

Communication Skills Training Curriculum for Pulmonary and Critical Care Fellows

Jennifer W. McCallister¹, Jillian L. Gustin², Sharla Wells-Di Gregorio³, David P. Way⁴, and John G. Mastronarde¹

¹Department of Internal Medicine, Division of Pulmonary, Allergy, Critical Care and Sleep Medicine; ²Department of Internal Medicine, Division of Palliative Medicine; and ³Department Psychiatry and ⁴Department of Emergency Medicine, The Ohio State University Wexner Medical Center, Columbus, Ohio

Abstract

Rationale: The Accreditation Council for Graduate Medical Education requires physicians training in pulmonary and critical care medicine to demonstrate competency in interpersonal communication. Studies have shown that residency training is often insufficient to prepare physicians to provide end-of-life care and facilitate patient and family decision-making. Poor communication in the intensive care unit (ICU) can adversely affect outcomes for critically ill patients and their family members. Despite this, communication training curricula in pulmonary and critical care medicine are largely absent in the published literature.

Objectives: We evaluated the effectiveness of a communication skills curriculum during the first year of a pulmonary and critical care medicine fellowship using a family meeting checklist to provide formative feedback to fellows during ICU rotations. We hypothesized that fellows would demonstrate increased competence and confidence in the behavioral skills necessary for facilitating family meetings.

Methods: We evaluated a 12-month communication skills curriculum using a pre–post, quasiexperimental design. Subjects for this study included 11 first-year fellows who participated in the new curriculum (intervention group) and a historical control group of five

fellows who had completed no formal communication curriculum. Performance of communication skills and self-confidence in family meetings were assessed for the intervention group before and after the curriculum. The control group was assessed once at the beginning of their second year of fellowship.

Results: Fellows in the intervention group demonstrated significantly improved communication skills as evaluated by two psychologists using the Family Meeting Behavioral Skills Checklist, with an increase in total observed skills from 51 to 65% ($P \leq 0.01$; Cohen's D effect size [es], 1.13). Their performance was also rated significantly higher when compared with the historical control group, who demonstrated only 49% of observed skills ($P \leq 0.01$; es, 1.55). Fellows in the intervention group also showed significantly improved self-confidence scores upon completion of the curriculum, with an increase from 77 to 89% ($P \leq 0.01$; es, 0.87) upon completion of the curriculum

Conclusions: A structured curriculum that includes abundant opportunities for fellows to practice and receive feedback using a behavioral checklist during their ICU rotations helps to develop physicians with advanced communication skills.

Keywords: education; interpersonal communication; Pulmonary and Critical Care fellows

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Correspondence and requests for reprints should be addressed to Jennifer McCallister, M.D., The Ohio State University Wexner Medical Center, 201 Davis Heart Lung Research Institute, 473 W 12th Ave., Columbus, OH 43210. E-mail: jennifer.mccallister@osumc.edu;

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Communication is a critically important skill for Pulmonary and Critical Care Medicine (PCCM) fellows to master in their clinical practice. The Accreditation Council

for Graduate Medical Education requires fellowship training programs in PCCM to provide formal instruction in interpersonal and communication skills (1). The

American Thoracic Society has recommended that PCCM physicians receive training to provide basic competencies in palliative care, including

communication and shared decision-making (2). Specifically, a multidisciplinary committee of medical educators represented by the American College of Chest Physicians, the American Thoracic Society, the Society of Critical Care Medicine, and the Association of Pulmonary and Critical Care Medicine Program Directors has endorsed facilitation of family meetings, including advanced directive and end-of-life decisions as Entrustable Professional Activities (i.e., the knowledge and skill that society can expect physicians to have upon completion of the training) (3). Despite these clear requirements and recommendations, there are only a few published studies on fellowship curricula to address communication, particularly related to facilitation of family meetings, as a core skill of pulmonary and critical care education (4, 5).

A growing body of literature supports the importance of good communication in the intensive care unit (ICU) and a need for improved communication training (6–9). Research has shown that effective communication by health care providers in this setting can improve family satisfaction, decrease the psychological morbidity associated with the critical illness of a loved one, avoid malpractice litigation, and support bereavement adjustment for families (7–10). Nonetheless, clinician communication in the ICU often fails to meet the needs of patients and families (11–14). The outcomes of poor communication can be substantial: adverse mental health sequelae for family members, late hospice referrals, and more unwanted life-prolonging care (15, 16).

