

Simulation: the opportunity to learn through research

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Situational Awareness of Patient Deterioration in a Simulated Environment (2009)

Major grant awarded by The Nurses Board of Victoria. Australia

Ethics Approval: Monash University Standing Committee on Ethical Research in Humans

conducted in the clinical laboratory using a mannequin simulated to reflect rapid deterioration into
1) hypovolaemic and 2) septic shock

mixed methods (1.5 hours)

data collected July - August 2008

final year student nurses (Australia)

aims of paper

discuss key challenges and benefits of the approach

present findings to demonstrate knowledge gain as result of participation

consider implications for research design & maintaining participant integrity



data sources:

| data collection tool | data sources |
|--|----------------------------|
| demographic survey & knowledge questionnaire | 51 |
| video recordings situation awareness scores | 102 10 minute |
| video review & reflective interviews debrief interviews | 51 (30 - 45 minutes) 51 |
| participant evaluation open commentary | 50 46 |



why research in simulated environments?

proxy for practice - ethics

safe environment for applying clinical skills (McGaghie, 2006)

control over contextual variables & pace of scenario

video captures data for reflective insight into performance

debrief and training on 'hot issues'

reciprocal benefit

researcher: rich contextual data

participant: learning opportunity

risks of researching in simulated environment

performance anxiety – memory recall (Masters 1992)
attribution of error – heightens anxiety (Elstein and Bordage, 1988)

challenges to recruitment

lack of fidelity – mannequin & lone performance
(physical, psychological and ecological representativeness)

reactivity to unnatural phenomenon
unfamiliarity with equipment
speed of simulated deterioration
video can degrade performance

reduces expert advantage from scenario reduction to elements

compromising participant integrity

physical, psychological and ecological representativeness

Reflective interview: Std 2

'how ***** unrealistic! Its hard to be friendly to a dummy ... and being filmed, I'm not good at acting.

If I were in a situation like this [for real] I would get assistance
.... I was very uncomfortable'



initial freeze to recovery

Reflective interview std 25

'I was really nervous. ...at first I freaked out. The first thing I noticed was the patient in the middle of the room and the monitor I had not seen before so I had to work out what that meant. Then I talked to the patient ...

At first I thought it was appendicitis and then I noticed her BP was low. Her obs were off. Her heart rate was high and then I started to think about bleeding'



majority (n= 45) work through PA

debrief interview

'It was good but a bit nervy. It wasn't as stressful as I thought it would be' (Std 7)

'It was a good experience because it makes you think about what you should start thinking about but very VERY scary' (Std 27)



simulation + research

doubt in self and scenario created by the simulation environment – leading to lack of trust in decision making and performance

.....or a cue that this MUST be something big!

heightens vigilance & responsiveness



procedure: design to mitigate risks

brief demographic survey

knowledge questionnaire (11 item mcq – Smith & Poplett 2002)

brief patient profile

enter clinical laboratory – scenario (video'd) 1 & 2

video review & reflective interview – tape recorded (30-45 mins)

debrief

participant evaluation (adapted from Wiseman and Snell (2008))

5 point scale to rate:

7 different statements about the experience

self rated knowledge – 6 items – pre & post

additional comments – key learning points

results: knowledge questionnaire & biography

60.8% students experienced placement in critical care / emergency setting

MCQ answered correctly range - 23.5% - 100%

no correlation between MCQ scores and placement, past nursing experience, age, or experience of nursing the seriously ill



Self rated knowledge (retrospective rating n = 50)

| Pre simulation and interview | Post simulation and interview |
|------------------------------|-------------------------------|
| Range 2.67 – 3.10 / 5 | Range 3.90 – 4.17 / 5 |

| topic | pre mean score | post mean score |
|------------------------|----------------|-----------------|
| Managing deterioration | 2.86 | 3.9 |
| Setting priorities | 2.88 | 3.98 |
| Key observations | 3.1 | 4.08 |
| Emergency pressures | 2.76 | 4.12 |
| Understanding change | 3.06 | 4.02 |
| Specific emergencies | 2.67 | 4.17 |



key learning from experience

| theme | percent (n = 46) |
|---|------------------|
| patient assessment skills | 52.2 |
| prioritisation skills | 34.8 |
| self assessment / appraisal | 21.7 |
| recognising deterioration / when to call for help | 19.6 |
| need to manage stress / anxiety | 10.9 |
| need for increased confidence / assertiveness | 8.7 |
| appreciated feedback from moderator | 4.3 |
| non specific favourable comments | 4.3 |
| dislike of scenarios | 2.2 |



managing participants' integrity:

reflective insight self review of performance - video

facilitated reflective questions / probes

what is happening here?

what are you noticing here?

what were you thinking about at this point?

