Is clinical simulation an effective learning tool in teaching clinical ethics?

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Abstract

Introduction

In the teaching of clinical ethics, many traditional methods have been used that aim to develop competencies in the face of ethical challenges. Situations that can be reproduced in a standardized way through clinical simulation can be presented and evaluated in the training process of health professionals; however, its use requires evidence of effectiveness.

Objective

To identify and synthesize the available evidence on the effectiveness of teaching clinical ethics using simulation as a learning tool.

Methods

We conducted a bibliographic review, with searches in PubMed, LILACS and Cochrane databases using English and Spanish: "Ethics, Clinical/education" [Mesh]) AND "Simulation Training" [Mesh], without methodological filters, published from inception of each database until July 2019, without language, geographical or temporal restrictions. We considered as a primary outcome the identification, resolution or reflection on ethical problems.

Results

One hundred sixteen studies were retrieved. Fifteen studies met the selection criteria. Narrative reviews and opinion articles were excluded. The population to whom the intervention was applied were mainly students in nursing, medicine, and dentistry. A study in a multidisciplinary ethics committee was also included. The intervention was the use of the simulation technique with a standardized patient. Only two studies compared with traditional methods. Sixty percent considered the intervention to have favorable results on the primary outcome.

Conclusions

To date, there are few studies with very low quality of evidence that evaluate the effectiveness of clinical simulation in teaching clinical ethics. The studies found that, in the short term, this methodology allows participants to identify, solve or reflect on ethical problems by using standardized patients and it seems to be advisable to incorporate simulation techniques as part of the teaching and evaluation curriculum of clinical ethics, to the extent that resources are available.

Key ideas

- Numerous traditional teaching methods in clinical ethics aim to develop skills.

- Simulation in clinical education is a teaching tool that has recently emerged to develop clinical competencies.

- We found few studies that evaluate the effectiveness of simulation in teaching clinical ethics and demonstrate its effectiveness.

- We suggest including clinical simulation as a teaching and evaluation method of clinical ethics, taking into account available resources.

Introduction

Simulation or the imitation or representation of a process or system is a common teaching method in health care that involves the use of Simulated Patients (actors trained to role play as patients), and various tools, such as simulators, to demonstrate desirable skills for managing ethical problems that may arise in the clinical setting (including integrated decision-making, based on predetermined objectives) and, using feedback from participants, achieve maximum and long-lasting learning[1].

Clinical ethics studies evaluate "right" and "wrong," "good" and "bad," and "virtue" and "duty" in a clinical relationship; according to research, formal education is required for the development of appropriate clinical ethics skills[2].

Results of a recent review documented health professionals' feelings of inadequacy in dealing with the ethical dilemmas they encounter in their day-to-day clinical work[3]. Interventions to teach and formally evaluate ethics in health science programs have used many different methods, including conferences, written exams, debates, role play, small-group discussions, and case study analysis, as well as learning through service (experiential learning), which has certain logistical challenges[3]. Clinical simulation has also been used to teach and evaluate various generic skills, such as communication in interpersonal relationships, which is sometimes considered an ethical competency in medical professions, given the need for this type of communication in clinical activity. However, more evidence is needed to show that clinical simulation is useful for developing the skills that have been identified as necessary for managing specific ethical problems that may arise in the health care setting.

Objective

The objective of this study was to identify and synthesize the available evidence on the effectiveness of teaching clinical ethics using simulation as a learning tool.

Methods

This literature review identified relevant studies through an initial search of the PubMed, LILACS, and Cochrane databases, a supplemental search of Google Scholar, and a manual search. The keywords

"Ethics, Clinical/education" [Mesh]) AND "Simulation Training" [Mesh], in both English and Spanish, with no methodological filters, were used to identify studies published from the beginning of each database until July 2019, with no language, geographic, or temporal restrictions.

