

Project Title

Theory of Change EMPOWERment-Tracheostomy Training Program

Project Lead and Members

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Organisation(s) Involved

Ng Teng Fong General Hospital

Healthcare Family Group Involved in this Project

Medical, Allied Health, Nursing

Applicable Specialty or Discipline

Respiratory Therapy

Aims

The program aims to:

- (1) Improve tracheostomy knowledge, skills and confidence by achieving at least an average of 80% across these three areas.
- (2) Reduce adverse events, length of stay, and time to decannulation, increase speaking valve use/spigot trials and facilitate patient communication for tracheostomised patients.
- (3) Revamp tracheostomy training for healthcare professionals to hybrid learning. It is the first time this has been done for skill based training. It reduces from 1.5 DAYS to 1.5 hours on e-learn (reading at their own time) and another 1 hour on site simulation training, and have standardised care for tracheostomised patients.

Background

See poster appended/ below

Methods

See poster appended/ below

Results

See poster appended/ below

Lessons Learnt

- The project demonstrated that using E Learn is essential coupled with having hands on and open communication experiences enhances the educational value of web based education in training psychomotor skills, increase in knowledge and confidence.
- Alter the 'see one, do one, teach one' philosophy to a safer 'see one, simulate many, do one, teach one' empowerment Theory of Change model.

Conclusion

See poster appended/ below

Project Category

Training & Education

Learning Approach, Simulated Training

Keywords

Tracheostomy Training Program, E-Learn

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THEORY OF CHANGE EMPOWERMENT-TRACHEOSTOMY TRAINING PROGRAM

- ✓ SAFETY
- ✓ QUALITY

- ✓ PRODUCTIVITY
- ✓ COST

☐ PATIENT EXPERIENCE

MEMBERS: ONG WEI JUN DAN, SHARANIE BALASUNDARAM, CHRISTOPHER SALIBA, EVELYN DINO, IMELDA PASION, JULIPIE MANALANSAN, ANNA TRAJICO, CLAIRE WANG, MOHAMAD AHMADDILLAH, DR. ADELIN TAN
PATRICIA LEONG – ON BEHALF OF ICU NURSES’ PARTICIPANTS,
FAUZIAH JABIL – ON BEHALF OF MEDICAL WARD NURSES’ PARTICIPANTS
 ACKNOWLEDGEMENT: NTFGH RESPIRATORY THERAPISTS AND RESPIRATORY THERAPIST ASSISTANTS

