

Ethics interventions conducted on healthcare professionals and healthcare students – A systematic review

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accepted 27.2.2017 to Nursing Ethics (letter of acceptance at the end of this document)

Abstract

Background: The ethics and value bases in healthcare are widely acknowledged. There is a need to improve and raise awareness of ethics in complex systems and in line with competing needs, different stakeholders and patients' rights. Evidence-based strategies and interventions for the development of procedures and practice have been used to improve care and services. However, it is not known whether and to what extent ethics can be developed using interventions.

Objectives: To examine ethics interventions conducted on healthcare professionals and healthcare students to achieve ethics-related outcomes.

Research design: A systematic review.

Methods: Five electronic databases were searched: CINAHL, the Cochrane Library, Philosopher's Index, PubMed and PsycINFO. We searched for published articles written in English without a time limit using the keywords: ethic* OR moral* AND intervention OR program OR pre-post OR quasi-experimental OR rct OR experimental AND nurse OR nursing OR health care. In the four-phased retrieval process, 23 full texts out of 4,675 citations were included in the review. Data were analysed using conventional content analysis.

Findings: It is possible to affect the ethics of healthcare practices through professionals and students. All the interventions were educational in type. Many of the interventions were related to the ethical or moral sensitivity of the professionals, such as moral courage and empowerment. A few of the interventions focused on identifying ethical problems or research ethics.

Conclusions: Patient-related outcomes followed by organisational outcomes can be improved by ethics interventions targeting professionals. Such outcomes are promising in developing ethical safety for healthcare patients and professionals.

Key words: ethics, healthcare, intervention, nursing, systematic review

INTRODUCTION

Healthcare has a strong ethical basis globally¹ and professionally.^{2,3} Ethical issues arise in the management and governance of health organisations and systems, particularly in terms of competing needs, stakeholders or values.¹ Several studies have pointed out the typical ethical problems that professionals, patients and leaders encounter in healthcare settings.⁴⁻⁷ However, research has highlighted an increased rate of burnout when professionals perceive that their ethical standards or values are not shared by the healthcare organisations with which they are affiliated.^{8,9} As an evidence-based approach is internationally accepted for the development of care and healthcare, and is considered a key competency in healthcare professionals,¹⁰ interventions to improve ethics and value bases are also needed.

Intervention studies are needed to find evidence of best practices. They are also powerful for implementing best practices. However, there are several difficulties in implementation, one of which is connected with professionals in a healthcare context. Especially in the field of ethics, activities are strongly tied to people, their knowledge, characteristics and behaviour.¹¹ There is evidence that some clinically integrated interventions have led to improvements in the knowledge, skills and/or attitudes of professionals.^{10,12} It is not known, however, how and to what extent ethics or value bases in healthcare have been or can be improved using interventions.

Given the complexity of the healthcare environment and systems, and focusing on people in a variety of settings, interventions and intervention studies are complex.^{13,14} An intervention has been defined in terms of action taken by healthcare professionals with the aim of improving the well-being of people with health and/or social care needs.¹⁵ In this review we investigated interventions conducted on healthcare professionals assuming that attained outcomes will benefit well-being and health of patients. Studies are more often carried out in a complex environment where the intervention outcomes may be one or several, and where the environment affects the outcomes and measurement of outcomes. Intervention implementation, recognising a framework for causal mechanisms and understanding the contextual factors are the most critical issues in intervention studies that need guidance and recognition.¹⁴ However, it is difficult to implement interventions if the content is challenging. Although the delivery of ethically sound healthcare and nursing care for patients is important, there is limited evidence about how ethics in healthcare and in nursing care can be systematically enhanced and whether there are effective interventions for doing so. Furthermore, measuring ethical concepts is challenging as the topics are often abstract and non-observable. To the best of our knowledge, there is no systematic review of the interventions in the field of ethics (hereinafter “ethics interventions”) on healthcare professionals and the outcomes of such interventions.

AIM AND OBJECTIVES

The aim of this review was to examine which ethics interventions have been conducted on healthcare professionals and healthcare students to achieve ethics-related outcomes. The ultimate goal was to support the understanding of the relevance of intervention studies in the field of ethics. The research questions were as follows:

- What types of ethics intervention have been tested on healthcare professionals or students?
- What are the outcomes of ethics interventions?
- What types of measure have been used to assess the effects of the ethics interventions?

METHODS

This study was a systematic review of the literature¹⁶ focused on ethics interventions related to healthcare professionals or students.

Search strategy

A computerised search was undertaken to identify relevant scientific research articles. Five electronic databases were searched: CINAHL, the Cochrane Library, Philosopher’s Index, PubMed (Medline) and PsycINFO from their earliest content up to 26 January 2016 using keywords and Boolean operators. The search phrase was: ethic* OR

moral* AND intervention OR program OR pre-post OR quasi-experimental OR rct OR experimental AND nurse OR nursing OR health care.

