Pilot RCT of Technology Enhanced vs. Face to Face External Cardiac Compression Training

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RQI
OVERALL SCORE
86%
Compressions: 136

Background

- Health care professionals provide poor quality external cardiac compression (ECC)
- Training in ECC skills improves survival rates
- Technology enhanced ECC training is more effective than traditional, face to face training[1]
- Current annual ECC retraining cycles do not maintain competence[1]
- High frequency, low dose training is required to prevent skill degradation[2-4]
- Few studies have examined the trajectory of skills degradation

Questions

Does technology enhanced ECC training improve skills?

At what time point do ECC skills decline below the level of competence?

Does more frequent ECC training result in skill retention?

Design

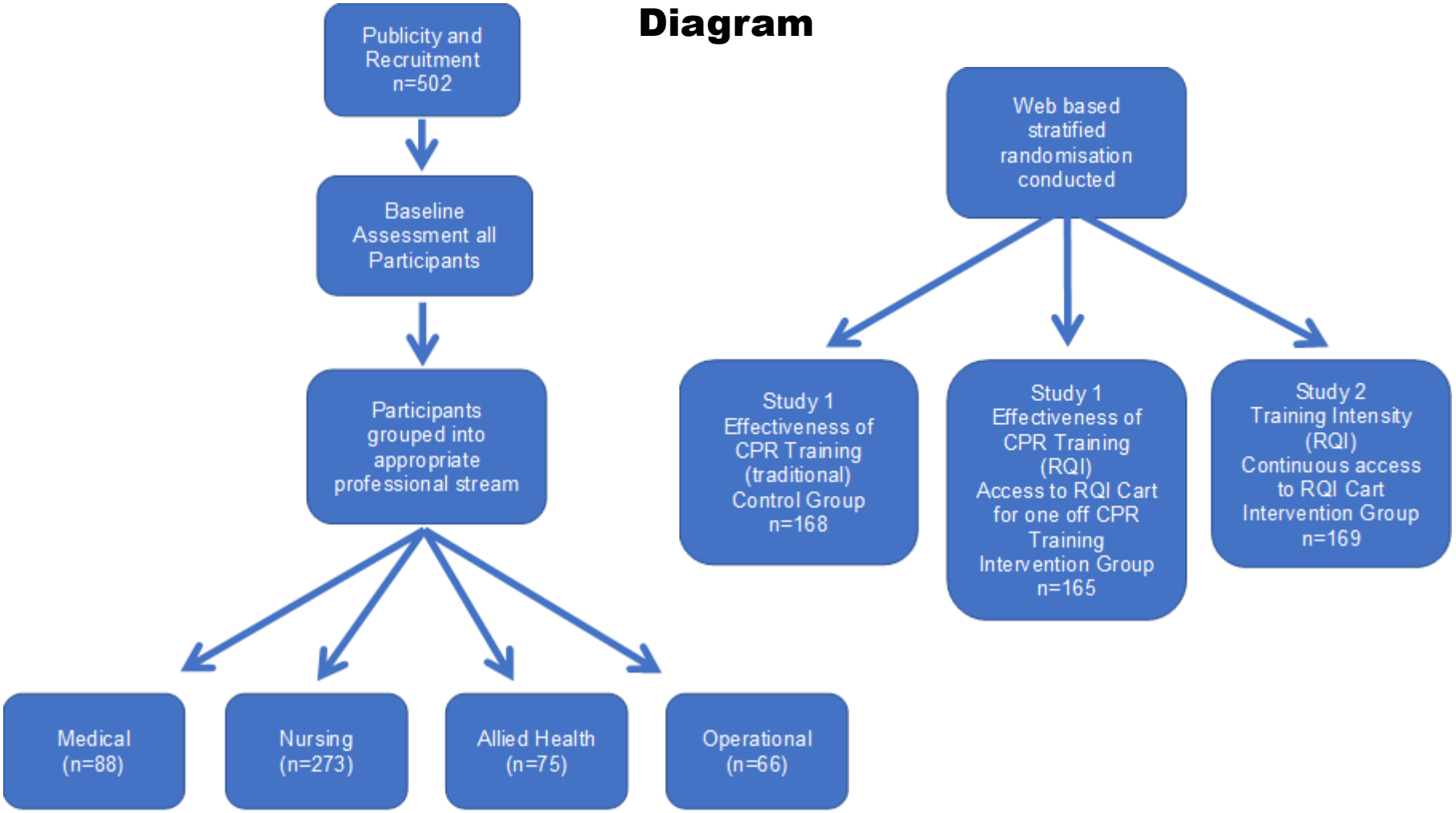
RCT – 3 armed

2 elements - Effectiveness of ECC training and skill retention; Intensity of skills practice

