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Evaluating interventions to improve ethical decision-making in clinical practice: a review of the literature and reflections on the challenges posed

Agnieszka Ignatowicz, Anne-Marie Slowther, Christopher Bassford, Frances Griffiths,
Samantha Johnson and Karen Rees

Corresponding author: Prof Anne-Marie Slowther, Professor of Clinical Ethics, Division of Health Sciences, Warwick Medical School, The University of Warwick, Coventry, CV4 7AL.

Authors:

Agnieszka Ignatowicz, Institute of Applied Health Research, College of Medical and Dental Sciences, University of Birmingham, Birmingham, B15 2TT. E-mail: a.m.ignatowicz@bham.ac.uk

Anne-Marie Slowther, Division of Health Sciences, Warwick Medical School, The University of Warwick, Coventry, CV4 7AL. E-mail: a-m.slowther@warwick.ac.uk

Christopher Bassford, Division of Health Sciences, Warwick Medical School, The University of Warwick, Coventry, CV4 7AL and University Hospitals Coventry and Warwickshire NHS Trust, Clifford Bridge Road, Coventry, CV2 2DX. E-mail: christopher.bassford@uhcw.nhs.uk

Frances Griffiths, Division of Health Sciences, Warwick Medical School, The University of Warwick, Coventry, CV4 7AL. E-mail: f.e.griffiths@warwick.ac.uk

Samantha Johnson, The Library, Warwick Medical School, The University of Warwick,
Coventry, CV4 7AL. E-mail: s.a.johnson@warwick.ac.uk

Karen Rees, Division of Health Sciences, Warwick Medical School, The University of
Warwick, Coventry, CV4 7AL. E-mail: karen.rees@warwick.ac.uk

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AMS and CB led the study from design through to writing up study reports. FG led the qualitative component of the study. KR led the literature synthesis component of the study. AI, AMS and KR undertook this systematic review. SJ structured the database searches for the systematic review. AI and AMS drafted this paper. All authors contributed to writing the paper and read and approved the final version.

Abstract

Since the 1980s there has been an increasing acknowledgement of the importance of recognising the ethical dimension of clinical decision-making. Medical professional regulatory authorities in some countries now include ethical knowledge and practice in their required competencies for undergraduate and post graduate medical training. Educational interventions and clinical ethics support services have been developed to support and improve ethical decision-making in clinical practice, but research evaluating the effectiveness of these interventions has been limited. We undertook a systematic review of the published literature on measures or models of evaluation used to assess the impact of interventions to improve ethical decision making in clinical care. We identified a range of measures to evaluate educational interventions, and one tool used to evaluate a clinical ethics support intervention. Most measures did not evaluate the key impact of interest, that is the quality of ethical decision-making in real world clinical practice. We describe the results of our review and reflect on the challenges of assessing ethical decision-making in clinical practice that face both developers of educational and support interventions and the regulatory organisations that set and assess competency standards.

Background

Since the 1980s the ethical dimension of clinical decision-making has received increasing attention from academic ethicists, from those responsible for training future health care professionals and from health care organisations and practising clinicians themselves. Advances in medical science, changing demographics and limited resources create ethical dilemmas across the spectrum of care including treatment decisions, sharing of information, and rationing access to interventions. Individual clinicians must make decisions using their

86 clinical knowledge and skill, taking into account their patient's values and wishes, and work
87 within the normative framework of wider society. Medical schools and professional
88 organisations have recognised the need to include relevant education and assessment around
89 the ethical dimension of clinical decision-making. The Association of American Medical
90 Colleges (AAMC) (1) has published the "Entrustable Professional Activities" (EPAs)— a
91 competency-based list of clinical activities used in undergraduate and graduate medical
92 education to assess the skills that students and trainees can be trusted to perform with
93 minimal or no supervision (2). The EPAs are divided into units of professional practice and
94 include activities around demonstration and understanding of ethical principles in provision
95 of care. In the UK, the General Medical Council, which is responsible for licensing medical
96 schools, has included ethical knowledge and skills in its required learning outcomes for
97 graduates since 2009 (3). The Institute of Medical Ethics has published an updated core
98 curriculum for medical training in medical ethics and law (4) and some professional
99 organisations now include reference to recognising and applying ethical principles in relation
100 to clinical practice in their specialty training curricula (5). The method of assessing ethical
101 knowledge and skills in clinical practice at both an undergraduate and postgraduate level is
102 however less clearly defined (6, 7). The emphasis in medical curricula on the ethical
103 dimension of clinical decision-making and the requirement to achieve competency in this
104 element of clinical practice recognises that ethical decision making can affect patient care
105 with poor ethical decision-making having potentially harmful outcomes for patients. There is
106 therefore a moral imperative to describe and assess the competencies required for good
107 ethical decision making in clinical practice.

Recognition of the ethical dimension of clinical practice, and the ethical challenges faced by clinicians, has also resulted in the emergence of clinical ethics support services in hospitals and community health care organisations. This international phenomenon includes a diverse range of services for providing advice and support to health care professionals facing difficult ethical decisions related to treatment and care of patients. Clinical ethics committees, ethics consultants, and moral deliberation groups are three of the commonest examples of such services. Despite the proliferation of these interventions, there has been little evidence of robust evaluation, specifically in relation to the ethical decision-making of the health care professionals these services aim to support.

