

Impact of Unexpected Death in Simulation: Skill Retention, Stress and Emotions

Data Analysis Plan

Primary Outcome: Difference in retention of non-technical crisis resource management (CRM) skills using Ottawa Global Rating Scale (OGRS)

ANCOVA:

- Dependent variable: OGRS score (total score)
- Independent variable: Death vs. survival
- Covariates: Junior vs. senior; Acute vs. non-acute

Secondary Outcome 1: Technical CRM skills (according to checklist)

- Same Videos to be provided for primary outcome will be scored using the “Task-specific checklist” (derived from American Heart Association’s Megacode Checklist) and given a score out of 18

ANCOVA:

- Dependent variable: Task-specific checklist score (total score)
- Independent variable: Death vs. survival
- Covariates: Junior vs. senior; Acute vs. non-acute

Secondary Outcome 2: Stress

Measure 1: Salivary cortisol

Five time points (minutes passed since baseline):

1. Baseline (0 minutes) during the accommodation period at the beginning of the day
2. Before scenario (10 minutes)
3. Immediately after scenario (30 minutes)
4. 30 minutes after start of scenario (45 minutes)
5. After debrief (50 minutes)

ANCOVA:

- Dependent variable: Change in cortisol concentration (versus baseline) at a given time point (for each time point)
- Independent variable: Death vs. survival
- Covariates: Junior vs. senior; Acute vs. non-acute

Regression:

- Linear regression to determine the effects of covariates (Junior vs. senior; Acute vs. non-acute) on change in cortisol concentration over time
 - Separated into “death” and “survival” groups
 - Change in cortisol concentration will be established using the baseline reading of each participant on each day of the study (time point 1).
- Unpaired t-tests will be used to compare change in cortisol levels between the “death” group and the “survival” group at each time point.

Measure 2: State-Trait Anxiety Inventory (STAI)

- Analysis will be carried out in the same way as the cortisol measures with the STAI score taking the place of the change in cortisol concentration

Measure 3: Cognitive appraisal

- Mean cognitive appraisal ratios for each group (“death” and “survival”) at each time point will be calculated and subjected to a one-sample t-test to determine whether they are significantly different from 1.
- Unpaired t-tests will be used to compare the mean ratios of the “death” and “survival” groups at each time point.

Secondary Outcome 3: Valence of emotions

Five-point Likert scale

Repeated measures ANCOVA:

- Dependent variable: Score for each emotion
- Independent variable: Death vs. survival
- Covariates: Junior vs. senior; Acute vs. non-acute
- Time points: Initial and retention

For all Outcomes:

Relationships between all outcomes (determined by ANCOVA or by Pearson’s correlation) will be presented in a matrix table.