The Impact of Rudeness on Medical Team Performance: A Randomized Trial

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abstract

BACKGROUND AND OBJECTIVES: Iatrogenesis often results from performance deficiencies among medical team members. Team-targeted rudeness may underlie such performance deficiencies, with individuals exposed to rude behavior being less helpful and cooperative. Our objective was to explore the impact of rudeness on the performance of medical teams.

METHODS: Twenty-four NICU teams participated in a training simulation involving a preterm infant whose condition acutely deteriorated due to necrotizing enterocolitis. Participants were informed that a foreign expert on team reflexivity in medicine would observe them. Teams were randomly assigned to either exposure to rudeness (in which the expert's comments included mildly rude statements completely unrelated to the teams' performance) or control (neutral comments). The videotaped simulation sessions were evaluated by 3 independent judges (blinded to team exposure) who used structured questionnaires to assess team performance, information-sharing, and help-seeking.

RESULTS: The composite diagnostic and procedural performance scores were lower for members of teams exposed to rudeness than to members of the control teams (2.6 vs 3.2 [P = .005] and 2.8 vs 3.3 [P = .008], respectively). Rudeness alone explained nearly 12% of the variance in diagnostic and procedural performance. A model specifying information-sharing and help-seeking as mediators linking rudeness to team performance explained an even greater portion of the variance in diagnostic and procedural performance (R^2 = 52.3 and 42.7, respectively).

CONCLUSIONS: Rudeness had adverse consequences on the diagnostic and procedural performance of the NICU team members. Information-sharing mediated the adverse effect of rudeness on diagnostic performance, and help-seeking mediated the effect of rudeness on procedural performance.

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WHAT'S KNOWN ON THIS SUBJECT: Rudeness is routinely experienced by hospital-based medical teams. Individuals exposed to mildly rude behavior perform poorly on cognitive tasks, exhibit reduced creativity and flexibility, and are less helpful and prosocial.

WHAT THIS STUDY ADDS: Rudeness had adverse consequences on diagnostic and procedural performance of members of the NICU medical teams. Information-sharing mediated the adverse effect of rudeness on diagnostic performance, and help-seeking mediated the effect of rudeness on procedural performance.

Iatrogenesis refers to an adverse patient condition associated with medical treatment.[1] Iatrogenic events include diagnostic error or delay, dosing and procedural errors, and failure to identify and respond to diagnostic or treatment errors in a timely manner.[1–4] In nearly 4% of hospitalizations, the treatment itself causes morbidity, with one-half of these events being preventable and 14% resulting in death.[5,6] Studies suggest that the rate of iatrogenic events among hospitalized pediatric patients is substantially higher, and that the critically ill, such as those hospitalized in NICUs, are at particular risk.[2,3,7,8] Although research has tended to focus primarily on patient-related factors (eg, age, weight),[1,8–11] studies suggest that practitioner stressors may also heighten iatrogenic risk.[12–14]

One such stressor may be rudeness, a relatively mild form of interpersonal aggression or incivility. At least 1 study[3] speculated that such subtle contextual stressors may be linked to iatrogenic events by affecting medical professionals' cognitive processing (at the individual level) and communication processes (at the team level).[3] However, to date, there is no empirical evidence to support such claims. Studies estimate that 98% of employees experience incivility, with 50% experiencing these behaviors at least weekly.[15] Customers, clients, and patients serve as the primary perpetrators of incivility,[16,17] particularly in high-intensity, service-oriented organizations such as hospitals.[12,18,19] Scholars have distinguished among 3 main types of rudeness encountered by medical practitioners based on the rudeness source,[19] namely hierarchical rudeness (enacted by an authority [eg, department head, charge nurse]), peer rudeness (enacted by a member of the medical team), and client rudeness (enacted by patients or someone associated with them). However, psychologists have shown that the rudeness source fails to moderate its deleterious effects on performance.[20,21]

Using a simulation-based experiment, we explored the impact of rudeness on the performance of NICU team members. Our hypothesis was that interrelating processes essential for collaboration are adversely affected when medical professionals are victims of others' rudeness, thus impairing members' diagnostic and procedural performance and heightening iatrogenic risk.

METHODS

Study Design

This study was a randomized, double-blind trial. It was approved by the institutional review board of Tel Aviv University.

