHAPTER 5: RESULTS

5.1 ENROLLMENT PROCEDURE

The anaesthesia trainees were recruited into the study after giving informed consent. The response rate was 82.9%, as the anticipated number was 76. This was because of the delayed intake of new year one KMTC trainees this year due to the COVID-19 pandemic that has necessitated alteration of the academic calendar.
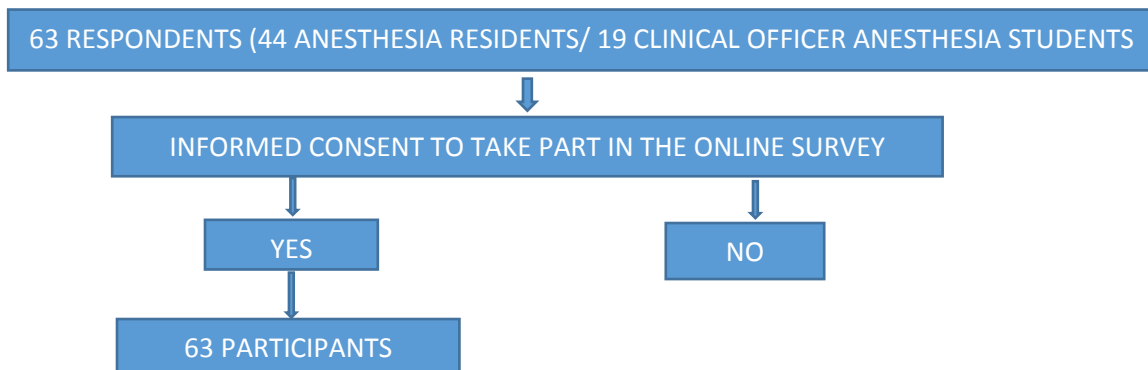
Figure 2: The anesthesia trainee enrollment procedure

5.2 SOCIODEMOGRAPHIC CHARACTERISTICS OF THE ANAESTHESIA TRAINEES

69.8% (44) of the respondents were residents from the University of Nairobi while 30.2% (19) were from higher national diploma students from KMTC. About a third were in their first year of training (Table 1) 31.7% while 41.2% were in their second and third years of training. Majority of the respondents were aged 30- 35 years (54%) while 11.1% were above the age of 35 years. There was a slight female preponderance at 50.8%.

Table 1: Sociodemographic characteristics

Variable	UON (n=44) n (%)	KMTC (n=19) n (%)
Age (in years)		
25-30	8 (18.2)	14 (73.7)
30-35	29 (65.9)	5 (26.3)
>35	7 (15.9)	0
Gender		
Male	18 (40.9)	13 (68.4)
Female	26 (59.1)	6 (31.6)
Year of training		
1	6 (13.6)	14 (73.7)
2	13 (29.5)	4 (21.1)
3	12 (27.3)	1 (5.3)
4	13 (29.5)	0

5.3 EVALUATION OF SPEAKING OUT BEHAVIOUR

5.3.1 PERCEIVED CONCERNS SCALE

This scale consists of 3 questions that assessed how often the respondent experienced any specific concerns about patient safety in their clinical environment and among colleagues. Majority of the respondents from both learning institutions 50.8% reported that they sometimes have patient safety concerns and 49.2% have experienced an error which if uncaptured would be harmful to the patient. Overall, perceived concerns were noted in 79.5% and 81.5% of the KMTC and UON respondents respectively (Figure 3).
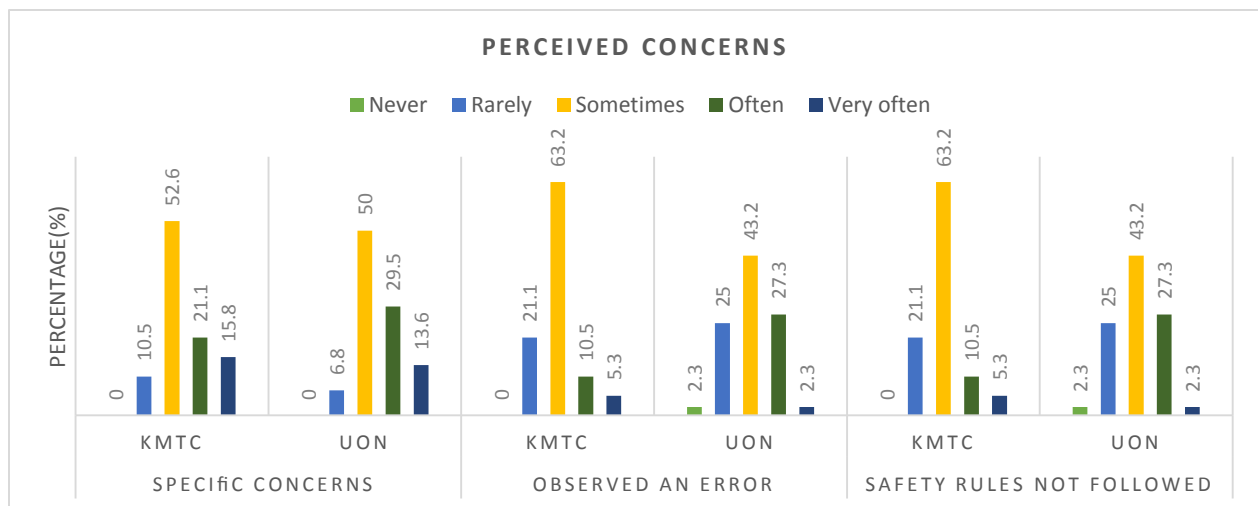
Figure 3: Perceived safety concerns

In the multivariate analysis, there was no statistically significant inter-institutional variation in the level of perceived concerns as assessed by the three questions (Table 2).

