Emotional Intelligence, Burnout, and Wellbeing Among Residents as a Result of the COVID-19 Pandemic

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Abstract

Background: We previously reported the correlation between emotional intelligence (EI) with burnout/wellbeing in our PGY-1 residents, finding that EI moderated the development of burnout in the PGY-1 year. When COVID-19 arrived in early 2020, we were already collecting EI and burnout data for the 2019-2020 year. We elected to follow those residents throughout the year and compare them to the subsequent cohort to study the effect of the pandemic on their burnout and wellbeing and the influence of EI on this pattern.

Materials and Methods: All residents entering the training program (PGY-1) 2019-2020 (SURGE) & 2020-2021 (POST-SURGE) were administered the emotional intelligence questionnaire short form (TEIQue-SF), the Maslach burnout inventory, and the physician's wellness inventory. The questionnaires were completed quarterly. Statistical analysis included ANOVA. Institutional Review Board approval was obtained prior to the study.

Results: The overall combined PGY-1 residents year (n = 73) mean EI was 3.9 with no differences between academic year groups. The domains of burnout and physician wellbeing were examined across four different time points during the resident's first year. Domain scores changed over the four time periods during the first year. There was a relative decrease in achievement by 3.4 points, decrease in career purpose by 1.8 points, decrease in cognitive flexibility by .6 points and increase in distress by 4.1 points. Emotional exhaustion increased significantly more for the SURGE 2019-2020 group compared to the POST-SURGE 2020-2021 group (a relative 77% change). Emotional intelligence was independently assessed within each domain at baseline and for changes over time.

Discussion: Patterns of burnout and wellbeing were different with the COVID-19 SURGE group compared to the COVID-19 POST-SURGE group, perhaps because of differing expectations of the PGY-1 year participants but also perhaps due to the destabilizing effect of the first COVID-19 surge.

Keywords
emotional intelligence, resident burnout, COVID-19

Key Takeaways

- Emotional intelligence is partially protective against resident's burnout and wellbeing during their residency.
- The COVID-19 pandemic initial surge appeared to negatively alter the protective effect of residents' emotional intelligence on their burnout and wellbeing in our community hospital.

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Introduction

When the COVID-19 pandemic began the health professionals were asked to provide needed care at a time of

crisis, not fully knowing the effect this would have on their personal wellbeing. It was unknown at that time how the pandemic would affect everyday human behavior and wellbeing and the medical establishment proved no exception to the disruption. For our medical residents, as with many others across the country, educational activities and rotations were altered to meet the surge demand of treating patients with COVID-19 in our hospital. Our hospital declared emergency status with the ACGME for 8 weeks (March 25-May 18, 2020) which allowed for this disruption in normal education processes.

In unpublished data we described patterns of burnout and wellbeing in our PGY-1 residents at our community hospital (classes 2017-18 and 2018-19). We demonstrated how burnout and wellbeing were related to previously assessed emotional intelligence at the beginning of their residency (emotional intelligence as measured by trait emotional intelligence questionnaire remains mostly unchanged). Specifically, a resident physician's emotional intelligence appeared to moderate the normal development of burnout and reduction of perceived wellness. In the current study, we sought to examine the burnout and wellness in those residents who experienced greater disruptions in their training in the initial COVID-19 surge as well as the subsequent class which experienced a lesser degree of disruption post-COVID-19 surge. We elected to analyze this data to detect if there is a different response to burnout and wellness in the time of COVID-19.

Methods

Eighty-one PGY-1 residents entering the following programs in 2019-20 and 2020-21, general surgery, orthopedic surgery, obstetrics and gynecology, internal medicine, family medicine, emergency medicine and podiatry were surveyed at four different time periods (June, October, February, May) during their first year. The questionnaires were the trait emotional intelligence questionnaire—short form (TEIQue-SF),[1] the Maslach burnout inventory (MBI),[2] and the physician wellness inventory (PWI).[3] The TEIQue-SF is a 30-item validated instrument based on the conceptual framework of emotional intelligence (resulting in a score of emotional quotient—EQ). The MBI is a 17-item validated measure of burnout and the three subscales of emotional exhaustion (EE), depersonalization (DP), and personal achievement (PA). The PWI Is a 14-item validated measure of wellness with three subscales which include career purpose (CP), distress (D), and cognitive flexibility (CF), and was constructed with a physician normative group.

Scores were analyzed by EQ quartiles calculated from respondent score distributions. EQ score cutoffs based on the sample's calculated quartiles included: lower <3.7,

middle >3.71 to <4.0, and higher >4.1 (See Table 1.) For each questionnaire, where applicable, global and construct scores were tabulated for each resident and baseline measurements were used for identifying significant associations for the analysis. For burnout domain scoring interpretations of EE and DP, higher scores equate to increased exhaustion and depersonalization. For PA, higher scores equate with increased achievement. For wellness domain scoring interpretations of CP and CF, higher scores equate with increased purpose/meaning and greater mental flexibility. For D, higher scores equate with increased distress. All residents entering the training program (PGY-1) during the 2019-2020 year were classified as the SURGE group and those entering training during the 2020-2021 program year were classified as the POST-SURGE group.