To investigate this apparent lack of evaluation of the impact of either educational or ethics support interventions on the ethical decision-making of health care professionals in practice we conducted a systematic review of published literature, as part of a larger project focusing on the process of referral and admission decisions for intensive care (8), to answer the following question: what measures or tools of evaluation have been used to assess the impact of interventions to improve ethical decision-making in clinical practice? Based on the findings from the review and other literature, we explore how competency in ethical decision-making is currently assessed and reflect upon broader challenges of assessing ethical decision-making in education and real-world clinical practice.

The paper proceeds as follows. First, we briefly consider development of interventions to improve ethical decision-making in clinical practice, and a parallel development of tools to evaluate ethical sensitivity and ethical judgment more generally. We note that this is some overlap in these two streams of research but argue that a robust assessment of such interventions needs to go beyond ethical sensitivity and judgment and capture the process of

ethical decision-making in the clinic. We next describe our systematic literature review which focussed on evaluation tools or measures specifically used to assess interventions to improve ethical decision making in clinical practice. We present an overview of the review findings and conclude that none of the tools identified work-based assessments of ethical decision-making. Finally, we sketch out the problems that exist for assessing ethical decision-making in education and real-world clinical practice and discuss the need for further work on developing valid and reliable instruments to evaluate clinicians' ethical decision-making in practice.

Interventions to improve ethical decision-making

Interventions to improve ethical decision-making in clinical practice can be broadly divided into educational interventions aimed at equipping health care professionals with the knowledge, skills and attitudes required for decision-making, and interventions that provide real time support for clinicians facing ethical challenges in their work. Educational interventions have largely focused on medical and nursing students rather than postgraduate trainees. The development of clinical ethics support services and their integration into front line care has been documented in the literature (9-12). In the UK, both the Royal College of Physicians and the Nuffield Council on Bioethics have referred to the importance of support for clinicians in dealing with the ethical dimension of their work (13, 14). However, clinical ethics support services have faced a persistent challenge from health care funders and some clinicians to demonstrate the impact of these interventions on clinical decision-making and patient care. Authors have noted the lack of robust studies demonstrating effectiveness of clinical ethics support (12, 15-18). Schildmann et al. specifically looked at outcome criteria used in evaluation studies of clinical ethics support. They did not identify any studies that evaluated clinician's decisions following advice in an ethics consultation, or the ethical

quality of decision-making within the service itself (12, 19). The Euro-MCD Instrument, specifically designed to measure outcomes of moral case deliberation, focuses on how participants perceive the importance of outcomes and experience these outcomes after the deliberation (20, 21). Recent systematic and literature reviews on clinical ethical support cite a number of other evaluation tools, but conclude that evaluation is still an underdeveloped area (22, 23). Research on moral deliberation groups or individual ethics consultations have found that clinicians find them helpful and report that they reduce conflict, save money and improve the overall quality of patient care (24, 25), but little is known about whether and how these actually shape and influence health care professionals' decision-making in practice (26).

Evaluation tools measuring ethical sensitivity and judgment

Concurrent with, but unrelated to, research on interventions to support healthcare professionals in ethical decision-making in practice, there has been a stream of research focused on the development of reliable and valid tools (often referred to as frameworks, instruments or methods in the literature) to assess ethical reasoning and judgement. Some of these have been used, or adapted for use, in the evaluation of ethics educational interventions. Early tools originated in moral psychology and were generic and profession non-specific. The most extensively used tool to study moral reasoning is the Defining Issues Test (DIT) (27), which is designed to measure default schema by which individuals interpret moral issues. The DIT assesses one of the four components of Rest's model of moral behaviour (moral judgment), the other three components being ethical sensitivity, moral motivation, and moral character (28-30). Some profession-specific instruments have been developed for use in medicine and dentistry, based on the DIT. The Medical Ethical Reasoning and Judgement Test (MERJT) (31) uses ethical dilemmas relevant to medical students and doctors. Other

instruments include the ‘Dental Ethical Reasoning and Judgement Test’ (DERJT), the Nursing Dilemmas Test (32) and Ketefian’s Judgement About Nursing Dilemmas Test (33). Several authors have recognised the need to extend assessment of ethical decision-making to include the other three components of the four-component model (34-36). The Dental Ethical Sensitivity Test (DEST), for example, measures ethical sensitivity in dentistry (37), and Hebert et al.’s vignette questionnaire tests the ability to recognise ethical issues in undergraduate medical students and healthcare professionals (38). Research in behavioural ethics and business ethics suggests that other factors including cognitive error, social, organisational, and contextual factors may also play a significant role in ethical decision-making (39). In 2002, Bebeau commented on the relative neglect of moral motivation and moral character in education and assessment in the professions compared to the focus on ethical reasoning and sensitivity and there has been increasing focus on professionalism and professional values within health care education in the last decade (40). However, the ultimate challenge for assessment of moral reasoning and behaviour is to capture its implementation in practice. Well-developed ethical sensitivity and reasoning skills that perform well in hypothetical situations do not necessarily predict ethical competency in implementing action plans in the high-pressured environment of clinical practice. There is a need for valid and reliable instruments to evaluate how clinicians make ethical decisions in this environment.

