

65 Conceptualising and assessing non-technical skills in simulation-based medical education and training: an integrative scoping review

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Research Domains

Employability, enterprise and graduate careers (EE)

Abstract

This presentation focuses on 'transferable' or 'non-technical' skills (NTS) development in medical education/training. NTS - teamwork, communication and decision-making - are widely acknowledged as central to workplace practice and hence important to HE. Simulation-based learning (SBL) is increasingly used to enhance NTS but little is known about its effectiveness. The field lacks robust outcome measures and clarity about educationally relevant conceptual and operational dimensions of NTS to support instrument development. We synthesise findings from two analyses: a Scoping Review of outcome measures used in research on SBL's effectiveness (funded by SRHE), and a content analysis of NTS-related learning objectives (LOs) in UK medical curricula. A comparative analysis demonstrates that while the outcome measures used in SBL-research address many of the identified curricular LO-dimensions, there are significant gaps relating to assessing evidence-based reasoning and inclusive practice. This study contributes to our understanding and evaluation of learning outcomes in NTS-focused SBL in HE.

Full paper

This presentation brings together two current topics in Higher Education (HE): transferable or 'non-technical' skills (NTS) skills and simulation-based learning (SBL). It focuses on the conceptualisation and assessment of NTS in HE, using medical education as an example. One of the perceived key tasks of HE is preparation for workplace practice and learning. NTS – communication, interprofessional teamwork and decision-making - are widely acknowledged as central to this (Römgers et al., 2020). NTS are well-established in medical education curricula internationally, but they are of wider relevance in HE: there is increasing acknowledgement in the field that all graduates need a range of non-technical competences, or 'employability skills', for effective professional practice (Kornelakis & Petrakaki, 2020).

SBL is increasingly used to enhance NTS in medical education (Anon1) and other areas of HE, such as teacher education (Anon2). Simulations are partial replications of professional practice situations which enable the practice of professional competences in an authentic setting without the issues of access, scalability and real-world risk (Chernikova et al., 2020). However, little is known about the effectiveness of many simulations (Anon1; Anon3). In particular, the field lacks robust outcome measures required for the systematic assessment of learning, and evaluation of learning interventions. More fundamentally, there is lack of clarity about educationally relevant conceptual and operational dimensions of NTS, required support the development and testing of assessment instruments.

To address this gap, this presentation addresses the following Research Questions:

RQ1. What measures of learning outcomes assessing NTS have been used in recent research in SBL-interventions targeting these competences in the field of medical education?

RQ2. How have the competences been conceptualised in UK undergraduate and postgraduate medical curricula?

RQ3. To what extent do the outcomes sought in SBL-research address the learning objectives in the curricula, and what are the gaps?

To address these questions, a multi-component study focusing on three key NTS (communication, interprofessional teamwork and decision-making) was undertaken. Firstly, a Scoping Review (ScR) methodology (Peters et al., 2017) was utilised to synthesise instruments used in recent publications on medical/clinical simulations targeting NTS. The

ScR identified 225 studies from 2018–20 of which 72 met the inclusion criteria. 31/72 studies' abstracts referred to a named instrument, including 27 unique instruments. Most studies used their own instruments, and when validated instruments were used, the same instrument was rarely used by two studies (4 times in total). This demonstrates a significant lack of consistency in the field, hindering the development of cumulative evidence. Full-text analysis identified a sub-set of robust instruments for further analysis which were analysed for their conceptual dimensions.

Secondly, a systematic qualitative content analysis (Mayring, 2019) of learning objectives (LOs) in UK medical education curricula was conducted. This analysis identified and synthesised the conceptual dimensions underlying the three NTS. Finally, a comparative analysis was undertaken, systematically comparing the identified measures' dimensions with the dimensions of curricular LOs to establish the extent to which instruments used in current SBL-research address desired learning goals, and to identify relevant measures and gaps. This analysis found that the outcome measures used in the SBL-studies addressed many of the identified curricular LO-dimensions. However, significant gaps were identified. These related to evidence-based reasoning and inclusive professional practice. Moreover, the comparison revealed there is little conceptual overlap between the numerous instruments used in the field, highlighting the need for further research to ensure comparability of different studies.

This study contributes to our understanding and assessment of learning outcomes in NTS-focused SBL, by describing conceptual and operational constructs of NTS-learning outcomes in medical education and identifying appropriate validated assessment instruments to evaluate SBL-interventions. It hereby also contributes to the readiness to generate a rigorous evidence base for using SBL to develop NTS in medical education, which could inform a development of learning interventions and assessments for NTS in HE more widely. Finally, in explicitly conceptualising non-technical skills as the key soft skills widely considered important in graduate employment based on both research and HE curricula, it contributes to a shared language in and across HE and HE policy to discuss ways of preparing graduates for the challenges of the labour market.

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