Design and validation of a three-instrument toolkit for the assessment of competence in electrocardiogram rhythm recognition

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Background: Rapid and accurate interpretation of cardiac arrhythmias by nurses has been linked with safe practice and positive patient outcomes. Although training in electrocardiogram rhythm recognition is part of most undergraduate nursing programmes, research continues to suggest that nurses and nursing students lack competence in recognising cardiac rhythms. In order to promote patient safety, nursing educators must develop valid and reliable assessment tools that allow the rigorous assessment of this competence before nursing students are allowed to practise without supervision. Aim: The aim of this study was to develop and psychometrically evaluate a toolkit to holistically assess competence in electrocardiogram rhythm recognition. Methods: Following a convenience sampling technique, 293 nursing students from a nursing faculty in a Spanish university were recruited for the study. The following three instruments were developed and psychometrically tested: an electrocardiogram knowledge assessment tool (ECG-KAT), an electrocardiogram skills assessment tool (ECG-SAT) and an electrocardiogram self-efficacy assessment tool (ECG-SES). Reliability and validity (content, criterion and construct) of these tools were meticulously examined. Results: A high Cronbach's alpha coefficient demonstrated the excellent reliability of the instruments (ECG-KAT=0.89; ECG-SAT=0.93; ECG-SES=0.98). An excellent context validity index (scales' average content validity index>0.94) and very good criterion validity were evidenced for all the tools. Regarding construct validity, principal component analysis revealed that all items comprising the instruments contributed to measure knowledge, skills or

self-efficacy in electrocardiogram rhythm recognition. Moreover, known-groups analysis showed the tools' ability to detect expected differences in competence between groups with different training experiences. Conclusion: The three-instrument toolkit developed showed excellent psychometric properties for measuring competence in electrocardiogram rhythm recognition. © European Society of Cardiology.

cardiac arrhythmias

Competence assessment

knowledge

nursing students

self-efficacy

skills

adult

Article

assessment of humans

construct validity

content validity

cross-sectional study

electrocardiogram knowledge assessment tool

electrocardiogram self efficacy assessment tool

electrocardiogram skills assessment tool

electrocardiography

female

human

male

nursing competence

observational study

principal component analysis

priority journal

psychometry

questionnaire

reliability

young adult

clinical competence

education

electrocardiography

heart arrhythmia

middle aged

reproducibility

Spain

standards

symptom assessment

validation study

Adult

Arrhythmias, Cardiac

Clinical Competence

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