Participants

Seventy-two NICU professionals organized in teams (each comprised 1 physician and 2 nurses from the same unit) were recruited from 4 Israeli hospitals. Ages ranged from 25 to 60 years, with a mean age of 37.2 ± 7.5 years (median: 35.0 years; interquartile range: 31.5–41.0). Participants had a mean occupational tenure of 10.6 ± 8.6 years and a mean tenure of 7.7 ± 7.3 years in their current NICU. All participants provided a priori written informed consent for this simulation-based study on behavioral impacts on NICU teams' performance, and all participants were debriefed upon the study's conclusion.

Randomization

To ensure that team knowledge, skills, and abilities, as well as other performance-shaping factors (eg stress, fatigue), were distributed equally across conditions, 2 randomization methods were applied. First, participants were randomly assigned to teams at the same time and shift of the day based on availability in the NICU. Second, teams were randomly assigned to the control or the incivility condition. Such randomization procedures are common in social science research in general and incivility research in particular.[20,21] Randomization was stratified according to unit and hospital and was based on a sample size calculation of 10 to 11 teams per condition. Randomization was performed by a research assistant. Both the experimenter and the participants were blinded to the condition assignment. Thirty-nine participants were in the rudeness exposure group and 33 were in the control group. Demographic composition of the group did not vary significantly across conditions.

Procedure

Participants were invited to take part in a 1-hour simulation using a medical mannequin in their own NICU to be followed by a workshop on team reflexivity. This workshop was a collective activity in which team members reviewed their work and developed ideas for performance improvement[22]; it was led by the experimenter, himself a NICU physician. The experimenter informed participants that he was working with a visiting head of a US ICU who is also a leading expert on team reflexivity. The experimenter then showed the participants a short video in which a confederate playing the role of the expert explained what team reflexivity is and how it may be used to enhance team performance.

After consenting to participate in the study and being observed by the visiting expert via a live Webcam, the experimenter told participants that before starting, the visitor would like to greet them. The experimenter then dialed a fictitious number and played a prerecorded (although ostensibly live) message on the telephone, which served as the first part of the rudeness manipulation. Specifically, the expert told participants that he had already observed a number of groups from other hospitals in Israel,

and compared with the participants observed elsewhere, he was "not impressed with the quality of medicine in Israel." This manipulation was designed to be similar to 1 previously tested among students in a psychology laboratory[20] and was specifically scripted to avoid making any reference to the participants' competence or performance. In the control condition, the expert mentioned that he had observed other professionals but did not insult the broader group to which the participants likely identify (ie, Israeli medical professionals). After listening to the message, participants proceeded to the actual simulation (described in the following text). Each participant then received a separate packet containing information regarding initial symptoms and medical history. Participants were given 10 minutes to work on the first part of the scenario.

After 10 minutes, participants were asked to stop, and the experimenter contacted the expert a second time to see if he had any comments thus far. This interaction with the expert served as the second and final component of the rudeness manipulation. Again following a script written to avoid any reference to the performance of the target team in the rudeness condition, the visiting expert commented that while he liked some of what he observed during his visit, medical staff like those observed in Israel "wouldn't last a week" in his department. He added that while he hoped participants could improve and learn more from the workshop, he also hoped that he would not get sick while in Israel. In contrast, the expert simply commented to the control group that he hoped participants could improve and learn more from the workshop. After listening to this second message, participants were given 10 to 15 minutes to continue their treatment of the infant. Physicians were asked to submit a written diagnosis and recommend a course of treatment. Nurses were also asked to submit their diagnosis and then execute the orders given by the physician. The team then continued to the second phase of the simulation. Participants received additional patient-related information and continued to provide treatment for another 10 minutes, at which point the experimenter ended the simulation and initiated the team reflexivity exercise.

