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## Abstract

**Background:** Mitigating resident burnout is a high priority for medical centers. Monitoring residents' overall perceptions of their training environments could be a reliable indicator of potential future burnout. Furthermore, recent national studies suggest procedural specialties have a higher burnout rate and lower satisfaction than non-procedural specialties. In the current study, we utilized institutional data from the Accreditation Council for Graduate Medical Education (ACGME) resident survey to better understand trends related to our residency program learning environments over time (2012-2018) and by specialty grouping (procedural versus non-procedural).

**Methods:** Annual ACGME survey results from 2012 to 2018 were retrospectively analyzed to determine trends in resident satisfaction. Specifically, satisfaction was defined as a "very positive" or "positive" response on the survey. Programs with an average of four or more residents were included. The programs were categorized into procedural versus non-procedural specialties and differential trends between the two groups were analyzed.

**Results:** A total of 17 residency programs were included in this study (nine procedural and eight non-procedural), with a combined average satisfaction score ("very positive" plus "positive") over all years of 89%, which is slightly better than the annual national means (87-88%). Using this combined average score, residents in procedural residency programs rated their satisfaction higher (93%) when compared to non-procedural specialties (87%). Further analysis demonstrated that procedural specialties had higher combined satisfaction scores every year of the study except for 2018. Conversely, residents in non-procedural specialties had a higher "positive" rating when compared to procedural specialties (range of 28.5-44% versus 15-33%, respectively).

**Conclusion:** The results of our study demonstrate that the overall satisfaction scores for our academic center are comparable to or better than the national patterns, with a favorable trend towards the procedural specialties.

## Keywords

Resident, Survey, ACGME

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# Evaluation of Resident Satisfaction in the Current Era: A Local Perspective on a National Issue

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## Abstract

**Background:** Mitigating resident burnout is a high priority for medical centers. Monitoring residents' overall perceptions of their training environments could be a reliable indicator of potential future burnout. Furthermore, recent national studies suggest procedural specialties have a higher burnout rate and lower satisfaction than non-procedural specialties. In the current study, we utilized institutional data from the Accreditation Council for Graduate Medical Education (ACGME) resident survey to better understand trends related to our residency program learning environments over time (2012-2018) and by specialty grouping (procedural versus non-procedural).

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## Introduction

Understanding resident physicians' perceptions of their learning environment is a vitally important aspect of promoting physician well-being. Recent studies show that a resident's experience in the learning environment is correlated with burnout.<sup>1</sup> The impact of the training environment on wellness is further substantiated when considering that organization-based interventions can lead to a significant decrease in burnout symptoms among physicians.<sup>2</sup> The relationship between the learning environment and burnout is especially important today, given the increasing numbers of physicians who have experienced burnout over the last decade.<sup>3,4</sup>

The Accreditation Council for Graduate Medical Education (ACGME) distributes an annual resident and fellow survey to evaluate the clinical learning environment. This survey is a valid, reliable, and widely utilized instrument that permits the illumination of trends over numerous years.<sup>5,6</sup> The survey addresses multiple aspects of the learning environment including duty hours, evaluation and feedback, and available facilities, among others. In addition, residents' and fellows' general overall perceptions of their training environments have been assessed since 2012. Given the correlation of burnout with a resident's perception of the learning environment, we posit that the survey could be utilized as a barometer to gauge changes and trends in residents' perceptions of their overall learning environment over time and by specialty. These data could potentially be used to mitigate issues related to resident training and prevent burnout.

As such, we utilized the ACGME survey to understand residents' overall perceptions of their learning environment across diverse specialties at a single academic medical center.<sup>6</sup> To focus on the trainee's global perceptions of their clinical learning environment, we limited our study to the generalized question from the ACGME survey, about residents' overall perceptions of

their learning environment.<sup>6</sup> Specifically, our research aims were to:

1. Examine trends in the overall ratings of all programs combined from 2012-2018.
2. Determine the average "very positive" and "positive" ratings for procedural and non-procedural specialties.
3. Evaluate trends for procedural vs. non-procedural specialties from 2012-2018.