Physicians preparing to care for critically ill patients may require more advanced and nuanced communication skills than those who do not routinely care for these types of patients because discussions often occur with multiple family members acting as surrogate decision-makers. Most physicians receive inadequate training in communication and thus report discomfort with complex communication tasks (16, 17). Studies have revealed that residents feel unprepared to provide end-of-life care and are ill-equipped to facilitate medical decision-making with patients and families (16, 17). The purpose of this pre-post intervention study was to evaluate a communication skills curriculum focused on facilitation of family meetings for first-year PCCM fellows. We

hypothesized that, upon completion of this curriculum, (1) PCCM fellows would demonstrate observable improvement in facilitating simulated family meetings and (2) PCCM fellows' confidence and self-assessed competence in communication skills would increase.

Methods

We evaluated a 12-month communication skills curriculum for first-year PCCM fellows using a pre-post, quasiexperimental design. The subjects for the study included three classes of PCCM fellows who entered our program between the years of 2009 and 2011. Two classes of fellows ($n = 11$) participated in the curriculum during their first year of fellowship (intervention group) and were compared with one class of second-year fellows ($n = 5$), who served as the historical control group. The study was approved by the Ohio State University Institutional Review Board, and all participants signed consent forms to participate in the research portion of the curriculum.

Measures

Educational experience and attitudes. Fellows' prior education and experience with communication skills and their attitudes toward their prior training and its perceived importance were assessed with the Educational Experience and Attitudes Questionnaire (see Appendix E1 in the online supplement).

Communication skills. The Family Meeting Behavioral Skills Checklist (FMBSC) is a 31-item yes/no checklist assessing fellows' observable behavioral communication skills (Appendix E2). The skills were derived from available literature on patient-physician-family communication during family meetings with expert consensus of physicians in critical care, palliative medicine, and psychosocial oncology (18, 19). These skills encompass behaviors used to prepare for a family meeting, assess patient and/or family member understanding and communication preferences, share information, attend to family reactions, manage uncertainty, engage in shared decision-making, and summarize the meeting and next steps. The FMBSC was developed at our institution for the

purposes of teaching and assessment of communication skills and was implemented for the first time during this project. To summarize fellow communication skill performance, the number of observed behaviors on the checklists was tallied and converted to a percentage score out of 31.

Self-efficacy. Fellows' confidence in performing communication skills was measured with The Self-Confidence in Communication Skills Survey also developed for this study (Appendix E3). The behaviors on this instrument mimic the behaviors on the FMBSC, but the response scale on this instrument allowed us to get a more precise measure of fellows' perceptions of their own communication skills. The instrument asks trainees to rate their level of confidence with engaging in 20 specific behaviors rated on a four-point scale (i.e., 1 = no confidence at all, 2 = minimal confidence, 3 = moderate confidence, and 4 = confident to perform independently). A confidence percentage score was calculated by summing the 20 ratings, dividing by the maximum total score of 80, and multiplying by 100.

Procedures

Before implementation of the curriculum, both groups of fellows completed the Educational Experience and Attitudes Questionnaire and the Self-Confidence in Communication Skills Survey. Participants then conducted simulated family meetings with trained actors portraying the family members of a critically ill patient in the ICU. The case scenario for the simulated family meetings was the same for all fellows. These meetings were digitally recorded and stored. After the simulation, fellows self-assessed their performance by completing the FMBSC. After completion of the 1-year communication curriculum, fellows in the intervention group participated in a second simulated family meeting with trained actors and rated their performance with the FMBSC.

The second case scenario was different from the first but was intended to have similar learning objectives and a similar level of difficulty. All fellows participated in the cases in the same sequence. They also completed the Self-Confidence in Communication Skills Survey again. The pre-post digital video recordings were then coded by two hospital-based clinical health psychologists with postdoctoral training

in psychosocial oncology and palliative medicine who were blinded to intervention group. The psychologists were trained in behavioral observation and use of the FMBSC. Each psychologist independently reviewed and scored the digital recordings of the fellows before and after the communications curriculum was implemented by recording the number of skills performed by each fellow on the FMBSC.

Due to the timing of the implementation of the curriculum, we were only able to assess the control group's communication performance during a simulated family meeting using the FMBSC at the beginning of their second year of fellowship training. Therefore, we treated the control group's measure as a posttest comparison in our analyses.

