



Managing the deteriorating patient in a simulated environment: Nursing students' knowledge, skill, and situation awareness.

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Aim

- **To measure nursing students' ability to assess and manage patient deterioration, including the relationship between:**
 - Knowledge
 - Situation awareness
 - Skill performance.

Setting





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Instruments

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- ***Participants:*** *Point of completion* Bachelor of Nursing students (n=112).
 - 51 were recruited (1.5 hour session)
- **Instruments**
 1. Validated MCQ focussing on ‘ABCs’

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Instruments:

2. Two videoed simulations *(rating skill performance real time & video rated for inter-rater reliability = k.72)*

A brief history e.g. abdo pain or post post appendectomy then:

- **Hypovolaemic shock – high information low uncertainty (easiest)**
- **Septic shock – low information – high uncertainty (hardest)**
- **Both patients deteriorated significantly at the 3 minute mark and ran for 7 minutes**



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Instruments

- 3. Situation awareness (17 questions in a scenario freeze using SAGAT)**
 - > Global e.g. is suction available?
 - > Physiological e.g. what is the heart rate?
 - > Comprehension e.g. what do you think is wrong?
 - > Prediction e.g. what do you think may happen to the heart rate?
- 4. Video review ‘photo elicitation’ (to elicit decision points and strategies + Dimensional analysis)**
- 5. Performance feedback**
- 6. Evaluation**



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Results

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Results

- **MCQ:** The average total score was 74.2% (range 46 – 100%)
- **Skill performance:** an average score of **60%** (range 30-78%).
 - With a significant improvement in scores by the second scenario ($p=.001$)
 - Skill performance decreased significantly between the first and second halves of each scenario ($p=.012$) despite the obvious cues in the later stage of each scenario.

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SCORES

- **Mean situation awareness score 59% (38-82%).**
 - > Physiological Perception 77%
 - > Projection 73%
 - > Global Situation Perception 52%
 - > Comprehension 44%
- **Situation awareness scores not influenced by age and experience.**

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Video review

- **Performance anxiety** (1 minute into the scenarios 12% remained frozen)



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Video review (continued)

- **Clinical reasoning:**
 - 65% fixated on abdominal pain (a single cue from preliminary information which obscured data assimilation)
 - 10% started CPR on a patient with a pulse
 - Up to 33% failed to seek assistance
 - The majority treated the ‘monitor’ not the patient.
 - And patients were sat up when Sats were low despite low BP (single data chunk)
- **Demographic and experience factors: had no effect on any of the ratings**

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Video review (contin)

- **Decision possibilities: 1. ignore the sign, 2. intervene or 3. seek assistance**
 - Students took any of these routes without a clear rationale for their behaviour.
- **There was no clear correlation between the accuracy of the diagnosis and help seeking behavior**

However performance improved (e.g. calls for help) when:

- **Chunks of data (e.g HR, BP, Sats) were compared**
 - i.e. not sitting up a hypovolaemic patient.
- **Data was compared against the baseline recordings (trends)**



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- **Evaluation**: Participants reported a significant improvement in their self rated level of knowledge and commented:

‘How little I observed around me whilst in a stressful situation’

‘This session was the best thing that I have done to help me with my reflections and skills and to improve my confidence.’

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Summary

- **Application of knowledge was an issue**
- **Performance decreased as patients deteriorated (including fewer vital sign measurements)**
- **Situation awareness was focussed on physiological perception but with poor prediction.**
- **Skill performance improved with practice.**
- **Performance improved when data was chunked and trends identified.**

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Conclusion

- **Satisfactory academic preparation however:**
- **Participants' poor performance of basic assessment tasks, their failure to call for assistance in many situations, and their limited data comprehension has implications for clinical practice.**
- **Repetitive high fidelity and high stakes simulation, including teaching of inductive and comparative clinical reasoning, (chunking/trends) have the potential to impact on practice.**

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Future directions – with patient actors:

- **Adult hospital based simulations - time series design.**
- **Midwifery simulations with ‘pregnancy suit’**



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Any Questions

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Full report at Nurses Board of Victoria

http://www.nbv.org.au/c/document_library/get_file?p_l_id=10327&folderId=12855&name=DLFE-1702.pdf

In press papers:

Cooper S. Kinsman L. Buykx P. McConnell-Henry T. Endacott R. Scholes J. Managing The Deteriorating Patient In A Simulated Environment: Nursing Students' Knowledge, Skill, And Situation Awareness. In Press Journal of Clinical Nursing.

Under review

- Clinical cues paper
- Dimensional analysis paper