Inclusion and exclusion criteria

The inclusion criteria required the article to relate to: 1) an empirical, research-based study, 2) an intervention study with ethics content, 3) a study conducted in a healthcare context with a sample of healthcare professionals and/or students and, 4) a study reporting ethics-related outcomes. Articles were excluded if 1) they reported instrument development or testing or, 2) ethics interventions were targeted to patients.

Retrieval of the studies

Retrieval of the studies included four steps. Each stage of the search and elimination process was documented in the adapted version of the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA)¹⁷ flowchart (Figure 1). Firstly, in the identification phase, 4,675 citations were found in the databases, of which 1,057 were duplicates. Secondly, in the screening phase, 3,618 citations were screened on a title and abstract level. A total of 3,521 abstracts were excluded as they were not relevant based on the study context or topic of ethics intervention. In the third phase – the eligibility phase – the full texts of 43 articles were analysed against the inclusion and exclusion criteria and 22 full texts were eliminated in this phase. In the fourth and final phase, 21 empirical articles were included along with two additional, relevant articles found in the references lists, giving 23 empirical research articles to be included in the review.

Data analysis

Data were collected on a worksheet in table format. The information included the author(s), year, country of origin, design, aim of the study and participants. Secondly, information about the ethics intervention included type and description of the intervention content and how the intervention was administered. Thirdly, information about the outcomes and how they were measured was included. The effect of the intervention on the outcome was analysed using three-step categorisation (+ = positive effect, 0 = no effect, - = negative effect). Data were analysed using conventional content analysis.¹⁸ The original expressions used by authors in their article were used, without any interpretations.

Quality appraisal

The CONSORT statement¹⁹ was used to evaluate the quality of the study reports. The CONSORT statement guides reporting on randomised trials. As such, it was possible to evaluate quality using the CONSORT statement checklist in fifteen studies that had RCT or a similar research design, including experimental and control groups. The CONSORT list was applied using items 1–23, three items (registration, protocol and funding) were omitted as irrelevant to the current study. Furthermore, feasibility was included in the analysis of quality appraisal.

FINDINGS

Characteristics of the studies

The studies were published between 1987 and 2016 and the majority (n=19) published in the 2000s. The studies were carried out mainly in the USA (n=8), Europe including UK/England (n=2), Switzerland (n=1), Sweden (n=1) and Slovenia (n=1), in Asia including Iran (n=2), South Korea or Korea (n=3), China (n=1), Singapore (n=1) and Thailand (n=1) and in Australia (n=1). One study had international collaboration with data from Nigeria and the USA.

The designs of the studies (Table 1) included randomised controlled trials (RCT, 3 studies), a controlled prospective (1 study), an experimental design (1 study) and quasi-experimental (QE, 11 studies) and pre-post designs (7 studies). Twenty of the studies used pre- and post-tests after intervention, while three studies used only post-tests. There was a control group in 15 of the studies, and, in two studies, there were two experimental groups.

Insert Table 1 about here

The participants in the studies were mainly students. In total, 13 studies had students (from nursing, medical, dental or pharmacy technician) as respondents. Other studies (n=10) focused on nurses and physicians in the field of healthcare as respondents. The mean number of participants in experimental groups was 75 (range 20–238), and in control groups, the mean number of participants was 69 (range 13–182).

Implementation of the intervention

All interventions were educational in type. The interventions were multidimensional, combining different educational elements such as lectures, small-group discussions, workshops and ethical rounds (Table 2). The majority of the interventions took place face-to-face in small groups, and some utilised electronic learning environments.²⁰⁻²²

The content of the interventions focused on four different areas: 1) ethics in general, 2) research ethics, 3) identification of ethical problems and 4) ethical empowerment. In the area of ethics in general, the interventions provided foundational information about ethics in nursing and medicine with the aim of improving the ethical competence of professionals. Interventions related to research ethics focused on conducting ethically sound research as a researcher or participating in research projects in the workplace. Identifying ethical problems aimed to increase ethical sensitivity and problem recognition, and improve the skill of recognising ethical issues in healthcare. Ethical empowerment consisted of reducing moral distress, improving ethical behaviour and coping with ethical dilemmas from the perspective of nurses and managers.

Insert Table 2 about here

Outcomes

Ethics interventions had different outcomes. The majority of the interventions had positive outcomes, some had no effect and some had negative effects (Table 2).