Change in burnout and wellness scores was calculated by the difference between the year end (May) and early in the year (October) which was chosen as June measurements indicated no burnout was present for residents beginning the academic year. Pearson's r correlation coefficients were calculated to determine significant associations at $P < .05$. Multiple group score means were compared using one-way and two-way ANOVA. Ethics approval was obtained by the Institutional Review Board prior to the study.

Results

A total of 81 PGY-1 residents were invited to participate. Response rate to consent for the study was 100%. The sample was slightly more male 44/81, than female 37/81. No data was collected on ethnicity or age. In the comparative time analyses, the total numbers differ due to missing data at various time points (decreasing our n from 81 to 73.) The overall (combined PGY-1 residency years, n = 73) emotional quotient (EQ) global trait score was a mean of 3.4 (SD: .59) and ranged from 3.3 to 6.87.

There was a group effect observed. For the SURGE (2019) group, EI subgroups responded differently in their burnout and wellness responses. This was not the case in the POST-SURGE 2020 group (Tables 2 and 3). For the SURGE group, EE increased in the low EI, decreased in the middle EI, and decreased in the high EI ($P = .06$). DP increased for the low EI and decreased for the other two subgroups ($P = .07$). PA had increased for the middle EI but little change was observed for the other two, and the three means did not significantly differ ($P = .66$). For CP the low EI decreased, no change in the middle EI, and a significant increase for the high EI ($P = .02$). D changed little for the low and middle EI but decreased for the high EI but these means did not differ significantly ($P = .58$). Likewise, for CF there was little change for the low and middle EI but a larger increase for the high EI which approached being significant ($P = .07$).

Table 1. Mean Change in Physician Burnout Index Levels and Differences between Groups.

Groups	Baseline mean (SD)	Year end mean (SD)	Difference[a]	P-value
EE (N = 53)				
SURGE 2019	17.1 (10.9)	23.4 (13.3)	+6.3	.07
POST COVID 2020	22.3 (10.2)	20.3 (11.1)	−2.0	.50
P-value between groups			<.001	
DP (N = 48)				
SURGE 2019	7.4 (5.0)	8.2 (5.3)	+0.8	.59
POST COVID 2020	7.6 (4.4)	8.9 (5.5)	+1.3	.37
P-value between groups			.71	
PA (N = 54)				
SURGE 2019	39.4 (6.8)	37.7 (7.8)	−1.7	.40
POST COVID 2020	32.4 (6.7)	32.3 (10.1)	−0.1	.97
P-value between groups			<.001	

[a]A positive equates to an increase and a negative equates to a decrease in scores at the post measure.

Table 2. Mean Change in Physician Wellness Levels and Differences between Groups.

Groups	Baseline mean (SD)	Year end mean (SD)	Difference[a]	P-value
CP (N = 55)				
SURGE 2019	21.6 (2.5)	21.2 (2.9)	−0.4	.59
POST COVID 2020	19.9 (3.2)	19.4 (3.2)	−0.5	.52
P-value between groups			.94	
D (N = 55)				
SURGE 2019	13.6 (5.2)	14.9 (4.4)	+1.3	.32
POST COVID 2020	14.5 (4.0)	15.1 (3.6)	+0.6	.55
P-value between groups			.59	
CF (N = 55)				
SURGE 2019	17.9 (1.9)	17.6 (1.4)	−0.3	.66
POST COVID 2020	16.9 (1.9)	16.4 (2.1)	−0.5	.35
P-value between groups			.52	

[a]A positive equates to an increase and a negative equates to a decrease in scores at the post measure.

For the POST-SURGE group (2020), none of the domain factors showed a statistically significant difference across the EI subgroups: EE (P = .41), DP (P = .39), PA (P = .88), CP (P = .38), D (P = .43), and DF (P = .48).

The mean change in each burnout factor was compared across the EI subgroups for both the SURGE and the POST-SURGE groups. For EE and DP, high EI appears to be protective. Their EE decreased (mean 9.1) while the low EI had increased (mean 1.7) (P = .04). The middle EI group fell in between. They experience less EE at Time 4 but not as much as the high EI group (mean 5.7). The same pattern was seen for DP (P = .03). For PA there was similar change for each subgroup (P = .97) (Table 4).

