




KNOWLEDGE OF CRITICAL CARE NURSES: THE EVIDENCE


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INTRODUCTION


- Project started in 2000 when a study was completed under my supervision which measured knowledge of critical care nurses regarding a specialised area in the field (Oosthuizen: 2000)
- Second study completed in 2000: American student (Price: 2000)
- Potential realised for CPD program development

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- Obligatory continuing professional development (CPD) introduced in 1999 for the medical profession in South Africa.
 - HPCSA requires 50 hours of CPD per year for recertification
 - The Nursing Act No 33 of 2005 states that Council may determine conditions relating to continuing professional development (Chapter 2: section 39).
 - Problem solving / critical thinking



Studies completed (after Oosthuizen 2000):

- Hutchings (2001) : not considered for this paper, as nurses working in wards were target group. Focus: CPR
- Cochius (2002): CPR
- Ellis (2002): Invasive haemodynamic monitoring
- Claassen (2003): Antibiotics used in ICU

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- Van Huyssteen (2004): Postoperative airway emergencies (recovery room)
 - Windsor (2005): Ventilator graphics
 - Hyde (2006): Legal liability issues
 - Pretorius (2006): Intra-aortic balloon counterpulsation [replication first study]
 - Malebane (2007): Patients with pneumonia in ICU
 - Aikman (2007): Patients with pulmonary embolism in ICU
 - Scheepers (2007): 12 Lead ECG




METHODOLOGY

- With each study that was completed, methodology changed slightly for next study, because research is a dynamic field and also because of the valuable comments / critique of examiners & evaluators. Some students also added new and innovative ideas (some not!)
- Statistical support also had effect



METHODOLOGY (continued)

- Quantitative studies: surveys
- Questionnaire used as measuring instrument: level of knowledge
- Questionnaire (self) developed based on thorough literature review
- Measured against **competency indicator (CI)** (value determined by experts in the field indicating competence regarding topic)

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- Validity and reliability: *literature and experts used in questionnaire design
*competency indicator determined, *pre-testing of instruments
 - Reliability of data gathering process: threatening exercise, therefore questionnaire designed in such a way that **anonymity** was absolutely guaranteed (mostly MCQ's)



Study Contexts

- Limited scope dissertations as well as full research Masters theses
- Limitations to generalisability of results of studies, but limited scope studies could serve as point of departure for more extensive studies
- Data analysis done with advanced statistical support and in some cases without



Populations and sampling

- Convenience sampling: those available and willing to participate (time: limited)
- Non-random sampling method
- Populations differed: from company country wide, province wide, city, one or two hospitals
- Results therefore not comparable from study to study



Ethical aspects

- Anonymity extremely important
- Informed consent: did not have to sign
(*detailed information on study, informed consent given if participant agreed to complete questionnaire*)
- Hospitals, companies' consent obtained but not to be mentioned in report at all



Data Analysis

- Biographical data: qualification, number of years working in an ICU, appointment status
- Each question: % correct / incorrect, therefore, an area needing attention or not
- Results for group as whole, broken down per sub-biographical groups, comparisons within group etc
- Results per knowledge area (Anatomy, Patophysiology, etc)
- Groups not comparable, because not homogeneous
- Other: Crohnbach Alpha

RESULTS

Study theme	Competency indicator for study	Number of participants (scope of study)
Intra-aortic balloon pump	80%	24
Invasive haemodynamic monitoring	70%	32
CPR	85%	30
Antibiotics	70%	28
Airway emergencies	70%	21 (43)
Ventilator graphics	80%	111 (160)

RESULTS

Study theme	Competency indicator for study	Number of participants (scope of study)
Legal liability issues	60%	171 (200)
Intra-aortic balloon pump (replication)	70%	39
Pneumonia	75%	36
Pulmonary Embolism	65%	43
12-Lead E C G	80%	30

THEME	% ABOVE C I	% BELOW C I
Intra-aortic balloon pump	21%	79%
Invasive haemodynamic monitoring	3%	97%
CPR	7%	93%
Antibiotics	6%	94%
Airway emergencies	5%	95%
Ventilator graphics	14%	86%
Legal liability issues	5%	95%
Intra aortic balloon pump (rep)	10%	90%
Pneumonia	10%	90%
Pulmonary Embolism	2%	98%
12-Lead ECG	33%	67%

THEME	HIGHEST	LOWEST	GROUP AV
Intra-aortic balloon pump	95%	35%	64%
Invasive haemodynamic monitoring	74%		58%
CPR	91%	48%	69%
Antibiotics	80%	30%	55%
Airway emergencies	75%	5%	43%
Ventilator graphics	80%	0%	40%
Legal liability issues	72%	12%	47%
Intra-aortic balloon pump (rep)	94%	31%	52%
Pneumonia	90%	40%	36%
Pulmonary Embolism	73%	19%	42%
12-Lead ECG	100%	28%	72%



Conclusions

- Nurses working in the critical care environment need updating
- Seems as if critical care trained nurses are more knowledgeable than ICU experienced nurses (data could not be used to conclude this)
- Not all areas within a particular theme needs updating – selected areas (value of studies)



Lessons learnt

- Allow for flexibility within study: leave space for innovative students, learn from them (programme design)
- Value of efficient statistician
- Value of reflection on study
- Value of external evaluator's reports
- Value of good editor
- Value of environment where anonymity can be assured
- Possibly nurses are aware of knowledge needs (second study), but become acutely aware of needs after studies like these