Simulation Task

The simulation involved a neonate mannequin in an incubator connected to standard NICU monitors. Participants were faced with a preterm (28-week) infant who at 23 days had developed rapidly progressing necrotizing enterocolitis (NEC). In the first phase of the simulation, participants were required to: (1) identify the acute deterioration in the infant's condition, initially expressed as multiple apneas and bradycardias; (2) identify that the infant was in respiratory failure and shock, and respond promptly by providing the appropriate resuscitative (ventilation) and supportive (intravenous fluids and initiation of antibiotics) treatments; and (3) diagnose the neonate's underlying morbidity (sepsis and/or NEC). In the second phase in which the neonate's condition further deteriorated due to cardiac tamponade stemming from a leaking central line, the participants faced both diagnostic (ie, rule out intestinal perforation and identify cardiac tamponade as the cause for deterioration) and procedural (resuscitation and pericardiocentesis) challenges.

Measures

Three independent NICU staff (2 senior physicians and 1 experienced nurse), blinded to the experimental intervention, reviewed participants' written documentation (ie, diagnosis, orders) and watched the recorded simulations (edited to protect participants' identity). Videorecordings and other materials from all the simulations were presented to all judges in the same order, with this order determined randomly. Using a 5-point scale (1 = failed to 5 = excellent), judges rated participants' individual performance along items relating to 4 parameters: diagnostic performance, procedural performance, information-sharing, and help-seeking. Descriptors and examples of indicative behaviors were presented to the judges before applying their ratings to enhance interrater reliability.

Diagnostic performance was measured by using 9 items: diagnosed respiratory distress, diagnosed shock, suspected infection, diagnosed NEC, general diagnostic skills stage 1, diagnosed deterioration, suspected perforation of bowel, diagnosed cardiac tamponade, and general diagnostic skills stage 2.

Procedural performance was also measured by using 9 items: performed resuscitation well, ventilated well, verified place of tube well, asked for the right laboratory tests, asked for the right radiographs, gave the right resuscitation medications, stopped percutaneous central line infusion on time, prepared and performed pericardiocentesis, and general technical skills.

Information-sharing was measured with a single item[23]; namely, "Participant #_ shared quality information vital for treatment in a timely manner."

Help-seeking was measured with a single item[24]; namely, "Participant #_ appeared comfortable seeking help from his/her teammates when needed."

Manipulation Check

Analysis of variance with rudeness condition as the independent variable and perceived rudeness (assessed on the basis of a 4-item measure validated in previous research[20,21,25] and with $\alpha = .93$) as the dependent variable indicated that participants rated the confederate as significantly ($F_{[1,70]} = 93.76$, $P < .01$) more rude in

the rudeness condition (3.24 ± 1.14) than in the control condition (1.21 ± 0.43). This finding confirmed that the rudeness manipulation was effective.

Statistical Analysis

All analyses were conducted by using SPSS version 19.2 (IBM SPSS Statistics, IBM Corporation, Armonk, NY) unless otherwise indicated. Because each participant's performance was rated by 3 judges, reliability (the relative consistency among raters) was assessed by calculating intraclass correlation coefficients (ICC[1]) (R version 2.15.0, The R Foundation for Statistical Computing, Vienna, Austria). An ICC(1) ≥0.10 indicated that the item could be averaged across judges.[26] Comparisons of diagnostic and procedural performance scores in the rudeness and control groups were conducted by using Student's t test. Statistical significance was set at .05. Cronbach's α was calculated for all the items included within the diagnostic and procedural performance measures, with $\alpha \geq .80$ indicating sufficient reliability to aggregate these items into their respective overall diagnostic and procedural performance indices. Multivariate analyses were conducted by using MPlus version 7.2 (Muthén & Muthén, Los Angeles, CA), which is specifically designed to test nested complex path models and assess the degree to which the effect of an exogenous variable on some endogenous variable may operate through an intermediary mechanism (ie, an indirect effect). MPlus achieves this goal by taking team-level variance into account before calculating the direct and indirect effects. Because indirect effects have a skewed distribution, a 2000 iteration resampling approach (Monte Carlo method) was used to estimate indirect effects and their 95% confidence intervals.[27]

RESULTS

Table 1 presents the mean, SD, intercorrelation, and ICC(1) values.