Literature review

In collaboration with an experienced information specialist (SJ), we searched MEDLINE, EMBASE, PsycINFO via OVID and Web of Science (SCI and SSCI). We used specific Medical Subject Heading (MeSH) terms in Medline and their equivalent for the different other databases. Our initial search was run on 21st March 2016. We repeated the search in

March 2018 and November 2020 to capture any studies published since the original search.

See Supplementary file 1 for full search strategy.

We included empirical studies that:

- evaluated an intervention(s) aimed at improving ethical decision-making in clinical care (we used the term “intervention” to refer to any strategy used to inform, build or encourage healthcare professionals’ or students’ skills in dealing with ethical challenges in clinical practice); and
- described tools or instruments that evaluated one or more components of the intervention(s) aimed at improving ethical decision-making in clinical care.

The combined searches yielded 3594 papers after deduplication (465 of these were from the updated search in 2020). Two primary reviewers (AI, AMS) independently screened all included papers on the title and abstract and identified 86 potentially relevant papers for full text review. During the full text review process a further three papers were identified by a bibliography search of included papers. 14 papers (13 studies) were included for data extraction. See Supplementary file 2 for PRISMA study flow diagram.

AI and AMS independently carried out data extraction for each study. All included were evaluated for methodological quality using an adapted version of items from the CONsensus-based Standards for the selection of health status Measurement INstruments (COSMIN) checklist (41) (please see Supplementary file 3 for evaluation of methodological and reporting quality). We used a narrative approach to summarise the findings.

Results of the systematic review

Characteristics of the included studies are presented in table 1. All studies except one (42), evaluated interventions that were educational in type. These educational interventions were diverse and included: a general medical curriculum with some lectures and discussion relating to ethics in the Introduction to Medicine course (43); specific ethics course within a medical or nursing curriculum (44-48); an integrated ethics thread in a medical curriculum (49, 50); a specific educational tool for teaching ethics in a nursing curriculum (guided design) (51); and a general medical or nursing undergraduate curriculum as part of the medical or nursing curriculum in ethics (40, 52-54). Eight studies recruited medical students, four studies nursing students and one study clinical ethics consultants as their participants.

INSERT TABLE 1 HERE

Table 1. Summary of included studies.

Tools and instruments to evaluate interventions to improve ethical decision-making in clinical practice

Almost all evaluation tools (12) were administered to medical and nursing students and assessed educational interventions to improve ethical decision-making related to clinical practice. Amongst these 12 instruments, five were already existing instruments and seven were new instruments developed for the purpose of the study. Ten out of 13 studies included described evaluation tools based on written assessments (43-51, 54), two described tools that included an Objective Structured Clinical Examination (OSCE) station/s (52, 53), and one a combination of performance based assessment with a standardised patient and written assessment of a clinical case (40).

Of the ten studies describing written assessment evaluation tools, three studies used the previously developed and validated tools. Turner and Bechtel (51) and Kim and Park (48) used Judging About Nursing Decisions (JAND) test (55) that assesses nurses' ability to judge which course of action in a series of scenarios most closely accords with the American Nursing Association's code of ethics and how likely the participant is to follow it. Akabayashi et al. (43) modified the Defining Issues Test and combined it with the Problem Identification Test. Both, DIT and PIT are questionnaire surveys based on vignettes and participants are asked to list the ethical issues in the vignette (PIT) or choose the most suitable action from a list (DIT). The other seven studies that used written assessment developed the new instruments for the purpose of the study. Three studies used case vignettes but the number of cases varied from one (The Ethical Reasoning Tool)(45) to 12 (Ethics and Health Care Survey Instrument)(49, 50, 54)). Three tools asked students to state and justify what they would do in each case vignette (44-46), and one tool required students to choose from a pre-specified list of actions for each vignette and then to justify their decision (49, 50, 54). One tool combined the performance based assessment with a standardised patient and written assessment of a clinical case (40). Students were asked to complete ten OSCE stations and interact with the standardised patient. Following the encounter with the standardised patients, students had a pre-defined time to list the moral conflicts in the case and briefly analyse at least two of these conflicts. In one study, the description of the written assessment evaluation tool - the nursing ethical decision-making ability scale (47) - was not described well enough to establish whether case vignettes were used.

Of the performance-based tools, two studies used OSCE as an assessment tool to evaluate medical students' and residents' performance in the ethics stations (52, 53). The studies were designed around either six or four ethics stations based on actual clinical and legal cases.

Students' performance was scored using a checklist that was developed using the comments made by practising physicians who were videotaped playing the role of the student and interacting with the standardised patients. Each item on the checklist corresponded with the comment made by the physicians and students were scored by two independent raters.

Only one study described an instrument for evaluating ethical decision-making in actual clinical practice rather than using hypothetical scenarios (42). The instrument (Ethics Consultation Quality Assessment Tool – ECQAT) was used to evaluate written records of case consultations, which then form part of the patient clinical record. The ECQAT was based on a holistic assessment model covering four key elements in the case consultation: identifying the ethics question; eliciting consultation specific information; ethical analysis; and making practical recommendations. The key elements have sub-elements that explain the characteristics of the element and serve as the basis for rating the quality of the ethics consultation. Each key element is then scored on a rating scale of 1-4 with 1 being poor and 4 strong. An overall assessment of acceptable/less than acceptable was also given. Interrater reliability was 43% for the individual key element scores and 74% for the overall holistic assessment score.