Table 2: Perceived safety concerns bivariate analysis

Variable	Perceived safety concerns	Total (%)	KMTC (%)	UON (%)
PC1	Have you had specific concerns about patient safety?	63 (100.0)	19 (100.0)	44 (100.0)
PC2	Have you observed an error which if uncaptured could be harmful to patients?	62 (98.4)	19 (100.0)	43 (97.7)
PC3	Have you noticed that your workplace colleagues haven't followed important patient safety rules, intentionally or unintentionally?	62 (98.4)	19 (100.0)	43 (97.7)

5.3.2 WITHOLDING VOICE SCALE

This scale consists of 4 questions assessing how often the anesthesia trainees spoke about specific patient safety concerns, declined to share new ideas or information that could improve patient safety or failing to address a colleague who did not follow important patient safety rules.

Overall majority of the respondents reported that they "sometimes" to "very often" have either chosen not to bring up patient safety concerns that they had or share ideas that would benefit the patient (Figure 6). 55.5% reported that they at one point chose not to address a colleague who did not follow important patient safety rules. However, when the patient's life was at obvious risk, majority of the trainees, reported that they did not withhold voice. Overall withholding voice behavior was significant as it was observed in 39.5% of KMTC students and 49.4% of UON residents (Figure 4)
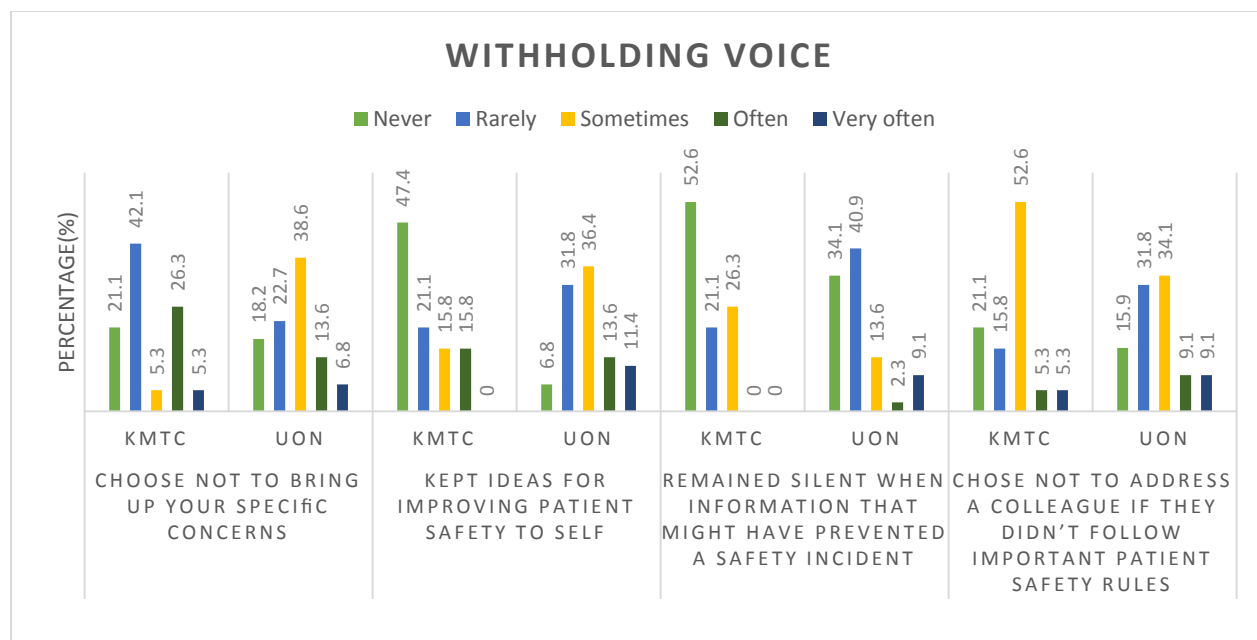
Figure 4: Withholding voice scale

On further analysis, the anesthesia trainees showed a trend towards choosing not to bring up specific concerns about patient safety and not addressing colleagues who did not follow important safety rules although this was not statistically significant. UON residents were more likely to keep ideas for improving patient safety to themselves compared to the KMTC students and this was found to be statistically significant. (Table 3).

Table 3: Withholding voice bivariate analysis

	Variable (Withholding voice)	Total (%)	KMTC (%)	UON (%)
WV1	Did you choose not to bring up your specific concerns about patient safety?	51 (81.0)	15 (78.9)	36 (81.8)
WV2	Did you keep ideas for improving patient safety in your unit to yourself?	51 (81.0)	10 (52.6)	41 (93.2)*
WV3	Did you remain silent when you had information that might have prevented a safety incident in your unit?	38 (60.3)	9 (47.4)	29 (65.9)
WV4	Did you not address a colleague if he/she didn't follow important patient safety rules, intentionally or unintentionally?	52 (82.5)	15 (78.9)	37 (84.1)

P value <0.001

5.3.3 SPEAK UP SCALE

The scale is made up of 4 questions that seek to find out the frequency with which the anesthesia trainees bring up errors or other specific patient safety concerns that they observe or directed at either their colleagues or their seniors. Over half of the respondents, 50.8% reported that they often/ very often spoke up about patient safety concerns, with the number rising to 87.3% when they sensed impending danger to the patient. 84.1% reported that by speaking up, they have at one point prevented harm getting to the patient. As a whole, the prevalence of speaking up behavior in this study, was reported in 80.25% and 83.2% of KMTC and UON trainees respectively.