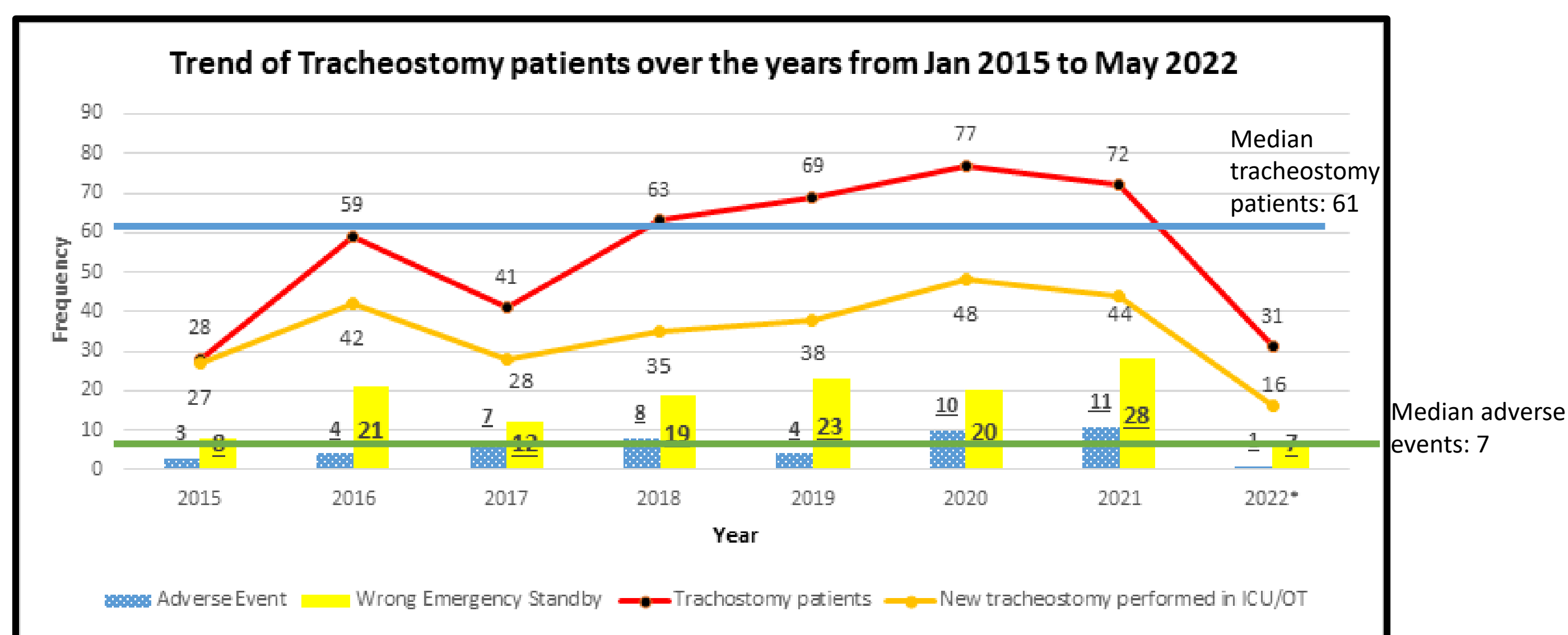
Define Problem, Set Aim

Problem/Opportunity for Improvement

- Between 2020 and 2021, there were 154 tracheostomy patients. Most of them have complex medical conditions and might need assistance in tracheostomy care and management during their stay in the hospital.
- Incidences from lack of tracheostomy management had led to adverse events such as mucous plugging and tracheostomy tube dislodgement, resulting in readmission to ICU and even fatality.
- Tracheostomy training started in the foundation training in 2019, took 1.5 DAYS, and comprises lectures and on-the-job training. In 2020, due to the Covid pandemic and shortage of staffing, tracheostomy training was removed as part of the foundation training.
- The cost of an adverse event in tracheostomy will result in medical liability, hospital reputation and lawsuit.
- The program aim to:
 - (1) Improve tracheostomy knowledge, skills and confidence by achieving at least an average of 80% across these three areas.
 - (2) Reduce adverse events, length of stay, and time to decannulation, increase speaking valve use/spigot trials and facilitate patient communication for tracheostomised patients.
 - (3) Revamp tracheostomy training for healthcare professionals to hybrid learning. It is the first time this has been done for skill-based training. It reduces from 1.5 DAYS to 1.5 hours on e-learn (reading at their own time) and another 1-hour on-site simulation training, and have standardised care for tracheostomised patients.
- Our goal is to create joy at work by having staff having ample rest and receive quality training while supporting the staffing needs in the ward. The hands-on simulation session conducts during staff’s handover time and reduce the need for staff to attend training during their off days.

