



Trainees' Experience of Family Presence during Intensive Care Unit Procedures

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Family presence during procedures in adult intensive care units (ICUs) is an important component of family-centered care (1, 2). However, in a teaching ICU with housestaff, the trainee experience must also be considered. In this study, we sought to further understand trainees' experience when families are present at procedures, including satisfaction with the educational experience, degree of levels associated with the procedure, and perceived degree of supervision during the

procedure. This study was performed at Intermountain Medical Center, Murray, Utah. The Intermountain Medical Center Institutional Review Board approved this study (#1050086). Institutional review board approval was obtained with implied consent.

METHODS

This is an ancillary study of a study that examined how an ICU policy to invite

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family members to be present during ICU procedures affected family member engagement and psychological distress. Trainees (interns, residents, and fellows) present during ICU procedures were surveyed about their experience within 24 hours of the procedure; they were asked about their satisfaction with the educational experience, their degree of stress during procedures, and their degree of perceived supervision. Trainees were asked if there were issues with family presence and could include free text comments about the procedure. All responses were anonymous.

All patients in the ICU were considered for inclusion into the study if they were ≥ 18 years old and spoke English, if their family was present in the building (presumably could have been present at the bedside if invited and/or desired; if they were not present, the procedure was not eligible for the study), and if research staff were available. Procedures included were those normally performed by trainees in the teaching ICU, including central line placement, intubation, chest tube placement, thoracentesis, paracentesis, lumbar puncture, and bronchoscopy. Only one procedure per patient was eligible for study inclusion, regardless of the number of procedures performed during the ICU stay. The study ICU's standard is that the attending is present in the room during the entire procedure. Study data were collected and managed using Research Electronic Data Capture (3, 4).

Survey responses were analyzed based on family presence. Fisher's exact test, *t* test, and analysis of variance were used when appropriate. To predict the degree of stress based on family presence, clinician role, and their interaction, a mixed-effects model was developed. Because multiple clinicians might have rated a single procedure, a random effect was included to

correct for the relationship between procedures within these models. The stress of the residents was used to compare the effects of the other variables included in the model.

RESULTS

Overall, 119 procedures were included, with 63 procedures completed with family present and 56 without family present. A total of 87 surveys were collected from critical care fellows (56% with family present), and 34 surveys were collected from interns and residents (47% with family present) (Table 1).

Family presence did not increase stress in trainees overall (P value = 0.95) (Table 2). Because the data were right-skewed, a logit transformation was completed and was not significant ($P = 0.66$). Trainee role (intern or resident or fellow) was not associated with an increase of stress with family presence (clinician role, $P = 0.24$; family presence, $P = 0.95$). Mixed modeling found that family presence ($P = 0.90$) and clinician role ($P = 0.21$) were not significant; the interaction was also not significant ($P = 0.67$).

The majority of trainees were satisfied with the educational experience: 97% were satisfied when the family was present and 88% without the family present ($P = 0.08$) (Table 2).

Most trainees (95%) felt their supervision was appropriate, and this did not change with family presence ($P = 0.99$). This was similar when looking at fellows specifically ($P = 0.99$).

All trainees who responded to the survey indicated that there were no issues with family presence. Trainee free text comments about family presence were supportive, noting that family presence seemed to help both patients and families.

Table 1. Summary statistics of procedures performed by year in training of training

Variable	All	Family Present	Family Not Present
Fellows	87	49	38
Procedure completed			
Intubation	20 (23)	13 (27)	7 (18)
Central line placement	46 (53)	23 (47)	23 (61)
Bronchoscopy	7 (8)	6 (12)	1 (3)
Thoracentesis	6 (7)	5 (10)	1 (3)
Chest tube placement	3 (3)	0 (0)	3 (8)
Paracentesis	2 (2)	0 (0)	2 (5)
Lumbar puncture	3 (3)	2 (4)	1 (3)
Interns and residents	34	16	18
Procedure completed			
Intubation	5 (15)	3 (19)	2 (11)
Central line placement	21 (62)	9 (56)	12 (67)
Bronchoscopy	1 (3)	1 (6)	0 (0)
Thoracentesis	5 (15)	3 (19)	2 (11)
Chest tube placement	0 (0)	0 (0)	0 (0)
Paracentesis	1 (3)	0 (0)	1 (6)
Lumbar puncture	1 (3)	0 (0)	1 (6)

Data are presented as *n* or *n* (%).