Interventions had multiple outcomes related to ethical knowledge and performance (Table 2). The effects of the interventions can be divided into four categories. In the area of ethics in general, the interventions increased professionals' awareness of patients' rights,²³ improved knowledge about ethics,^{24,25} ethical competence,²⁵ ethical discrimination ability²⁶ and improved the ethical environment and organisational culture.²⁷ In the area of research ethics, knowledge,^{20,28} application of ethical principles²⁸ and working according to ethical codes improved.²⁸ In the area of identifying ethical problems, being a patient advocate (advocacy) and moral sensitivity improved²⁹ along with protecting ethical principles²⁹ and moral judgement.³⁰ In the area of ethical empowerment, moral distress decreased³¹⁻³³ and participants were able to identify strategies to cope with moral distress or reduce it.³¹ Moral courage could be increased with short-term teaching about ethics.³²

The studies had some contradictory results: in some studies, ethics interventions had no effect on moral development,³⁴ moral distress,³⁵ ethics knowledge³⁶ or moral reasoning,³⁷ while in some studies, there was a negative effect on factors such as the perceived gravity of bioethical issues²⁵ and moral distress.³⁸

It seems that lectures, as a purely didactic method, had no impact on the ethical competence of professionals or students.³⁶ Instead, multimethod interventions seem to be effective, allowing participants to reflect and discuss their thoughts in groups face-to-face or online. The implementation (frequency and timing) of interventions was poorly reported in the articles. Despite this, it seems that every implementation had at least some effect on the desired outcome.

Instruments

As is known from the methodological literature, the effects of outcomes are dependent on valid and reliable measures. In the studies, most of the outcome measures were developed for the particular study (Table 1). Only a few standardised and validated instruments were used, such as the Ethics Environment Questionnaire,²⁷ Corley's Moral Distress Scale,³⁹ the Moral Sensitivity Questionnaire⁴⁰ and Rest's Defining Issues Test.⁴¹ Otherwise, reporting of the instruments lacked clarity; for example, information about scaling and the number of items was omitted.

DISCUSSION

In this review, we aimed to examine ethics interventions and the outcomes of these interventions, as well as the instruments used to assess these outcomes. This knowledge is useful, as more powerful study designs are needed in the field of nursing and healthcare ethics to define best ethical practices and support evidence-based nursing.⁴²

Different ethical interventions have been conducted, although the number of interventions was rather limited. Thus, based on this review, there is a clear need to develop and implement ethics interventions in clinical practice and evaluate the effects of these interventions in the future. Interventions can lead to evidence to promote ethical best practice.^{6,15} Ethical quality is important in all fields of healthcare, so the need for intervention studies is general, and requires multi-disciplinary collaboration.

All of the interventions analysed were educational. Evidence based on studies is rather general, and only six studies used data randomised into experimental and control groups, almost half of them were quasi-experimental and the most common design was pre-post testing. Interventions varied in their type, nature, conduct and dosing. Administration varied and the implementation was mostly missing from the study reports. The majority were face-to-face interventions, although online interventions were also used. Thus, regarding the implementation of the interventions, no single type of effective educational intervention was identified, even though education is seen as important.⁴³ Also, it has been pointed out that organisational support is needed for moral courage⁴⁴⁻⁴⁶ and the ethical climate is connected with professional competency and job satisfaction⁴⁷; as such, organisational, complex interventions are also needed.

The content of the interventions was in four areas: ethics in general,⁴⁸ research ethics,⁴⁹ identification of ethical problems^{5,7} and ethical empowerment.⁵⁰ The importance of all these areas is self-evident, but they are mainly studies in descriptive and cross-sectional designs. Ethics as the content of an intervention study is complex. Targeted ethics interventions that address caring for different patient populations are needed.⁶

The outcomes of the tested interventions varied and the analysis remained descriptive. An increase in ethical knowledge, based on educational intervention, was the most common outcome – a natural outcome due to the nature of intervention. Furthermore, applying ethical principles²⁸ and working according to ethical codes,²⁹ as well as increased ethical sensitivity²⁹ and identifying ethical problems,⁵¹ increased moral courage and decreased moral distress were among the outcomes also indicated by other researchers.⁵²⁻⁵⁴ These should all be tested in ethical interventions,¹ although a more systematic approach with more systematic outcomes is needed, and new areas such as resilience⁵⁵ and moral efficacy⁴³ are suggested.

A more systematic approach will also be needed with the instruments used in the studies analysed here. Only a few standardised instruments were used, and most of the instruments used were mainly developed for each specific study. Although the intention to develop interventions and outcome measures in the same study were clearly needed, the validity of the study remained unclear as both the interventions and measures were developed for each study. Newly developed instruments are rarely able to detect change and are not usually sensitive and precise enough.⁵⁶ We challenge future researchers to use instruments developed in the field, and we challenge the authors of the instruments to develop their instruments further for systematic use. This has a special importance in the field of ethics because ethical concepts are abstract, vague and often difficult to measure. Further research could benefit from a review focusing on instruments with ethics content.

