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Burnout amongst Cardiothoracic Surgery Trainees in the UK: Insights from the GMC National Trainee Survey

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ABSTRACT

Background: Burnout among medical professionals profoundly impacts both individuals and patient care. This study looks into the escalating burnout rates among cardiothoracic surgery trainees in the UK, using data from the General Medical Council National Trainee Survey conducted in 2023. Methods: Survey responses from 45 cardiothoracic surgery trainees were analysed and compared with those of trainees from various other surgical specialties. The survey assessed emotional exhaustion, frustration, and work-related fatigue. Results: Cardiothoracic surgery trainees exhibited a higher burnout rate of 24.4% compared to the overall average for surgical specialties of 22.7% (P=0.9417). A detailed analysis revealed that 60% of trainees experienced a high or very high degree of emotional exhaustion, and 44% reported burnout due to work. These rates have shown an alarming upward trend over the years, with a 351.85% increase in high burnout levels from 2019 to 2023. Conclusion: The data underscores a worrying trend of increasing burnout among cardiothoracic surgery trainees in the UK, with rates significantly higher than the average for other surgical specialties. Addressing the rising burnout rates among cardiothoracic surgery trainees is crucial to ensuring high-quality patient care, a sustainable workforce, and the overall well-being of medical professionals.

Keywords: Burnout, cardiothoracic surgery, emotional exhaustion, national trainee survey, workforce.

INTRODUCTION

Burnout, as defined by the World Health Organization (WHO), is a syndrome characterized by emotional exhaustion, depersonalization, and a low sense of personal accomplishment, resulting from unmanaged workplace stressors [1]. This syndrome is increasing among medical professionals and has negative effects on patient and provider [2]. Burnout carries significant professional and personal consequences [3–6]. Burnout is associated with decreased job

performance [7] and reduced job commitment [8] and predicts stress-related health problems [9] and low career satisfaction [10,11]. Burnout is a widespread issue among practicing physicians, with prevalence rates ranging from 25% to 60% [12]. Additionally, numerous studies have documented burnout among surgical trainees [13, 14].

The field of cardiothoracic surgery stands as a pinnacle of medical expertise, demanding not only exceptional technical and non-technical skills but also unyielding dedication and emotional resilience. Yet, the arduous journey toward becoming a cardiothoracic surgeon often exacts a heavy toll on the mental and emotional well-being of trainees. This study aims to establish the prevalence and patterns of burnout experienced by these cardiothoracic surgery trainees, juxtaposed against the experiences of their counterparts in other surgical specialties. Within the framework of quality assurance procedures governing medical training and education in the United Kingdom (UK), the General Medical Council (GMC) has conducted an annual National Training Survey (NTS) since 2013 of all doctors in training posts in the UK as well as their trainers [15]. The survey is structured around five fundamental themes: the learning environment and culture, educational governance and leadership, supporting learners, supporting educators, and developing and implementing curricula and assessments [15]. Notably, in 2018, the GMC incorporated seven specific indicators of work-related burnout from the Copenhagen Burnout Inventory (CBI) into the National Training Survey (NTS) [16]. As per the CBI, work-related burnout is defined as "The extent of physical and psychological fatigue and exhaustion perceived by an individual in relation to their occupation". It is essential to acknowledge the CBI has undergone rigorous validation across diverse contexts, including assessments among healthcare professionals [17]. Utilizing data from the GMC NTS, this research highlights the unique challenges faced by cardiothoracic surgery trainees in their pursuit of specialty training.

MATERIALS AND METHODS

The GMC annually conducts the NTS survey amongst all trainees in the UK. The methods of the surveys are published by the GMC in briefing notes [18,19]. The results presented in this article are derived from the GMC NTS conducted in 2023. Specifically, the focus was on the 45 out of a total 131 trainees who actively participated in the survey process. The survey instrument comprehensively probed various dimensions of burnout, including emotional exhaustion, depersonalization, and reduced personal accomplishment. As an integral component of the survey, participants were presented with seven questions (Table 1), allowing them to indicate their responses on a scale ranging from 'to a very low degree' to 'to a very high degree'.