Discussion

This review aimed to identify and describe instruments that were specifically designed to evaluate interventions to improve ethical decision-making in clinical practice. Of the 13 studies identified, 12 described an evaluation tool that could be used to assess or the use of an existing tool to assess, educational interventions to improve ethical decision-making in medical or nursing students. None of these tools included work-based assessments with

health care professionals. A single study described a tool to evaluate clinical ethics case consultation in practice using consultation records.

A striking finding from our review was that we found no educational interventions aimed at post graduate practising clinicians. The evaluation tools and instruments for educational interventions identified focussed on students' skills in reasoning about and articulating principles for ethical action with the aim of improving ethical competence in future practice. Despite the emphasis on clinical veracity in the use of clinical case reports and simulated patients, the tools were not designed to be used as a workplace assessment. This is perhaps not surprising given the interventions were aimed at students, although work place assessment of clinical skills can form part of medical and nursing education. Thus, while the literature acknowledges the importance of recognising the ethical dimension of clinical decision-making, currently available evaluation tools and instruments for assessing interventions to improve ethical decision-making in clinical practice appear to be limited in this respect.

Assessing knowledge and reasoning skills in an educational setting is an important part of developing competencies in health care professional students as a foundation for competent clinical practice in the workplace. This is true of both clinical and ethical decision-making. Assessment of clinical competency is a requirement of continuing professional training and development. However, the use of workplace assessment for ethical competency, however defined, is more challenging than similar assessment of clinical procedural skills. Firstly, there is the complexity of assessing how ethical decision-making happens in clinical practice, and therefore precisely what are the elements of good ethical decision-making. Ability to recognise and articulate ethical issues or concerns (moral sensitivity); to draw on ethical

principles and consider arguments for alternative courses of action (ethical reasoning) and to make a judgment based on ethical reasoning will clearly be needed. But ethical decision making in the clinic, like clinical decision making, is a dynamic and interactive process, requiring dialogue between clinician and patient, and often a patient's family, identifying perspectives and values of those involved, and knowledge of personal, organisational and societal constraints on decision-making in a specific situation. Thus, any assessment tool for ethical decision making in clinical practice needs to first identify the full complement of competencies that the tool needs to include for a comprehensive evaluation. This will also include a discussion of what are the aims of good ethical decision making and whether the tool can measure whether these aims have been achieved.

The importance of clarifying the key aims and components of the process to be evaluated have been highlighted in the literature on evaluation of clinical ethics support services. A recent systematic review on ethical case interventions and their impact on care for patients found no data on decisional conflict, moral distress, patient involvement in decision-making, quality of life of patients or ethical competency (56). Another review of tools used to assess clinical ethics consultations concluded that the diversity of these tools used in studies stem from the diverse goals of assessing consultations, different contextual factors and practical limitations (57).

Even with an agreed set of competencies for ethical decision making in clinical practice underpinning an evaluation tool, there remains the challenge of how to implement such a tool in a workplace setting. Ideally evaluation of ethical decision-making should be embedded in overall assessment of clinical practice and therefore it might be useful to look to current models of workplace assessment for clinicians for inspiration. The UK foundation doctor

training programme includes a range of ‘supervised learning events’ that contribute to the trainee’s portfolio which forms the basis of the decision regarding their competency to progress. These include case-based discussions and ‘Mini Cex’ assessments involving direct observation of a doctor’s interaction with, and clinical management of, a patient. Both learning events use a structured framework for assessing competency in specific domains that guide the supervisor (58). Inclusion of a framework that evaluated ethical decision-making could be incorporated into this kind of assessment. In the area of communication skills training for clinicians, studies have described using observation and feedback from senior clinicians and patients and families in the assessment of communication skills for trainee physicians (59, 60). Similar approaches may work for ethical decision-making training and evaluation.

The recent calls for setting standards for training and evaluating the impact and efficacy of ethics consultation in the U.S. have also led to the development of new tools. The Assessing Clinical Ethics Skills (ACES) tool (61) is designed to be used in an educational setting with simulated ethics consultation cases and assesses a range of interpersonal skills, including specific behaviours that the trainee ethics consultant should demonstrate. (7). Adapting such a tool to capture the elements of ethical decision-making in clinical practice could be a powerful educational tool for use in both the classroom (with simulation) or in clinical practice.

These workplace and educational assessment tools and models have potential for development of assessment of ethical decision-making that translate into clinical practice but they are resource intensive (62). Furthermore, direct observation and feedback on a very limited number of cases may not capture consistency of ethical decision-making across the

diversity and complexity of clinical situations that health care professionals encounter. There is a need for valid and reliable tools that can evaluate not only whether individual clinicians have the competencies for ethical decision-making but also whether ethical decision-making is implemented consistently in practice.

Conclusion

Despite previous calls for research to develop evaluation methods that address elements of ethical decision-making other than moral judgment and in particular assessment of ethical decision-making in practice (35), our review found that little progress has been made. Given the increasing focus on the ethical dimension of decisions relating to patient care, and the potential harm to patients of poor ethical decision-making, there is a moral obligation for clinicians, their trainers, and those providing ethics support to clinicians, to demonstrate that educational and other interventions have an impact on this element of clinical practice. There is a clear need for further work to develop valid and reliable instruments to evaluate clinicians' ethical decision-making in practice. These could be used as part of formative assessment and learning in clinical training and continuing professional development, in addition to providing a mechanism for evaluating interventions aiming to support and improve ethical decision-making in relation to patient care.