We have, however, identified many educational ethical interventions implemented in different countries. In the future, it would be important to develop these interventions, instruments used and protocols. This would allow us to develop research, and support the evidence-based ethical quality in the field of nursing and healthcare ethics. One key limitation in the studies was the lack of complex ethical trials¹⁵ in different healthcare contexts – these will be needed in the changing environments of the future.

Strengths and limitations

This review had some strengths and limitations. The absolute strength was to attempt to identify knowledge in the empirical field of ethical interventions and outcomes. Without that knowledge, it is not possible to develop ethical operations for evidence-based nursing. Ethical intervention also requires clarification. In this study, we accepted any intervention using ethical concepts in the expression of intervention and/or outcomes. In spite of this rather general definition, we were able to scope the field of ethical interventions.

We conducted the literature search following a systematic search protocol, using several comprehensive databases. These databases cover all professionals working in the healthcare sector, including professionals in clinical practice, such as healthcare ethicists, and healthcare and nursing students. The computerised search was conducted by one researcher with the support of the informatics in the library after determining the search targets in the research group. The search was done without time limitations to enable an in-depth investigation of the topic. A large number of citations were evaluated by two researchers first independently and then together to reach a consensus and to minimise selection bias. In problematic cases, a third researcher evaluated the citations to reach a consensus. A manual search of reference lists selected for this review produced two additional references.

All studies selected for this review were tabulated to produce data for the analysis. The analysis was performed by one researcher and the results were confirmed in the research team.

The limitations of the review are connected to the analysis of the data, as well as a challenging quality appraisal, which revealed variety in reporting and led to rather low quality in reporting, as reported in Table 1. Analysis of the data was then challenging due to the missing or limited information in the articles. The information provided would not enable the intervention to be repeated, even if it were found effective, and there was no clear detailed information on the implementation of educational interventions/programmes. For example, the roles and responsibilities of the learners in educational interventions were rarely described. Moreover, there seemed to be no acceptability evaluation for the interventions.

Conclusions

This review enhanced our understanding about ethics interventions in many ways. Firstly, we obtained preliminary evidence that it is possible to affect the ethics of practices through professionals and students. Secondly, we identified that all the interventions were educational in type. It would also be important to develop alternative interventions, such as testing ethics journal, clubs, checklists, ethical games and mobile applications. Thirdly, a variety of improved outcomes were identified. Many of these were important and urgently needed in healthcare organisations to highlight value-based healthcare. Many of these interventions were related to the ethical or moral sensitivity of professionals, such as moral courage and empowerment. Most importantly, patient-related outcomes and organisational outcomes can be improved by ethics interventions targeting professionals. Such outcomes are promising in developing ethical safety for healthcare patients and professionals.

Declaration of Conflicting Interests: The Authors declare that there is no conflict of interest.

Acknowledgements: None.

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Table 1. Studies included in the review (n=23)

Authors, year, country	Aim	Study design	Number of participants E (experimental) and C (control) groups, (*)=number of all participants	Instrument(s)	Consort
Abedian et al., ²³ 2014 Iran	To determine the effect of an education-based intervention on self-reported awareness and practice of nurses in observing patients' rights.	Quasi-experimental, pre-post intervention	Nurses (N=93) from 2 teaching hospitals E: n=50 C: n=43	- Questionnaire about Patient's Bill of Rights (21 items). Part 1 Awareness/Knowledge about Patient's Bill of Rights Part 2 Practice of Patient 's Bill of Rights Scale: Awareness: 1=correct, 0=wrong Practice: 1=appropriate, 0=not-appropriate	15/35
Ajuwon & Kass ²⁸ 2008 Nigeria & USA	To develop the capacity of academic staff of the College of Medicine, University of Ibadan, Nigeria, to conduct ethically acceptable research involving human participants.	Pre-post intervention (no control group)	Academic staff from university; medicine, nursing, pharmacy, social science and laboratory science: n=97 *pretest & posttest 1 month follow-up, n=59	- Questionnaire, 23 items, (adaptation of the instrument developed by the Family Health International, 2002 ⁵⁷), - Knowledge was assessed by requesting trainees to list three international guidelines and regulations that they knew, and identify three issues that they perceived were important for the conduct of such research. - Level of ethics reasoning: two case studies.	NA
Baykara et al., ²⁹ 2015 England	To determine the effect of the ethics training on fourth-year students of the nursing department recognizing ethical violations experienced in the hospital and developing ethical sensitivity.	Pre-post intervention, randomized	4th year nursing students (N=50) E: n=25 C: n=25	- Form including three sections: *11 items of sociodemographics and ethical sensitivity. *Moral Sensitivity Questionnaire ⁴⁰ ; 6 subscales, 30-item * The observation form: observation of students on ethical principle violations developing in the clinical environment.	16/35
Beumer ³¹ 2008 USA	To determine if information presented to the participants can impact the ICU nursing staff's experience of moral distress.	Pretest, post-test	Registered nurses (N=38) from ICU E: n=25 RN staff C: n=13 RN supplemental staff	- The Moral Distress Survey (Modified from Corley's Moral Distress Scale ³⁹); 2 subscales, 12-items	7/35
Chin et al., ²⁴ 2011 Singapore	To evaluate the effect of the newly integrated ethics curriculum.	cohort-based quasi-experimental study, pretest and post-test	1st year medical students (N=283) E: n=119 students from academic year 2008/09 C: n=164 students from academic year 2007/08	- Questionnaire of opinions of biomedical ethics and law and ethics education, 26-items, three main areas: 1) students' opinions on selected taught topics in biomedical ethics and law, students' opinions on the importance of ethics education and formal training for teachers of medical ethics (10 items), 2) students' confidence in relation to specific clinical ethical competencies (6 items), 3) students' knowledge of topic areas (10 items)	14/35