Table 1: Work-Related Burnout Assessment: Survey Questions

Question 1	Is your work emotionally exhausting?
Question 2	Do you feel burnt out because of your work?
Question 3	Does your work frustrate you?
Question 4	Do you feel worn out at the end of the working day?
Question 5	Are you exhausted in the morning at the thought of another day at work?
Question 6	Do you feel that every working hour is tiring for you?
Question 7	Do you have enough energy for family and friends during leisure time?

Comparative analyses were performed, contrasting the responses of cardiothoracic surgery trainees with those from other surgical specialties, thereby providing a detailed understanding

of the burnout landscape among cardiothoracic surgery trainees in the UK. The NTS falls under the GMC's responsibility of maintaining standards and requirements for postgraduate education and training [19]. Therefore, and in accordance with the UK's Health Research Authority [20], no ethical approval was required to carry out the survey. To guarantee anonymity, the GMC assures participants in advance that it would not share individual participant's responses and would not publish data for a category or training programme if the number or responses was fewer than three [21].

RESULTS

The findings of this survey are outlined in Table 2, offering a comprehensive overview of work-related burnout among trainees in various surgical specialties. The data provides valuable insights into the prevalence of burnout across different fields. Out of the 41 to 45 cardiothoracic trainees who responded, approximately a quarter, or 24.4%, reported experiencing high levels of burnout. When contextualized within the broader landscape of medical specialties, cardiothoracic surgery trainees exhibit one of the highest rates of high burnout, ranking second only to core training. Additionally, 42.2% of cardiothoracic surgery trainees reported moderate levels of burnout. Notably, 33.3% of trainees reported low levels of burnout, suggesting that a minority within this specialty experience comparatively lower levels of emotional exhaustion and fatigue.

Table 2: Prevalence of Work-Related Burnout Among Trainees in Various Surgical Specialties

Programme Type	Number of trainees (range)	High	Moderate	Low	P value
All programmes	29121 to 29125	22.7%	43.0%	34.3%	
Core Surgical Training	516 to 520	29.0%	44.1%	26.9%	0.0009
Cardio-thoracic surgery	41 to 45	24.4%	42.2%	33.3%	0.9417
Oral and maxillo-facial surgery	46 to 50	22.9%	29.2%	47.9%	1.0000
Vascular surgery	91 to 95	22.0%	45.1%	33.0%	0.9730
Neurosurgery	86 to 90	21.8%	47.1%	31.0%	0.9442
Trauma and orthopaedic surgery	366 to 370	20.9%	40.7%	38.5%	0.4506
Otolaryngology	131 to 135	17.9%	38.8%	43.3%	0.2284
Urology	121 to 125	15.6%	44.3%	40.2%	0.0797
Plastic surgery	126 to 130	14.6%	39.2%	46.2%	0.0394
General surgery	411 to 415	14.6%	43.9%	41.5%	0.0001
Paediatric surgery	41 to 45	13.6%	40.9%	45.5%	0.2287

Figures 1(a-g) and Figure 2 present a detailed breakdown of responses from both UK-wide trainees and specifically those in the field of cardiothoracic surgery concerning various aspects of work-related burnout.

Emotional Exhaustion

Regarding emotional exhaustion, 60% of cardiothoracic surgery trainees reported feeling emotionally exhausted to a high or very high degree, which is notably higher than the UK-wide average of 55%.