Communication Curriculum

The communication curriculum was introduced with a 3-hour workshop that included a didactic presentation on effective communication strategies and role-play activities. The workshop curriculum was based on the principles of shared decision-making and patient-centered communication (18–20). We also designed instruction based on best practices from the literature on effective family meetings and used training scenarios best suited to prepare fellows for their roles in the medical ICU (MICU) (21, 22).

After the workshop, fellows were required to complete at least two supervised family meetings during routine clinical care during each of their four MICU rotations. These family meetings were supervised by Palliative Medicine faculty who used the FMBSC to identify learning goals before a family meeting and to foster self-reflection of the fellow on communication skills, gather and rate performance data, and provide feedback to the fellows after a family meeting (Appendix E4) (20, 23). The focus on frequent self-assessment and formative feedback using the FMBSC after clinical encounters was chosen deliberately to bolster continued development of the PCCM fellows' communication skills over time. The details of the curriculum, including content and educational/instructional strategies, are summarized in Appendix E5. The study methods and timing of evaluations are summarized in Appendix E6.

Data Analysis

Scores derived from multiple evaluators using the FMBSC were aggregated to create a summary score on both the pre- and postsimulated family meeting assessments. Because we did not have comparisons between the control and intervention groups at Time 1 (before the curriculum) and Time 2 (after the curriculum), we did not have a full factorial design. Consequently, comparisons over time for the intervention group were made with paired or dependent *t* tests, and comparisons between intervention and control groups at posttest were made with independent *t* tests. We planned five total statistical comparisons, so we used a Bonferonni correction to control for family-wise type 1 error rates (i.e., we divided the traditional level of α [0.05] by 5 to get the adjusted value of α [0.01] or the level of α that we would consider statistically significant) (24). We calculated Cohen's D effect sizes to quantify the size of any observed statistically significant effects. The traditional Cohen's D was used for independent *t* tests (25). For significant results of dependent *t* tests, we used methods recommended by Lenhard and Lenhard to adjust the Cohen's D for the correlation between the pre- and posttest means (26).

Results

Educational Experience and Attitudes

We included 16 fellows in this assessment. The trainees' characteristics are

summarized in Table 1. The fellows had limited formal exposure to palliative medicine before entering fellowship. Although they reported a range of opinions describing the usefulness of past communication skills training, they noted modeling by attending physicians and other fellows to be the most helpful. Appendices E7 and E8 summarize the fellows' previous communication training experiences and the content of this training.

Communication Skills

Fellows in the intervention group self-assessed that they used 68% of the skills included on the FMBSC during their initial simulated family meeting (preintervention) and reported a significant increase in the use of these behavioral skills (78%) after communications training using this curriculum ($t = 3.60$, $df = 10$, and $P = 0.005$; Cohen's D effect size [es], 0.72). The evaluations performed by the psychologists confirmed this improvement in observed skills ($t = 5.00$, $df = 10$, and $P = 0.001$; es, 1.13), albeit with a more conservative improvement in the use of these skills from 51 to 65% of skills noted (Table 2). The Cohen's D effect sizes for the fellows' and psychologists' improvements were large (0.72 for fellows and 1.13 for psychologists, with values of 0.2 considered small, 0.8 large, and ≥ 1.0 extremely large [25]). This suggests that our findings are not a chance occurrence. The large effect sizes we observed imply that we would have a high probability of reproducing these results (i.e., a significant improvement in

Table 1. Trainee characteristics, including pulmonary/critical care fellows in the historical control group, who did not participate in the communication curriculum, and the intervention group, who completed the curriculum

Trainee Characteristics	Study Groups*		Total
	Control (n = 5)	Intervention (n = 11)	
Age, yr (mean \pm SD)	31.8 \pm 1.92	30.7 \pm 2.00	31 \pm 1.98
Female, n (%)	2 (40.0)	3 (27.3)	5 (31.3)
Trainee ethnic minority, n (%)	0 (0)	2 (18.2)	2 (12.5)
Previous clinical experience, n (%)			
Hospice or palliative medicine rotation in medical school	1 (20)	1 (9.1)	2 (12.5)
Hospice or palliative medicine rotation in residency	2 (40)	2 (18.2)	4 (25)
Palliative medicine fellowship	1 (20)	0 (0)	1 (6.3)
Contact with physicians who specialize in palliative medicine during residency	5 (100)	9 (81.8)	14 (87.5)

*There were no significant differences between the groups.

