

Observational Teamwork Assessment for Surgery (OTAS): Content Validation and Refinement

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Background

- Effective teamwork is crucial for safe surgery; failures in teamwork are frequently implicated in adverse events to surgical patients.
- In order to provide surgical teams with the non-technical and teamwork skills required to achieve and maintain an optimal environment for surgical safety, it is essential that a tool to assess teamwork exists.
- The Observational Teamwork Assessment for Surgery (OTAS) is a tool that assesses the quality of teamwork in the Operating Room (OR).
- OTAS captures five teamwork-related behaviours: cooperation, coordination, communication, leadership, and team monitoring/situation awareness.
- OTAS Behaviour ratings are carried out for each sub-team of OR personnel (surgeons, nurses, anaesthetists) and operative phase (pre/intra/post-operative). Ratings are aided by 130 behaviour exemplars – one set of exemplars per behaviour and sub-team.

Aims

- To assess the content validity of OTAS and refine the behavioural scoring of the tool.

Methods

A two-phase approach was used.

Phase 1: Observational Study

Data were collected in 30 surgical procedures. Five teamwork behaviours (communication, leadership, co-operation, co-ordination, and monitoring) were assessed and exemplar behaviour completion rates were recorded independently by two blinded observers.

Phase 2: Refinement

Observational data highlighted a sub-set of behaviour exemplars that required further content validity assessment (low completion rates and low observer agreement). For these behaviours, a consensus procedure was carried out with 15 OR experts (5 surgeons, 5 nurses, 5 anaesthetists).

OR experts assessed the degree to which each behaviour exemplar contributed positively to teamwork (scale: 1-5) and patient safety (scale: 1-5).

A panel of experts was formed to refine the behaviour exemplars of OTAS. Refinement decisions were based on the consensus procedure and panel judgement.

Results

Phase 1: Observational Study

- 53.8% (70/130) of exemplar behaviours were frequently completed by the surgical teams (agreement between observers >70%).
- 17.7% (23/130) of exemplar behaviours were completed less often (agreement between observers >70%).
- Observer agreement was low (<70%) for the remaining 16.9% (22/130) of exemplar behaviours.

Phase 2: Refinement

- Mean ratings for teamwork and patient safety were computed for each exemplar behaviour. These means were summed to provide an overall content validity rating (range 2-10).
- Exemplar behaviours that were rated less relevant to teamwork by the 15 OR experts and were deemed less relevant or 'not observable' by the expert panel were removed.

21 exemplar behaviours were **REMOVED**
27 exemplars behaviours were **MODIFIED**
7 exemplar behaviours **REMAINED**
4 additional exemplars behaviours were **INCLUDED**.

- A one-way ANOVA revealed a significant effect of behaviour exemplar classification (removed, modified, remained/included) $F(2,56)=5.49, p=0.007$.

- Post-hoc comparisons revealed a significant difference between Removed and Remained/Included behaviour exemplars ($p=0.01$) and a significant difference between Removed and Modified behaviour exemplars ($p=0.04$).

Conclusions

- This study provides empirical evidence that the behavioural component of OTAS exhibit a high degree of content validity.
- Taken together with recent evidence on the construct validity of the tool, these findings demonstrate that OTAS is a psychometrically robust tool for capturing teamwork in the OR.