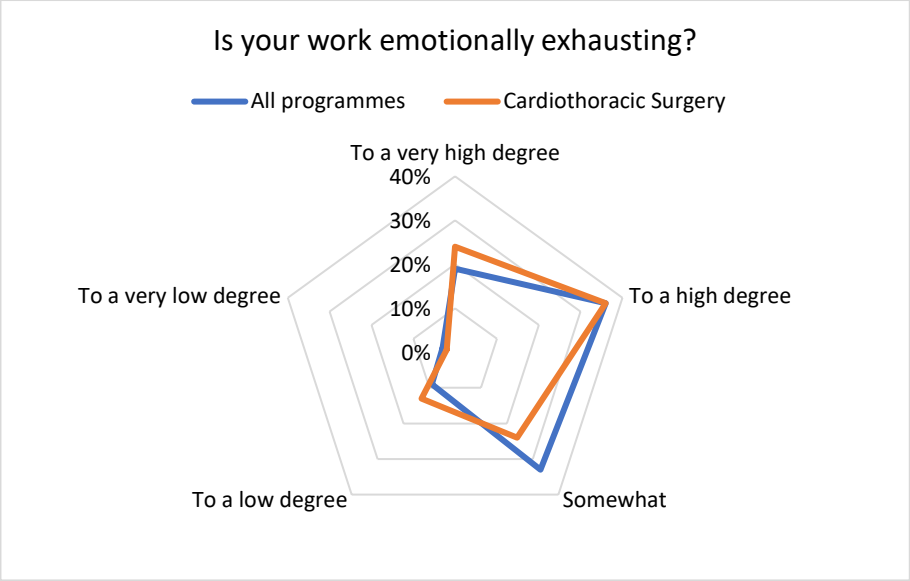

Figure 1a: Emotional Exhaustion Levels: Cardiothoracic Surgery vs. UK-wide

Feeling Burnt Out

When asked about feeling burnt out due to work, 51% of cardiothoracic surgery trainees indicated experiencing burnout to a moderate to very high degree, surpassing the UK-wide average of 47%.

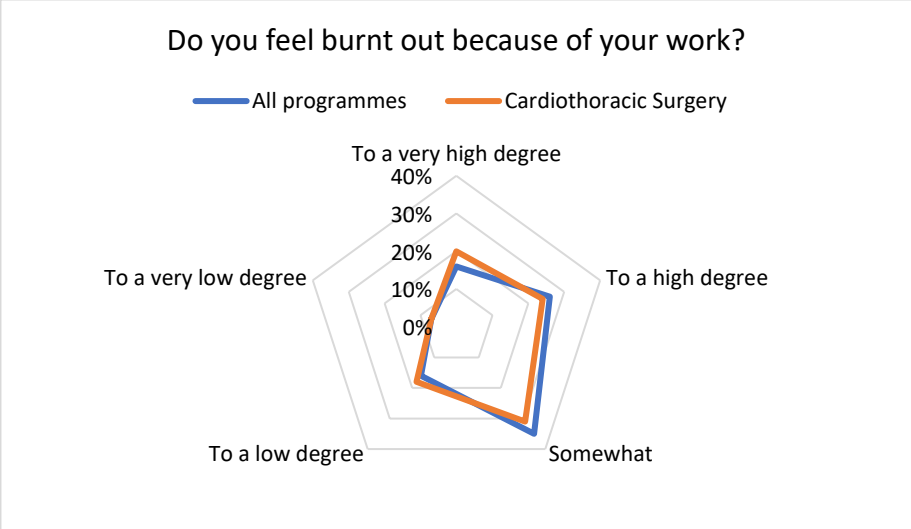

Figure 1b: Burnout Perception: Cardiothoracic Surgery vs. UK-wide

Frustration and Weariness

Furthermore, cardiothoracic surgery trainees expressed frustration and weariness. Around 49% reported work-related frustration to a moderate to very high degree, exceeding the UK-wide average of 46%. Regarding feeling worn out at the end of the day, 58% of cardiothoracic surgery trainees felt this way often or always, which is notably higher than the UK-wide average of 50%.

