Assessing Burnout Among Obstetrics & Gynecology Residents During Night Float Versus Day Float in a Large Academic Hospital

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Abstract

Background

The prevalence estimates of burnout among residents vary widely. Residents experiencing symptoms of burnout are at an increased risk of delivering suboptimal patient care and contributing to an increase in medical errors.

Objective

To determine the differences in burnout among residents working night rotations versus day rotations.

Methods

All residents in a large OB/GYN residency program were asked to complete the Maslach Burnout Inventory after the first rotation of the academic year in 2018, 2019, and 2020. The scores for each of the three aspects of the Maslach Burnout Inventory: burnout, depersonalization, and personal achievement, were then separated into night and day rotations.

Results

A total of 76 responses were received, 13 from residents on night rotations and 63 from residents on day rotations with a response rate of 61.8%. Comparing resident responses for a night versus day rotation, the residents averaged a low level of burnout (a score of 17) on day shift, compared to a moderate level of burnout (a score of 18) on nights.

Conclusions

Residents averaged a low level of burnout and moderate level of personal achievement on day shift, compared to a moderate level of burnout on nights and a low level of personal achievement on nights. Although there was no difference in depersonalization when comparing the day and night shift, 45% of the responses indicated high levels of depersonalization regardless of the type of shift. These results highlight the need to continue efforts to minimize burnout in medical training.

Introduction

After completion of Medical School, residency training is a requirement, and it is a grueling learning experience. It requires a competitive resume, higher education, taxing work hours, relatively restricted income, and lack of autonomy. As a result, resident physicians’ mental health may be impacted. This may
induce symptoms and increase the likelihood of burnout. Burnout describes an emotional depletion and loss of motivation from prolonged exposure to chronic emotional and interpersonal stress on the job. Three dimensions have been used to describe the complex syndrome of burnout: emotional exhaustion, depersonalization, and feelings of decreased personal accomplishment (1, 2). Personal and professional consequences are evident and may become symptomatic. Residents experiencing symptoms of burnout are at an increased risk of delivering suboptimal patient care and contributing to an increase in medical errors (3, 4, 5, 6). Residents are also at a higher risk of substance use, alcohol consumption, depression, and suicidal thoughts and attempts (7, 8, 9, 10, 11).

The prevalence estimates of burnout among residents vary widely between medical and surgical specialties, gender, geographic location, and post-graduate year in training. Standardized tools to assess burnout are currently lacking and therefore, the exact prevalence remains unknown (12, 13). Studies show that more than half of all US physicians experience professional burnout, and the incidence is increasing (14) Burnout is increasing in prevalence with 45.5% of physicians surveyed in 2011 reporting symptoms of burnout compared to 54.4% in 2018. Additionally, feelings of an adequate work-life balance are declining with 48.5% in 2011 and 40.9% in 2014 reporting an inadequate experience (6). Physicians have been shown to have higher levels of burnout, when compared with other professions. Despite higher levels of burnout, the rate of physician suicide is on par with the general workforce in the United States. According to the Center for Disease Control in the United States, the “all occupation” suicide rate for men and women in 2016 was 27.4 and 7.7 per 100,000 respectively. This is compared to the rates for healthcare practitioners which are 23.6 for men and 8.5 for women per 100,000 respectively. Burnout is also a factor that can lead to substance abuse. In a 2015 study that surveyed physicians regarding substance use disorders, 12.9% of men and 21.4% of women physicians who responded met criteria for alcohol abuse or dependence (11).

Systemic causes of burnout involve issues in the learning environment and overall institutional culture (15, 16). The hierarchy in medicine often leads to a paternalistic atmosphere with dominant authority figures. Workplace climate clearly has an influence on overall resident well-being. Notoriously, surgical specialties have had a higher rate of burnout when compared to non-surgical medical residencies (7). Similarly, those in their intern (post-graduate 1st ) year and those who identify as female gender are more likely to experience burnout (17). Previous studies have also suggested that some personality traits are more likely to be associated with residents experiencing symptoms of burnout such as pessimism, neuroticism and high conscientiousness. Those self-identifying as anxious or disorganized are more likely to experience burnout. However, emotional intelligence and perseverance are strong predictors of resident well-being (4, 18, 19, 20).

The COVID-19 pandemic has affected levels of burnout throughout most, if not all jobs in the healthcare field. Many physicians were re-deployed to help care for COVID positive overflow patients, with a large portion of those physicians coming from specialties who were not trained to care for complex intensive care patients, particularly those residents in the surgical specialties. The two specialties that have likely been affected the most are anesthesiology and emergency medicine physicians. Anesthesiologists have
been on the front line, putting themselves at much higher risk than most in the medical field during intubations on COVID positive patients. Similarly, emergency room physicians are exposed to patients before their COVID status is known putting themselves at a higher risk of exposure. Additionally, the sheer volume of COVID positive patients is highest in the ED because the clinicians see COVID positive patients who are ultimately discharged home in addition to those who are admitted to the hospital. Physicians in all fields have had to experience sicker patients and significantly more deaths than they likely would have previously. This has taken an enormous emotional toll on the medical healthcare clinicians overall.

