Original Contribution

Anesthesiologists' perceptions of minimum acceptable work habits of nurse anesthetists

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ARTICLE INFO

ABSTRACT

Study objective: Work habits are non-technical skills that are an important part of job performance. Although non-technical skills are usually evaluated on a relative basis (i.e., "grading on a curve"), validity of evaluation on an absolute basis (i.e., "minimum passing score") needs to be determined.
Design: Survey and observational study.
Patients: None.
Interventions: None.
Measurements: The theme of "work habits" was assessed using a modification of Dannefer et al.'s 6-item scale, with scores ranging from 1 (lowest performance) to 5 (highest performance). E-mail invitations were sent to all consultant and fellow anesthesiologists at Mayo Clinic in Florida, Arizona, and Minnesota. Because work habits expectations can be generational, the survey was designed for adjustment based on all invited (responding or non-responding) anesthesiologists' year of graduation from residency.
Main results: The overall mean ± standard deviation of the score for anesthesiologists' minimum expectations of nurse anesthetists' work habits was 3.64 ± 0.66 (N = 48). Minimum acceptable scores were correlated with the year of graduation from anesthesia residency (linear regression P = 0.004). Adjusting for survey non-response using all N = 207 anesthesiologists, the mean of the minimum acceptable work habits adjusted for year of graduation was 3.69 (standard error 0.02).
The minimum expectations for nurse anesthetists' work habits were compared with observational data obtained from the University of Iowa. Among 8940 individual nurse anesthetist work habits scores, only 2.6% were <3.69. All N = 65 of the Iowa nurse anesthetists' mean work habits scores were significantly greater than the Mayo estimate (3.69) for the minimum expectations; all P < 0.00024.
Conclusions: Our results suggest that routinely evaluated work habits of nurse anesthetists within departments should not be compared with an appropriate minimum score (i.e., of 3.69). Instead, work habits scores should be analyzed based on relative reporting among anesthetists.

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1. Introduction

Anesthesia care in operating rooms (ORs) of many practices in the United States and Europe involves the collaboration of both physician anesthesiologists and non-physician anesthesia providers, including nurse anesthetists [1]. In these settings, physician anesthesiologists (i.e., attending physicians, faculty members) provide clinical supervision (i.e., clinical oversight functions directed toward assuring the quality of clinical care when the anesthesiologist is not the sole anesthesia care provider).

Much is known about the evaluation and effect of anesthesiologist clinical supervision [2–10]. However, at the present, there is less known regarding the assessment of nurse anesthetists [11,12].

Work habits are non-technical skills [11] that are an important part of job performance [13]. In a previous survey, "owners of small and medium-sized businesses" in the United States were asked their opinions regarding "which [applicant] abilities influence hiring selections the most" [13]. The characteristic "that most directly rivaled occupational skills (i.e., the ability)" to *actually perform* the job) was 'work habits' [13]. "Work habits and attitude (trying hard, enthusiasm, punctuality)" were ranked as the first or second most important trait by 65% of employers [13]. "Occupational [and] job skills" was ranked first or second

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by 54% of employers [13]. "One year later," the two characteristics "with the largest" associations with productivity were "the ability to learn new occupational and job skills" and "ex-post assessments of work habits" [13].

At the University of Iowa, consulting anesthesiologists have been performing daily evaluations of the work habits of nurse anesthetists. As is typical psychometrically, comparisons among nurse anesthetists have been made on a relative basis (i.e., ranking; "grading on a curve"). Our goal in the current study was to determine whether an absolute (rather than relative) criterion should be applied when assessing nurse anesthetists' work habits (i.e., "minimum passing score"). Specifically, to do so, we wished to determine average minimum expectations of a hypothetical nurse anesthetist whose performance would be acceptable to supervising anesthesiologists. We did this by surveying anesthesiologists at another organization (Mayo Clinic) that does not currently use work habits assessment. This approach of using 2 organizations matched how we previously estimated anesthesiology residents' and nurse anesthetists' perceptions of anesthesiologist clinical supervision that meets minimum expectations [2].

2. Methods

2.1. Survey of Mayo Clinic anesthesiologists

The survey was deemed exempt from IRB review on June 15, 2015 by the Mayo Clinic IRB (IRB application # 15-003671).