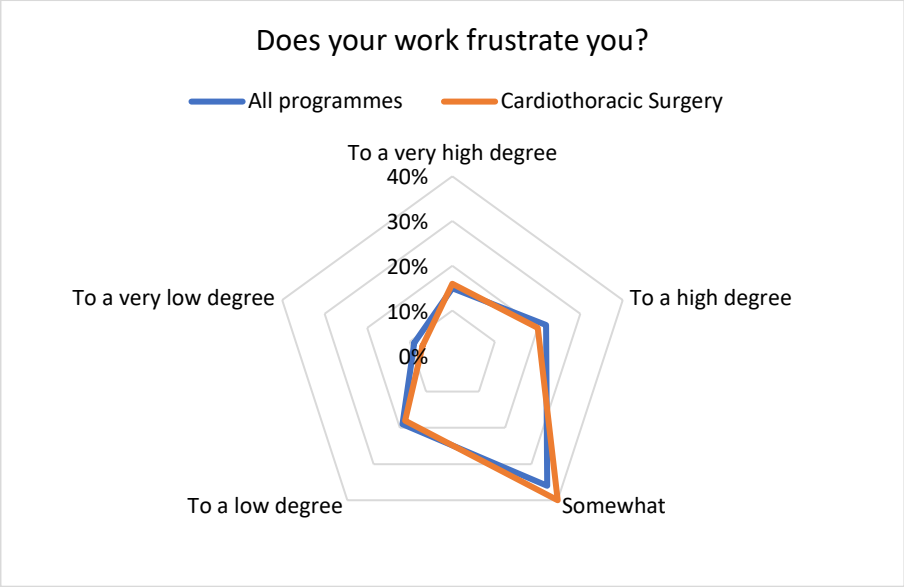

Figure 1c: Frustration at Work: Cardiothoracic Surgery vs. UK-wide

Morning Exhaustion and Working Hour Fatigue

In terms of morning exhaustion, 42% of cardiothoracic surgery trainees felt exhausted often or always in the morning, compared to the UK-wide average of 46%. When it comes to perceiving every working hour as tiring, cardiothoracic surgery trainees were somewhat less affected than the national average, with 45% reporting feeling tired often or always, slightly lower than the UK-wide average of 50%.