This survey was conducted at a large academic residency program that spans two separate hospitals. The residents and attendings cover an extremely high-volume labor and delivery (L&D) floors with approximately 17,000 deliveries per year. Not only are they high volume, but the acuity of the patients can be quite significant. The L&D are accompanied by a level 3 and a level 4 NICU, so many transferred for neonatal concerns are received. Additionally, the patients may have very high-risk pregnancies, including significant heart failure, end stage renal disease on dialysis, and patients with high order prior cesarean sections or other significant abdominal surgeries.

When physicians have high levels of burnout it affects not only their quality of life and job satisfaction, but also the quality of the care they provide for patients, and this may affect patient safety. There are various factors that may affect perceived burnout that are different during day shift hours when compared with night shift hours, includes fewer support staff, fewer social interactions outside of the workplace, and difficulty adjusting to an opposite sleep schedule.

Methods

The residents in all post-graduate years in a large OB/GYN residency program were asked to complete the Maslach Burnout Inventory and indicate which rotation they just completed after the first rotation of the academic year in 2018 and again in 2019 and 2020. The scores for each of the three aspects of the Maslach Burnout Inventory: burnout, depersonalization, and personal achievement, were then separated into night and day rotations. Scores between day and night rotations were then compared to assess for differences in the three categories. The review and analysis of data collected was approved by the Northwell Institutional Review Board.

The Maslach Burnout inventory is a validated tool used to evaluate burnout in medical professionals (34). Each of the three categories of the Maslach Burnout Inventory are scored in three categories: low, moderate, and high (Fig. 1). Those filling out the questionnaire are asked to respond to each question indicating the frequency with which he or she experiences the sentiment of each statement.

These statements are intended to evaluate the degree of satisfaction and pride the resident feels regarding how they perform their job. The results of each of the 3 categories together indicate the respondent’s degree of burnout.

The questionnaire was distributed via the Research Electronic Data Capture
Each of the questions was input and the respondents were blinded from their scores and from the thresholds for low, moderate, and high values in each section, to help prevent the respondent from answering based on his or her own subjective level for each category. Each questionnaire also asked the resident to indicate which post-graduate year in residency they are currently (PGY-1, -2, -3 or -4), and to indicate which rotation they had just completed. The rotation options were labor and delivery (L&D) nights, L&D days, gynecology (Gyn), gynecologic oncology, and off service. They were then asked to answer all the survey questions regarding how they currently felt about each statement. However, those on a rotation that did not involve significant patient care like a research rotation were asked to think back to the prior rotation they had and how they felt at that time. Additionally, as the first survey was taken after the first rotation during residency for the PGY-1s, they were unable to accurately respond with a “a few times a year,” so they were advised to skip this option and progress from “never” to “once a month” if they experienced the sentiment expressed by the statement once during that rotation.

Finally, the resident responses were split into either a “nights rotation” or a “days rotation” (anything other than L&D nights). The responses in each of the three sections (burnout, depersonalization, and personal achievement) were then assigned their respective point values as mentioned above, and they were then averaged. The average values in each section were then labeled as “low,” “moderate,” or high for each section, and the results for “nights rotations” and “days rotations” were compared.

**Results**

A total of 76 responses were received, 13 of which were from residents on night rotations and 63 from residents on day rotations (Fig. 2).

Each year 41 residents were surveyed, leading to a maximum number of responses of 123, yielding a response rate of 61.8%. Comparing resident responses for a night versus day rotation, the residents averaged a low level of burnout (a score of 17) on day shift, compared to a moderate level of burnout (a score of 18) on nights (Fig. 3).

Additionally, the residents averaged a moderate level of personal achievement (a score of 39) on day shift, compared to a low level of personal achievement (a score of 41) on nights (Fig. 4).

Though there was no difference in depersonalization when comparing day and night shift (scores of 14 and 16 respectively), 45% of the responses indicated high levels of depersonalization (Fig. 5).

**Discussion**

Physicians are strongly predisposed to burnout due to intense clinical demands in work hours, continued education, large personal debt, and sacrifices in personal relationships. Imposter syndrome, depersonalization and a lower level of training have a tremendous impact on overall resident stress (21). House staff are therefore predisposed to depression and delivering a reduced quality of patient care (3, 8, 9). Standardizing measurement tools to effectively analyze the impacts of chronic occupational stress
and to better quantify the amount of people impacted by the phenomenon of burnout are becoming increasingly important.