TABLE 1 Means, SDs, Correlations, and ICC(1)s for Individual-Level Score Variables (N = 72)

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Diagnosed respiratory distress	3.28	1.03	(0.15)																			
2. Diagnosed shock	2.44	1.25	0.36	(0.13)																		
3. Suspected infection	3.09	1.07	0.57	0.35	(0.12)																	
4. Diagnosed NEC	2.83	1.10	0.47	0.69	0.50	(0.65)																
5. Good general diagnostic skills (1)	3.06	0.88	0.76	0.60	0.68	0.77	(0.23)															
6. Diagnosed deterioration	3.77	0.86	0.39	0.31	0.35	0.40	0.55	(0.17)														
7. Suspected perforation of bowel	2.24	1.25	0.35	0.39	0.38	0.57	0.49	0.40	(0.57)													
8. Diagnosed cardiac tamponade	2.62	1.44	0.37	0.26	0.46	0.51	0.49	0.47	0.39	(0.78)												
9. Good general diagnostic skills (2)	2.72	1.20	0.57	0.50	0.57	0.70	0.75	0.66	0.55	0.84	(0.35)											
10. Performed resuscitation well	2.74	0.83	0.03	0.20	0.01	0.25	0.18	0.37	0.29	0.27	0.30	(.46)										
11. Ventilated well	3.20	0.89	0.63	0.27	0.53	0.35	0.63	0.37	0.36	0.43	0.52	.18	(.63)									
12. Verified place of tube well	3.17	0.91	0.48	0.34	0.52	0.38	0.66	0.46	0.25	0.37	0.49	.22	.53	(.23)								
13. Asked for right radiograph	3.12	1.38	0.42	0.29	0.52	0.49	0.55	0.59	0.57	0.61	0.71	.29	.31	.31	(.34)							
14. Asked for the right laboratory tests	3.48	0.95	0.44	0.43	0.52	0.49	0.57	0.46	0.48	0.46	0.53	.24	.44	.50	.64	(.24)						
15. Gave right resuscitation medications	3.35	0.98	0.28	0.29	0.40	0.33	0.40	0.52	0.31	0.34	0.46	.42	.28	.29	.56	.27	(.19)					
16. Stopped percutaneous central line on time	2.64	1.42	0.11	0.13	0.20	0.22	0.22	0.22	0.14	0.48	0.46	.23	.27	.34	.30	.15	.42	(.46)				
17. Prepared and performed pericardiocentesis	2.47	1.48	0.37	0.34	0.33	0.56	0.47	0.41	0.36	0.78	0.76	.20	.31	.24	.73	.44	.48	.45	(.63)			
18. Good general technical skills	2.87	0.85	0.49	0.29	0.42	0.51	0.59	0.61	0.48	0.75	0.82	.51	.50	.44	.69	.45	.63	.52	.77	(.47)		
19. Information-sharing	3.28	0.85	0.57	0.38	0.47	0.45	0.60	0.69	0.43	0.49	0.68	.32	.32	.39	.47	.59	.41	.14	.43	.59	(.25)	
20. Asked for help	3.66	0.68	0.43	0.45	0.58	0.43	0.60	0.58	0.37	0.38	0.56	.31	.34	.44	.53	.61	.54	.14	.42	.55	.73	(.10)

Correlations >0.23 are significant at the $P < .05$ level. Correlations >0.30 are significant at the $P < .02$ level. ICC(1) values for each variable in the study are reported in parentheses along the diagonal.

ICCs indicated mostly moderate to high interrater reliability, thus supporting aggregation of information-sharing and help-seeking to the team level.

Tables 2 and 3 report results of the mean comparisons between the control and rudeness groups for the diagnostic and procedural performance measures. As shown, the majority of the individual performance items were negatively affected by rudeness. Furthermore, overall diagnostic (α = .90, ICC = 0.19) and procedural (α = .83, ICC = 0.35) performances were both negatively affected by exposure to rudeness. In addition, a multivariate analysis of variance comparison of means (multivariate $F_{[2,69]}$ = 4.62, P = .013, η^2 = 0.118) suggested that a model with rudeness predicting the 2 performance measures simultaneously was significant and explained ~12% of the variance in medical performance. Other factors (eg, age, gender, hierarchical status, level of expertise, tenure of participants) were not significantly different between the teams and could not explain the differences in medical performance (data not shown).