Background

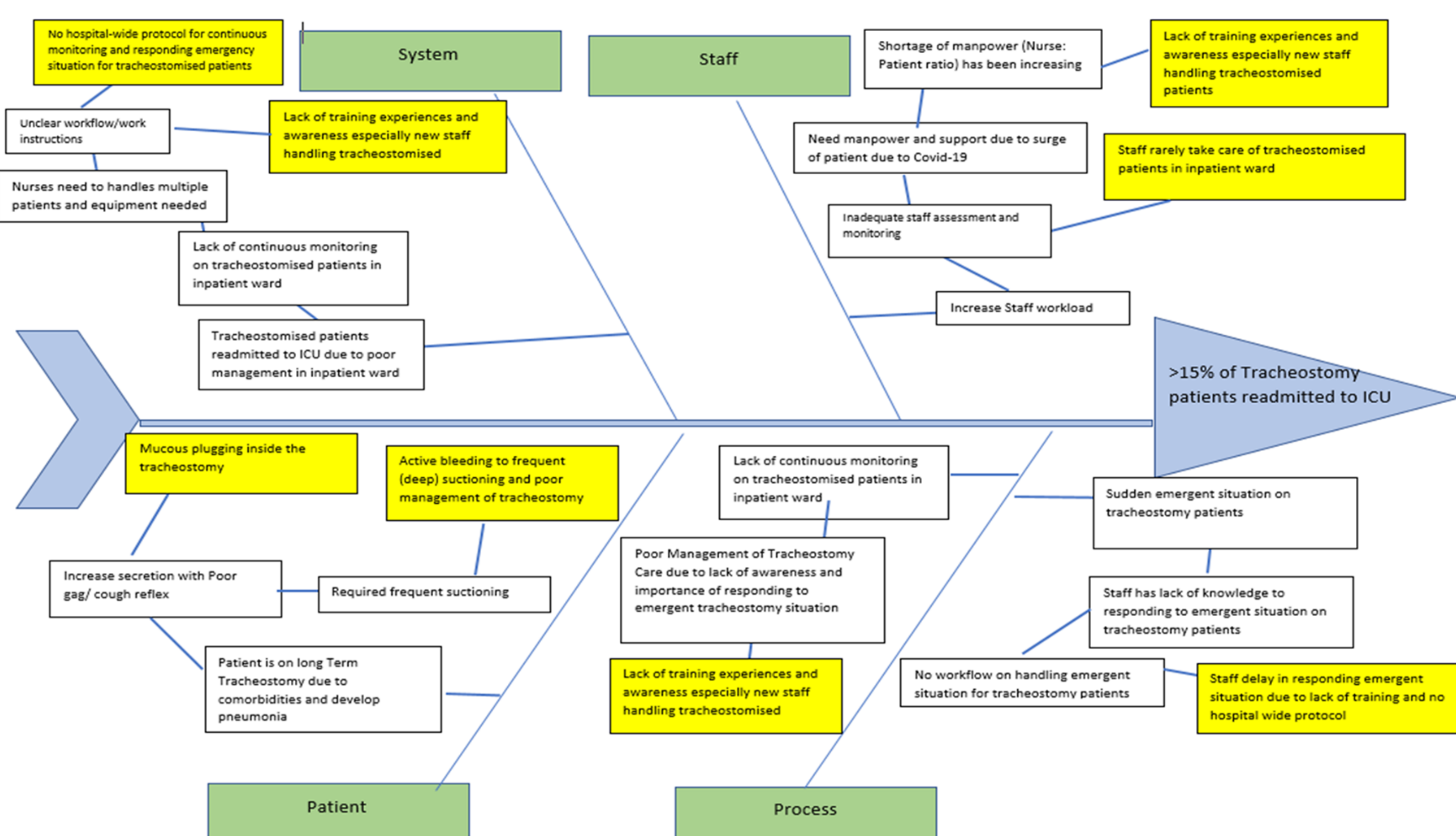
Trend of tracheostomy was taken from January 2015 to May 2022. There were a median of 61 tracheostomy patients each year with a median total of 7 adverse events each year. This accounts to an average of 11.6% of adverse events of tracheostomy patients each year.



Analyse Problem

What are the probable root causes?

A root cause analysis was performed. The scope of the problem are that staff are not confident and inexperienced due to lack of training.