The enactment of ACGME work hour limits stating that residents should work no more than 80 hours per week were associated with an improvement in emotional exhaustion and burnout (22). Patient mortality seemed to improve in addition to resident well-being (23). One conflicting study found that the reduction in resident work hours from an average of 100 to 82 following resident duty hour restrictions did not significantly change measures of burnout (24). Limiting the number of on-call hours is essential to promote a healthy work-life balance, maintain necessary sleep habits and attempt to alleviate and prevent burnout.

Working overnight (night shift) has been associated with adverse effects such as sleep deprivation, irritable mood, reduced quality of patient care and diminished healthcare worker personal safety. Studies have concluded that residents are at risk when driving home after a night on call emphasizing the importance of post-call recovery sleep and the consequences of sleep disruption and deprivation. Returning to a baseline sleep schedule after a block of night call is extremely difficult (25). Additionally, there is an increased propensity to ignore healthy nutrition and perform less physical activity. The alteration in circadian rhythm increases the risk of numerous medical conditions and malignancy (26, 27). On a night shift, the junior resident has limitations in easy access to senior residents and faculty. This is of upmost importance in their education, development and clinical training (28). Studies have shown that the implementation of a night float system was associated with decreased sleep hours, while 24-hour coverage led to improved junior case volume and elective time with no detrimental effect on patient-related outcomes (29, 30, 31). Additional studies are necessary to determine the benefits and outcomes when comparing a night-float schedule to a 24-hour call schedule (32).

The Covid-19 pandemic created unique healthcare challenges that had a major impact across all specialties. Hospital systems that were overwhelmed with patients required residents to be responsible for a higher number of patients and work hours while battling the substantial work and life stressors of their own personal illness prevention (33, 34). This resulted in a spike in the prevalence of resident burnout, anxiety, distress, and isolation (35, 36). Studies throughout the course of the Covid-19 pandemic highlight the concerns of residents including anxiety about their professional future due to the perception that their training suffered a significant and irreversible impairment (37). Furthermore, adverse effects spread beyond the workplace into all aspects of their personal and social lives (38). Extra-ordinary hardships have been magnified during this time for all healthcare clinicians.

Limitations of the study include temporal factors such as the Covid-19 pandemic. Some of the surveys were taken prior to COVID while others were taken during the pandemic. There is a high likelihood that resident responses were skewed by the stresses of COVID. Additionally, to control for different stressors during different points in the residency year, all residents were surveyed at the same time. While this should have controlled for any temporal confounding variables, it ultimately compared different residents who were on night shift than those on day shift. Another possible method of controlling for confounding
variables between different residents could have been to survey each resident during his or her night rotation and again during a day rotation. However, this would have resulted in residents being surveyed at different times during the year which would not have controlled for temporal variables. Furthermore, our study was limited by a small sample size. Our data suggests that residents appear to be more prone to experience burnout while working any night shifts. Strategies to combat this should be considered by residency programs including extra support (mid-level clinicians) or limiting or removing night rotations.

Resident well-being is of the upmost importance and residents are unlikely to seek help on their own (39). There is a shared responsibility of both healthcare systems and individuals to promote a rich learning environment which minimizes the risks of burnout. Implementation of formal programs focused on resident well-being have positively impacted residents’ perceived stress, life satisfaction and their perception of the residency program (40, 41). Organizational support by program directors and other faculty in leadership positions can help promote well-being (42). Enacting workshops, residency assistance programs, self-care interventions, engagement, support groups, didactic sessions, stress management and coping training are all effective strategies to build resilience and feelings of social belonging (43, 44, 3, 45, 46). Efforts should be focused on improving access to mental health clinicians for medical residents (47). Additionally, healthy exercise habits have been associated with a lower risk of burnout and higher quality of life among medical trainees (48). Although many gaps in knowledge about preventing burnout remain, strategies to enhance medical training and search for effective cures for burnout must continue.

Conclusions

Residents averaged a low level of burnout and moderate level of personal achievement on day shift, compared to a moderate level of burnout on nights and a low level of personal achievement on nights. Though there was no difference in depersonalization when comparing day and night shift 45% of the responses indicated high levels of depersonalization regardless of the type of shift. These results highlight the need to continue efforts to minimize burnout in medical training.

Declarations

Ethics approval and consent to participate: Methods were carried out in accordance with relevant guidelines and regulations. All experimental protocols were approved by a named Northwell IRB. Informed consent was obtained from all subjects.

Consent for publication: Not applicable

Availability of data and materials: All data generated or analyzed during this study are included in this published article

Competing interests: The authors declare that they have no competing interests.
Authors' contributions

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References


Figures

Figure 1
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Figure 2
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Figure 3
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Figure 4
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Figure 5: Level of depersonalization for residents on day versus night rotations.

Figure 5

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