Anesthesia trainees from both UON and KMTC showed a trend towards speaking up on all the four elements tested but it was not found to be statistically significant (Table 4).

Table 4: Speaking up bivariate analysis

	Variable (Speaking up)	Total (%)	KMTC (%)	UON (%)
SU1	Did you bring up specific concerns about patient safety?	63 (100.0)	19 (100.0)	44 (100.0)
SU2	Did you address an error which if uncaptured could be harmful for patients?	62 (98.4)	19 (100.0)	43 (97.7)
SU3	Did you address a colleague (anesthetists and/or nurses) when he/she didn't follow important patient safety rules, intentionally or unintentionally?	61 (96.8)	19 (100.0)	42 (95.5)

SU4	Did you prevent an incident from occurring as a consequence of bringing up specific concerns about patient safety?	63 (100.0)	19 (100.0)	44 (100.0)

5.4 THE SPEAKING UP CLIMATE

This was assessed using a set of 3 sub-scales namely: the psychological safety for speaking up scale, encouraging environment for speaking up scale and the resignation scale, all of which were also answered using a 5 point Likert scale with responses ranging from never to very often.

5.4.1 PSYCHOLOGICAL SAFETY FOR SPEAKING UP SCALE

This scale has 5 questions that determined the perception of the respondents concerning whether they could rely on their colleagues and seniors for assistance at work as well as the whether the work environment allows for raising concerns on patient safety. Additionally, the scale also looks into the reaction of colleagues and seniors when these concerns on patient safety are raised. Overall, respondents from both institutions of learning reported that they could rely on their colleagues at 84.1% and their seniors at 92.1%. a favorable attitude to correction by seniors and fellow colleagues was also reported by most of the trainees. The psychological safety is favorable, considering the 5 elements above with the overall psychological safety being 84.2% in KMTC students and 86.3% reported by the UON residents. (Figure: 5)
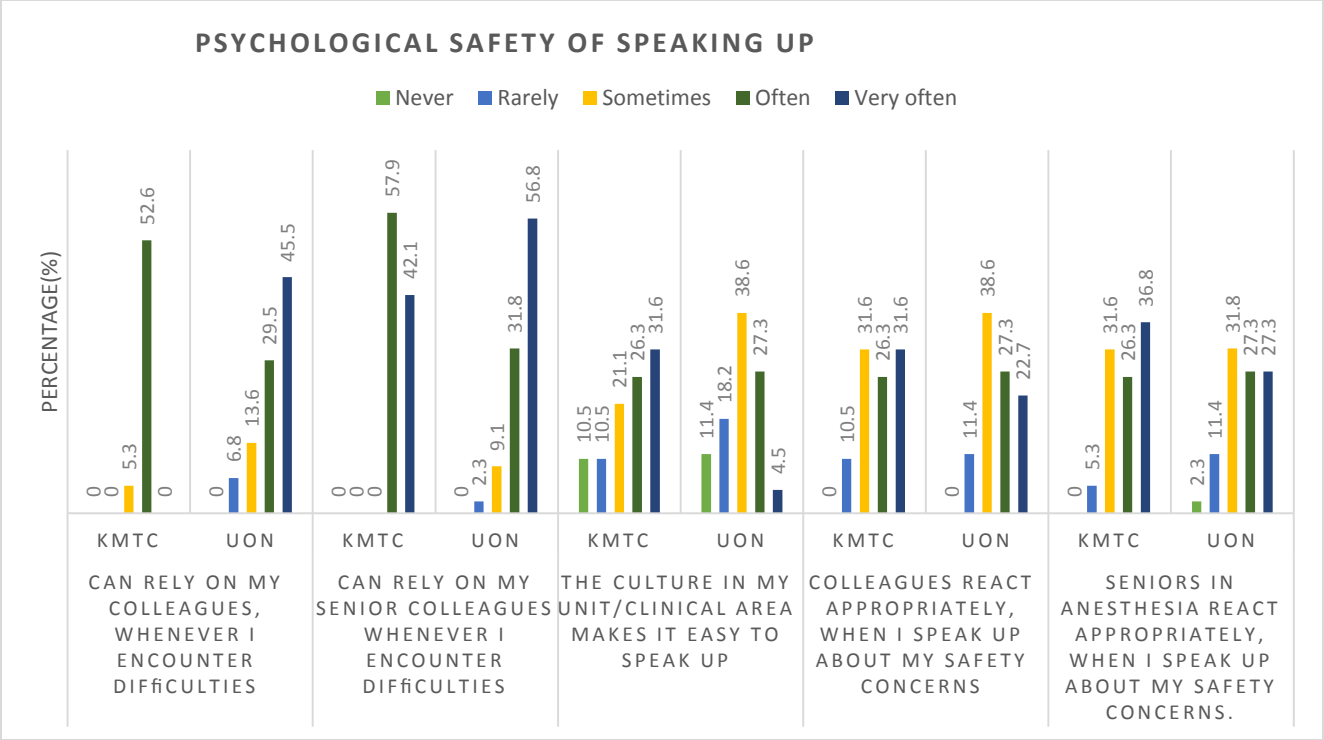
Figure 5: Psychological safety of speaking up

On multivariate analysis, it was noted that the respondents from both institutions reported a favorable psychological safety of speaking up (table 5). There was no statistically significant difference.