DISCUSSION

In this study of trainees' perception of family presence during ICU procedures, trainees degree of stress and educational experience were not negatively impacted. Most trainees were satisfied with their educational experience, regardless of family presence during the procedure. This is an important finding for teaching hospitals, which must balance housestaff experience with family engagement.

Importantly, we found that trainees degree of stress does not appear to be affected by family presence. There were few complications in these procedures (manuscript in preparation), but it is

possible that a procedural complication with the family present would be more stressful than without the family present. However, multiple trainees pointed out the improved transparency when family members were present (manuscript in preparation). If a complication occurred, family presence might mitigate concerns from the family if they were able to observe the careful supervision and efforts of the attending and team as a whole.

Perception of supervision during procedures was unchanged by family presence. This may indicate that housestaff were able to learn procedures with neither too much nor too little

Table 2. Trainees' educational satisfaction and perceived stress based on family presence

Variable	All	Family Present	Family Not Present
Overall			
<i>n</i>	119	63	56
Satisfaction with educational experience*			
Dissatisfied	8 (9)	3 (2)	12 (7)
Satisfied	92 (110)	97 (61)	88 (49)
Perceived stress [†]		20 (10–80)	20 (10–42.5)
Intern and resident			
<i>n</i>	32	14	18
Satisfaction with educational experience [‡]			
Dissatisfied	6 (2)	0 (0)	11 (2)
Satisfied	94 (30)	100 (14)	89 (16)
Perceived stress [§]		20 (10–50)	25 (10–57.5)
Fellow			
<i>n</i>	87	49	38
Satisfaction with educational experience			
Dissatisfied	8 (7)	4 (2)	13 (5)
Satisfied	92 (80)	96 (47)	87 (33)
Perceived stress [§]		20 (10–40)	20 (10–30)

Data are presented as *n* or *n* (%), or perceived stress score (interquartile range).

*Fisher's exact test by family presence, $P=0.08$.

[†]*t* test by family presence, $P=0.95$; logit *t* test, $P=0.66$.

[‡]Fisher's exact test by family presence, $P=0.49$.

[§]Analysis of variance *t* test by clinician role, $P=0.244$; analysis of variance logit, $P=0.394$.

^{||}Fisher's exact test by family presence, $P=0.23$.

supervision, whether the family was present or not. Potentially, attending physicians are more engaged in teaching when family members are present, and trainees may find it beneficial to include or explain the procedure to a layperson as part of their educational experience (5).

Our study is limited by our small sample size. In addition, the culture in the study ICU is strongly supportive of family presence, and this may have created a social desirability bias in responding to the

surveys, although responses were anonymous. Attending physicians in this ICU were comfortable with family presence and teaching with family present, which might have influenced trainee perceptions of the practice. We were unable to capture as many responses from residents and interns relative to fellows, which could bias our results, as more junior trainees have previously been shown to have differing opinions of family presence relative to more senior physicians

(5, 6), therefore resulting in a type II error. Trainees only reported their experience on one procedure, without further instruction on which procedure; they may have chosen to complete the survey on the procedure they are most experienced with, potentially introducing bias. Timing within the academic year could also affect trainee outcomes (July vs. April). However, responses were consistent throughout the study period, potentially mitigating this limitation. Finally, the timing of completing the surveys relative to completion of the procedure may have affected our results, as it is possible that

intraprocedural stress is more severe than post-procedural stress.

Conclusions

Trainee experience was not negatively impacted by family presence. In addition, trainees were generally supportive of family presence. Family engagement efforts, including inviting family members to be present at the bedside during procedures, do not appear to conflict with educational priorities in teaching hospitals.

Author disclosures are available with the text of this article at www.atsjournals.org.

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