We next explored the mediating processes through which rudeness was expected to influence performance (Fig 1, Table 4). The relationship of rudeness to both team information-sharing and help-seeking was negative (estimate = –0.51 [$P < .01$] and –0.38 [$P < .05$], respectively) and significant, suggesting that rudeness negatively influenced these collaborative processes. Information-sharing had a significant positive relationship with diagnostic performance (estimate = 0.47; $P < .01$) but not with procedural performance, and help-seeking had a significant positive relationship with procedural performance (estimate = 0.41; $P < .01$) but not diagnostic performance.

Neither the 95% confidence interval for the indirect effect of rudeness on diagnostic performance mediated by information-sharing ([–0.49 to –0.05]) nor the indirect effect of rudeness on procedural performance mediated by help-seeking ([–0.36 to –0.02]) contained a zero, further supporting the hypothesized relationships presented in Fig 1. It thus seems that rudeness reduced information-sharing among the physician and the 2 nurses, which, in turn, harmed their diagnostic performance. Similarly, rudeness reduced helping among the team members, which, in turn, explained the reduction in their procedural performance. The estimated model explained substantial variance in diagnostic performance (R^2 = 52.3), as well as in procedural performance (R^2 = 42.7). We also estimated a model including only rudeness and found that it alone explained 10.0% of the variance in diagnostic performance and 11.2% of the variance in procedural performance.

TABLE 2 Comparison of Mean Diagnostic Performance Variables (N = 72)

Variable	Control Group (n = 33)		Rudeness Group (n = 39)		t Test	P (One-Tailed)
	Mean	SD	Mean	SD		
Diagnosed respiratory distress	3.39	1.07	3.20	1.00	0.772	.2215
Diagnosed shock	2.88	1.32	2.08	1.08	2.836**	.003
Suspected infection	3.13	1.01	3.06	1.13	0.272	.3935
Diagnosed NEC	3.08	1.23	2.62	0.95	1.76*	.0415
Good stage 1 diagnostic skills	3.22	0.99	2.91	0.75	1.498	.0695
Diagnosed deterioration	4.05	0.75	3.54	0.89	2.562**	.0065
Suspected perforation of bowel	2.60	1.47	1.94	0.96	2.297*	.0125
Diagnosed cardiac tamponade	3.18	1.30	2.15	1.40	3.214**	.001
Good stage 2 diagnostic skills	3.13	1.21	2.35	1.07	2.881**	.0025
Overall diagnostic	3.18	0.92	2.65	0.69	2.796**	.00035

*$P < .05$, **$P < .01$.

DISCUSSION

Despite some modest improvements in patient safety since the publication of the Institute of Medicine's 1999 report *To Err Is Human*, major disparities remain between patient safety objectives and achievements.[28–31] For example, recent studies estimate that patients are exposed to at least 1 medication error per day[4,32] and report numerous cases of retained surgical items.[4,33] We suspect that 1 major reason for this gap is because many of the improvements were directed at refining systems and technologies[11,14] while neglecting human/relational factors.[4,34]

Our results highlight the potential role of human interaction in iatrogenic events, indicating that occurrence of even a mild rudeness can have adverse consequences on the diagnostic and procedural performance of NICU team members. Indeed, many of the ratings received by members of the rudeness group were between 2 (poor) and 3 (moderate) (Tables 2 and 3), suggesting that the judges saw evidence of potentially harmful practice. Moreover, they show that even the mild incivility common in medical practice can have profound, if not devastating, effects on patient care.

But what underlies the impact of mild incivility on potentially risky medical practice? Psychologists have found rudeness to interfere with working memory; that is, the "workbench" of the cognitive system where most planning, analyses, and management of goals occurs.[35] Thus, rudeness exposure can adversely affect the cognitive functions required for effective diagnostic and medical procedural performance. However, results from the mediation analyses indicate that aside from any effects that rudeness may have on individual cognitive processing, rudeness exposure may also weaken the very collaborative processes (information-sharing and help-seeking)[36,37] that might otherwise allow teams to

TABLE 3 Comparison of Mean Procedural Performance Variables (N = 72)

