Original Article

Needs assessment of ethics and communication teaching for neonatal perinatal medicine programs in Canada

Thierry Daboval MD MSc FRCPC FAAP^{1,2,3,9}, Emanuela Ferretti MD MSc FRCPC^{1,2,3}, Ahmed Moussa MD MEd FRCPC FAAP⁴, Michael van Manen MD PhD FRCPC⁵, Gregory P. Moore MD FRCPC^{1,2,3}, Ganesh Srinivasan MD⁶, Alexandru Moldovan BSc⁷, Amisha Agarwal MSc⁸, Susan Albersheim MD PhD FRCPC⁹; the Canadian Neonatal Ethics and Communication Teaching (CanNECT) working group

¹Division of Neonatology, Department of Pediatrics, Children's Hospital of Eastern Ontario, Ottawa, Ontario; ²Division of Newborn Care, Department of Obstetrics and Gynecology, The Ottawa Hospital – General Campus, Ottawa, Ontario; ³The University of Ottawa, Ottawa, Ontario; ⁴Division of Neonatology, Department of Pediatrics, Hôpital Sainte-Justine, University of Montreal, Montreal, Quebec; ⁵Division of Neonatal-Perinatal Medicine, Department of Pediatrics, John Dossetor Health Ethics Centre, University of Alberta, Edmonton, Alberta; ⁶Department of Pediatrics and Child Health, University of Manitoba, Winnipeg, Manitoba; ⁷Children's Hospital of Eastern Ontario, Student University of Ottawa, Ottawa, Ontario; ⁸Clinical Research Unit, Children's Hospital of Eastern Ontario Research Institute, Ottawa, Ontario; ⁹Division of Neonatology, Department of Pediatrics, University of British Columbia, Vancouver, British Columbia

Correspondence: Thierry Daboval, Department of Pediatrics, Division of Neonatology, Children's Hospital of Eastern Ontario, and Department of Obstetrics and Gynecology, Division of Newborn Care, The Ottawa Hospital – General Campus, University of Ottawa, 401 Smyth Road, Ottawa, Ontario K1H 8L1. Telephone 613-737-7600 ext. 2415, fax: 613-738-4847, e-mail tdaboval@cheo.on.ca or Emanuela Ferretti, Department of Pediatrics, Division of Neonatology, Children's Hospital of Eastern Ontario, and Department of Obstetrics and Gynecology, Division of Newborn Care, The Ottawa Hospital – General Campus, University of Ottawa, 501 Smyth Road, Ottawa, Ontario K1H 8L6. Telephone 613-737-8561, fax: 613-737-8889, e-mail eferretti@toh.on.ca

Abstract

Objective: To explore ethics education needs in Canadian Neonatal Perinatal Medicine (NPM) training programs.

Methods: A retrospective review of NPM trainees' performance at the National NPM Objective Structured Clinical Examination (OSCE) was undertaken for 2012 to 2017 and two distinct cross-sectional online surveys were carried out. One survey targeted recently graduated neonatologists (RGNs) who completed 2 years' training in a Canadian NPM program between 2010 and 2015; the other survey was sent to Canadian NPM training program directors (PDs). The domains of interest were: perception of education, ethics and communication topics, educational strategies, assessment of trainees' competencies, and barriers to neonatal ethics education.

Results: NPM trainees generally performed less well in stations involving ethics and communication relative to other domains on the National OSCE. Forty-seven RGNs (44.3%) and 12 PDs (92.3%) completed the survey. Over 90% of PDs and RGNs agreed on the importance of training in ethics and communication. Both groups highly valued training on topics related to communication. Preferred teaching strategies were experiential: observation and feedback. PDs mentioned the importance of using validated tools to regularly and formally assess trainees. They recognized challenges in regard to financial resources, physical space, and faculty training in patient–physician communication.

Conclusions: National OSCE results indicate the need to improve neonatal ethics and communication training in Canadian NPM programs. RGNs and PDs identified important topics, as well as teaching and evaluation strategies. These results can be used to develop a training program for ethics and communication in NPM.