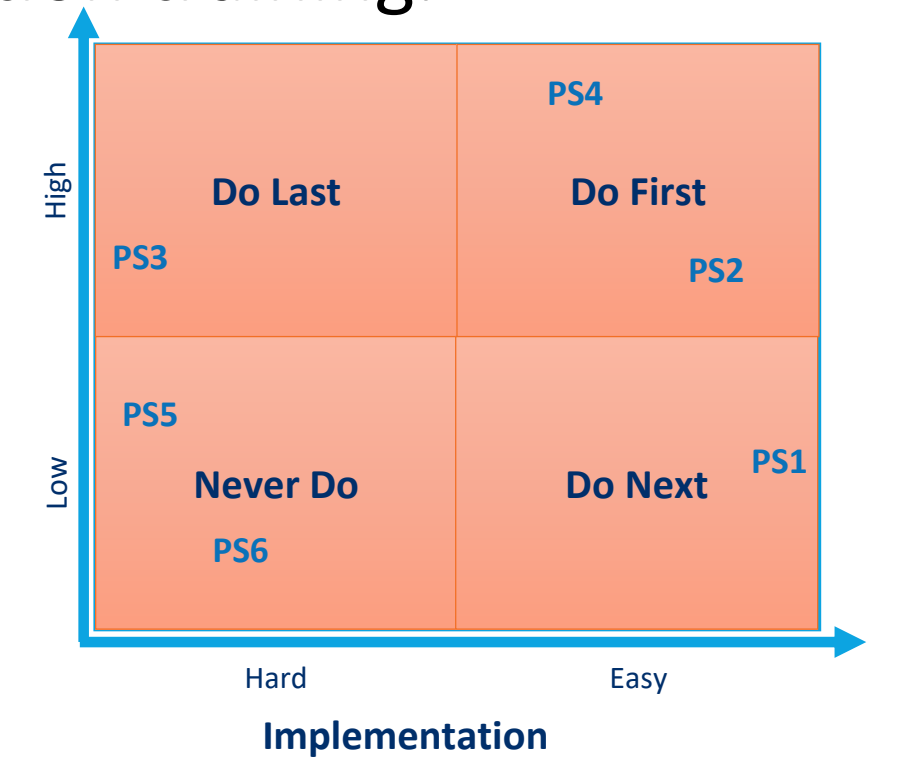


Select Changes

Aim

- We identified more than 80% of root causes based on the IRIS report and our survey that the poor tracheostomy management is due to a lack of knowledge, confidence and skills from our staff.
- We discussed with our stakeholders and identified six possible solutions through literature search on empowerment training (Saunders et al.) We implement the (“Do First Quadrant”), which incorporates both e-learn tracheostomy resources and performed assessment through hands-on simulation training.

Root Cause	Potential Solutions
Poor tracheostomy management due to lack of knowledge, skills and confidence by staff	PS1 Tracheostomy brochure and bed-head sign
	PS2 E-Learn tracheostomy resources
	PS3 On-the-job training by respiratory therapist
	PS4 E-Learn + Hands-on Simulation Training
	PS5 Dedicate tracheostomy wards
	PS6 Increase staff manpower