List of abbreviations

- UK – United Kingdom
- EPA - Entrustable Professional Activities
- NIHR - National Institute for Health Research
- PIT - Problem Identification Test
- MERJT - Medical Ethical Reasoning and Judgement Test

406 DERJT - Dental Ethical Reasoning and Judgement Test

407 DEST - Dental Ethical Sensitivity Test

408 OSCE - objective structured clinical examination

409 ECQAT - Ethics Consultation Quality Assessment Tool

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411 References

- 412 1. The Association of American Medical Colleges. The Core Entrustable Professional Activities
413 (EPAs) for Entering Residency. 2018.
- 414 2. Ten Cate O, Scheele F. Viewpoint: competency-based postgraduate training: can we bridge
415 the gap between theory and clinical practice? Acad Med. 2007;82(7):542–7.
- 416 3. General Medical Council. Outcomes for graduates. General Medical Council; 2018.
- 417 4. Institute of Medical Ethics. Core Curriculum for Undergraduate Medical Ethics and Law 2019.
- 418 5. Joint Royal Colleges of Physicians. Training Board Curriculum for internal medicine. 2019.
- 419 6. Brooks L, Bell D. Teaching, learning and assessment of medical ethics at the UK medical
420 schools. J Med Ethics. 2017;43(9):606-12.
- 421 7. Pinilla S, Lenouvel E, Cantisani A, Klöppel S, Strik W, Huwendiek S, et al. Working with
422 entrustable professional activities in clinical education in undergraduate medical education: a
423 scoping review. BMC Med Educ. 2021;21(172).
- 424 8. Bassford C, Slowther AM, Griffiths F, Perkins G, Ryan M, Dale J, et al. Gatekeeping in
425 intensive care: Understanding and improving the decision-making process surrounding admission to
426 the intensive care unit. Protocol. . Health Services and Delivery Research 2015;13/10/14.
- 427 9. Molewijk B, Verkerk M, Milius H, Widdershoven G. Implementing moral case deliberation in
428 a psychiatric hospital: process and outcome. Medicine, health care, and philosophy. 2008;11(1):43-
429 56.
- 430 10. Foglia MB, Fox E, Chanko B, Bottrell MM. Preventive ethics: addressing ethics quality gaps on
431 a systems level. Joint Commission journal on quality and patient safety. 2012;38(3):103-11.
- 432 11. Reiter-Theil S, Mertz M, Schurmann J, Stingelin Giles N, Meyer-Zehnder B. Evidence -
433 competence - discourse: the theoretical framework of the multi-centre clinical ethics support project
434 METAP. Bioethics. 2011;25(7):403-12.
- 435 12. van der Dam S, Molewijk B, Widdershoven GAM, Abma TA. Ethics support in institutional
436 elderly care: a review of the literature. Journal of Medical Ethics. 2014.
- 437 13. Royal College of Physicians of London. Ethics in practice. Background and recommendations
438 for enhanced support. Report of a Working Party, 2005; 2005.
- 439 14. Nuffield Council on Bioethics. Critical care decisions in fetal and neonatal medicine: ethical
440 issues. Nuffield Council; 2006.
- 441 15. Hem MH, Pedersen R, Norvoll R, Molewijk B. Evaluating clinical ethics support in mental
442 healthcare: a systematic literature review. Nursing ethics. 2015;22(4):452-66.
- 443 16. Aulisio MP, Arnold RM, Youngner SJ. Health care ethics consultation: nature, goals, and
444 competencies. A position paper from the Society for Health and Human Values-Society for Bioethics
445 Consultation Task Force on Standards for Bioethics Consultation. Ann Intern Med. 2000;133(1):59-
446 69.
- 447 17. Slowther A, Bunch C, Woolnough B, Hope T. Clinical ethics support services in the UK: an
448 investigation of the current provision of ethics support to health professionals in the UK. Journal of
449 medical ethics. 2001;27 Suppl 1:i2-8.