The original 6-item uni-dimensional work habit scale by Dannefer et al. was developed to assess medical students based on peer feedback [14]. For our survey (and for use at the University of Iowa, below), the ranking statements with a 5-point scale were modified slightly from the original version (see Table 1). The survey was built and executed using the REDCap Survey Software, Version 1.3.10 (© 2015 Vanderbilt University, Nashville, TN).

The survey began with the following instructions: "Please do NOT rate any specific nurse anesthetist with whom you have worked. This survey is not meant to rate individual nurse anesthetists. Give your impression of 6 attributes of a **hypothetical** nurse anesthetist who MET your minimum expectations for clinical performance. Do not provide scores based on a **hypothetical** nurse anesthetist who EXCEEDED your expectations or whose activity was BELOW your expectations. For each of the 6 statements, select the number between 1 (lowest performance) and 5 (highest performance)." The bold and capitals shown are as were presented in the instructions. We specifically chose not to have consultants evaluate any of the nurse anesthetists whom they currently supervise, as we wanted to evaluate unbiased perceptions and expectations based on a hypothetical nurse anesthetist.

The 207 e-mail invitations were sent on June 29, 2015. The invitations included all consultant anesthesiologists and trainees in fellowship training at Mayo Clinic in Florida (N = 30), Arizona (N = 29), and Minnesota (N = 139). The invitations included fellows in our survey, as they have billing and supervisory privileges identical to those of consultants. The invitations included all emeritus staff anesthesiologists at the three Mayo academic sites (N = 9). Each invitation contained a unique survey link for each participant.

If the recipient of the e-mail answered the survey, the e-mail address was marked complete. Subsequent e-mails were auto-collated by REDCap so the same e-mail address could not provide >1 response. Answers were not linked to the e-mails in order to protect respondents' confidentiality.

A follow-up reminder email with unique survey link for each participant was sent on July 13, 2015 (2 weeks after the initial survey), to consultants, fellows, and emeritus staff who had not completed the survey. After receiving the initial survey request, two consultants were concerned that they were asked to evaluate the expectations of the CRNAs with whom they worked on a daily basis. In the follow-up e-mail, and in personal communication with the two consultants who

Table 1
Work habits scale adapted from Dannefer et al. [14].

Lowest performance = 1	
Consistently seemed unprepared for case(s)	
2	
3	Observed 4.17 ± 0.88
4	
Consistently well prepared for cases(s)	
Highest performance = 5	
Lowest performance = 1	
Overlooked important data and failed to identify or solve problems correctly	
2	
3	Observed 3.54 ± 0.82
4	
Identified and solved problems using intelligent interpretation of data	
Highest performance = 5	
Lowest performance = 1	
Did not communicate clearly his or her reasoning process with regard to solving problem(s)	
2	
3	Observed 3.83 ± 0.97
4	
Clearly communicated his or her reasoning process with regard to solving problem(s)	
Highest performance = 5	
Lowest performance = 1	
Lacked initiative or leadership qualities	
2	
3	Observed 3.17 ± 0.83
4	
Took initiative and provided leadership	
Highest performance = 5	
Lowest performance = 1	
Only assumed responsibility when forced to, and failed to follow through consistently	
2	
3	Observed 3.81 ± 0.67
4	
Consistently identified tasks and completed them efficiently and thoroughly	
Highest performance = 5	
Lowest performance = 1	
Dependent upon others for direction with regard to his or her care	
2	
3	Observed 3.31 ± 0.95
4	
Thought and worked independently	
Highest performance = 5	

The listed "observed mean ± SD" are those for each statement. The scores reported in the Results were calculated as the mean of the responses to the 6 statements. Adaptations from Dannefer were as follows: Item (1) "for sessions" was changed to "for case(s)." Item (2) "overlooks" was changed to "overlooked." Item (3) "unable to explain clearly" was changed to "did not communicate clearly." Item (4) "lacks initiative" was changed to "lacked initiative." Item (5) "only assumes responsibility" was changed to "only assumed responsibility." Item (6) "learning agenda" was changed to "care."

had misunderstood the intent of the survey, we recommended that the survey instructions (above) be followed (i.e., focus on *hypothetical* CRNAs, not specific staff members with whom anesthesiologists work).

The survey remained active for 4 weeks after the follow-up reminders were distributed. The final survey response was received on August 12, 2015. On August 13, 2015, the survey link was inactivated, such that no additional responses could be submitted.

Survey participants could close their Web browser without answering all of the survey questions, but to complete and submit the survey, all questions had to be answered. Upon submission of the survey, the