The mean change in each wellness factor was compared across the EI subgroups for both the SURGE and the POST-SURGE groups. For CP and CF, high EI was not protective. Their CP decreased (mean −2.35) while the low EI had a slight increased CP (mean .41) (P = .01). The middle group had no change. For CF also, the high EI had a greater decline (mean −1.35) than the middle group

(mean −.35) or the low group (.12) but this did not reach statistical significance (P = .12). The EI subgroups did not differ in their change in D (P = .99) (Table 4).

Discussion

Emotional intelligence (EI) is defined as an ability to perceive emotions in one's self and others and one's ability to manage emotions of self and others.[2] While there is no shortage of stressors during residency, the impact of sudden unexpected changes in the curriculum and structure of residency during the COVID-19 pandemic is of high magnitude with expected serious impact on physicians, residents, attendings, and allied healthcare workers.[4-8] The relationship of individual EI and its relation to changes in resident burnout and physical well-being during residency has shown a protective and positive impact at least partially in our residents during the academic years 2017-2018 and 2018-2019 (unpublished data). We expected this relationship to maintain during the

Table 3. Burnout Scores Overtime by Domain by EQ Quartile for Post Covid Group.

Domain	Time 1 (n = 30)	Time 2 (n = 32)	Time 3 (n = 31)	Time 4 (n = 33)	Mean change (T4 - T2)	Sig
A. Emotional exhaustion						
All EQ*	12.8	21.9	23.6	21.2	1.4	.24
Low EQ	10.6	17.0	22.8	13.0	−3.8	.40
Med EQ	10.1	20.4	21.8	21.2	4.0	
High EQ	21.3	26.2	30.8	31.6	8.4	
B. Depersonalization						
All EQ*	5.4	7.5	8.5	8.1	2.2	.18
Low EQ	5.0	6.1	8.0	4.3	−1.2	.48
Med EQ	4.4	6.9	8.6	7.7	2.9	
High EQ	7.7	11.0	11.8	14.8	5.4	
C. Personal achievement						
All EQ*	38.0	30.8	31.1	32.7	2.7	.94
Low EQ	39.0	34.0	31.3	38.7	1.7	.18
Med EQ	39.0	34.0	31.3	38.7	4.3	
High EQ	34.0	26.7	30.8	28.0	5.0	

Table 4. Wellness Scores Overtime by Domain by EQ Quartile for Post Covid Group.

Domain	Time 1 (n = 30)	Time 2 (n = 32)	Time 3 (n = 31)	Time 4 (n = 33)	Mean change (T4 - T1)	Sig
A. Career purpose						
All EQ*						.32
Low EQ	21.9	19.6	19.8	20.2	−0.8	.18
Med EQ	21.5	19.3	18.6	18.7	−0.6	
High EQ	23.0	20.8	20.2	20.8	−1.0	
B. Distress						
All EQ*						.47
Low EQ	10.1	14.1	13.3	15.7	1.8	
Med EQ	10.3	13.8	15.5	14.9	0.8	
High EQ	12.0	13.3	14.2	15.8	−0.3	
C. Cognitive flexibility						
All EQ*						.08
Low EQ	18.0	16.4	16.5	16.5	−1.0	
Med EQ	17.9	16.7	16.7	16.5	−0.3	
High EQ	18.4	17.2	18.0	16.8	−1.5	

pandemic. However, the question remains as to what extent and whether external support is not only needed but vital to maintain this relationship. The EI construct in this study had a resilience factor within its measures and resilience has been proven overtime to be one of the factors that support individual response to stressors.[9]

We previously identified that residents with high EI had better wellness and reduced burnout and higher EI was shown to be undoubtedly a protective measure to a certain extent. The question raised with our residents was how much of this relationship remained and was maintained throughout an especially difficult time (surge of cases from the COVID-19 pandemic). Our institution was positioned well for this study as we were conducting the study of EI relationships with burnout and physician

wellbeing and the opportunity to further this project was presented when the pandemic affected the healthcare industry and brought sudden unexpected changes to the 2019-2020 academic year. Our data indicates that the initial shock to the healthcare system appears to be replaced by accommodation in expectations and training practices post initial COVID-19 surge demands.

One notable difference to our previous study was the SURGE group of residents scoring at pre-pandemic baseline with an average overall EQ score of 3.9 as compared to 5.8 from the previous study (unpublished data). However, the EI relationship and its protective effects on burnout and wellbeing remained the same. It continued to show that those with the higher EI index had a better response to stressors.

Limitation

Demographic characteristics (ie, age, gender, race, income, and marital status) were not considered in the analysis. The sample size is relatively small for subgroup analysis which limits representation. A few study responses were missing during the peak of the COVID-19 surge which may limit generalizability.

Conclusion

Emotional intelligence continues to partially protect our residents' burnout and wellbeing. However, a health crisis like the COVID-19 pandemic might alter that relationship. Future studies with larger study populations are needed to confirm these findings.

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