Furthermore, we compared our findings to other current research on physician career satisfaction and resident burnout to determine if residents' perceptions on the ACGME survey align with findings from previous studies.

## Methods

**Design:** In this retrospective longitudinal study, we utilized data from the ACGME annual resident survey from a single institution.<sup>6</sup> Specifically, we analyzed the residents' overall satisfaction rating of their programs from 2012-2018 by year from the ACGME website. This rating is a Likert-type item, with five options ranging from "very positive" to "very negative." These years were chosen because the survey was changed after 2011. There are a total of 53 residencies and fellowships at the institution, and all were included in the initial overall satisfaction analysis. For the second part of the study, comparing procedural and non-procedural specialties, to be included, the specialty was required to average four or more resident respondents. Because data utilized were de-identified by the ACGME, this study did not require Institutional Review Board review. Permission to use the data was granted by the ACGME.

**Analysis:** The data in this study were aggregated and dependent (e.g. many of the same residents from one year to the next); therefore, we were able to evaluate survey data using descriptive statistics. Because the data were not normally distributed, medians were more appropriate for comparison than means. Subsequently, we categorized the specialties into procedural and non-procedural for comparison of median "very positive" and "positive" ratings over time to identify trends.

## Results

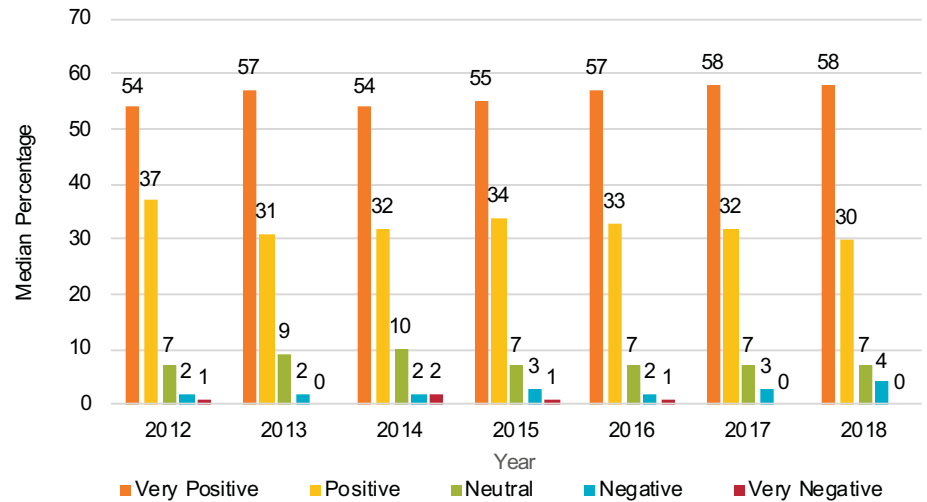
The median percentage of each rating (very positive, positive, neutral, negative, and very negative) for all specialties combined from 2012-2018 can be seen in Figure 1. Notably, there is minimal fluctuation in the ratings from year to year; 54-58% of all residents rated their overall residency experience as “very positive” each year, and on average another 30-37% of residents rated their experience as “positive.” Taken together, the “very positive” and “positive” ratings ranged from 86-91%. Because only about 7-10% of residents rated their experience as neutral, and 0-4% rated their experience as negative, or very negative consistently over the years, these categories were not included in the subsequent analyses.

Next, specialties were pooled into procedural and non-procedural categories (Table 1). To be included in this part of the study, the specialty had to average four or more resident respondents, which resulted in 17 programs being included in the analysis.