Keywords: *Medical education; Ethics communication; Neonatal-perinatal-medicine; Objective structured clinical examination (OSCE); Assessment.*

Neonatology will always require an understanding of ethical issues. It is not simply the utilization, limitation, or discontinuation of medical therapies that require ethical insights; even routine care requires an appreciation of ethical considerations. As practitioners, we have ethical responsibilities to both infants and their families. Therefore, trainees need a sound foundation in medical ethics and communication (1,2).

Ethics teaching supports trainees to develop in their professional values, social perspectives, and interpersonal skills (3). Trainees' communication skills can be improved by structured teaching programs (4). Leading discussions or a well-informed decision-making process and attending to cultural, religious and other family needs are just a few key aspects of being a professionally competent physician (5). This position is supported by organizations such as the Accreditation Council for Graduate Medical Education (ACGME) (6) and the Royal College of Physician and Surgeon of Canada (RCPSC) (5); both value medical ethics and communication education among trainees, including those in Neonatal Perinatal Medicine (NPM) (6,7).

It would seem that the majority of Canadian NPM training programs fulfill their mandate for teaching medical ethics although there is a lack of standardization with respect to curriculum and teaching tools (8). In the USA, researchers have emphasized the need for a more standardized curriculum to support ethics education (9). An evidence-based, ubiquitous assessment strategy is required (8,9). These studies (8,9) and others (10) challenge us to consider how to best teach and assess knowledge and competencies in neonatal ethics and communication during NPM training programs.

Although teaching models in ethics and communication are emerging in NPM (11–14), the knowledge and competencies trainees need to learn and the best teaching strategies to support this learning must be determined. Multiple questions already exist: What competencies or professional activities should we expect trainees to be proficient in by the end of training? What is the optimal way to teach medical ethics to trainees? Which outcomes of ethics education should be evaluated (8,9,15)?

We, the Canadian Neonatal Ethics and Communication Teaching (CanNECT) working group, aimed to complete a national needs assessment by (1) reviewing the results of trainee performance on the national NPM objective structured clinical examination (OSCE), and (2) completing two national surveys—one of recently graduated neonatologists (RGNs) and one of NPM training program directors (PDs).

METHODS

Trainee performance on the National NPM OSCE exam

Each year, first and second year NPM trainees participate in Canadian National OSCE. Trainees include both international medical graduates as well as Canadian subspecialty trainees. Each individual OSCE station performance is scored using the following: a checklist completed by the examiner and two global rating scales out of 7, one completed by the examiner and the other completed by the station's standardized patient or health professional.

We reviewed NPM trainees' performance at the National NPM OSCE between 2012 and 2017. We compared the overall scores between OSCE stations aimed at assessing ethics and communication to those that assessed other domains including medical expert, health advocate, and collaborator.

For each year, paired t-tests were used to determine any statistically significant differences between the mean score across all trainees' scores for the ethics and communication stations to that for the stations that assessed other domains. A two-sided P-value less than 0.05 was considered statistically significant.

National survey of recent graduates of NPM training and NPM training PDs

We developed two distinct surveys about ethics and communication teaching to explore the perspectives of: 1) RGNs, who completed their training in a Canadian NPM training program between June 2010 and July 2015, and 2) Canadian NPM training PDs listed on the RCPSC website at the time of survey distribution. Our rationale was that RGNs and PDs would have important, contemporary insights on Canadian NPM ethics education training that could improve the ability of one to navigate difficult and ethically challenging clinical situations. We excluded RGNs who did not complete a full 2 years of Canadian NPM training.

A literature review of needs assessment models and methods of data collection for needs assessments in general and specifically in medical ethics education (10,16–20) informed the design and content of the RGNs survey. Two neonatologists with expertise in teaching ethics and communication and one senior NPM trainee drafted the first version. Four content and methodological experts reviewed the questions to ensure content validity. The members of the CanNECT working group reviewed the draft for final changes and approval. The survey was piloted with a sample of four senior NPM trainees and their suggestions were incorporated into the final survey. Surveyed domains included: demographic characteristics; attitudes

toward ethics and communication; tools to evaluate these domains; topics to be included in structured/scheduled education; and other educational strategies.