18. Molewijk AC, Abma T, Stolper M, Widdershoven G. Teaching ethics in the clinic. The theory and practice of moral case deliberation. *Journal of medical ethics*. 2008;34(2):120-4.
19. Schildmann J, Molewijk B, Benaroyo L, Forde R, Neitzke G. Evaluation of clinical ethics support services and its normativity. *Journal of medical ethics*. 2013;39(11):681-5.
20. de Snoo-Trimp JC, Molewijk B, Ursin G, Brinchmann BS, Widdershoven GA, de Vet HC, et al. Field-testing the Euro-MCD Instrument: Experienced outcomes of moral case deliberation. *Nurs Ethics*. 2020;27(2):390-406.
21. de Snoo-Trimp JC, Molewijk AC, Svantesson M, Widdershoven GAM, de Vet HCW. Field-Testing the Euro-MCD Instrument: Important Outcomes According to Participants Before and After Moral Case Deliberation. *HEC Forum*. 2020.
22. Haan MM, van Gorp JLP, Naber SM, Groenewoud AS. Impact of moral case deliberation in healthcare settings: a literature review. *BMC Medical Ethics*. 2018;19(1):85.
23. Schildmann J, Nadolny S, Haltaufderheide J, Gysels M, Vollmann J, Bausewein C. Do we understand the intervention? What complex intervention research can teach us for the evaluation of clinical ethics support services (CESS). *BMC Medical Ethics*. 2019;20(1):48.
24. Dauwerse L, Weidema F, Abma T, Molewijk B, Widdershoven G. Implicit and explicit clinical ethics support in The Netherlands: a mixed methods overview study. *HEC Forum*. 2014;26(2):95-109.
25. Andereck WS. Development of a hospital ethics committee: lessons from five years of case consultations. *Cambridge quarterly of healthcare ethics : CQ : the international journal of healthcare ethics committees*. 1992;1(1):41-50.
26. Cardy RL, Selvarajan TT. Assessing ethical behavior: the impact of outcomes on judgment bias. *Journal of Managerial Psychology*. 2006;21(1):52-72.
27. Rest JR, Narvaez, D., Thoma, S. J., & Bebeau, M. J. DIT2: Devising and Testing a Revised Instrument of Moral Judgment. *Journal of Educational Psychology*. 1999;91(4):644-59.
28. Rest J. The major components of morality. In: Kurtines W GJ, editor. *Morality, moral development, and moral behavior*. New York: Wiley 1984. p. 24-38.
29. Rest JR, Narvaez D. *Moral development in the professions*. Hillsdale, NJ: Lawrence Erlbaum; 1994.
30. Rest J, Narvaez D, Bebeau MJ, Thoma SJ. *Postconventional moral thinking: a neo-Kohlbergian approach*. Mahwah, NJ: Lawrence Erlbaum; 1999.
31. Caldicott C, Faber-Langendoen K, Bebeau M, Thoma S. *Assessing Moral Reasoning in Medical Training and Practice: A Pilot Study*. New York City, USA: Cambridge Consortium for Bioethics Education; 2010.
32. Crisham P. Measuring moral judgment in nursing dilemmas. *Nurs Res*. 1981;30(2):104-10.
33. Ketefian S. Professional and bureaucratic role conceptions and moral behavior among nurses. *Nurs Res*. 1985;34(4):248-53.
34. Kotzee B, Ignatowicz A. Measuring 'virtue' in medicine. *Medicine, health care, and philosophy*. 2016;19(2):149-61.
35. Bebeau MJ. The Defining Issues Test and the Four Component Model: Contributions to professional education. *Journal of Moral Education*. 2002;31(3):271-95.
36. Baldwin D, Self D. The Assessment of Moral Reasoning and Professionalism in Medical Education and Practice. In: Stern D, editor. *Measuring Medical Professionalism*. Oxford: Oxford University Press; 2005.
37. Bebeau MJ, Rest JR, Yamoore CM. Measuring dental students' ethical sensitivity. *J Dent Educ*. 1985;49(4):225-35.
38. Hebert P, Meslin E, Dunn E, Byrne N, Reid S. Evaluating Ethical Sensitivity in Medical Students: using vignettes as instrument. *Journal of medical ethics*. 1990;16(3):141-45.
39. Drumwright M, Prentice R, Biasucci C. Behavioral Ethics and Teaching Ethical Decision Making. *Decision Sciences Journal of Innovative Education*. 2015;133(3):431-58.
40. Smith S, Balint J, Krause K, Moore-West M, Viles P. Performance-Based Assessment of Moral Reasoning and Ethical Judgement Among Medical Students. *Academic Medicine*. 1994;69(5):381-6.