Table 5: Psychological safety of speaking up bivariate analysis

	Variable (Psychological safety of speaking up	Total (%)	KMTC (%)	UON (%)
PSS1	I can rely on my colleagues (anesthetists and/or nurses), whenever I encounter difficulties in my work.	63 (100.0)	19 (100.0)	44 (100.0)
PSS2	I can rely on my senior colleagues whenever I encounter difficulties in my work.	63 (100.0)	19 (100.0)	44 (100.0)
PSS3	The culture in my unit/clinical area makes it easy to speak up about patient safety concerns.	56 (88.9)	17 (89.5)	39 (88.6)

PSS4	My colleagues (anesthetists and/or nurses) react appropriately, when I speak up about my concerns about patient safety.	63 (100.0)	19 (100.0)	44 (100.0)
PSS5	My seniors in anesthesia react appropriately, when I speak up about my patient safety concerns.	62 (98.4)	19 (100.0)	43 (97.7)

5.4.2 ENCOURAGING ENVIRONMENT FOR SPEAKING UP

There are 3 questions in this scale. It seeks to determine if there is a reciprocal relationship among colleagues as well as with the seniors that allows members of the team to speak up on patient safety concerns freely. The trainees reported that they have at one point observed their colleague speak out for patient safety at 67.2%. Additionally, majority of the respondents felt that they are encouraged by both their colleagues (84.1%) and seniors to speak out (90.4%). Generally, the study notes a favorable environment with 81.8% and 92.97% of KMTC and UON trainees reporting an encouraging environment.

Further analysis on the encouraging environment for speaking up showed no inter- institutional variation (Table 6).

Table 6: Encouraging environment to speaking up

	Variable (Encouraging environment for speaking up)	Total (%)	KMTC (%)	UON (%)
EES1	In my unit/clinical area, I observe others speaking up about their patient safety concerns.	61 (96.8)	19 (100.0)	42 (95.5)
EES2	I am encouraged by my colleagues (anesthetists and/or nurses) to speak up about patient safety concerns.	58 (92.1)	17 (89.5)	41 (93.2)
EES3	I am encouraged by my shift senior to speak up about patient safety concerns.	61 (96.8)	19 (100.0)	42 (95.5)

5.4.3 RESIGNATION SCALE

There are 3 questions on this scale, they aim at establishing if the respondent has to repetitively remind colleagues of patient safety rules, how often they feel "unheard" after raising patient

safety concerns and how often they have difficulty speaking up. 46% of the study cohort reported that they rarely have to remind their colleagues of the same issues over and over (Figure 7). 31.7% often/ very often get discouraged as nothing changes when they voice their patient safety concerns while 33.8% of them reported difficulty raising their concerns (Figure 6). Overall, resignation was variable, with 31.6% in KMTC and 63.35% in the UON students.
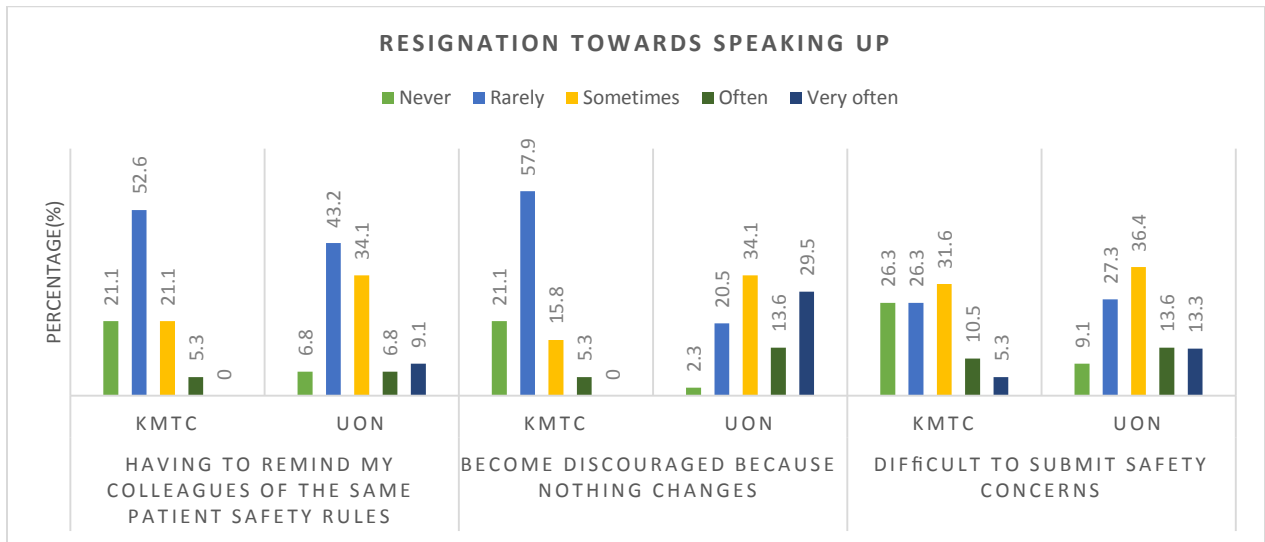
Figure 6: Resignation towards speaking up

On all the parameters assessed, respondents from both UON and KMTC showed a trend towards resignation to speaking up, with only one parameter among UON respondents being statistically significant, that is, feeling discouraged because nothing changes after expressing their safety concerns (Table 7).