The study selection criteria were:

- Study population: teachers of ethics/bioethics in health or students in clinical health areas

- Study intervention: use of clinical simulation with or without a comparison with other methodologies.

- Main study outcome: identification, resolution, or analysis of clinical ethical problems.

- Secondary study outcome: knowledge of ethics/bioethics and/or perception and evaluation of the methodology.

Narrative reviews and opinion pieces were excluded.

The studies were evaluated by the authors individually and independently based on the selection criteria.

Results

A total of 116 studies were identified in the literature search. Of the 22 studies found in PubMed, 12 met the selection criteria. In LILACS, 11 of the 102 studies that were found met the selection criteria but eight had already been found in PubMed and were thus excluded. No additional studies were found in the Cochrane databases. The 15 selected studies are described in detail below.

A study conducted in the United States by Donnelly et al.[4] analyzed the effect of simulation in the acquisition of knowledge of the principles of ethics in nursing undergraduate students. This was a quasi-experimental study with a pre-test/post-test design and random assignment of students from three universities, including control groups (traditional didactic format) and experimental groups (simulation), that evaluated whether knowledge of the principles of nursing ethics improved significantly from the prior test to the subsequent one ($p = 0.002$). No significant differences between the knowledge scores of the experimental and control groups were found ($p = 0.13$), and the authors concluded that more research is required on the use of simulation to teach ethics principles.

In Canada, Fanous et al.[5] evaluated ethical reasoning and perceptions in an ethics program using clinical simulation in ENT residents, using a different module for each year of the 4-year program, and Simulated Patients. Results showed 18 residents significantly improved their knowledge of ethics and skills in ethical reasoning and provided good feedback on and recommendations for this methodology.

In Saudi Arabia, Marei et al.[6] measured the perceptions of 65 dental students on interactions with Simulated Patients to develop ethical reasoning skills. Based on the favorable assessments of the intervention, the authors recommended the use of this method.

In another study conducted in the United States, Harari & Macauley[7] evaluated the effectiveness of simulation with Simulated Patients in the selection of hospital ethics committees to deal with ethically complex and emotionally difficult clinical situations. Based on the results, after substantial review, the institution adopted a policy for better identification of non-beneficial or futile treatments, using standardized simulation in which Simulated Patients were trained in certain treatments, and members of the ethics committees were subjected to simulated clinical scenarios and asked to determine if a specific treatment requested by a Simulated Patient should be applied based on the treatment outcomes. Improved decision-making was found in pre- and post-intervention surveys, but the small sample size limited the power of the study and its statistical significance. One interesting incidental finding was that a quarter of the committee members voted against categorizing one of the treatments as futile even though it clearly met the criteria established by the policy. This finding highlights the emotional challenges in implementing a rigorous ethic.

In the United Kingdom, Pan et al.[8] studied the use of Simulated Patients in an immersive virtual reality intervention and how it helps participants obtain an accurate understanding of the factors that influence a doctor's response to the ethical challenges that underlie tenacious requests for antibiotics, given the threat posed by increasing antibacterial resistance worldwide, and if this methodology helps train doctors to deal with such dilemmas. In this intervention, 12 experienced doctors and nine trainee doctors had to manage an increasingly angry patient who demanded antibiotics for her mother before conclusive evidence showed that it was necessary. The daughter and mother were Simulated Patients in an immersive virtual reality program. Results showed that eight of the nine trainees prescribed the antibiotics, compared to only seven of the 12 doctors. Based on a Bayesian analysis, these results provide reasonable statistical evidence that experienced physicians are more likely to resist the pressure of an ethical challenge like the one described above compared to physicians in training. In addition, using a questionnaire, the intervention evaluated participants' experience of being immersed in a virtual consultation (based on comments and body language). Results showed the overall perception was that the scenario was really occurring; therefore, this methodology was considered useful in physician training.