Variable	Control Group (n = 33)		Rudeness Group (n = 39)		t Test	P (One-Tailed)
	Mean	SD	Mean	SD		
Performed resuscitation well	3.05	0.84	2.49	0.73	3.00**	.002
Ventilated well	3.43	0.94	3.01	0.81	2.029**	.0023
Verified place of tube well	3.56	0.88	2.85	0.82	3.492**	.0005
Asked for right radiographs	3.29	1.23	2.96	1.50	0.994	.162
Asked for right laboratory tests	3.78	0.89	3.24	0.94	2.382*	.01
Gave right resuscitation medications	3.55	0.81	3.17	1.08	1.639	.053
Stopped percutaneous central line on time	2.95	1.35	2.36	1.44	1.764*	.041
Prepared and performed pericardiocentesis	2.71	1.55	2.24	1.39	1.301	.099
Good general technical skills	3.17	0.88	2.61	0.73	2.869**	.0025
Overall procedural	3.26	0.72	2.77	0.67	2.974**	.0002

*$P < .05$, **$P < .01$.

compensate for the diminished performance of 1 or more of their members.[4,34]

Overall, we found rudeness explained 52% of the variance in diagnostic performance and 43% of the variance in procedural performance. In comparison, recent meta-analyses found that structural factors such as the presence/absence of computerized order entry systems explained just 12.5% of the variance in medication error[38] and chronic sleep loss explained just 23% of the variance in physician clinical performance.[39] We concluded from these findings that greater attention should be paid to day-to-day social interaction as a critical risk factor for iatrogenesis, and that in taking steps to enhance patient safety, policy makers should begin to consider the role played by the subtle and seemingly benign verbal aggression to which medical professionals are subjected on a routine basis.[18,19]

Nevertheless, our findings may reflect just the tip of the iceberg of the deleterious effects of incivility that runs rampant in health care organizations.[19] Although our manipulation came from an external source, was very short in duration, and not target-specific, its impact was notable with regard to both diagnostic and procedural performance. It is possible that impaired performance may be even greater if the source of rudeness is a medical colleague rather than a visiting outsider; if the intensity, length, and frequency of rudeness are greater; and if the rudeness is specifically directed at the target. Further research to investigate such variations in rudeness is needed. In addition, although we found no evidence of individual differences (eg, age, gender) influencing participants' susceptibility to the performance effects of rudeness, further research in this area is also needed.

Our findings also reflect an important advance in understanding how rudeness exerts its toll. We have moved from simply confirming what many physicians already implicitly understand regarding the adverse performance-related effects of rudeness to unraveling just how these effects operate. In this regard, the results of our mediation analyses make intuitive sense in that one would expect diagnostic performance (a very cognitive process requiring information exchange) to be susceptible to the effects of rudeness on information-sharing among team members. Similarly, given the central role of technical proficiency in procedural performance, it makes sense that help-seeking, which is a primary means by