Cho & Shin ²⁰ 2014 South Korea	To identify the effectiveness of the Good Research Practice program	Pre-post intervention, no comparison/control group.	Nurses (n=45) and nursing students (n=69) from hospitals, colleges of nursing and the Korean Nurses Association. *pretest & posttest	- Self-reported questionnaire of 24 items, 5-point Likert-type scale to assess the knowledge and perceptions about research ethics (higher value indicate better knowledge and perception). Questionnaire tailored for this study.	NA
Choe et al. ²⁵ 2014 Korea	To compare the effects of action learning and cross-examination debate on bioethics education for nursing students, specifically on their recognition of bioethical issues, experience of bioethics, and ethical competence in making practical ethical decisions.	Quasi-experimental, pre-post intervention, 2 experiment groups.	Nursing students (N=93) E1; Action learning: n=46 E2; Cross-examination debate: n=47	- Recognition of Bioethical Issues Questionnaire ⁵⁸ ; 2 scales, 19-item - The Experience of Bioethics Education ⁵⁹ ; 24-item, 5 point Likert scale - Need of Bioethics Education ⁵⁹ ; 24-item, 5 point Likert scale - Quality of Bioethics Education ⁵⁹ ; 24-item, 5 point Likert scale - Ranking of 7 areas in need of improvement to better the quality of bioethics education - Ethical Competence Questionnaire ⁵⁹ ; 5 subscales (respect for others, respect for self, ethical emotions, ethical knowledge, ethical behavior).	NA
Edmonson 2015 ³² USA	To strengthen the moral courage of nurse leaders with intervention	Pre-post intervention	Targeted group of nurse managers from community hospital: n=20 in pretest, n=16 in post-test	- Professional Moral Courage Scale (PMCS) ⁶⁰⁻⁶²	NA
Frisch ³⁴ 1987 USA	To demonstrate that carefully designed instruction can have a positive impact on the moral development of the nursing student.	Pre-post intervention	Nursing students (N=52) E: n=28 C: n=24	- Rest's Defining Issues Test (DIT) ⁴¹ ; two scores: level of principal thinking and stage rank.	17/35
Gazarian et al. ⁵¹ 2016 USA	To evaluate the effectiveness of narrative pedagogy on the development of advocacy in student nurses	Quasi-experimental, pre-post intervention. No control group.	Senior-level nursing students on final semester (n=36)	- Protective Nursing Advocacy Scale (PNAS) ⁶³ ; 43 items, 4 subscales: acting as an advocate, work status and advocacy actions, environment and educational influences, support and barriers to advocacy.	NA
Goldie et al. ⁶⁴ 2001 UK	To judge the impact of small group ethics teaching, in an integrated medical curriculum,	Quasi-experimental, pre-post intervention, nonequivalent control	Medical students (N=320) E: n=238 (1st year students, new curriculum)	- Instrument of ethics and health care (modified from the Ethics and Health Care Survey Instrument, see ⁶⁴), 12 vignettes	17/35