In another study in the United States, Buxton et al.[9] used realistic simulations with trained health personnel and Simulated Patients that presented various ethical problems to nursing students and graduate-level nurse-midwifery students. Student interactions with Simulated Patients were monitored by faculty and peers, and a group evaluation was used to explore students' emotions and reactions. Participant feedback on the simulation was extremely positive. This simulation could easily be adapted for use by health education programs to help students develop skills in ethics.

In Israel, Harnof et al.[10] evaluated 15 neurosurgery residents using eight simulated scenarios with Simulated Patients: 1) obtaining informed consent for an elective surgery; 2) discharge of a patient after an elective surgery; 3) dealing with an unsatisfied patient; 4) delivering news of intraoperative complications; 5) delivering news of a brain tumor to parents of a young child; 6) delivering news of brain death to a family member; 7) obtaining informed consent for urgent surgery from the grandfather of a young boy with an epidural hematoma; and 8) dealing with a case of child abuse. The final evaluation showed improvements in communication skills and residents' ability to address the ethical problems that were presented, so this practice is now part of the residency program.

Another U.S. study, by Greco et al.[11], investigated the effect of a high-fidelity disaster simulation on perceived confidence in ethical reasoning for completing triage in 90 nursing students. Results showed a significant increase in ethical reasoning confidence scores in students participating in this practice.

In Spain, Martín Robles et al.[12] studied nursing students' opinions on clinical simulation as a bioethics learning methodology. The study results included very positive feedback on simulated issues regarding action on suspicion of abuse, and less positive feedback on simulated issues related to cooperation with bad actors.

A study at Yale University by Pantalón et al.[13] evaluated the value of motivational interviews in addressing conflicts related to patient autonomy versus the beneficence of the doctor, using simulation with a Simulated Patient who chooses not to continue an evaluation of his hematuria due to high resistance based on fear (expressed by his ambivalence toward continuing or not, while the doctor recommends that he should). Using motivational interviews with Simulated Patients, alignment of the objectives of the doctor (beneficence) with those of the resisting patient (autonomy) was achieved.

In another study conducted in the United States, Bramstedt et al.[14] described their experience using interactions with Simulated Patients and complementary instructional materials (e.g., films, panel discussions, and reading lists) to educate second-year medical students about ethical problems in the donation of living organs and various related topics such as informed consent, altruism, criteria for patient selection, sale of organs, and support systems after donation.

K.V. Smith et al., in another U.S. study[15], replaced the traditional teaching method (legal and ethics coursework) with a transformational learning intervention in which nursing students applied material from legal and ethics curricula in a scenario of high-fidelity human simulation (HFHS). Based on a preliminary evaluation that compared use of the HFHS teaching method with the traditional

(coursework) method in groups of students, in person and online, using the same case study, the newer method was used in the rest of the course, as HFHS was identified as the best approach, based on feedback from both students and teachers.

In a study conducted in Belgium, Vanlaere et al.[16] showed how experimental or simulated learning has improved the empathic skills of health care providers, specifically nursing students, since its incorporation into the teaching curriculum at the care-ethics laboratory 'sTimul' in Flanders, Belgium in 2008. This lab provides training focused on improving the ethical skills of care providers through experiential work simulations, using contrasting experiences conducive to self-reflection on ethical issues by care providers.

In a study conducted in Canada, Brondani & Rossoff[17] described a didactic approach used in the University of British Columbia's first-year curriculum to teach dental ethics and ethical reasoning and analyzed three main pedagogies: the "hot seat" experience (role play with a trained actor or Simulated Patient); small-group presentations of a case study addressing an ethical dilemma; and group discussions of student feedback on their interactions with the Simulated Patients. As the authors explain, the approach to dental ethics examined in the study was not designed to "make an unethical person ethical"; it merely provides the tools to help students recognize an ethical dilemma and teaches them how to analyze their options and ultimately make a good decision on how to address it, as demonstrated in the feedback from and reported positive impact on students participating in both the "hot seat" experience and the case study presentations. However, more studies are needed to better understand the implications of ethical problems in academic and professional settings.