Table 2. Percent of observed behaviors on the Family Meeting Behavioral Skills Checklist before (pretest) and after (posttest) communications curriculum for pulmonary/critical care medicine fellows (n = 11) from two evaluators (self and psychologists) for intervention participants only

	Mean (%)	SD	P Value	es
Self-assessment				
Pretest	67.74	14.43	0.005	−0.73
Posttest	77.71	12.86		
Psychologists' assessment				
Pretest	50.59	13.46	0.001	−1.39
Posttest	65.40	6.66		

Definition of abbreviation: es = Cohen's D effect size.

communication skills) with a different sample of fellows or in a different setting.

At postassessment, there were no differences between the intervention and historical control groups' self-assessment scores on the FMBSC. However, the psychologists, who were blinded to group status, observed significantly fewer behaviors on the FMBSC in the control group compared with the intervention group, with only 49% of behaviors observed compared with 65% in the intervention group postcommunication curriculum ($t = 3.35$, $df = 14$, and $P = 0.005$) (Table 3). This effect was also quite large (es, 1.55).

Self-Confidence

Total confidence in performing the skills noted on the Self-Confidence in Communication Skills Survey increased significantly upon completion of the communications skills curriculum in the intervention group from 77 to 89% confident ($t = 4.20$, $df = 9$, and $P = 0.002$; es, 0.87). Of interest, the control group's confidence rating percentage score on the self-confidence survey was not significantly different from the confidence ratings of the intervention group (96 vs. 89%) despite

having fewer observed skills rated on the FMBSC by the psychologists.

Discussion

Consistent with our first hypothesis, this study demonstrates improvement in key critical care communication skills for fellows who participated in a 1-year, behavior-based communication curriculum embedded within their MICU rotations. Participants in the curriculum used more skills in facilitating family meetings at the end of the year-long curriculum when compared with the start of their fellowship and when compared with fellows at a similar point in training who had not completed the curriculum. To our knowledge, no other curriculum for PCCM fellows has approached communication training by using a checklist for formative feedback at the bedside and shown significant observable changes in communication skills (4, 5). Bays and colleagues demonstrated an improvement in trainees' communication skills in simulated patient encounters after a series of small-group workshops over a 1-month timeframe (5). Arnold and

colleagues developed a 3-day communication skills workshop for pulmonary and/or critical care medicine fellows where participants' self-reported competence in communication skills improved after completion of the program (4).

In comparison, our curriculum used the FMBSC to provide formative feedback embedded in the trainees' MICU rotations and demonstrated improved communication skills as measured by increased behaviors on the FMBSC in simulated patient encounters confirmed by psychologists via blind assessment.

Interestingly, although the confidence levels in communication skills were the same between the intervention and control groups at the end of their first-year of fellowship, the fellows who participated in the curriculum used more skills when facilitating family meetings based on psychologist assessments (65 vs. 49%). This may be related to two factors. First, confidence level and actual skill are not necessarily correlated. This highlights the importance of measuring competence through observable behaviors as opposed to reliance on self-assessment. Second, traditional clinical bedside feedback with modeling of communication behaviors by attending physicians may not be sufficient to produce a change in skill. Although the majority of fellows at the beginning of this program felt that modeling by attending physicians was helpful to their learning, our results underscore the importance of a structured system of communication skills assessment, such as a checklist to provide formative feedback, as a necessary element to produce behavioral change.

The primary strength of this study comes from its pre-post design with independent raters who have expertise in palliative communication skills. Additionally, many communication skill acquisition studies look at changes in learner satisfaction and self-confidence rather than actual behaviors (4, 27). In contrast, our study identifies actual observed behavioral change in communication skills over time in addition to improved self-rated competence and confidence in performing these skills.