We adapted the questions from the RGNs survey for the PDs survey and added two sections: 1) assessment strategies of trainees' competencies, and 2) facilitators and barriers in teaching ethics and communication. Questions targeting characteristics of their NPM training program replaced the questions on demographic information included in the RGNs survey. The draft survey was piloted with four neonatologists and modifications were made for clarity before distribution.

Response fields of both surveys consisted of three types: 1) 1st to 7th ranking; 2) 5 or 6-point Likert-type scales (e.g., level of agreement and level of importance); and 3) open-ended questions. Both surveys were distributed and research data were managed using the Research Electronic Data Capture (REDCap) a secure, web-based application with survey capability designed to support electronic data capture (21). Nonidentifiable questionnaire responses were exported to a statistical software package for tabulation and analysis.

Following Children's Hospital of Eastern Ontario (CHEO) Research Ethics Board approval for both surveys, all PDs of the

13 Canadian NPM training programs were approached to solicit participation of RGNs. They were asked to e-mail their NPM trainees who completed training during the specified epoch (2010 to 2015). The e-mail sent to the RGNs included survey information and an online link. Two follow-up reminder e-mails were sent 6 weeks apart to the PDs to relay to their RGNs. To determine the response rate, we asked PDs to provide us with the total number of NPM trainees they contacted. The PDs were also invited by e-mail to complete their specific survey online. Again, two reminder e-mails were sent 6 weeks apart. For both RGNs and PDs, an additional 6 weeks' period from the last reminder e-mail was allowed before closing data collection. Consent to participate was implied by participants filling in the survey.

All descriptive statistics were computed using R statistical software version 3.4.1 (22). Statistics comparing RGNs to PDs were computed using SPSS version 24.0 (23). Two-sided P-values less than 0.05 were considered statistically significant. RGNs and PDs responses were compared in regard to perception of ethics and communication education and educational strategies to facilitate learning. Prior to any comparisons, questions were collapsed into three categories (disagree/neither disagree nor agree/agree) or level of preference (least favoured/

Table 1. OSCE stations comparison for 3 score types over 5 years

Evaluation characteristics	Ethics and communication stations Mean (SD)	Other stations Mean (SD)	P-value
2012 (N=64)			
Checklist (%)	64.9 (±14.9)	72.1 (±6.1)	<0.001
Examiner's global rating scale (out of 7)	4.9 (±1.1)	4.6 (±0.7)	0.04
SP ^a global rating scale (out of 7)	5.4 (±1.3)	5.3 (±0.7)	0.52
2013^b			
2014 (N=67)			
Checklist (%)	62.6 (±8.9)	67.2 (±7.4)	<0.001
Examiner's global rating scale (out of 7)	3.4 (±0.7)	4.7 (±0.7)	<0.001
SP global rating scale (out of 7)	4.1 (±0.8)	5.3 (±0.7)	<0.001
2015 (N=81)			
Checklist (%)	63.2 (±9.2)	69.7 (±7.3)	<0.001
Examiner's global rating scale (out of 7)	4.4 (±1.0)	4.8 (±0.7)	<0.001
SP global rating scale (out of 7)	4.9 (±1.0)	5.2 (±0.7)	<0.001
2016 (N=70)^c			
Checklist (%)	62.0 (±10.6)	66.8 (±10.1)	<0.001
SP global rating scale (out of 7)	5.0 (±1.0)	5.0 (±0.7)	0.95
2017 (N=72)			
Checklist (%)	72.0 (±10.0)	71.0 (±8.7)	0.44
Examiner's global rating scale (out of 7)	4.7 (±0.9)	4.6 (±0.8)	0.69
SP global rating scale (out of 7)	5.3 (±0.9)	5.2 (±0.8)	0.53

OSCE Objective Structured Clinical Examination.

^aSP Standardized patient.

^bThere was no data available for the year 2013.

^cThere was no examiner's global rating scale for the year 2016.