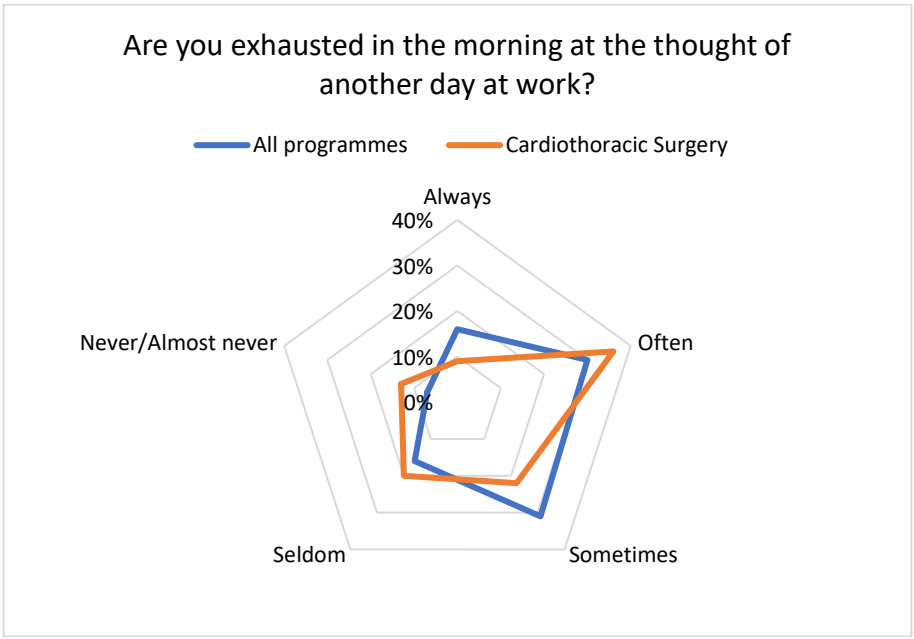

Figure 1d: Morning Exhaustion: Cardiothoracic Surgery vs. UK-wide

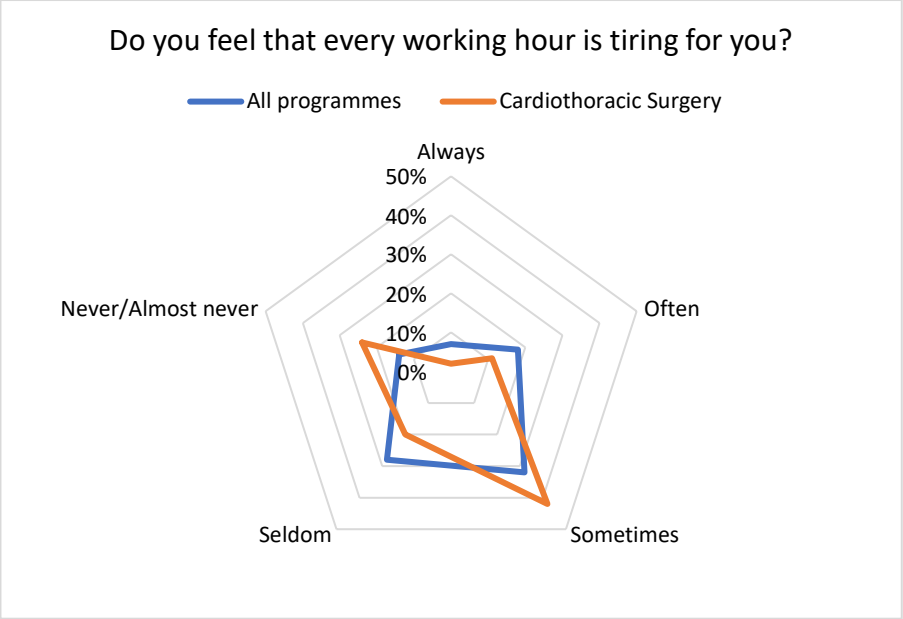

Figure 1e: Tiring Working Hours: Cardiothoracic Surgery vs. UK-wide

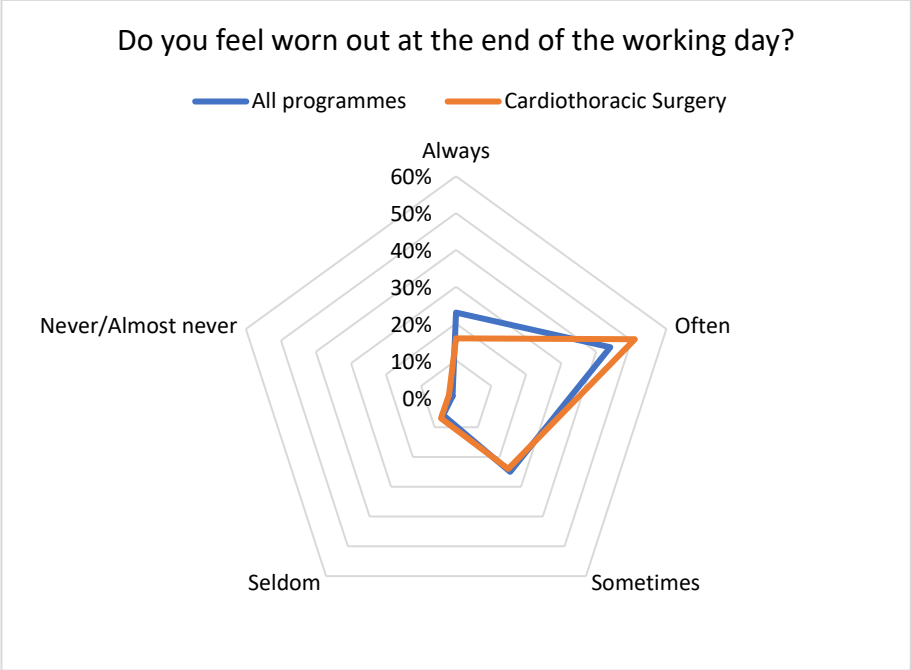

Figure 1f: End-of-Day Weariness: Cardiothoracic Surgery vs. UK-wide

Energy for Leisure Activities

Lastly, regarding energy for family and friends during leisure time, 73% of cardiothoracic surgery trainees reported having enough energy sometimes or often, aligning closely with the UK-wide average of 70%.