41. Mokkink LB, Terwee CB, Patrick DL, Alonso J, Stratford PW, Knol DL, et al. The COSMIN checklist for assessing the methodological quality of studies on measurement properties of health status measurement instruments: an international Delphi study. *Quality of life research*. 2010;19(4):539-49.
42. Pearlman RA, Foglia MB, Fox E, Cohen JH, Chanko BL, Berkowitz KA. Ethics consultation quality assessment tool: A novel method for assessing the quality of ethics case consultations based on written records. *The American Journal of Bioethics*. 2016;16(3):3-14.
43. Akabayashi A, Slingsby BT, Kai I, Nishimura T, Yamagishi A. The development of a brief and objective method for evaluating moral sensitivity and reasoning in medical students. *BMC Medical Ethics*. 2004;5:E1.
44. Siegler M, Rezler AG, Connell KJ. Using simulated case studies to evaluate a clinical ethics course for junior students. *J Med Educ*. 1982;57(5):380-5.
45. McAlpine H, Kristjanson L, Poroch D. Development and testing of the ethical reasoning tool (ERT): an instrument to measure the ethical reasoning of nurses. *J Adv Nurs*. 1997;25(6):1151-61.
46. Savulescu J, Crisp R, Fulford K, Hope T. Evaluating ethics competence in medical education. *Journal of medical ethics*. 1999;25(5):367-74.
47. Chao S-Y, Chang Y-C, Yang S, Clark M. Development, implementation, and effects of an integrated web-based teaching model in a nursing ethics course. *Nurse education today*. 2017;55:31-7.
48. Kim WJ, Park JH. The effects of debate-based ethics education on the moral sensitivity and judgment of nursing students: A quasi-experimental study. *Nurse Educ Today*. 2019;83:104200.
49. Goldie J, Schwartz L, McConnachie A, Morrison J. The impact of three years' ethics teaching, in an integrated medical curriculum, on students' proposed behaviour on meeting ethical dilemmas. *Medical education*. 2002;36(5):489-97.
50. Goldie J, Schwartz L, McConnachie A, Morrison J. The impact of a modern medical curriculum on students' proposed behaviour on meeting ethical dilemmas. *Medical education*. 2004;38(9):942-9.
51. Turner SL, Bechtel GA. The effectiveness of guided design on ethical decision making and moral reasoning among community nursing students. *Nursingconnections*. 1998;11(1):69-74.
52. Singer PA, Robb A, Cohen R, Norman G, Turnbull J. Evaluation of a multicenter ethics objective structured clinical examination. *Journal of general internal medicine*. 1994;9(12):690-2.
53. Singer PA, Robb A, Cohen R, Norman G, Turnbull J. Performance-based assessment of clinical ethics using an objective structured clinical examination. *Acad Med*. 1996;71(5):495-8.
54. Lohfeld L, Goldie J, Schwartz L, Eva K, Cotton P, Morrison J, et al. Testing the validity of a scenario-based questionnaire to assess the ethical sensitivity of undergraduate medical students. *Med Teach*. 2012;34(8):635-42.
55. Ketefian S. Moral reasoning and ethical practice in nursing. *Measurement issues*. *Nursing Clinics of North America*. 1989;24(2):509-21.
56. Schildmann J, Nadolny S, Hltaufderheide J, Gysels M, Vollmann J, Bausewein C. Ethical case interventions for adult patients. *Cochrane Database of Systematic Reviews*. 2019(7):Art. No.: CD012636.
57. Yoon NYS, Ong YT, Yap HW, Tay KT, Lim EG, Cheong CWS, et al. Evaluating assessment tools of the quality of clinical ethics consultations: a systematic scoping review from 1992 to 2019. *BMC Medical Ethics*. 2020;21(1):51.
58. UK Foundation Programme. Supervised Learning Events [Available from: <https://foundationprogramme.nhs.uk/curriculum/supervised-learning-events/>].
59. Roze des Ordons AL, Doig CJ, Couillard P, Lord J. From Communication Skills to Skillful Communication: A Longitudinal Integrated Curriculum for Critical Care Medicine Fellows. *Academic medicine : journal of the Association of American Medical Colleges*. 2017;92(4):501-5.

- 550 60. Sullivan AM, Rock LK, Gadmer NM, Norwich DE, Schwartzstein RM. The Impact of Resident
551 Training on Communication with Families in the Intensive Care Unit. Resident and Family Outcomes.
552 Annals of the American Thoracic Society. 2016;13(4):512-21.
- 553 61. Wasson K, Adams WH, Berkowitz K, Danis M, Derse AR, Kuczewski MG, et al. What Is the
554 Minimal Competency for a Clinical Ethics Consult Simulation? Setting a Standard for Use of the
555 Assessing Clinical Ethics Skills (ACES) Tool. AJOB Empir Bioeth. 2019;10(3):164-72.
- 556 62. Wilkinson JR, Crossley JG, Wragg A, Mills P, Cowan G, Wade W. Implementing workplace-
557 based assessment across the medical specialties in the United Kingdom. Medical education.
558 2008;42(4):364-73.

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560 **Table 1. Summary of included studies**

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Authors and year	Country	Name/brief description of evaluation tool	Target population	Validity testing	Reliability testing	Intervention evaluated	Language of tool	What was measured
Siegler, 1982 (44)	US	A series of case vignettes with questions related to clinical and ethical dimension of the case; students asked to give reasons for their answers to the individual question	Medical students (36 in the experimental group and 29 in the control group)	Scoring categorisation of reasons developed by several members of weighting of reasons reflected values of teaching staff	Two independent scorers each scored 10 students' assessments and reached agreement on 88% of responses	Experimental teaching course in ethics	English	Ethical reflectiveness and reasoning
Smith, 1994 (40)	US	Performance based clinical skills assessment; students assessed on performance with standardised patient based on five behaviours and on written element of the assessment which asked students to list the moral conflicts identified and analyse 2 of them.	511 medical students	Not described	For written portion: the Spearman rank-correlation coefficients for pairs of readers who jointly rated more than ten students	Medical curriculum	English	Moral reasoning and ethical judgement
Singer, 1994 (52)	Canada	Objective structured clinical examination (OSCE); six ethics OSCE stations; stations based on actual cases described; scoring checklists developed using videotaped encounters between attending physicians and standardized patients.	66 medical students and residents	Performance of eight expert clinicians in response to the scenarios	Interrater reliability determined using intra class correlation coefficient Internal consistency reliability calculated using Cronbach's alpha	Medical curriculum	English	Performance in the OSCE
Singer, 1996 (53)	US	Four ethics stations on the objective structured clinical examination (OSCE); cases developed based on legal cases; scoring checklists developed by videotaping performances of 4-6 staff physicians on each of the stations, then transcribed and reviewed by the physicians to identify comments most commonly mentioned and consistent with bioethical principles.	88 final year medical students	Content validity tested by use of staff physicians in development of station	Interrater reliability scored using inter-class correlation coefficients.	Medical curriculum	English	Performance in the OSCE
McAlpine, 1997 (45)	Australia	Ethical Reasoning Tool (ERT). Case reflections are scored for each component of ethical reasoning against three professional response levels (traditional/traditional reflective/reflective). And eight components of ethical reasoning: (1) recognition of ethical issue; (2) use of ethical framework; (3) use of personal values; (4) use of professional values; (5) perception of the nurse's role; (6) perception of therapeutic nurse-patient relationship; (7) communication patterns; (8) potential action.	30 nursing students	Content validity-assessed by panel Construct validity Wilcoxon matched pairs signed rank test used to test changes in scores from pre-test to post test. Confirmed by a content analysis of students' reflections	Philosopher not connected with the study used the tool to score a random sample of 25% of papers. At least 75% agreement on level of response was achieved for 11 of 15 students.	Ethics study unit in medical curriculum	English	Cognitive reasoning