I see you have [specific action from video] what were you looking for?

what were you feeling as [action from video] is happening?

how did you know to [action from video]?



research as an educative opportunity

high intellectual interference

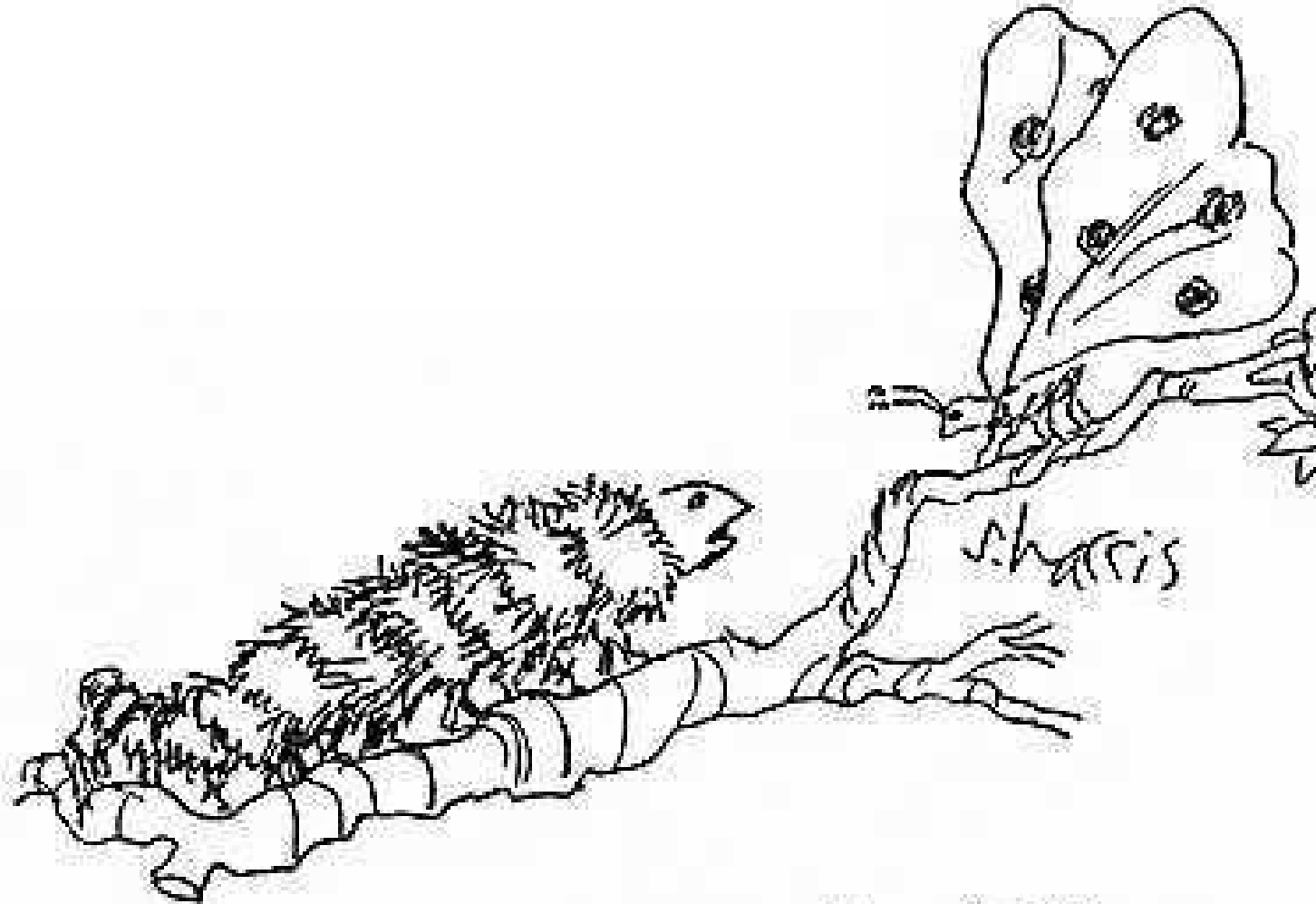
impact on learning

'In transformative learning, the line between learning, education and research often becomes mercifully blurred' (Mezirow 1989, xix)

participation in research that places simulation as the 'field' requires high levels of support, non-judgement, debrief and skills input to build on / redress applied knowledge deficits



Kinsman L, Endacott R, Cooper S, Scholes J, Buykx P, McConnell-Henry T (2009)
Situational Awareness of Patient Deterioration in a Simulated Environment
<http://www.nbv.org.au/web/guest/final-research-reports>



"GREAT DISGUISE, MAX. HOW'D
YOU DO IT?"