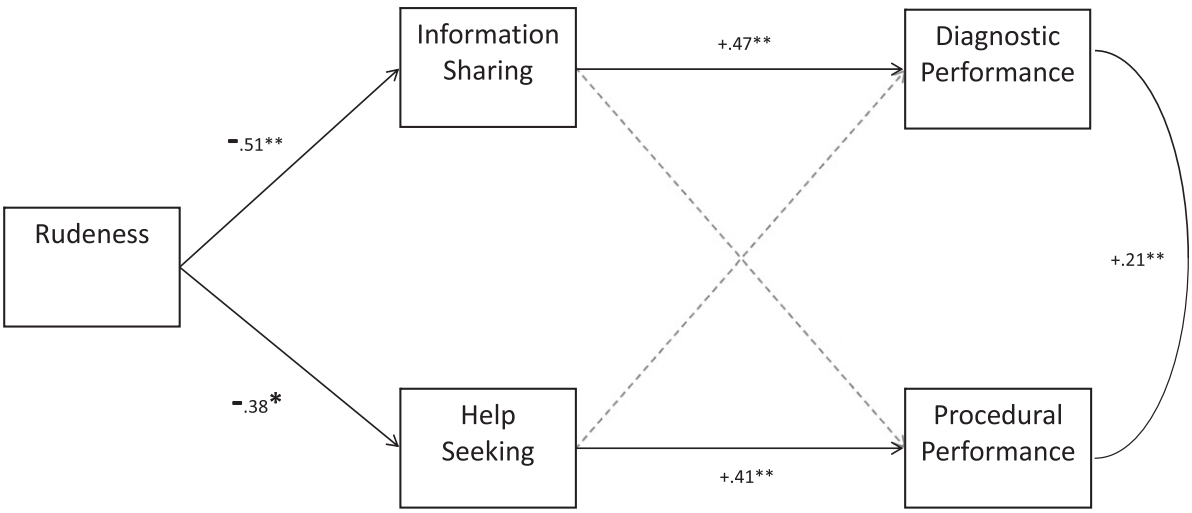

FIGURE 1
Path model of the effect of rudeness on performance, mediated by information-sharing and help-seeking. Numbers denote standardized coefficients for the mediation path shown by the arrow. The relationship between information-sharing and help-seeking was 0.37.* The relationships between information-sharing and procedural performance and between help-seeking and diagnostic performance were not significant. *$P < .05$, **$P < .01$.

TABLE 4 Standardized Coefficients for Mediation Model ($N = 72$)

Variable	Information-Sharing		Help-Seeking		Diagnostic Performance		Procedural Performance	
	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
Rudeness	−0.51**	−0.87 to −0.15	−0.38*	−0.70 to −0.08	−0.17	−0.46 to 0.10	−0.22	−0.50 to 0.23
Information-sharing (mediator 1)					0.47**	0.20 to 0.72	0.21	−0.21 to 0.55
Help-seeking (mediator 2)					0.32	−0.03 to 0.64	0.41**	0.05 to 0.85

*$P < .05$, **$P < .01$.

which individuals achieve mastery, serves as a primary linking mechanism.

More research is needed to gain a better understanding of the efficacy of interventions aimed at reducing the threat posed to patient care by rudeness directed at medical personnel. In particular, research is needed on the prevalence and source of such events. To the extent that such events stem largely from the behavior of colleagues toward one another, training and administrative interventions might be adopted to increase awareness of the risks associated with such behavior, and shift the behavioral norms underpinning such behavior. To the extent that such events are more externally driven (ie, patient- or family-based), interventions aimed at enhancing caregiver resilience should be examined.

Our study has several limitations. First, given the simulation-based study design, external validity may be questioned. Nevertheless, hospital-based research on incivility and its consequences[19,40–43] suggests that our findings are consistent with the "real world" and, if anything, underestimate the magnitude of effects. Moreover, simulations are becoming more widespread in medicine as an investigative tool.[44,45] Second, because the study was conducted in only 4 hospitals in 1 country, further research is required to assess the broad-scale generalizability of our findings. Third, despite evidence that the impact of rudeness is not conditioned according to source,[20,21] our findings may not be generalizable to rudeness stemming from other, nonauthority sources.

CONCLUSIONS

Although the rude behaviors regularly experienced by medical practitioners can seem benign, our findings indicate that they may result in iatrogenesis, with potentially devastating outcomes. Not only does rudeness harm the diagnostic and procedural performance of practitioners, it also seems to adversely affect the very collaborative processes that might otherwise allow for teams to compensate for these effects.

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ABBREVIATIONS

ICC: intraclass correlation coefficient
NEC: necrotizing enterocolitis

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VIRTUAL FIELD TRIPS: *All of my children attended the local public middle and high schools. Since they were all fairly close in age, we experienced the same field trips several years in a row. For example, each year the fourth grade went to a local stream to investigate the flora and fauna, the fifth grade went to Saratoga, NY to investigate Abenaki culture, and the sixth grade visited the Space Center in Montreal. As an infectious disease specialist, I see many children going with their high school classes to countries in Central America to either enhance their understanding of Spanish or biology. However, field trips in the future may look quite a bit different. As reported in* The Wall Street Journal *(Video: June 19, 2015), several schools are now using videoconferencing rather than busses to connect students to educational and culture events. For example, students in a classroom in New Jersey can videoconference with an educator working in a chimpanzee enclosure in England or an aquarium in Florida. Some museums even allow distant students to control a robot in the museum, so that the controllers can turn the video camera attached to the robot in any direction to better see things in which they are most interested. The benefit is that the schools do not have to actually pay the fees involved in transporting the students. Moreover, the students can experience or view far more events or artifacts than they could otherwise. Students and educators generally like the arrangement. One downside is that students cannot wander and explore personal interests. Videoconferencing may not replace all field trips in public schools, but it certainly is an appealing adjunct for student education.*

Noted by WVR, MD

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