Table 7: Resignation to speaking up

Variable		Total (%)	KMTC (%)	UON (%)
RES1	I find myself having to remind my colleagues of the same patient safety rules again and again	56 (88.9)	15 (78.9)	41 (93.2)

| RES2 | Sometimes I become discouraged because nothing changes after expressing my patient safety concerns. | 58 (92.1) | 15 (78.9) | 43 (97.7)* |
| RES3 | When I have concerns regarding patient safety, it is difficult to submit them. | 54 (85.7) | 14 (73.7) | 40 (90.9) |

*p value 0.026

5.5 FACTORS ASSOCIATED WITH SPEAKING UP AND WITHHOLDING VOICE

Respondents aged above 30 years were more likely to speak up compared to those under 30 years and also more likely to withhold voice although this was not found to be statistically significant. The effect of gender was varied, with male respondents more likely to speak up and females more inclined to withhold voice with no statistical significance observed. Being from UON was associated with a trend towards speaking up, particularly among year 4 residents and statistically significant withholding voice behavior. Comparison between the speaking up safety environment and the perceived concerns with both withholding voice and speaking up did not yield any association in our study population (Table 8).

Table 8: Factors affecting speaking up

Variable	Speaking up (>=median (%)	Withholding voice >=median (%)
Age in years		
25-30	10 (45.5)	12 (54.5)
30-35	19 (55.9)	24 (70.6)
>35	4 (57.1)	6 (85.7)
Gender		
Male	18 (58.1)	20 (64.5)
Female	15 (46.9)	22 (68.8)
Institution		
KMTC	9 (47.4)	8 (42.1)*
UON	24 (54.5)	34 (77.3)
Year of training		
1	10 (50.0)**	12 (60.0)

2	8 (47.1)	10 (58.8)
3	4 (30.8)	10 (76.9)
4	11 (84.6)	10 (76.9)
PC, median (IQR)	4 (3-4)	4 (3-4)
PSS, median (IQR)	4 (2-4)	4 (3-5)
EES, median (IQR)	4 (2-5)	4 (2-4)
RES, median (IQR)	3 (3-4)	3.5 (3-4)

*p value 0.07   **p value 0.044

5.6 THE CASE VIGNETTE AND APPROACH TO SENIOR COLLEAGUES

The anesthesia trainees were the subjected to a clinical case vignette based on a practical example of an erroneous esophageal intubation by a senior colleague. Following which they are to answer 4 questions on how realistic they thought the scenario was, likelihood of poor patient outcome if nobody intervened, the possibility that they would alert the senior of the error and the approach they would take to raise the patient safety concern. 14.9% of residents from UON felt that the scenario was unlikely to be realistic while 100% of the KMTC students reported that this was a likely scenario (Figure 7). Majority of the study cohort identified the situation as being hazardous to the patient, but 21.3% of KMTC and 18.2% of UON trainees still would not alert the senior of the esophageal intubation (Figure 7). Of those who would alert the senior of the error, majority opted for indirect communication rather than crisp advocacy which was used by 11 respondents (Table 9).
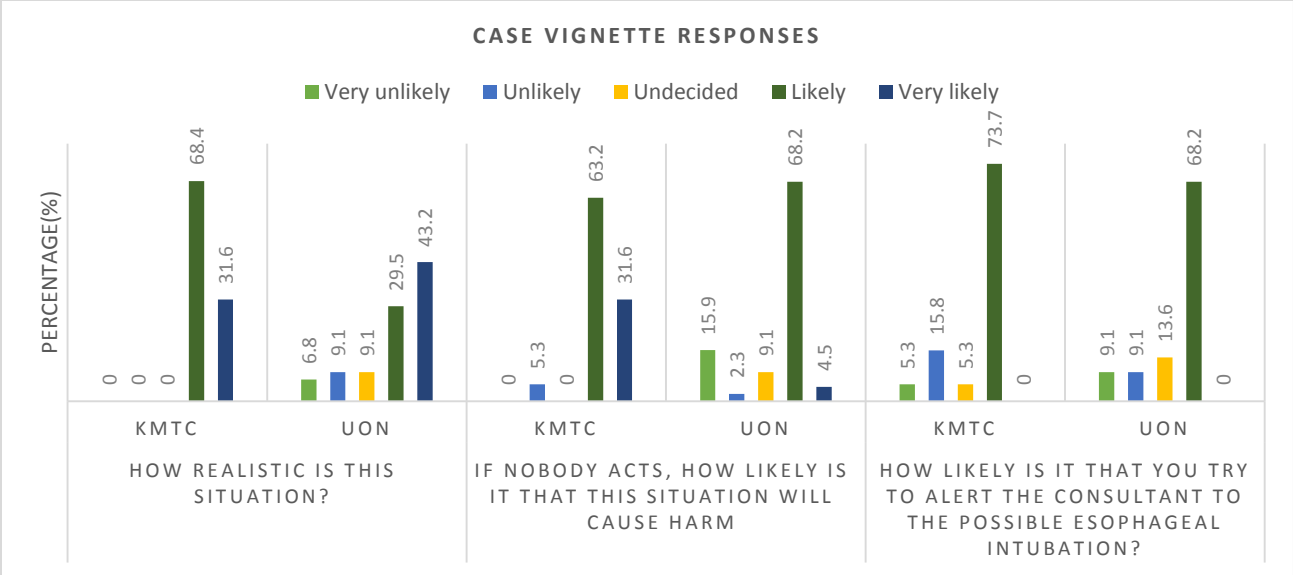
Figure 7: Case vignette responses

Table 9: Table showing responses to the approach to senior colleagues

Variable	KMTC (%)	UON (%)
Say something indirect e.g. "saturations are 85%"	5 (26.3)	25 (56.8)
Probe e.g. "I am concerned about the low saturations"	4 (21.1)	9 (20.5)
Probe repeatedly with initiation of discussion e.g. "I am uncomfortable with these low saturations; shall we ventilate the patient?	5 (26.3)	9 (20.5)
Use crisp advocacy inquiry: you need to bag-mask ventilate	6 (31.6)	5 (11.4)

5.7 BARRIERS TO SPEAKING OUT FOR PATIENT SAFETY

This was an open ended question in which the respondents stated in their own words the most commonly encountered barriers to speaking up about patient safety. Table 10.