	on first-year students' potential behavior when facing ethical dilemmas.		C: n=51 (2th year students, old curriculum) E: pretest, n=162, posttest, n=111		
Källemark Sporrang et al. ³⁵ 2007 Sweden	To evaluate the impact on perceived moral distress of an education and training program in ethics, which included ethics rounds, for health care staff in different settings.	Controlled prospective intervention study (control)	Pharmacists', physicians' and nurses' (N=259); from three pharmacies and five clinical departments E: n=77 C: n=182	- Quality Work Competence (QWC) ⁶⁵ questionnaire modified by adding subscales of level of moral distress and tolerance/openness, in total 13 subscales Scale: 0-100 with high values denoting more moral distress and less tolerance	15/35
Lerkiatbundit et al. ³⁰ 2006 Thailand	To determine the effect of the Konstanz method of moral dilemma discussion on moral judgement in allied health students.	Intervention study	Dental nursing and pharmacy technician students (N=83) E: n= 42 C: n=41	- Moral Judgement Test (MJT) ⁶⁶ ; 12-item and two dilemmas in the MJT, each followed by 12 items. The items are grouped into six pro and six con arguments, 9-point Likert scale.	13/35
Lin et al. ²⁶ 2010 China	To compare the educational results of peer tutor problem-based learning and conventional teaching in nursing ethics education.	Experimental design, pre-post intervention, randomization (control with standard education)	Senior nursing students (N=142) E: n=72 C: n=70 *pretest & posttest	- Nursing ethical discrimination ability scale; 9 situations and 41-item; 5 point-Likert scale - Learning satisfaction survey; 9-item (3 open-ended, 6 closed questions); 5-point Likert scale	10/35
McDaniel ²⁷ 1998 USA	To assess the influence of an on-site ethics education program on the clinical practice of care providers; register nurses.	Quasi-experimental. pre-post research design with a comparison group	Nurses (N=40) from three acute care hospitals E: n=20 C: n=20 *pretest & posttest	- Ethics Environment Questionnaire ⁶⁷ ; 20-item, 5-point Likert scale - Organizational Culture Inventory (OCI) ⁶⁸ ; 120-item, 5-point Likert scale	14/35
Molazem et al. ³³ 2013 Iran	To investigate the effect of education based on the "4A model" on the rate of moral distress among the nurses in Cardiac Care Units (CCU)	RCT, pre-post intervention (control)	Nurses (N=60) from Cardiac Care Units (CCU) E: n=30 C: n=30 * pretest & posttest	- Corley's Moral Distress Scale ³⁹ ; 3 subscale, 30-item, 7-point Likert scale	16/35
Monteverde ³⁸ 2016 Switzerland	To demonstrate the educational transferability of the moral resilience approach in baccalaureate students in nursing	Explorative, quantitative pre-post interventional study;	Bachelor students in nursing science at three sites (n=166) * pretest & posttest, n= 167	- Moral Distress Thermometer (MDT) ⁶⁹ ; 1-item Scaling not mentioned	NA

	science through an educational intervention.				
Park & Park ⁷⁰ 2015 South Korea	To test the effectiveness of a case-based computer program, using an integrative ethical decision-making model on the ethical decision-making competency of nursing students.	Quasi-experimental, pre–post intervention comparison design (nonequivalent control with standard education)	4th year and 2nd year students (N=158) from different nursing schools. E: n=69 C: n=89 *pretest & posttest	- Perceived ethical preparation questionnaire ⁷¹ ; 7-item, 9-point scale (ranging from 1 = <i>limited</i> to 9 = <i>excellent</i>), - Korean version of the Defining Issues Test (KDIT) ⁷² ; 6-item - Kohlberg’s moral stages, are rated on a scale from 1 = <i>very important</i> to 5 = <i>not at all important</i> - Ethics Case Analysis; 3 cases - Satisfaction With the Ethics Course-questionnaire ⁷¹ ; 8-item, 5-point scale from 0 = <i>strongly disagree</i> to 5 = <i>strongly agree</i> .	18/35
Robinson et al. ²¹ 2014 USA	To change attitudes, increase knowledge, and develop skills to act on one’s knowledge.	Quasi-experimental, pre–post intervention, mixed methods (no control)	Nurses from two levels: point-of-care or staff nurses and advanced practice or supervisory nurses: n=67 *pretest & posttest	- Moral Distress Scale-Revised; 21-item (MDS-R) ⁷³ , Likert 0-4 (frequency 6 level of disturbance scales) - The Ethics Knowledge Scale; 20-item, true/false options - The Self-efficacy Scale in Clinical Ethics; 12-item; four-point scale	NA
Seal ⁷⁴ 2007 Australia	To explain the role of patient advocacy in the Advance Care Planning (ACP) process, to test whether The Respecting Patient Choices Program (RPCP) influences nurses work.	Quasi-experimental, pre–post intervention, qualitative part (control)	Acute care nurses (N=275) from different wards. E: n=142 C: n=133 E: pretest, n=81; posttest, n=69 C: pretest, n=82; posttest, n=74	- Questionnaire of experience of patient advocacy, end-of-life assurance and job satisfaction, 5-point Likert, developed for the study	15/35
Sulmasy et al. ³⁶ 1993 USA	To determine the impact of ethics education on house officers' knowledge of medical ethics, confidence in addressing ethical issues and responses to a simulated case involving resuscitation.	RCT (two experiment groups, control)	Medical house officers (N=64) with excellent or poor background of medical ethics training E1; Limited Intervention: n=15 E2; Extensive Intervention: n=16 C: n=33 *posttest	- Ethics knowledge test; 15-item, multiple-choice 1-5 - Confidence scale-instrument regarding ethical issues; 6 subscales (Modified from instrument of Bandura et al. ⁷⁵) - Questionnaire of one simulated case	17/35
Trobec & Starcic ²² 2015 Slovenia	To investigate whether students have good achievements in online learning and whether there are differences between students’ competences in	Quasi-experimental, randomization, pre-post intervention, qualitative part (control with standard education)	First-year nursing students (N=211): E (online) and C (classroom) (a-c) a: n=40 b: n=56 c: n=115	- Questionnaire of ethical principles and knowledge; 6 subscales Scale from 1 to 5 - Opinion about learning environment, (5=high to 1=low) and a Likert scale (5=totally agree to 1=totally disagree)	13/35