A U.S. study by S.R. Smith et al.[18] used an evaluation technique that measured clinical ethics skills of 511 fourth-year medical students from five U.S. schools in the Northeast from 1991 to 1992. The study analyzed five parameters of behavior observed in each student's encounter with a Simulated Patient who rated the student's performance. Immediately after the interaction, each student was asked to describe at least two moral conflicts in a short essay, which was graded by the study authors. Results showed 11% of the students had a low score in interactive tasks with the Simulated Patients and 14.1% had a low score in written (analytical) tasks. Only 2.3% had a low score in both areas, so there was little relationship between student performance in interactive versus written/analytical scenarios. Based on these scores, and given that these two areas require different skills, the authors proposed the development of models that allowed for individualizing any corrective teaching strategies.

Discussion

In this review, only 13% of the studies found in the scientific publication databases that were searched met the selection criteria, and of these half were carried out in the United States (no relevant studies conducted in Latin America were found). Across the 15 selected studies, most of the study participants trained with the clinical simulation intervention were in nursing (40%) or medicine (40%). One

study applied the intervention to a multidisciplinary ethics committee[7]; the results of this study were of great interest to the authors given the important ethical problems addressed by this population group.

It should be noted that in all of the studies selected for this review, a clinical simulation was evaluated and the effects were measured quantitatively—desirable attributes for scientific evidence supporting use of a recommended methodology[19]. However, 13 of the 15 studies did not compare the clinical simulation technique with any other teaching method. In the two studies that did conduct a comparison, the alternate teaching methodologies were traditional (role play, case study analysis); the main study outcome in one of them was skill acquisition[17] and in the other it was knowledge acquisition of ethical principles[4].

Development of skills in identifying, resolving, and analyzing ethical problems was selected as the main study outcome based on the classic Bloom's Taxonomy that has been studied in health[20] in which simulation is used as the teaching strategy to allow participants to attain a certain level of metacognitive knowledge so that what has been learned can then be analyzed—a desirable objective in any study of the learning process. This review only found a few studies on this topic, and they all had methodological limitations in terms of the levels of evidence they provided as intervention studies. Nonetheless, they found favorable results for the use of the clinical simulation teaching strategy for specific topics in the field of clinical ethics, albeit evaluated in the short term, and we consider this a good amount of evidence supporting the use of clinical simulation techniques.

One of the limitations of the studies selected for this review is that the interventions they applied and evaluated were not homogeneous, due to the diversity of ethical problems faced by clinical health workers. However, they all used actors or Simulated Patients. Another limitation was that none of them addressed the level of resources and training required for the implementation of the clinical simulation method.

Although this literature review had some methodological limitations (e.g., it was not comprehensive, or systematic), it did reveal the low quantity and quality of the available evidence on this topic. The study results that were included in the review were for specific topics related to clinical ethics, and their evaluation periods were all short-term. While these results showed the use of clinical simulation as a tool for teaching clinical ethics was favorable for the primary study outcome, it should be noted that implementation of this method requires substantial resources, training, and systematization.

Conclusions

To date, few studies have evaluated the effectiveness of clinical simulation in teaching clinical ethics, and all of them have a very low quality of evidence. The 15 studies included in our review found that, in the short term, use of clinical simulation with Simulated Patients as a teaching method allows participants to identify, resolve,

or analyze ethical problems, and therefore it seems advisable to incorporate it in teaching and evaluation curriculum for clinical ethics, when the required resources are available.

Notas

Conflicts of interest

The authors have completed the ICMJE conflict of interest declaration form and declare that they have not received funding for the realization of the article; they have not had financial relationships with organizations that might have interests in the published article over the last three years; and they do not have other relationships or activities that could influence the published article. Forms can be requested by contacting the corresponding author or the journal editor.

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