Limitations of the study include the small sample size, the potential lack of generalizability to other trainee groups, and the lack of preassessment data for our control group. In addition, for this study, we

Table 3. Percent of observed behaviors on the Family Meeting Behavioral Skills Checklist for pulmonary/critical care medicine fellows in historical control group (n = 5) and intervention group (n = 11) postcommunications skills curriculum from two evaluators (self and psychologists)

Measure	Groups	Mean	SD	P Value	es
Self-assessment	Control	74.84	8.95	0.661	NA
	Experimental	77.71	12.86		
Psychologists' assessment	Control	48.71	13.70	0.005	1.55
	Experimental	65.40	6.66		

Definition of abbreviations: es = Cohen's D effect size; NA = not applicable.

considered the performance of skills as dichotomous (yes/no) as opposed to the quality of the skills performed (e.g., not done to exceptionally well done). Finally, the two cases for the pre- and postintervention simulated family meeting were not randomized. Although the cases were developed to be equivalent in complexity, it is possible that the two cases were of differing degrees of difficulty or that experience with the initial simulated family meeting influenced the results of the second. However, the evaluation tool was designed to measure the occurrence of specific communication skills or behaviors, not to assess the participants' ability to reach a common goal in the encounter, such as defining limits of care. Future studies will incorporate a rating and dichotomous scale for each skill and will randomize the allocation of cases to address these potential limitations.

We believe that embedding a communication curriculum using

a checklist into the MICU rotations has many potential benefits. From a feasibility standpoint, we believe that this curriculum could be implemented in most PCCM fellowship programs. It necessitates little additional curricular time beyond the already required MICU rotations and can be integrated easily at the bedside. In our experience, the use of the checklist as a learning tool requires only a few minutes before a family meeting to identify learning goals and plan for feedback on observable skills and a few minutes after a family meeting to foster self-reflection and provide formative feedback.

Feedback on communication can often be challenging for the receiver and for the provider. A skills-based checklist allows fellows to potentially see communication skills as identifiable goals and learnable skills rather than innate or immutable characteristics. The FMBSC can help to operationalize the communication skills that fellows are asked to perform. In

addition, it can help identify a clear set of skills on which fellows can solicit specific feedback as opposed to overarching and potentially inconsistent comments about general communication style. As a tool for formative feedback and self-reflection, the FMBSC can assist fellows and teachers in identifying areas of strength and goals for improvement and can serve as one instrument to help address the communications skills training requirement for PCCM fellows. ■