The most commonly identified barrier was perceived personal safety of speaking up 39%, particularly victimization by senior colleagues. The other factors were individual factors (clinical

skills 17.1% and interpersonal skills 14.6%), efficacy of speaking up 9.7% and contextual factors 14.6%.

Table 10: Barriers to speaking out

	Examples	Percentage of Respondents (N=41)
Perceived personal safety of speaking up		
Consequences of speaking up	Victimization	16 (39%)
	`will say indirectly to avoid victimization"	
	Intimidation	
Hierarchy	"Difficult to speak up to senior"	2 (4.8%)
Individual Factors		
Clinical skills	"feel inexperienced"	7 (17.1%)
	"being the only one of contrary opinion"	
Interpersonal skills	"unfriendly team members"	6 (14.6%)
	"irresponsible members"	

	"poor communication "	
	"poor team coordinator"	
Efficacy of speaking up		
Powerlessness	"feeling Voiceless"	4 (9.7%)
	"nothing will be done"	
	"only one with a contrary opinion"	
Contextual factors		
Work related barriers	"lack of equipment and support"	6 (14.6%)
	"left unsupervised"	
	"poor referral system"	

CHAPTER 6: DISCUSSION

This study provides new insight into the speaking out behavior among the anesthesia trainees in the Kenyatta National Hospital.

The perceived concerns scale revealed that majority (92.1%) of the respondents reported that they had observed specific safety concerns that would cause harm to the patient if uncaptured. Additionally, 77.8% of the respondents reported that they noticed that their work place colleagues had not followed important patient safety rules. The high level of perceived concerns identified in our study does not come as a surprise as similar levels have been reported globally(37) with one study in Switzerland reporting rates as high as 62- 80%(14). One study notably reiterated the fact that healthcare systems have been known to un-intentionally cause harm to patients seeking help(38). Although the actual number of medical errors is not

known, it is estimated that about 10% of hospitalized patients incur injuries related to medical management, with about half of these being avoidable(39). Although some studies demonstrate inter- disciplinary variation in the perceived safety concerns, our study did not show any difference between the residents and the HND students. In a study done in the USA Physicians rated potential harm in common clinical scenarios lower than nurses did (7.5 vs. 8.4 on 2–10 scale; p<0.001). Additionally, although the level of perceived harm to the patient has been shown to increase the likelihood to speak up, just like in our study, they also demonstrated that some participants (12%) indicated they were unlikely to speak up despite perceiving high potential for harm in certain situations(12). The predominating, overarching motivator for speaking up for a vast majority of respondents in a study done by Schwappach et, al was to protect patients from harm(15), a finding that has been upheld in our study.

The rate of withholding voice among the anesthesia trainees was assessed using 4 questions. Over half (52.4%) reported that they have at one point chosen not to bring up either specific patient safety concerns or share improvement ideas with other team members. 25.4% reported that they have at some point chosen to remain silent about a safety incident that could otherwise have been avoided while 55.4% of the anesthesia trainees reported that they opted not address a colleague who had made an error in the last 4 weeks. In our study population, withholding ideas for improving patient safety among anesthesia residents from the University of Nairobi was found to be statistically significant P < 0.001. The rate of withholding voice is higher than what has been reported in other studies at 39.5 – 49.4%. A study done in Switzerland revealed withholding voice among health workers to be 19 – 39%(14). The hesitancy to speak up contributes significantly to communication errors within the health care system(36). Factors reported to result in withholding voice include: possession of high level interpersonal, communication and coping skills(1).

The possibility of speaking up in the last 4 weeks was assessed using 4 questions that revealed that: 87.3% addressed an error while 73% addressed a colleague doing an error and 84.1% reported that they prevented an error from occurring by speaking up for patient safety. This is similar to the findings of a study done by Shwappach et, al which reported speaking up in 55 –

76% of respondents(14) compared to study which found the overall speaking up behavior at 80.2- 83.3%.

The speaking out climate was evaluated using 3 scales namely: the psychological safety of speaking up, encouraging environment and the resignation scale. Considering each scale individually, the study revealed that there was positive psychological safety to speaking up as evidenced by the fact that the respondents reported that they can rely on colleagues (95.2%) and seniors (98.4%) when faced with difficulties at work. Moreover, appropriate response to patient safety concerns raised was reported among colleagues (88.9%) and seniors (96.9%). Psychological safety within health care systems is extremely vital as it enables team members to take inter-personal risks such as speaking up, asking questions and sharing ideas. It is also associated with improved team learning, work place creativity and increased team performance(40). Although those who reported a favorable psychological safety to speaking up trended towards speaking up and less withholding voice behavior, it was not statistically significant.

An encouraging environment was also reported by most of the respondents with (77.8%) reporting that they witness colleagues speaking out, and are encouraged by both colleagues (84.1%) and seniors (90.4%) to speak out for patient safety. Studies have shown that there is a strong positive relationship between an encouraging work environment and speaking up(14).

Resignation was reported in over half the respondents as they cited that they feel discouraged when they report patient safety concerns and nothing is done (58.3%), they have to keep reminding their colleagues of patient safety rules (42.9%) and they find it difficult to submit their opinions (58.7%). Lack of response and impact of the medical practitioners input has been cited many times as a significant barrier to speaking out(41). Respondents from both participating learning institutions reported resignation to speaking up with the feeling of discouragement when nothing is done about their reported safety concerns being statistically significant P < 0,026.