Subsequently, procedural and non-procedural groupings were examined for trends in positive and very positive ratings over time (Figure 2). The procedural specialties had more “very positive” ratings every year (range 64-73%) than the non-procedural specialties (range 46-56.5%), while the non-procedural specialties had more “positive” ratings (range 28.5-44%) than the procedural specialties (15-33%). We then calculated the average satisfaction score (“very positive” plus “positive”). Using this combined average score, residents in procedural residency programs rated their satisfaction higher (93%) when compared to non-procedural specialties (87%) over all years. Further analysis demonstrated that procedural specialties had higher combined satisfaction scores every year of the study except for 2018.

## Discussion

Our study examined the overall satisfaction of physician trainees with their learning environment at a single institution based on the ACGME national survey. The aggregated median percentages of all residency programs shown in Figure 1 demonstrate that a range from 86% to 91% of all residents consistently rate their training environment positively or very positively every year. More impressively, 54% or greater of the trainees rate the learning environment as “very positive” every year,



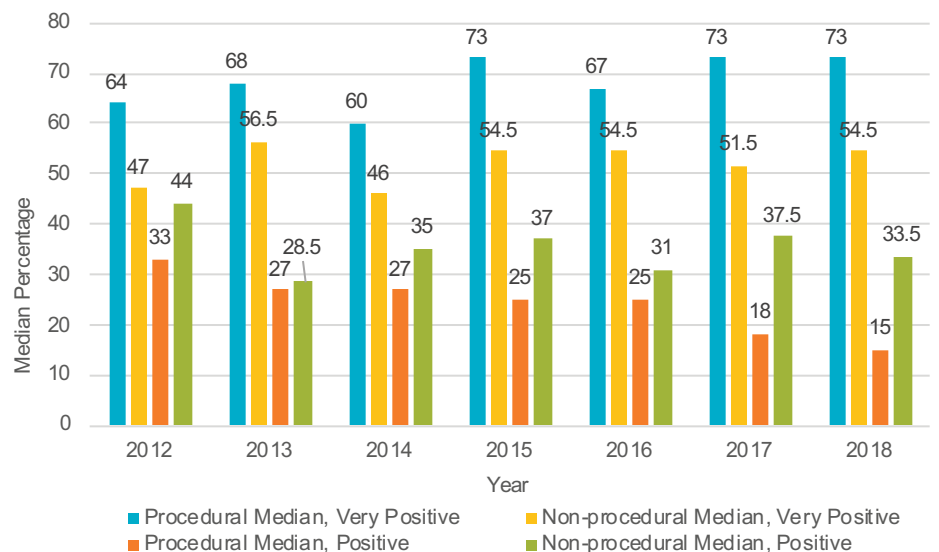
**Figure 1.** Median percentage ratings of overall residency experience for all specialties combined from 2012 – 2018.

**Table 1.**

UNMC specialties included in the study and division into procedural and non-procedural categories. The range of the number of resident respondents over the years (2012 – 2018) is also provided.

Procedural Specialties (n=9)	Number of Resident Survey Respondents (minimum to maximum)	Non-Procedural Specialties (n=8)	Number of Resident Survey Respondents (minimum to maximum)
Ophthalmology	4 to 7	Internal Medicine	49 to 62
Obstetrics & Gynecology	14 to 16	Family Medicine	37 to 47
General Surgery	20 to 28	Radiation Oncology	3 to 4
Urology	6 to 8	Neurology	8 to 16
Otolaryngology	7 to 14	Pediatrics	34 to 40
Emergency Medicine	18 to 27	Pathology	10 to 13
Orthopedic Surgery	19 to 24	Internal Med Pediatrics	7 to 13
Anesthesiology	38 to 49	Radiology Diagnostic	19 to 23
Neurosurgery	8 to 12		

\*Specialties were only included if they averaged four or more resident respondents per year.



**Figure 2.** UNMC annual ACGME residency survey median overall very positive and positive ratings by year for procedural and non-procedural specialties.

and there is no year with greater than 4% median percentage of “negative” rating or below. The national average for positive or very positive satisfaction with the learning environment is a consistent 87-88% per year,<sup>6</sup> and our data demonstrate that the residency programs at our institution rank at or above this mark every year but one (2014 at 86%).

