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EDITORIAL

The importance of considering social sciences in the assessment of non-technical skills in surgical simulation exercises

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Abstract

Non-technical skills are important to ensure a safe surgical practice and are frequently considered in surgical simulation evaluations. The non-technical skill assessment tools currently in use are interesting. However, greater consideration of the social sciences literature in the evaluation of soft skills could lead to their better assessment: consideration of additional concepts, more detailed assessment of the items considered in the existing grids and better methodological design.

Keywords: *social science; NTS; simulation; methodology*

In medical evaluation, non-technical skills (NTS), otherwise known as soft skills, are often opposed to technical skills. NTS are interpersonal skills, i.e. communication, leadership, teamwork, or decision-making that are not directly related to a specific environment or job.[1]

It is worth considering NTS in surgical simulation, given the important role they play in supporting technical skills.[2,3] Literature shows that emphasis on technical skills alone is insufficient to ensure a safe surgical practice.[4,5] Moreover, simulation studies have shown that coaching soft skills improves the performance of residents in surgery.[6] Nowadays, the importance of NTS is acknowledged, and they are frequently taken into account in surgical simulation evaluations.[7–9]

Observational Teamwork Assessment for Surgery (OTAS), Non-Technical Skills for Surgeons (NOTSS), and Oxford Non-Technical Skills Scale (NOTECHS) are tools widely used in surgical simulation exercises when the assessment of soft skills is required.[10] They address the most important NTS for surgeons by assessing key concepts in surgery, such as leadership, communication, or situation awareness.[11] Yet, they have two main limitations. First, by focusing only on the most important elements for surgeons, they do not allow the study of other non-technical elements. Secondly, the concepts considered are only partially assessed for efficiency.[10] Thus, these tools are useful but relying only on them for every assessment of NTS is not sufficient.

Social sciences study the understanding of humans and have therefore developed detailed approaches for non-technical parameters over time. Many recommendations on the assessment of NTS have been published in social science.[12,13] Taking them into consideration might be helpful in surgical simulation exercises.

First, it would allow additional concepts to be considered, such as emotional intelligence, which is the ability to recognize, understand and control one's own emotions and to deal with emotions of others. Emotional intelligence includes self-awareness, self-regulation, motivation, empathy, and social skills.[14] It has been widely studied in social sciences.[15] In management sciences, its impact in the workplace has been shown. It favors effective interpersonal interactions and teamwork.[16–18] Taking into consideration aspects of emotional intelligence as part of NTS in surgical simulation exercises could then be of interest for the evaluation of surgical teams.

Secondly, social sciences allow a more detailed assessment. Leadership, for instance, is evaluated by only three to four items in the NOTSS, the OTAS, and the NOTECHS scores,

while more extensive investigation tools exist, such as the Hill model which allows the study of three aspects: the choices of the leader to monitor or take actions centered on the tasks, on the relationships or on the environment[19]; then the situational leadership which assesses the leaders' direction and support according to the level of development of the team; and, finally, the transformational leadership which focuses on leaders' engagement with the team and the effects on motivation.[20,21]

Social sciences can also be useful to design grids.[22] Concerning the use of even or odd numbers of response options, for example, several studies indicate that odd numbers have been generally selected over even numbers because they allow the middle category to be understood as a neutral opinion, which gives an option for participants who have truly neutral positions and avoids forcing their choice.[23] It has been reported that a 7-point Likert scale is recommended when the respondents are neutral, and a 6-point Likert scale may be interesting when the respondents are not neutral.[24]

Similarly, there are methodological recommendations in social sciences concerning all other aspects to be considered for the analysis of non-technical components, such as the design of the study, data collection, and methods of analysis.[25–27] Some examples are as follows: choosing the number of items with the alpha value between 0.8 and 0.9[28,29]; having at least 10 participants for each item[28]; choosing self-evaluation questionnaires rather than with external observers[30]; or also creating grids with a mixed method including the use of qualitative and quantitative studies; this can go through interviews or focus groups with experts, observations, etc.[31] Of course, methodological considerations might vary according to the studied parameters—see Boateng et al.,[32] who published a set of recommendations for developing and validating evaluation scales.

To sum up, social sciences are essential for the assessment of NTS in surgical simulation studies, and research in the various fields of social sciences is constantly evolving. We recommend staying informed and considering changes and developments in social sciences when creating studies involving NTS.

Conflict of interest

None declared.

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