Using the multivariate analysis, the study noted that the factors affecting speaking out behavior were: age more than 30 years, male gender, year 4 residents from the university of Nairobi,

although only the latter was found to be statistically significant P < 0.044. Withholding voice behavior was associated with being from the university of Nairobi P < 0.007.

The airway scenario case vignette on the erroneous esophageal intubation was graded according to the adapted verbal challenges grading score. Majority of the respondents opted to raise the concern on the erroneous esophageal intubation by either saying something indirect (47.6%) or probing once (20.6%) or probing repeatedly (22.2%). Only 17.5% took the recommended option of crisp advocacy. In similar studies, it was established that the reasons behind not challenging the senior included: personality of both the senior and the junior, hierarchical structure of the medical team, maintaining or establishing relationships, ingrained respect for the seniors or avoiding conflict within the team(2). The most commonly identified barriers to speaking out in our study cohort were: perceived consequences of speaking up (43.8%), individual factors (31.7%) and perceived efficacy of speaking up (24.3%). These findings are similar to what was found in a study conducted among pediatric residents that showed the following commonly identified barriers: perceived personal safety of speaking up (consequences, intimidation, and hierarchy concerns), individual barriers (communication skills and confidence), perceived efficacy of speaking up (feeling powerless), and contextual factors (high workload)(7).

6.1 STUDY LIMITATIONS

The study being an online questionnaire, it is possible that scales of concerns were interpreted differently amongst respondents.

The study was done in only one discipline therefore the results cannot be generalized for other disciplines.

6.2 CONCLUSION

- The prevalence of speaking out behavior was 80.2- 83.2% among KMTC and UON residents respectively and was enhanced by the anticipation of danger posed to the patient.

- The speaking out environment for the anesthesia trainees is favorable, as majority of the respondents reported psychological safety 84.2% - 86.3% and an encouraging environment 81.8- 92.97%.

- Withholding voice behavior is common in our study population at 39.5 – 49.4%, with the withholding information that could benefit the patient being statistically significant $P < 0.001$

The top 3 barriers to speaking out for patient safety were:

- Perceived consequences of speaking up (43.8%),
- Individual factors (31.7%)
- Perceived efficacy of speaking up

6.3 RECOMMENDATIONS

A follow up study involving the entire multidisciplinary theatre team not only anesthetists

Emphasis on team work and a more enabling environment so as to reduce withholding voice behavior.

Future areas of research need to examine specific interventions that can help health-care professionals speak up and train healthcare leadership in how to respond to and create better cultures that foster speaking up.

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CHAPTER 8 APPENDICES

8.1 (A) PARTICIPANT INFORMATION SHEET

Study title − SPEAKING UP FOR PATIENT SAFETY AND ASSOCIATED FACTORS AMONG ANAESTHESIA TRAINEES IN KENYA.

Name of investigator and institution: Dr. Joe Mugambi Ambutu (University of Nairobi).

Name of sponsor: self

Study background/ Introduction

You are invited to participate in the study because you are an anesthesia trainee. It is important that you understand why the research is being done and what it will involve. Please take the time to read through and consider the information carefully before you decide whether to participate. I as the principal investigator is available if anything is unclear and if you need any additional information. To take part in the study you may be required to provide information on your age gender and year of study. Your participation in this study is voluntary. Information will be gathered in the form of an online survey/questionnaire sent to you via email or any other suitable social platform i.e. WhatsApp. The questionnaire is expected to take approximately 10 minutes of your time at no cost to you as the participant.

Broad objective/ Purpose of the study

The purpose of the study is to find out the speaking up for patient safety behavior among anesthesia residents in Kenya. In particular, the study will focus on the barriers and enablers to speaking up, speaking up culture and climate at the respective workplaces. This information will be key in improving communication among anesthetists for the improvement of patient safety.

Study procedure

If you agree to participate in the study you will be asked to fill an online self-administered questionnaire.

Voluntariness of participation

Your participation in this study is purely at your own will or discretion.

Confidentiality

The information we obtain from you will be treated with the utmost confidentiality. You will be assigned unique numbers linked to your name. Thus your name will not appear on any data form**.**

Benefits for the participant

You will not be charged for participating in this survey. The information gathered will be confidential.

Study risks

There are no risks you will be exposed to by participating in this study.

Rights to withdrawal

Please note that you are free to leave the study at any point and this shall not attract any consequences.

If you have any questions you can contact: -

The Chairman, KNH/UON – Ethics and Research Committee

P.O BOX 20723-00202, Nairobi   or   Tel. 020 2726300 ext 44355

Or

Dr. Joe Mugambi Ambutu

P.O BOX 4924-00200 Nairobi   or   Tel 0721439832

Or you can contact my supervisors

1) DR TIMOTHY MWITI

MBChB, M.Med Anaesthesia

Consultant Anaesthesiologist and Lecturer,

University of Nairobi.

2) DR. THOMAS MUINGA CHOKWE

MBChB, M.Med Anaesthesia

Consultant Anaesthesiologist and Lecturer,

University of Nairobi.

8.2 (B) CONSENT TO PARTICIPATE IN THE STUDY

I have read and understood the information in the consent form and it has been explained to me. My questions have been answered. I am also aware that participation is voluntary and I can withdraw from the study at any time without consequences. I have agreed to participate in the study.

Name of the participant _____ Date_____

Signature of Participant _____

I confirm that I have explained the details of the research to the participant.