In general, it should be considered an accomplishment to have more than three quarters of such a large, diverse group satisfied with their experience. Not only are 86% or more satisfied, a strong majority of residents, with a median as high as 58%, are very satisfied (very positive) with their experience. However, there is room for improvement, as we would like to see more than 58% of residents’ rate their overall experience as “very positive”. Furthermore, when comparing results from year to year, the combined “positive” and “very positive” ratings indicate some degree of increase over the years, but they do not demonstrate a consistent increase over the time period. The “very positive” rankings demonstrate an appreciable increase over the seven years examined in this study (from 54% in 2011 to 58% in 2018).

Next, we grouped the residencies into procedural and non-procedural specialties to better elucidate potential trends (Table 1). Past studies suggest that procedural/surgical specialties are generally felt to be less lifestyle-friendly than other, non-procedural/non-surgical programs, and this has correlated to higher level of burnout among surgical trainees and lower reported satisfaction.<sup>4,7-12</sup> Our institutional analysis revealed different outcomes related to overall satisfaction, starting with the combined “very positive” and “positive” median scores (Figure 2). The procedural residencies have a higher combined score every year, and a higher mean (“very positive” plus “positive”) over the study period at 93% for procedural vs. 87% for non-procedural. Furthermore, there were only two years with a combined percentage below 90% for procedural specialties (2014 and 2018), compared to five years with a combined score below 90% for non-procedural specialties. The “very positive” scores follow a similar trend, with the procedural residencies having three years above 70% compared to a lack of a single year above 60% for the non-procedural residencies. The non-procedural residencies do have better overall ratings in the “positive” scores, but this does not result in better combined scores. Finally, the procedural programs scores surpassed the national average of 87-88% for five years, while the non-procedural residency

programs surpassed the national average three years.

Given the mix of trends that were identified in our study, we turned to the current literature on physician satisfaction, burnout, and the learning environment. Overall resident satisfaction with their environment has been shown to be between 69-77%,<sup>7,13,14</sup> which is comparable to our results. The satisfaction of residents with their learning environment has been shown to be more closely related to institutional characteristics over program or specialty characteristics.<sup>15</sup> The aspects of the institution that have been shown to affect satisfaction include duty hours, the physical environment, quality of working relationships, and the procedural volume.<sup>14,16,17</sup> Our data demonstrated a lack of a trend regarding resident satisfaction, but when compared to national data, the relationship between satisfaction and burnout<sup>9</sup> may help identify a trend. Resident burnout has been shown to be increasing,<sup>3</sup> is higher than age-matched controls in the general population<sup>18</sup>, and negatively impacts resident satisfaction with their career.<sup>7</sup> Focus on the institutional environment may be the best way to improve these factors and to see the positive trend that is desired.<sup>2</sup>

Several limitations of this study should be taken into consideration when evaluating these trends. First, the programs included in our analyses were limited by the residency and fellowship programs at our institution. Next, the aggregated data are not truly independent from year to year, making interpretation and statistical testing limited. Even with the exclusion of many smaller programs, there were still several residencies with less than 10 residents in multiple years, wherein a small change can be disproportionately reflected in the data. This is a high-stakes survey for program administration, institutions, and the trainees themselves, making the burden of a negative evaluation much greater.

## Conclusion

There are numerous encouraging trends over the seven years since the overall satisfaction question was first included in this survey. Building on the improvements demonstrated can help to develop a very positive training environment for all involved. Both procedural and non-procedural residency programs had a majority of “very positive” or “positive” ratings over time at our institution, despite data from previous studies related to the differences in lifestyle and satisfaction. Overall, the ACGME, specific specialties,

institutions, and program administrations need to continue to find interventions to make the learning environment very positive for all of their trainees. ■

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