				on completing the post test.				
Turner and Bechtel, 1998 (51)	US	Ketefian's Judgment about Nursing Decisions (JAND), six stories with ethical dilemmas in practice; respondents rank which behaviour is most professionally desirable (moral reasoning) and which is most likely to occur (ethical decision-making).	Community health nursing students (149 students)	Content validity of JAND reported as being established with internal consistency measures giving alpha coefficients from 0.66 to 0.73 for ethical decision-making	Not described	Nursing curricula (nursing students enrolled in the study from three undergraduate programmes)	English	Ethical decision-making and moral reasoning
Savulescu, 1999 (46)	UK	Six vignettes constructed to reflect ethical issues arising in clinical practice; answers to vignettes evaluated by three markers with formal training in philosophy/bioethics and experience of teaching medical ethics and using a set of principles/marketing criteria developed for that purpose.	Medical students (30 scripts assessed)	Content validity assessed by naïve markers scores compared with marks by primary markers using the marking scheme.	Test-retest reliability evaluated by the extent to which the same student answering the same script two months later was given the same mark, from the same rater.	Medical ethics course in medical curriculum	English	Ethical awareness and core critical thinking skills
Goldie et al., 2002 and 2004 (49, 50)	UK	Ethics and health care survey instrument (EQUAT)/ 12 case vignettes which include an ethical dimension; nine have consensus opinion regarding preferred answer and 3 where there is reasonable disscensus; participants asked to choose preferred answer and justify their decision.	238 medical students	Not described	Not described	Integrated medical curriculum	English	Proposed behaviour in ethical situation
Akabayashi et al., 2004 (43)	Japan	Two component survey -1. Japanese version of the ethical sensitivity test (Problem Identification Test (PIT) Students are asked to list all the ethical issues related to each case in 3 vignettes. 2. Two vignettes from the Japanese version of the Defining Issues Test (DIT). In the DIT students are asked to choose the most suitable action, list reasons for that action and order four most important reasons.	Medical students and graduates (residents) (559 medical school students and 272 residents)	Referred to validity of the test in other papers	Not described	Medical curriculum with second year medical ethics lectures	Japanese	Moral sensitivity and reasoning
Lohfeld et al., 2012 (54)	UK	EHCQ-2 (Ethics in health care questionnaire) version 2 - ethical dilemmas in 12 clinical vignettes; subjects are asked to choose the best option from several pre-set responses; rationale for the choice is also explored by asking subjects to write a short answer that explains their thinking. These explanations are then scored through a formal coding system.	Medical students (20 final year McMaster University students and 45 final year Glasgow students)	Content validity was ensured by having a team of experts review the cases and reach consensus on the final versions.	Assessment of the performance of medical students on two occasions, separated by 2 weeks, using 2 or 3 trained raters at each site	Medical curriculum (McMaster - problem-based programme; Glasgow University - integrated, problem-based curriculum)	English	Ethical sensitivity
Pearlman et al., 2016 (42)	US	A records-based assessment using the record of a clinical ethics case consultation. Scoring is based on four key elements of an ethics consultation	Clinical ethics consultants (14	Verbal feedback from nine reviewers who were members	Scoring of a sample of case consultation records as part of an ASBH quality attestation	Clinical ethics consultation	English	Identification of ethical issue, relevant

		(ethics question, consultation specific information, ethical analysis, conclusions and recommendations. Each element is scored within 2 categories acceptable/less than acceptable using 4 key descriptors: poor; less than adequate; adequate; and strong. Each element has a set of descriptors about what should be included in the record.	different consultations)	of the SBH Quality Attestation Presidents Taskforce	pilot. 43% inter rater agreement between scores and 74% agreement regarding acceptable/not acceptable categories			information gathering, ethical analysis and ethical decision-making
Chao et al., 2017 (47)	Taiwan	Nursing ethical decision-making ability scale Questionnaire survey of 30 questions reflecting four dimensions of ethical decision-making recognising differences, comparing differences, self-dialogue and identifying implications. Self-assessment.	Nursing students (51 in the experimental group and 49 in the control group)	Not described References validity testing in an unpublished paper	Not described	Web based ethics course	Taiwanese	Self-assessment of ethical decision-making
Kim and Park 2019 (48)	Korea	Ketefian's Judgment about Nursing Decisions (JAND), translated and customized for the Korean context by the authors, with six patient-care vignettes each containing moral or ethical implications	64 senior years nursing students (35 in the debate group and 29 in the lecture group).	Content validity of Korean JAND reported in another referenced paper by the authors	Not described	Experimental debate-based ethics education	Korean	Moral judgement