Table 2. Demographics and characteristics of RGNs and the NPM programs

Characteristics	n (missing)	No. (%)
RGNs (n=47)		
Age (years)	44 (3)	
≤30		3 (6.8)
30–39		31 (70.5)
40–49		9 (20.5)
≥50		1 (2.3)
Gender	43 (4)	
Male		22 (51.2)
Female		21 (48.8)
Year of graduation from the NPM training program	41 (6)	
2010		6 (14.6)
2011		3 (7.3)
2012		6 (14.6)
2013		11 (26.8)
2014		15 (36.6)
Location of undergraduate medical training and completion	44 (3)	
North America		11 (25)
Europe		5 (11.4)
Asia		17 (38.6)
Other regions		11 (25.0)
Location of paediatric residency training and completion	44 (3)	
North America		12 (27.3)
Europe		5 (11.4)
Asia		20 (45.5)
Other regions		7 (15.9)
Location of other training in another NPM program, if applicable	43 (4)	
No previous training		16 (37.2)
North America		11 (25.6)
Europe		3 (7)
Asia		9 (20.9)
Other regions		4 (9.3)
Current main area of practice	44 (3)	
Clinician in an academic center		36 (81.8)
Clinician in a nonacademic center		7 (15.9)
Other		1 (2.3)
Care level of NPM center of practice ^a		
Level 1	47 (0)	2 (4.3)
Level 2	47 (0)	9 (19.1)
Level 3	47 (0)	41 (87.2)
Number of ethically-challenging cases per month	44 (3)	
<1		4 (9.1)
1–5		36 (81.8)
6–10		2 (4.5)
>10		2 (4.5)
Own personal experience with a very sick newborn hospitalized in an NICU	44 (3)	
Yes		16 (36.4)
No		28 (63.6)

Table 2. *Continued*

Characteristics	n (missing)	No. (%)
NPM training programs (n=12)		
Average number of NPM clinical fellows per year		
<i>Canadian postgraduate</i>	11 (1)	
0		1 (9.1)
1–2		7 (63.6)
3–5		0 (0)
>5		3 (27.3)
<i>International Medical postgraduate</i>	11 (1)	
0		1 (9.1)
1–2		2 (18.2)
3–5		2 (18.2)
>5		6 (54.5)
Structured/scheduled teaching in ... is part of the NPM training curriculum		
... <i>clinic neonatal ethics</i>	11 (1)	
Yes		10 (90.9)
No		1 (9.1)
... <i>communication skills</i>	11 (1)	
Yes		9 (81.8)
No		2 (18.2)
Number of sessions per year devoted to clinical neonatal ethics education during the 2-year NPM training program	11 (1)	
No sessions devoted to ethics		0 (0)
1–2		4 (36.4)
3–4		4 (36.4)
5–6		3 (27.3)
7–10		0 (0)
10 and more		0 (0)
NPM training program offers an optional Masters or PhD in Bioethics, or equivalent	11 (1)	
Yes		4 (36.4)
No		6 (54.5)
Other		1 (9.1)

NPM Neonatal perinatal medicine; NICU Neonatal intensive care unit; RGNs Recently graduated neonatologists.

*Selection of more than one level was possible.

somewhat favoured/most favoured). Specifically for the section: ‘topics to be included in neonatal ethics and communication teaching’, PDs scored each topic by importance (6-point Likert-type scales), whereas RGNs ranked them (1st to 7th). Due to this difference and to allow valid comparisons, the distribution of responses across all topic questions was first obtained for PDs and then for RGNs. RGN responses were mapped to PD importance categories to obtain an approximately similar distribution of responses overall. They were then collapsed into the levels of preference described above before analysis.

To analyze the results from the open-ended questions, two authors independently reviewed the responses using qualitative approach content analysis to provide a summary of the main

themes. Responses were discussed until consensus was achieved. In the event of unresolved discordance between authors, a third author assisted to support discussion to achieve consensus.

RESULTS

Trainee performance on the National NPM OSCE

A total of 354 NPM participant records were available with annual participation ranging from 64 to 81 trainees. [Table 1](#) shows the overall results for ethics and communication stations in comparison with the other stations. NPM trainees performed more poorly in stations involving ethics and communication with statistical significance reached for at least one of the scoring metrics for 2012, 2014, 2015, and 2016.

National surveys of recent graduates of NPM training and NPM training PDs

Forty-seven out of 106 RGNs completed the online survey (44.3%) and 12 out of 13 PDs completed the survey (92.3%). Table 2 shows the RGNs demographics and NPM training programs' characteristics.