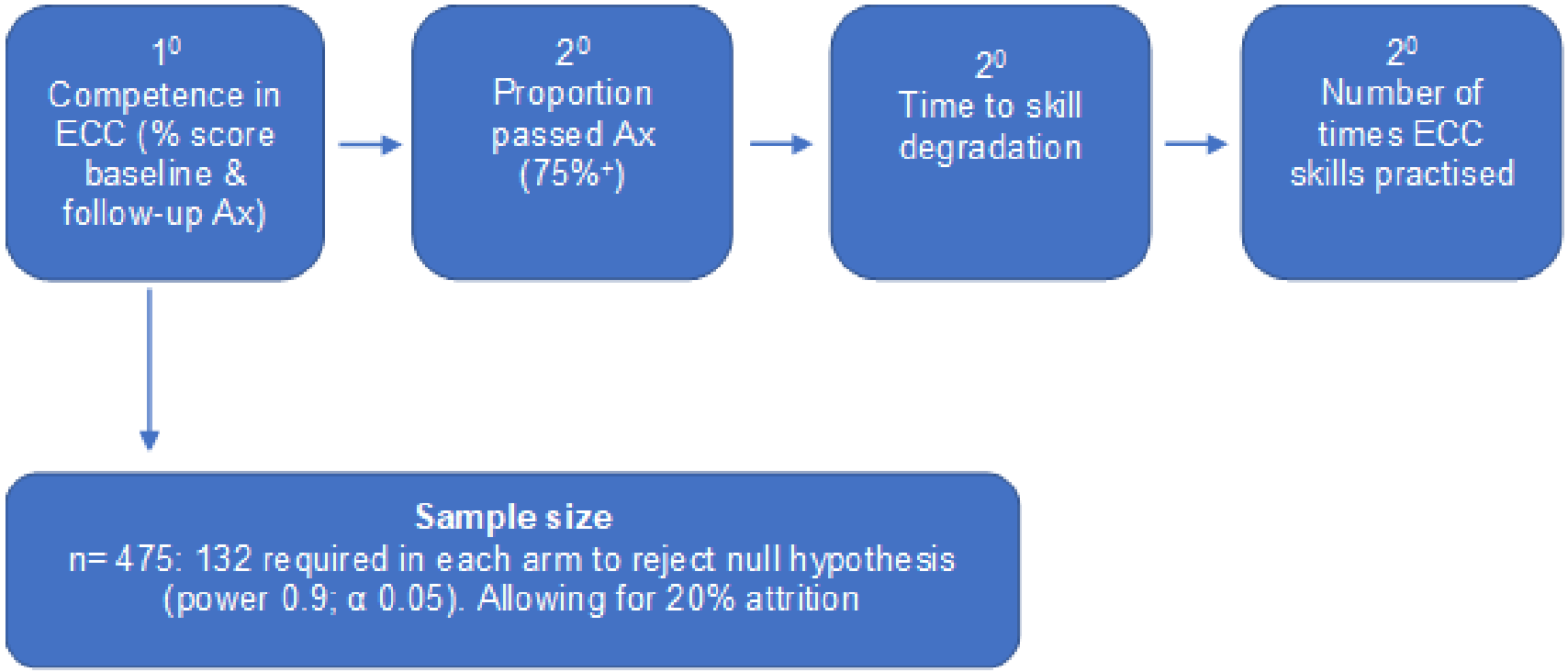
Inclusion - hospital based doctors, nurses, health practitioners and operational staff whose roles might involve ECC; permanent or temporary employees, with contracts ending after October 2017; worked in any unit in the regional Hospital; over 18 years

Exclusion - planning extended leave during the study; on a modified return to work program that excluded them from performing ECC; or, were unable to perform ECC due to pregnancy, injury or ill health

Diagram


Publicity and Recruitment n=502
Baseline Assessment all Participants
Participants grouped into appropriate professional stream
Medical (n=88)
Nursing (n=273)
Allied Health (n=75)
Operational (n=66)
Web based stratified randomisation conducted
Study 1 Effectiveness of CPR Training (traditional) Control Group n=168
Study 1 Effectiveness of CPR Training (RQI) Access to RQI Cart for one off CPR Training Intervention Group n=165
Study 2 Training Intensity (RQI) Continuous access to RQI Cart Intervention Group n=169