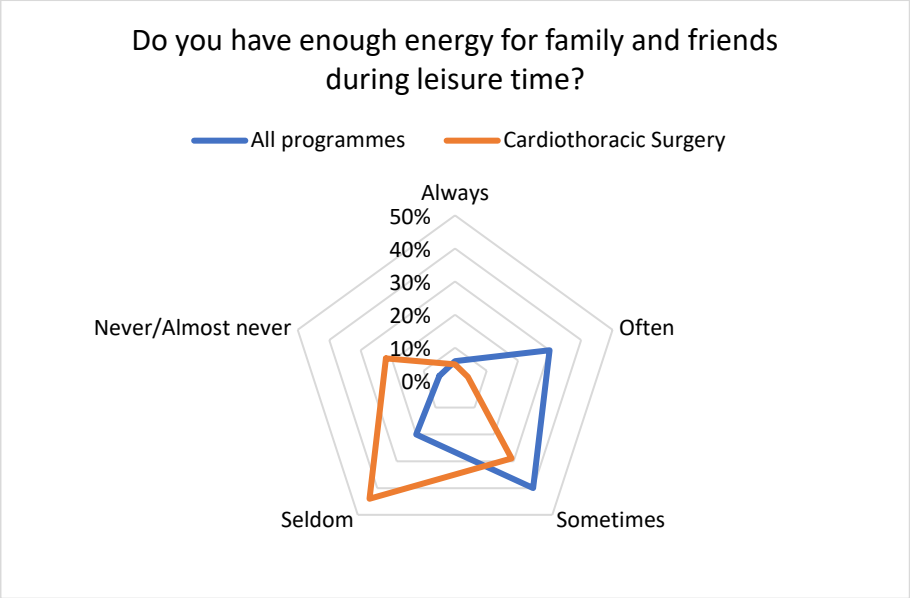

Figure 1g: Energy Levels for Leisure Activities: Cardiothoracic Surgery vs. UK-wide

The data presented in Table 3 illustrates a concerning upward trend in work-related burnout levels among cardiothoracic trainees from 2019 to 2023. In 2019, 5.4% of trainees reported high burnout, while 36.5% and 58.1% reported moderate and low levels, respectively. However, by 2023, the high burnout category had surged to 24.4%, indicating a substantial increase in emotional exhaustion and work-related stress (p=0.0082). Concurrently, the moderate and low burnout levels experienced fluctuations, with moderate burnout remaining relatively stable around 42-50%, and low burnout decreasing slightly to 33.3%.

Table 3: Trends in Work-Related Burnout Levels among Cardiothoracic Trainees (2019-2023)

Year	Number of trainees (range)	High	Moderate	Low	P value
2019	71 to 75	5.4%	36.5%	58.1%	
2021	41 to 45	12.2%	39.0%	48.8%	0.3564
2022	36 to 40	13.9%	50.0%	36.1%	0.2553
2023	41 to 45	24.4%	42.2%	33.3%	0.0082

Upon analysis of the quantitative trends in burnout rates among cardiothoracic trainees, we have calculated the annual percentage increase for each burnout level (high, moderate, and low) from 2019 to 2023.

$$Percentage\ increase = \frac{Burnout\ Rate\ in\ 2023 - Burnout\ Rate\ in\ 2019}{Burnout\ Rate\ in\ 2019} \times 100$$

The analysis reveals a stark increase in high burnout levels among cardiothoracic trainees, with a dramatic rise of approximately 351.85% from 2019 to 2023. Conversely, while moderate burnout levels have seen a moderate increase of approximately 15.62%, there has been a notable decrease in low burnout levels by about 42.92% (Figure 2).