	learning online and in traditional classroom.		*pretest & posttest		
Turner & Bechtel ³⁷ 1998 USA	To evaluate the effectiveness of guided design as an instructional method in ethical decision making and moral reasoning among community health nursing students.	Quasi-experimental, only post intervention (no control)	Senior level nursing students from community health: n=144 *pretest & posttest	Judgment About Nursing Decisions (JAND) ⁷⁶ ; 39-items	NA

Table 2. Ethics interventions and their outcomes

Category	Type of intervention	Implementation	Outcome reported and effect	Reference
Ethics in general	Small group-program about patients' rights	PowerPoint® presentation and educational pamphlets containing Patient's Bill of Rights. 2 x 50 min	<ul style="list-style-type: none"> • Awareness of Patient's Bill of Rights (+) • Practice of Patient's Bill of Rights (+) 	Abedian et al. ²³
	Multidimensional-program about medical ethics; lectures and small group-typed tutorials with discussion of case studies.	Ethics teaching in the form of lectures (n=12), and tutorials (n=8). Topics were integrated with the organ system-based medical curriculum.	<ul style="list-style-type: none"> • Opinions of selected topics in biomedical ethics and law, importance of ethics education and formal training for teachers. (+) • Confidence in recognizing and decision-making in clinical ethical problems and dilemmas, communicating bad news to patients. (+) • Knowledge in biomedical ethics (+) 	Chin et al. ²⁴
	Small group-programs about bioethics. Action learning (AL)-program; visits to clinical practice site, discussing and finding solutions to real cases involving ethical issues. Cross-examination debate –program where students had prepare arguments for or against a given topic.	2 hrs/week x 15 weeks	<ul style="list-style-type: none"> • Knowledge of bioethics (+) • Perceived gravity of bioethical issues (-) • Experience of bioethics education (+) • Need of bioethics education (0) • Quality of bioethics education (0) • Ethical competence (+) 	Choe et al. ²⁵
	Multidimensional-program about nursing ethics aimed to impact cognitive moral development. Three different education sections by analyzing different values using the value analysis method.	8 contact hours	<ul style="list-style-type: none"> • Moral development (0) 	Frisch ³⁴
	Multidimensional-program about medical ethics; problem-based learning small-group discussion of cases, interactive discussion with ethicists, legal experts and members of other relevant disciplines.	9 x 3h	<ul style="list-style-type: none"> • Consensus in different areas, for example; autonomy, confidentiality, informed consent and whistleblowing (+) 	Goldie et al. ⁶⁴
	Training program to cover the different aspects of ethical competence development. Contents of lectures: theories of ethics as a tool in ethical decision making, theories of human dignity and aspects of	3 ethics lectures (3h/each) and 3 ethics rounds (1h/each)	<ul style="list-style-type: none"> • Moral distress (0) • Tolerance/Openness (+) • Performance feedback (+) 	Kälvemark Sporrang et al. ³⁵