Outcome Measures



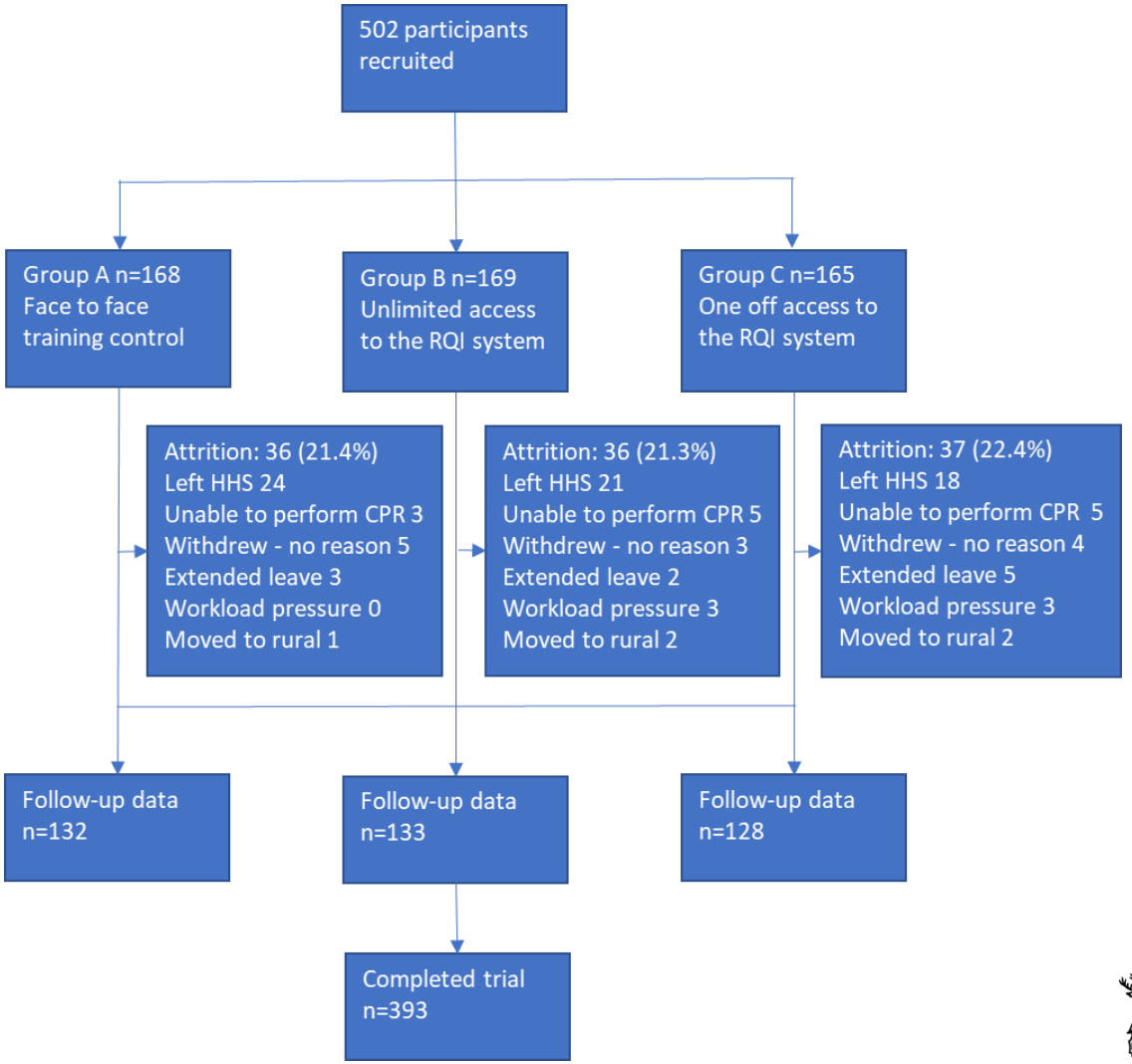
Results

Recruitment

Baseline assessment

Follow-up assessment

Trial completion



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Results

- 502 participants recruited (22% attrition)
- Baseline - 21% competent at ECC (16% HPs)
- Re-a_x - 38% competent between 3 & 12 months post training (47% HPs)
- HPs showed the greatest increase in skill level following training
- No statistically significant differences between groups in ECC skill level on re-a_x ($F=0.061$, $p=0.94$)
- 73% of participants attended ECC training
- Those who received training achieved higher competency scores than those who didn't ($U=12041$, $p<0.01$)
- No statistically significant differences between groups in time to skills degradation ($X^2=0.361$, $p=0.84$)
- 32 weeks mean time to any decline in skill score
- Participants who practised ECC skills had a statistically significant higher mean score than those who didn't ($U=16609$, $p=0.02$)

Conclusion

- ECC training increased health care staff skill levels
- Neither training modality was significantly more effective than the other
- High frequency, low dose training regime required
- Forcing function – cancellation of access card if ECC training out of date

References

1. Cheng, A, et al (2015). Improving CPR with a CPR feedback device and refresher simulations: a RCT. *JAMA Paediatrics. 1*69(2):137-44.
2. Council, and International Liaison Committee on Resuscitation (2015). Part 1: Executive Summary. International Consensus on CPR and Emergency Cardiovascular Care Science with Treatment Recommendations. *Circulation*. 132:S2–S39.
3. Mundell, W. C, et al. (2013). Simulation technology for resuscitation training: a SR & MA. *Resuscitation, 84*(9), 1174-1183.
4. Sutton, RM, et al (2011). Low-Dose, High-Frequency CPR Training Improves Skill Retention of In-Hospital Paediatric Providers. *Paediatrics.* 128:145-151.