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

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6

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52 Contributorship Statement (Specific contribution of authors in the paper)
53 AMS and CB led the study from design through to writing up study reports. FG led the
54 qualitative component of the study. KR led the literature synthesis component of the study.
55 AI, AMS and KR undertook this systematic review. SJ structured the database searches for
56 the systematic review. AI and AMS drafted this paper. All authors contributed to writing the
57 paper and read and approved the final version.

58

59

60

61

62 Abstract

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

78

79 Background

80 Since the 1980s the ethical dimension of clinical decision-making has received increasing
81 attention from academic ethicists, from those responsible for training future health care
82 professionals and from health care organisations and practising clinicians themselves.
83 Advances in medical science, changing demographics and limited resources create ethical
84 dilemmas across the spectrum of care including treatment decisions, sharing of information,
85 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.

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

117

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

127

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

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

141

142 [Interventions to improve ethical decision-making](#)

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

158 quality of decision-making within the service itself (12, 19). The Euro-MCD Instrument,
159 specifically designed to measure outcomes of moral case deliberation, focuses on how
160 participants perceive the importance of outcomes and experience these outcomes after the
161 deliberation (20, 21). Recent systematic and literature reviews on clinical ethical support cite
162 a number of other evaluation tools, but conclude that evaluation is still an underdeveloped
163 area (22, 23). Research on moral deliberation groups or individual ethics consultations have
164 found that clinicians find them helpful and report that they reduce conflict, save money and
165 improve the overall quality of patient care (24, 25), but little is known about whether and how
166 these actually shape and influence health care professionals' decision-making in practice
167 (26).

168

169 Evaluation tools measuring ethical sensitivity and judgment

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

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

202

203 Literature review

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

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

209 See Supplementary file 1 for full search strategy.

210

211 We included empirical studies that:

212 • evaluated an intervention(s) aimed at improving ethical decision-making in clinical
213 care (we used the term “intervention” to refer to any strategy used to inform, build or
214 encourage healthcare professionals’ or students’ skills in dealing with ethical
215 challenges in clinical practice); and

216 • described tools or instruments that evaluated one or more components of the
217 intervention(s) aimed at improving ethical decision-making in clinical care.

218

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

225

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

231

232 Results of the systematic review

233 Characteristics of the included studies are presented in table 1. All studies except one (42),
234 evaluated interventions that were educational in type. These educational interventions were
235 diverse and included: a general medical curriculum with some lectures and discussion
236 relating to ethics in the Introduction to Medicine course (43); specific ethics course within a
237 medical or nursing curriculum (44-48); an integrated ethics thread in a medical curriculum
238 (49, 50); a specific educational tool for teaching ethics in a nursing curriculum (guided
239 design) (51); and a general medical or nursing undergraduate curriculum as part of the
240 medical or nursing curriculum in ethics (40, 52-54). Eight studies recruited medical students,
241 four studies nursing students and one study clinical ethics consultants as their participants.

242

243 INSERT TABLE 1 HERE

244 Table 1. Summary of included studies.

245

246 Tools and instruments to evaluate interventions to improve ethical decision-making in 247 clinical practice

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

256

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

278

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

282 Students' performance was scored using a checklist that was developed using the comments
283 made by practising physicians who were videotaped playing the role of the student and
284 interacting with the standardised patients. Each item on the checklist corresponded with the
285 comment made by the physicians and students were scored by two independent raters.
286
287 Only one study described an instrument for evaluating ethical decision-making in actual
288 clinical practice rather than using hypothetical scenarios (42). The instrument (Ethics
289 Consultation Quality Assessment Tool – ECQAT) was used to evaluate written records of
290 case consultations, which then form part of the patient clinical record. The ECQAT was
291 based on a holistic assessment model covering four key elements in the case consultation:
292 identifying the ethics question; eliciting consultation specific information; ethical analysis;
293 and making practical recommendations. The key elements have sub-elements that explain the
294 characteristics of the element and serve as the basis for rating the quality of the ethics
295 consultation. Each key element is then scored on a rating scale of 1-4 with 1 being poor and 4
296 strong. An overall assessment of acceptable/less than acceptable was also given. Interrater
297 reliability was 43% for the individual key element scores and 74% for the overall holistic
298 assessment score.

299

300 Discussion

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

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

308

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

321

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

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

341

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

350

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

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

367

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

376

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

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

385

386 Conclusion

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

399 List of abbreviations

400

401 UK – United Kingdom

402 EPA - Entrustable Professional Activities

403 NIHR - National Institute for Health Research

404 PIT - Problem Identification Test

405 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

410
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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 naive 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