Importance of ethics education

The majority of RGNs (91.5%) and PDs (91.7%) agreed that training on how to deal with ethically challenging clinical situations is important ($P=0.9$). Although 89.4% of RGNs felt that they were well prepared to deal with ethically challenging

clinical situations by the end of their training, only 75% of the PDs agreed on this statement ($P=0.3$).

Topics for ethics education

RGNs and PDs ranked topics similarly as far as relative utility within a medical ethics curriculum (Figure 1). Topics related to communication were highly rated by both groups. Other topics mentioned by the RGNs in the open-ended questions were cultural differences and how to respect them, ethics related to the specificity of the parents' background, how to say sorry, approach to ethically challenging clinical scenarios, and how to identify stakeholders and evaluate all perspectives. PDs mentioned ethics

RGNs - Recently graduated neonatologists
PDs - Program directors

Figure 1. Participants' most favoured topics.

Figure 2. Percentage of participants who strongly agreed or agreed to the importance of the listed educational strategies.

related to medical technologies, limit of viability, communication skills including use of language and terms to avoid; the art of knowing 'what to say when', and professional duties and boundaries.

Educational strategies

RGNs and PDs ranked educational strategies for ethics education similarly (Figure 2). Interestingly, both PDs and RGNs valued hearing parents' testimonials to support learning. In the open-ended question, RGNs described other important factors to be considered that supported their learning in ethics and communication (Supplementary File). PDs mentioned the involvement of ethicists and the importance of a well-prepared or predefined curriculum in ethics and communication.

Assessment strategies

PDs were unanimous and strongly agreed on the importance of formally assessing NPM trainees' competencies including communication skills. The majority strongly agreed on the

importance of using tools other than the in-training evaluation report (82%), using well-validated tools (82%), and assessing trainees during the National OSCE (64%). Half of the PDs strongly agreed on the importance of assessing knowledge in neonatal ethics (55%). In the open-ended questions, PDs described the difficulty in assessing ethical communication in artificial settings such as the OSCE and suggested observation during real-life situations with post-encounter feedback as a better approach.

Barriers and facilitators

All PDs agreed that they had sufficient availability of faculty members to teach clinical neonatal ethics and 90% declared that they had strong faculty engagement. However, competing learning needs was a potential barrier identified by 70% of PDs. Seventy per cent of PDs had financial support for neonatal simulation; 18% of the respondents found that lack of faculty training in communication was an issue.

Table 3. Considerations for NPM PDs when developing a well-designed teaching ethics and communication program

1. Prioritize teaching concepts related to communication with parents including breaking bad news, truth-telling and discuss goals of care including limitation of intensive care measures with redirection towards palliative care
2. Include teaching methods that allow trainees to observe senior staff and ensure that staff will observe trainees and provide constructive feedback
3. Incorporate parents' testimony in the NPM residency training program to promote self-reflection
4. Incorporate assessment opportunities with direct observation in real clinical situations during various moments in the NPM training.
5. Assess trainees' communication skills when navigating ethically sensitive situations using a formal assessment tool rather than assessing knowledge in neonatal ethics and communication.

NPM Neonatal perinatal medicine; PDs Program directors.

DISCUSSION

The data from the National OSCE scores and the results from both surveys completed by RGNs and PDs provide a global view of the needs in neonatal ethics and communication teaching in Canada. NPM trainees' performances at the National OSCE stations suggest a lower level of competence in ethics and communication when compared to other domains. This trend aligns with the finding that 25% of the PDs reported that trainees are not well prepared to deal with ethically complex situations when transitioning from residency to practice. In comparison, 90% of RGNs responded that the training they received equipped them to be able to navigate ethically-challenging clinical situations. The Canadian RGNs perception on their training is somewhat reassuring when compared to two previous studies (9,10), where more than 40% of graduating fellows reported no formal communication training of any kind to guide family decision making (10) and only 37% of NPM trainees and recent graduates rated their ethics education as excellent/very good (9).

RGNs and PDs shared perceptions regarding key teaching topics and prioritized learning concepts related to communication with parents, breaking bad news, truth telling, and discussing goals of care. Training around spirituality and religious needs of families may be under-valued, given that both RGNs (30%) and PDs (36%) prioritized this topic. There is growing evidence that addressing religion and spiritual concerns may facilitate communication between parents and physicians (2,24,25) suggesting that these topics should be considered.