Researcher's Name _____

Date _____

Signature of Researcher_____

8.3 STUDY PRO-FORMA

BIODATA

Study number………………………

Name (initials)………………………

Physical address……………………

Date of Enrollment…………………..

SOCIAL DEMOGRAPHIC DATA

1. Age (in years) …………….

2. Gender *(tick one)* ☐ Male   ☐ Female

PROFESSIONAL INFORMATION

3. Institution of training   ☐ UON   ☐   KMTC   ☐   AKUH   ☐ MTRH

3. Year of training   ☐1   ☐2   ☐3   ☐4

8.4 QUESTIONNAIRE

SECTION 1: INCIDENCE OF SPEAKING OUT BEHAVIOUR

In everyday work, it sometimes happens that things go wrong and risks to patients arise. This could be a result of medication error during the administration of anesthesia, intubation, poor sterile technique or missing documentation. Over the last 4weeks, how often…

Perceived concerns

1. Have you had specific concerns about patient safety?

☐Never ☐Rarely ☐Sometimes ☐Often ☐ Very Often

2. Have you observed an error which if uncaptured could be harmful to patients?

☐Never ☐Rarely ☐Sometimes ☐Often ☐ Very Often

3. Have you noticed that your workplace colleagues haven't followed important patient safety rules, intentionally or unintentionally?

☐Never ☐Rarely ☐Sometimes ☐Often ☐ Very Often

Withholding voice

4. Did you choose not to bring up your specific concerns about patient safety?

☐Never ☐Rarely ☐Sometimes ☐Often ☐ Very Often

5. Did you keep ideas for improving patient safety in your unit to yourself?

☐Never ☐Rarely ☐Sometimes ☐Often ☐ Very Often

6. Did you remain silent when you had information that might have prevented a safety incident in your unit?

☐Never ☐Rarely ☐Sometimes ☐Often ☐ Very Often

7. …did you not address a colleague (anesthetists and/or nurses) If he/she didn't follow important patient safety rules, intentionally or unintentionally?

□Never   □Rarely   □Sometimes   □Often   □ Very Often

Speaking up

8. Did you bring up specific concerns about patient safety?

□Never   □Rarely   □Sometimes   □Often   □Very Often

9. Did you address an error which If uncaptured could be harmful to patients?

□Never   □Rarely   □Sometimes   □Often   □ Very Often

10. Did you address a colleague (anesthetists and/or nurses) when he/she didn't follow important patient safety rules, intentionally or unintentionally?

□Never   □Rarely   □Sometimes   □Often   □ Very Often

11. Did you prevent an incident from occurring as a consequence of bringing up specific concerns about patient safety?

□Never   □Rarely   □Sometimes   □Often   □ Very Often

SECTION 2: SPEAKING UP CLIMATE

Psychological Safety for Speaking up

1. I can rely on my colleagues (anesthetists and/or nurses), whenever I encounter difficulties in my work.
    □Never   □Rarely   □Sometimes   □Often   □Very Often

2. I can rely on my senior colleagues whenever I encounter difficulties in my work.
    □Never   □Rarely   □Sometimes   □Often   □Very Often

3. The culture in my unit/clinical area makes it easy to speak up about patient safety concerns.
    □Never   □Rarely   □Sometimes   □Often   □Very Often

4. My colleagues (anesthetists and/or nurses) react appropriately when I speak up about my concerns about patient safety.

    □Never   □Rarely   □Sometimes   □Often   □Very Often

5. My seniors in anesthesia react appropriately when I speak up about my patient safety concerns.

    □Never   □Rarely   □Sometimes   □Often   □Very Often

Encouraging Environment for Speaking up

6. In my unit/clinical area, I observe others speaking up about their patient safety concerns.

    □Never   □Rarely   □Sometimes   □Often   □Very Often

7. I am encouraged by my colleagues (anesthetists and/or nurses) to speak up about patient safety concerns.

    □Never   □Rarely   □Sometimes   □Often   □Very Often

8. I am encouraged by my shift senior to speak up about patient safety concerns.

    □Never   □Rarely   □Sometimes   □Often   □Very Often

Resignation towards Speaking up

9. I find myself having to remind my colleagues of the same patient safety rules again and again.

   □Never   □Rarely   □Sometimes   □Often   □Very Often

10. Sometimes I become discouraged because nothing changes after expressing my patient safety concerns.

   □Never   □Rarely   □Sometimes   □Often   □Very Often

11. When I have concerns regarding patient safety, it is difficult to submit them.

   □Never   □Rarely   □Sometimes   □Often   □Very Often

SECTION 3:

You are in theatre about to begin an elective Total Abdominal hysterectomy case with an anticipated difficult airway. During induction, the senior anesthetist takes charge of the airway. Multiple attempts at tracheal intubation are made unsuccessfully. You realize dropping oxygen saturation and bradycardia.

1. How realistic is this situation?

□Very Unlikely □Unlikely □Undecided □Likely □Very Likely

2. If nobody acts, how likely is it that this situation will cause harm to the patient?

□Very Unlikely □Unlikely □Undecided □Likely □Very Likely

3. How likely is it that you try to alert the consultant to the possible esophageal intubation?

□Very Unlikely □Unlikely □Undecided □Likely □Very Likely

4. Which of the following actions are you likely to take?

□ Say nothing

□ Say something indirect e.g. "saturations are 85%"

□ probe e.g. "I am concerned about the low saturations"

□ probe repeatedly with the initiation of a discussion e.g. "I am uncomfortable with these low saturations; shall we ventilate the patient?

□ use crisp advocacy inquiry: you need to bag-mask ventilate

5. What are your top 3 barriers to speaking up for patient safety?