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References

- 1 Accreditation Council for Graduate Medical Education. ACGME program requirements for graduate medical education in pulmonary disease and critical care medicine [effective 2012 July 1; accessed 2015 Jan 12]. Available from: http://www.acgme.org/acgmeweb/Portals/0/PFAssets/2013-PR-FAQ-PIF/149_pulmonary_disease_int_med_07132013.pdf.
- 2 Lancken PN, Terry PB, Delisser HM, Fahy BF, Hansen-Flaschen J, Heffner JE, Levy M, Mularski RA, Osborne ML, Prendergast TJ, et al.; ATS End-of-Life Care Task Force. An official American Thoracic Society clinical policy statement: palliative care for patients with respiratory diseases and critical illnesses. *Am J Respir Crit Care Med* 2008;177:912-927.
- 3 Fessler HE, Addrizzo-Harris D, Beck JM, Buckley JD, Pastores SM, Piquette CA, Rowley JA, Spevetz A. Entrustable professional activities and curricular milestones for fellowship training in pulmonary and critical care medicine: report of a multisociety working group. *Chest* 2014;146:813-834.
- 4 Arnold RM, Back AL, Barnato AE, Prendergast TJ, Emet LL, Karpov I, White PH, Nelson JE. The Critical Care Communication project: improving fellows' communication skills. *J Crit Care* 2015;30:250-254.
- 5 Bays AM, Engelberg RA, Back AL, Ford DW, Downey L, Shannon SE, Doorenbos AZ, Edlund B, Christianson P, Arnold RW, et al. Interprofessional communication skills training for serious illness: evaluation of a small-group, simulated patient intervention. *J Palliat Med* 2014;17:159-166.
- 6 Lautrette A, Darmon M, Megarbane B, Joly LM, Chevret S, Adrie C, Barnoud D, Bleichner G, Bruel C, Choukroun G, et al. A communication strategy and brochure for relatives of patients dying in the ICU. *N Engl J Med* 2007;356:469-478.
- 7 Levinson W, Roter DL, Mullooly JP, Dull VT, Frankel RM. Physician-patient communication: the relationship with malpractice claims among primary care physicians and surgeons. *JAMA* 1997;277:553-559.
- 8 Wright AA, Zhang B, Ray A, Mack JW, Trice E, Balboni T, Mitchell SL, Jackson VA, Block SD, Maciejewski PK, et al. Associations between end-of-life discussions, patient mental health, medical care near death, and caregiver bereavement adjustment. *JAMA* 2008;300:1665-1673.
- 9 Buckley JD, Addrizzo-Harris DJ, Clay AS, Curtis JR, Kotloff RM, Lorin SM, Murin S, Sessler CN, Rogers PL, Rosen MJ, et al. Multisociety task force recommendations of competencies in pulmonary and critical care medicine. *Am J Respir Crit Care Med* 2009;180:290-295.
- 10 Steinhilber KE, Christakis NA, Clipp EC, McNeilly M, McIntyre L, Tulsy JA. Factors considered important at the end of life by patients, family, physicians, and other care providers. *JAMA* 2000;284:2476-2482.
- 11 Abbott KH, Sago JG, Breen CM, Abernethy AP, Tulsy JA. Families looking back: one year after discussion of withdrawal or withholding of life-sustaining support. *Crit Care Med* 2001;29:197-201.
- 12 Azoulay E, Sprung CL. Family-physician interactions in the intensive care unit. *Crit Care Med* 2004;32:2323-2328.
- 13 Azoulay E. The end-of-life family conference: communication empowers. *Am J Respir Crit Care Med* 2005;171:803-804.
- 14 Azoulay E, Chevret S, Leleu G, Pochard F, Barboteu M, Adrie C, Canoui P, Le Gall JR, Schlemmer B. Half the families of intensive care unit patients experience inadequate communication with physicians. *Crit Care Med* 2000;28:3044-3049.
- 15 Kirchhoff KT, Walker L, Hutton A, Spuhler V, Cole BV, Clemmer T. The vortex: families' experiences with death in the intensive care unit. *Am J Crit Care* 2002;11:200-209.
- 16 Gorman TE, Ahern SP, Wiseman J, Skrobik Y. Residents' end-of-life decision making with adult hospitalized patients: a review of the literature. *Acad Med* 2005;80:622-633.
- 17 Schwartz CE, Goulet JL, Gorski V, Selwyn PA. Medical residents' perceptions of end-of-life care training in a large urban teaching hospital. *J Palliat Med* 2003;6:37-44.
- 18 White DB, Braddock CH III, Berecknyei S, Curtis JR. Toward shared decision making at the end of life in intensive care units: opportunities for improvement. *Arch Intern Med* 2007;167:461-467.
- 19 King A, Hoppe RB. "Best practice" for patient-centered communication: a narrative review. *J Grad Med Educ* 2013;5:385-393.
- 20 Gustin J, Stowers KH, von Gunten CF. Communication education for physicians. In: Wittenberg-Lyles E, Ferrell B, Goldsmith J, Smith T, Ragan S, Glajchen M, Handzo G, editors. *Textbook of*

- palliative care communication. New York: Oxford University Press. (In press)
- 21 Schaefer KG, Block SD. Physician communication with families in the ICU: evidence-based strategies for improvement. *Curr Opin Crit Care* 2009;15:569–577.
- 22 Curtis JF, Patrick DL, Shannon SE, Treece PD, Engelberg RA, Rubenfeld GD. The family conference as a focus to improve communication about end-of-life care in the intensive care unit: opportunities for improvement. *Crit Care Med* 2001;29: N26–N33.
- 23 Gustin J, McCallister J, Way D, Frier K, Wells-DiGregorio S. 2014. Platform presentation: Development of the Family Meeting Communication Skills (FMCS) checklist: an instrument for assessing communication skills in a palliative or critical care setting. Presented at the 16th Ottawa Conference on the Assessment of Competence in Medicine. April 27, 2014, Ottawa, Ontario, Canada.
- 24 Bland JM, Altman DG. Multiple significance tests: the Bonferroni method. *BMJ* 1995;310:170.
- 25 Cohen J. Statistical power analysis for the behavioral sciences. New York: Academic Press, 1969.
- 26 Lenhard W, Lenhard A. Calculation of effect sizes. *Psychometrika*, 2014. Bibergau (Germany). Available from: http://www.psychometrika.de/effect_size.html [accessed 2015 Jan 12].
- 27 Griffith CH III, Wilson JF, Langer S, Haist SA. House staff nonverbal communication skills and standardized patient satisfaction. *J Gen Intern Med* 2003;18:170–174.