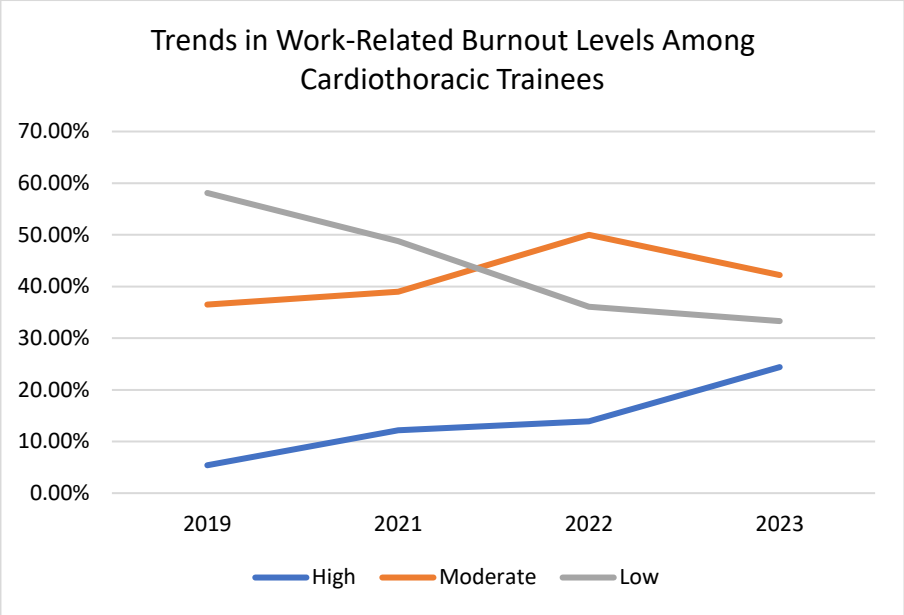

Figure 2: Trends in Work-Related Burnout Levels among Cardiothoracic Trainees (2019 – 2023)

DISCUSSION

The main finding of this analysis was higher levels of burnout in cardiothoracic surgery trainees compared to trainees in other specialties in the UK. Higher rates of emotional exhaustion suggest that cardiothoracic surgery trainees experience a heightened emotional toll compared to their peers in other specialties. These findings highlight a concerning trend indicating a significant proportion of cardiothoracic surgery trainees feel burnt out, impacting their overall well-being and professional resilience.

The upward trend in work-related burnout levels among cardiothoracic trainees in the past few years is concerning. These figures underline a worrying trajectory, signifying a significant deterioration in the mental well-being of cardiothoracic trainees over the evaluated years. Comparing the burnout rates between cardiothoracic surgery trainees in the UK and the US, some stark differences and similarities emerge. In the UK, 60% of trainees reported high or very high emotional exhaustion, which aligns closely with over half of the US respondents who met criteria for burnout on emotional exhaustion and depersonalization subscales [22]. However, in the US, there is an additional significant concern with over 40% of trainees screening positively for depression, a metric not specifically addressed in the UK data. Both regions exhibit concerning burnout rates and work-life dissatisfaction, with more than half of US respondents expressing dissatisfaction with their professional life balance, mirroring the high levels of burnout and emotional exhaustion in the UK trainees. US trainees also report gender disparities and higher regret rates regarding their career choice among those with children [22].

The high burnout rate among cardiothoracic surgery trainees can be attributed to several factors, including the demanding nature of the specialty, long working hours, and exposure to high-stress situations [23]. The COVID-19 pandemic has further exacerbated these issues, leading to increased emotional exhaustion and work-related stress [24]. Studies have shown

that healthcare professionals, including cardiothoracic surgery trainees, experienced heightened levels of burnout during the pandemic due to the overwhelming workload, fear of infection, and the emotional toll of treating severely ill patients. Additionally, the lack of adequate support systems and resources, as well as the competitive environment, contribute to the high burnout rates [23].