Test & Implement Changes

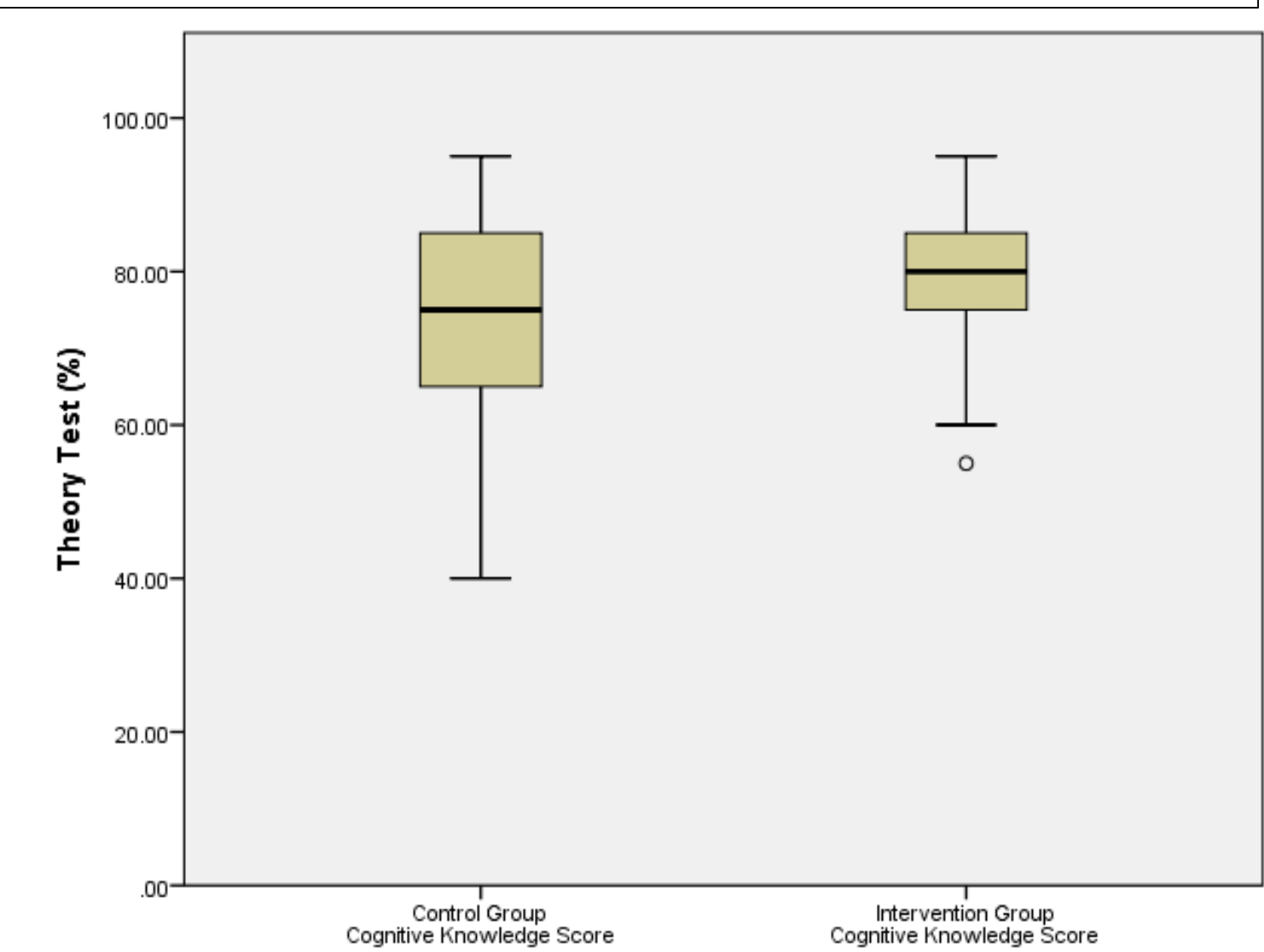
- We recruited 78 nurses volunteers in the medical ward to participate in our study from February to July 2022.
- Volunteers were randomly assigned to intervention and control group with each group have 39 participants.

Intervention in actions

Participants in the intervention group will need to attend 1 hour simulation class with pre-readings on the Tracheostomy training program taught by trained staff.