To support trainees' learning, the majority of RGNs and PDs indicated the importance of experiential and relational learning (26,27): 1) having trainees observe a senior attending neonatologist interacting with parents, and 2) receive debriefing and feedback after their own observed interactions with parents. These strategies are well aligned with adult learning theory including learning based on concrete experience and reflective observation (27). Similar to findings in another study (9), both groups valued case-based discussions on ethical issues. Most RGNs and PDs stated practicing communication was

an important educational strategy; PDs could use published simulation models in their NPM training programs (11,14). Cummings proposed that self-reflection is crucial for improvement and for ongoing professional development (4), but our results identify some potential resistance in using teaching strategies to stimulate reflection when journaling and storytelling were clearly less favoured. Our results indicate that hearing parents' testimonials and simulation along with debriefing could be an alternative to support some form of reflection.

PDs clearly identified the importance of formally assessing NPM trainees' competencies with well-designed and validated tools and the need to regularly assess the trainees outside of the annual National OSCE. Cummings describes assessment tools that could be used (4), however scholarly evidence-based work is needed to determine the most effective assessment strategies.

A limitation of our study is the reliance on RGNs and PDs' perspectives of ethics education. Although placing such perspectives within the context of the National NPM OSCE's scores provides some objectivity, we still have not answered whether strategies included in NPM training programs to teach ethics and communication, actually support RGNs learning to navigate ethically complex situations with sufficient competency. Furthermore, even though open-ended questions were included in each section, our survey presented a limited list of topics or educational strategies, which may have limited the potential breadth of responses.

Based on our findings and accounting for the limitations, we have identified a list of considerations (Table 3) for PDs when developing a well-designed ethics curriculum embedded in their NPM training program.

CONCLUSION

Learners and teachers in the NPM specialty in Canada regard training in communication during ethically sensitive situations as very important for professional development. Suggested topics, teaching strategies, and targeted assessment may help to support this specific type of learning. The results of this study provide the opportunity to examine other competencies or learning strategies

that may play a part in enhancing curriculum and better preparing NPM trainees for ethically challenging clinical situations. Our findings may be of help to PDs in developing further educational activities embedded in their NPM training programs.

Supplementary Material

Supplementary data are available at *Paediatrics & Child Health* Online.

Acknowledgements

We are grateful to Nick Barrowman for his statistical analysis assistance. We thank the members of the NPM National OSCE committee for sharing the National OSCE results.

Canadian Neonatal Ethics and Communication Teaching (CanNECT) working group:

Steering committee: Thierry Daboval - Chair, Susan Albersheim, Emanuela Ferretti, Gregory Moore, Ahmed Moussa, Ganesh Srinivasan, Michael van Manen.

Members: Kevin Coughlin, Emer Finan, Sophie Nadeau, David Simpson, Connie Williams.