The substantial percentage increase in burnout levels among cardiothoracic trainees over the years raises serious concerns about the well-being of medical professionals in this field. The staggering 351.85% rise in high burnout rates from 2019 to 2023 underscores a pressing need for immediate and targeted interventions. Such a dramatic escalation suggests underlying systemic issues within the cardiothoracic training environment that demand urgent attention. While moderate burnout levels have seen a relatively modest increase of approximately 15.62%, indicating a steady but concerning trend, the significant decrease in low burnout levels by about 42.92% is noteworthy. However, despite this decrease, the overall trend paints a worrisome picture, highlighting the importance of implementing proactive strategies to curb burnout and enhance the mental well-being of cardiothoracic trainees. Failure to address these escalating burnout rates could lead to long-term consequences not only for the affected individuals but also for the quality of patient care and the overall effectiveness of the healthcare system. Therefore, comprehensive support programs, improved work-life balance initiatives, and a cultural shift towards prioritizing mental health are imperative to mitigate the detrimental effects of burnout within this medical specialty.

When contextualized within the broader landscape of medical specialties, cardiothoracic surgery demonstrates a higher prevalence of burnout in comparison to other fields. The significant proportion of trainees experiencing burnout emphasizes the need for targeted interventions1. In the UK, specific interventions such as mindfulness courses, mentorship programs, stress resilience training, and self-compassion training have been introduced to address this issue [25]. Such support mechanisms are crucial for mitigating burnout and fostering the well-being of cardiothoracic surgery trainees. It is essential to address the unique challenges faced by individuals in this specialty to support their professional development and overall quality of life during their training period, as well as ensuring cardiothoracic training remains an attractive and rewarding choice.

While this study provides valuable insights into the burnout levels among cardiothoracic surgery trainees in the UK, several limitations should be acknowledged. Firstly, the data relies on self-reported responses from trainees, which might be influenced by social desirability bias, potentially leading to under reporting or over reporting of burnout experiences. Additionally, the sample size, especially within the specific subset of cardiothoracic surgery trainees, is relatively small, limiting the generalizability of the findings to the entire population of cardiothoracic surgery trainees in the UK. Furthermore, the survey's scope, although comprehensive, focuses on specific aspects of burnout and does not delve into the underlying causes or contributing factors. Understanding the root causes of burnout, such as workload, workplace culture, or personal factors, would provide a more nuanced perspective and aid in developing targeted interventions. Additionally, the survey does not capture the impact of burnout on the quality of patient care, which is crucial for assessing the broader implications of trainee burnout in healthcare settings. Another limitation pertains to the temporal scope of the study. While the data spans from 2019 to 2023, the specific reasons behind the observed

trends in burnout rates remain unexplored. Longitudinal qualitative studies or mixed-methods approaches could offer deeper insights into the factors contributing to the escalating burnout levels among cardiothoracic surgery trainees over time. Moreover, the study does not consider the effectiveness of existing support programs or interventions implemented by institutions to mitigate burnout among trainees. Evaluating the impact of such initiatives could provide valuable information on their efficacy and guide the development of evidence-based strategies to address burnout effectively. Lastly, online surveys, while convenient and cost-effective, come with several specific limitations of their own. One major concern is sampling bias, as participants are typically self-selected and may not represent the broader population, particularly those without internet access or who are less tech-savvy. Response rate can also be lower compared to other survey methods, as potential respondents may ignore or delete the survey email. Additionally, security and privacy concerns can impact the willingness of respondents to provide honest answers, especially for sensitive topics. Technical issues such as compatibility problems, broken links, and difficulties in navigating the survey interface can also hinder participation. Finally, online surveys often lack personal interaction, reducing the opportunity for clarifications and follow-up questions, which can lead to incomplete or misunderstood responses.

CONCLUSION

In conclusion, this comprehensive analysis sheds light on the distressing prevalence and escalating trends of burnout among cardiothoracic surgery trainees in the UK. The data, drawn from the GMC National Trainee Survey, paints a vivid picture of the immense emotional exhaustion and work-related stress faced by these professionals. The study underscores an urgent imperative for targeted interventions to safeguard the well-being of cardiothoracic surgery trainees and secure the future of this vital surgical specialty.

Author Contributions

All authors contributed to the conception of the work. MC contributed to the analysis of data for the work; and drafting the work. SGR contributed to the acquisition of data. TJ and SGR contributed to critically reviewing the work for important intellectual content. All authors read and approved the final manuscript. All authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Conflict of Interest

The authors declare no conflict of interest.

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