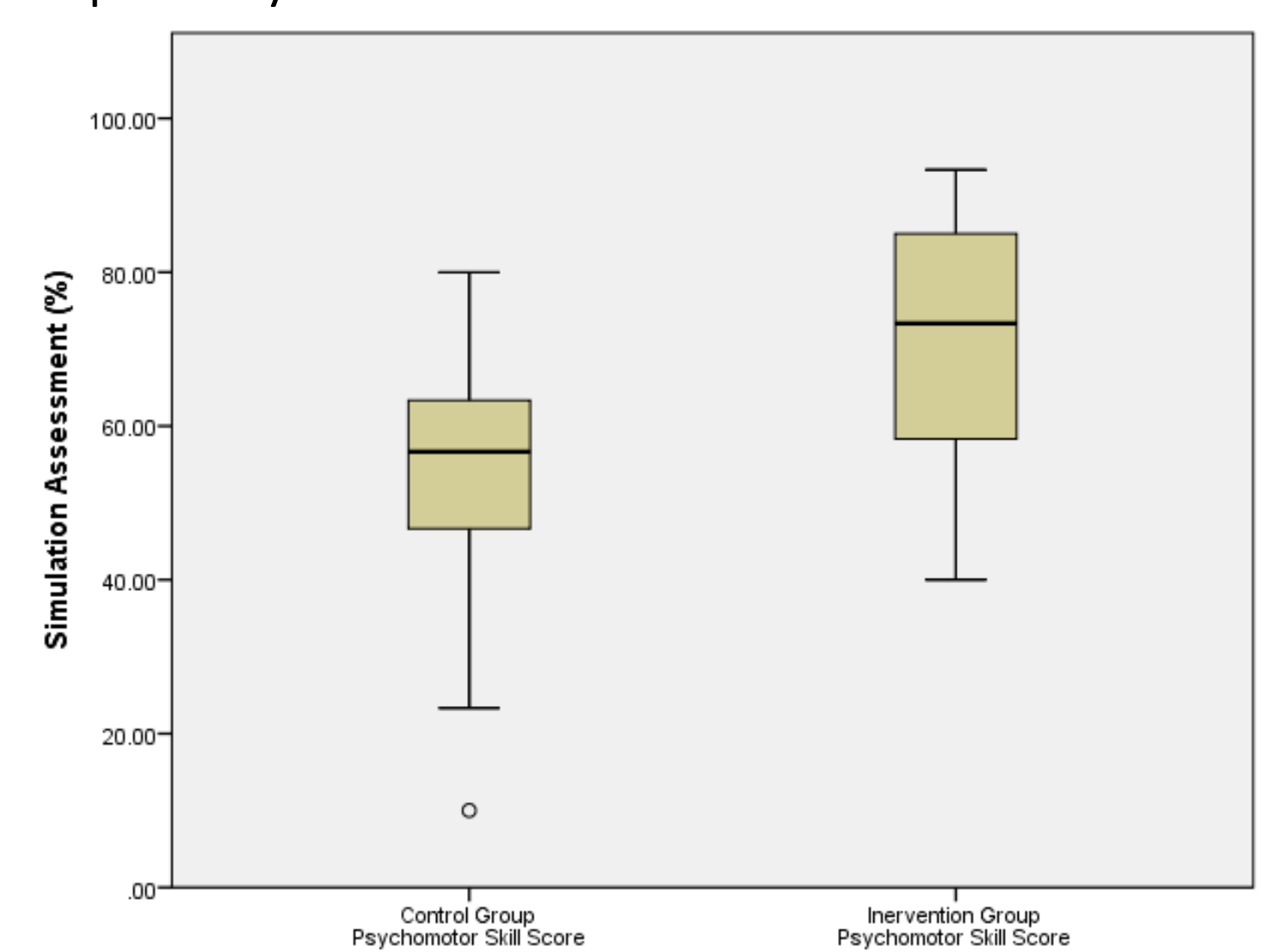
Control group

Subjects in the control group will not receive TTP (Booklet and videos) but will be required to complete baseline and post-questionnaires and participate in theory tests and clinical assessments.



The median theory test score in the control group is 75% (65-85), and the median theory test score in the intervention group is 80% (75-85); **p-value= 0.04**.

The lowest and highest score for the control group is 40% and 95%, respectively, while the intervention group's lowest and highest score is 55% and 95%, respectively.



The median psychomotor skill score in the control group is 56% (46-63), and the median theory test score in the intervention group is 73% (58-86); **p-value<0.01**.

The lowest and highest score for the control group is 10% and 80%, respectively, while the intervention group's lowest and highest score is 58% and 86%, respectively.

- Staff volunteers in the intervention group has a significant differences in the mean for both **theory test score** (74.3% vs 60.0%; p-value: <0.01) and **psychomotor skills competency** (69.5% vs 51.2%; p-value: <0.01)
- A pre-questionnaire was performed before the e-learn and on-site session, and a post-questionnaire was conducted following the participation in the debriefing session.
- Data analysis revealed that a statistically significant in confidence score were observed in both:
 - Control (pre: 1.85 ± 0.18, post: 4.15 ± 0.03; p-value <0.001) and;
 - Intervention group (pre: 2.01 ± 0.22, post: 4.23 ± 0.16; p-value <0.001).

Spread Changes, Learning Points

- The project demonstrated that using E-Learn is essential couple with having hands-on and open communication experiences enhances the educational value of web-based education in training psychomotor skills, increase in knowledge and confidence.
- Alter the ‘see one, do one, teach one’ philosophy to a safer ‘see one, simulate many, do one, teach one’ empowerment- Theory of Change model.

Next Steps:

- Promote empowerment training to all healthcare professionals.
- Ease of access to resources and preparedness for emergency situation.



References

Saunders A, Brooks J, El Alami W, et al. Empowering healthcare professionals to return to work through simulation training: addressing psychosocial needs. *BMJ Simulation and Technology Enhanced Learning*. 2020 Apr 8;bmjstel-2019.