	medical ethics such as prioritization. Each lecture was followed by ethics round.			
	Educational intervention of nursing ethics: introduction, small-group sessions using problem-based learning case. Control group: lecture-based-program; lectures and question answer-sessions.	8 x 1h 40min (to both groups same time)	<ul style="list-style-type: none"> Ethical discrimination ability (+) Learning satisfaction (0) 	Lin et al. ²⁶
	Workshop about ethics; using case-based instructional model, the program imparts ethics theories, ethics concepts and ethics decision making.	16 hours during 4 weeks	<ul style="list-style-type: none"> Ethical environment (+) Organizational culture (+) 	McDaniel ²⁷
	Case-based programs about nursing ethics; small-group discussion and analyzing of ethics cases using ethical decision-making model. Experimental group used computer program and control group used traditional paper assignment in classroom.	Students in both groups submitted their case analysis results to the and then participated in a 20 to 30-minute, in-class, small-group discussion of three to four students per group who analyzed the same three cases. 15-week course.	<ul style="list-style-type: none"> Perceived ethical preparation (+) Principled thinking (0) Ethics case analysis (0) Satisfaction with the ethics course (+) 	Park & Park ⁷⁰
	Multidimensional-program about clinical ethics; short foundation-course online, lectures, role-play, high-fidelity simulation and optional out-of-class clinical mentorship component for some participants.	2 h online + 10 x 8 h + 16h clinical mentorship	<ul style="list-style-type: none"> Moral distress (+) Ethics knowledge (+) Self-Efficacy (+) 	Robinson et al. ²¹
	Supportive program about patient advocacy; discussion and providing supportive framework to advance care planning and equipping nurses to advocate their patients.	Two day training	<ul style="list-style-type: none"> Fostered patient advocacy, (+) Quality end-of-life assurance (+) Associated job satisfaction (+) 	Seal ⁷⁴
	Lecture-based-program about ethics including lectures.	6 lectures	<ul style="list-style-type: none"> Ethics knowledge (0) Confidence regarding ethical issues (+) Simulated cases solution (0) 	Sulmasy et al. ³⁶
	Multidimensional-programs about philosophy and professional ethics in nursing.	Experimental group had small-group role play and discussion in online, control group in traditional classroom.	<ul style="list-style-type: none"> Knowledge of ethical principles (+) Opinion about learning environment (+) Ethical competence (+) 	Trobec & Starcic ²²

	Case-based-program about ethical decision making and moral judgement; discussion of guided planning and decision making process of narrative story. Case: Patient unable to advocate herself		<ul style="list-style-type: none"> • Moral reasoning (0) • Ethical decision making (+) 	Turner & Bechtel ³⁷
Research ethics	Research ethics training workshop.	Lectures, question and answer-sessions and small group-discussion of the case studies. 3 x 7 h	<ul style="list-style-type: none"> • Knowledge of principles of research ethics and guidelines. (+) • Application of the principles of research ethics. (+) • Knowledge about operations of an IRB and ethics reasoning in case studies. (+) 	Ajuwon & Kass ²⁸
	Multidimensional-program Good Research Practice. Topics of the program: bioethics, research ethics, institutional research board, research misconduct, publication ethics and copyright, collaborative research and conflict of interest.	Program proceeded with a 15-h-online instruction with web-based learning materials as well as a 15-h-off-line instruction. The 15-h-off-line instruction comprised a 3-h review of the core contents given on the online program, 9-h case analysis and small group discussion, and 3 h of miscellaneous activities such as orientation to the program, completion ceremony at the end of the program, and evaluation of the program. In the 3-h small group discussion, there were clinical cases of conflict in research ethics.	<ul style="list-style-type: none"> • Knowledge about research ethics (+) • Perception level of research ethics (+) 	Cho & Shin ²⁰
Identification of ethical problems	Multidimensional-teaching program about recognizing ethical violations (ethical codes, ethical responsibilities, ethical violations, and the precautions to prevent them)	Twice with an interval of 4 weeks.	<ul style="list-style-type: none"> • Moral sensitivity (+) • Observations of violations/protection ethical principles (+) 	Baykara et al. ²⁹
	Multidimensional program to help address ethical problems in practice, digital storytelling and discussion, processing and debriefing of students' clinical experiences using ethical framework model.	NA	<ul style="list-style-type: none"> • Perception of advocacy role (+) 	Gazarian et al. ⁵¹

	Intervention was Kontanz Method of Dilemma Discussion (KMDD) where moral dilemmas are supervised and discussed in larger group, and small-group discussion. Control group: small-group discussion without supervising; discussion about topics not directly related to ethics.	6 x 1,5h for both groups	<ul style="list-style-type: none"> • Moral judgement (+) 	Lerkiatbundit et al. ³⁰
Ethical empowerment	Didactic and interactive workshop about ways to identify moral distress and strategies to cope with or diminish it.	5 x 2 hours workshops during 4 weeks.	<ul style="list-style-type: none"> • Moral distress and coping with it (+) 	Beumer ³¹
	In phase one, participants self-evaluated their current level of professional moral courage. In phase two, the group was taught about ethics and moral courage and discussing virtue ethics.	1 x 2 h	<ul style="list-style-type: none"> • Level of professional moral courage (+) 	Edmonson ³²
	Educational workshop about moral distress; information and discussion of moral distress and stressful situations the participants had experienced and presentation of A4-model to identify and cope with moral distress.	2 x 4 h during 2 weeks	<ul style="list-style-type: none"> • Moral distress (+) 	Molazem et al. ³³
	Case-vignette-program about moral stressors; lecture introducing the typology of moral stressors, short discussion of the subject, and presenting of case vignettes of morally stressful situations.	4 x 30min	<ul style="list-style-type: none"> • Moral distress: Baseline without vignette (-) • Moral distress: Vignettes 1-4 (+) 	Monteverde ³⁸