References

1. Stokes TA, Watson KL, Boss RD. Teaching antenatal counseling skills to neonatal providers. *Semin Perinatol* 2014;38(1):47–51.
2. Janvier A, Barrington K, Farlow B. Communication with parents concerning withholding or withdrawing of life-sustaining interventions in neonatology. *Semin Perinatol* 2014;38(1):38–46.
3. Miles SH, Lane LW, Bickel J, Walker RM, Cassel CK. Medical ethics education: Coming of age. *Acad Med* 1989;64(12):705–14.
4. Cummings CL. Teaching and assessing ethics in the newborn ICU. *Semin Perinatol* 2016;40(4):261–9.
5. Frank JR, Snell L, Sherbino JE. CanMEDs 2015 Physician Competency Framework [Internet]. Ottawa: Royal College of Physicians and Surgeons of Canada, 2015:1–30. <<http://www.royal-college.ca/rcsite/canmeds/canmeds-framework-e>> (Accessed July 25, 2018)
6. Accreditation Council for Graduate Medical Education. ACGME Program Requirements for Graduate Medical Education in the Subspecialties of Pediatrics. 2016:1–42. <https://www.acgme.org/Portals/0/PFAAssets/ProgramRequirements/329_neonatal-perinatal_medicine_2017-07-01.pdf?ver=2017-06-30-083415-990> (Accessed July 25, 2018).
7. Royal college of physician and surgeons of Canada. Objectives of Training in the Subspecialty of Neonatal Perinatal Medicine. 2014:1–15. <<http://www.royalcollege.ca/cs/groups/public/documents/document/y2vk/mdaw/~edisp/tztest3rcp-sced000916.pdf>> (Accessed July 25, 2018).
8. Daboval T, Moore G, Rohde K, Moreau K, Ferretti E. Teaching ethics in neonatal and perinatal medicine: What is happening in Canada? *Paediatr Child Health* 2014;19(1):e6–10.
9. Cummings CL, Geis GM, Kesselheim JC, Sayeed S. Ethics and professionalism education during neonatal-perinatal fellowship training in the United States. *J Perinatol* 2015;35(10):875–9.
10. Boss RD, Hutton N, Donohue PK, Arnold RM. Neonatologist training to guide family decision making for critically ill infants. *Arch Pediatr Adolesc Med* 2009;163(9):783–8.
11. Boss RD, Urban A, Barnett MD, Arnold RM. Neonatal critical care communication (NC3): Training NICU physicians and nurse practitioners. *J Perinatol* 2013;33(8):642–6.
12. Meyer EC, Brodsky D, Hansen AR, Lamiani G, Sellers DE, Browning DM. An interdisciplinary, family-focused approach to relational learning in neonatal intensive care. *J Perinatol* 2011;31(3):212–9.
13. Cuttano A, Scaramuzzo RT, Gentile M, Ciantelli M, Sigali E, Boldrini A. Education in neonatology by simulation: Between reality and declaration of intent. *J Matern Fetal Neonatal Med* 2011;24 (Suppl 1):97–8.
14. Ferretti E, Rohde K, Moore G, Daboval T. The birth of scenario-oriented learning in ethics. *Med Educ* 2015;49(5):517–8.
15. Eckles RE, Meslin EM, Gaffney M, Helft PR. Medical ethics education: Where are we? Where should we be going? A review. *Acad Med* 2005;80(12):1143–52.
16. Harden RM. Ten questions to ask when planning a course or curriculum. *Med Educ* 1986;20(4):356–65.
17. Hesketh EA, Laidlaw JM. Developing the teaching instinct, 1: Feedback. *Med Teach* 2002;24(3):245–8.
18. Pauls MA. Teaching and evaluation of ethics and professionalism: In Canadian family medicine residency programs. *Can Fam Physician* 2012;58(12):e751–6.
19. Mohamed AM, Ghanem MA, Kassem A. Problems and perceived needs for medical ethics education of resident physicians in Alexandria teaching hospitals, Egypt. *East Mediterr Health J* 2012;18(8):827–35.
20. Sams RW II, Opar SP. Medical ethics in family medicine: The first learning needs assessment tool. *Fam Med* 2007;39(7):463–4.
21. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (redcap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform* 2009;42(2):377–81.
22. Team RC. A Language and Environment for Statistical Computing [Internet]. Vienna: R foundation for Statistical Computing, 2017. <<https://www.r-project.org/>> (Accessed July 25, 2018).
23. IBM Corp. IBM SPSS Statistics for Windows Version 24.0. Armonk, NY: IBM Corp, 2016.
24. Boss RD, Hutton N, Sulpar LJ, West AM, Donohue PK. Values parents apply to decision-making regarding delivery room resuscitation for high-risk newborns. *Pediatrics* 2008;122(3):583–9.
25. Balboni TA, Vanderwerker LC, Block SD, et al. Religiousness and spiritual support among advanced cancer patients and associations with end-of-life treatment preferences and quality of life. *J Clin Oncol* 2007;25(5):555–60.
26. Browning D, Solomon M. Relational learning in pediatric palliative care: Transformative education and the culture of medicine. *Child Adolesc Psychiatr Clin North Am* 2006;15:795–815.
27. Kolb DA. *Experiential learning: Experience as the source of learning and development*. New Jersey; Prentice-Hall International. 1984: xiii+256 pages.