

# **Drivers of medical student burnout and engagement since the COVID-19 pandemic: a scoping review**

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## Abstract

**BACKGROUND:** The COVID-19 pandemic presented medical students with novel social, emotional, and environmental challenges that affected their mental wellbeing and, in addition to this, pre-pandemic literature has demonstrated that medical students experience high rates of burnout. We conducted a scoping review to identify the social and environmental factors that have impacted medical students since the COVID-19 pandemic. We explored the key concepts, vocabulary and identified gaps in the literature published since the pandemic relating to burnout and engagement.

**MATERIALS AND METHODS:** We conducted this scoping review by following Joanna Briggs Institute guidelines and reported using the PRISMA Extension for Scoping Reviews. Ovid MEDLINE, EMBASE, PsycInfo, and Cochrane Library were searched from 30<sup>th</sup> of January 2020 to 6<sup>th</sup> of December 2023. Included studies had a sample of solely medical students, had burnout or engagement as a key focus whilst matching our predetermined definitions of those concepts and must have collected data after 30/01/2020. Studies not published in English and Grey literature were excluded. We used an *a priori* framework adapted from a physician model to categorise the drivers of medical student burnout and engagement and the extracted data from the included studies was charted in a Microsoft Excel spreadsheet.

**RESULTS:** Of 4897 initial titles, we identified 71 eligible papers, with a total of 62,892 participants. Most studies were cross-sectional in study design (77.5%). Three studies (4.2%) reported on both burnout and engagement, with none reporting on engagement alone. ‘Workload and job demands’ (43.7%) and ‘social support and community at work’ (31.0%) were the most prominent drivers from the *a priori* model cited in the literature whilst ‘control and flexibility’ (7.0%) and ‘efficiency and resources’ (4.2%) were the least. These findings

suggest that burnout and engagement in medical students during the pandemic were most significantly impacted by changes to their expected workload and the social isolation that occurred with lockdowns.

**CONCLUSIONS:** The literature related to medical student burnout and engagement since the COVID-19 pandemic is limited in design, topic, and geographical distribution. Focus on engagement and positive constructs in medical student burnout is a significant gap in the literature and should be targeted by future research.

**Keywords:** Burnout; Engagement; COVID-19 pandemic; Medical students; Mental health

## **Introduction**

The wellbeing of medical doctors has a direct impact on patient safety<sup>1</sup> and the quality of care they provide.<sup>2</sup> In 2015, a systematic review and meta-analysis identified that psychological distress and burnout amongst doctors has steadily increased in prevalence over time,<sup>3,4,5</sup> which has alarming implications for healthcare delivery and equity. A meta-analysis identified that burnout for doctors can begin as early as medical school, with approximately 44.2% of medical students self-reporting consistent burnout symptoms.<sup>6</sup> Understanding the early drivers of burnout for medical students is essential for helping to prevent future burnout in medical doctors for a more stable and effective health system.

Burnout is an occupational phenomenon characterised by emotional exhaustion, and reduced feelings of competence.<sup>7</sup> Maslach and Jackson's 1981 paper defined the syndrome as occurring in individuals who work in roles where they provide care for others; however it is now recognised that burnout can occur in any occupation.<sup>8</sup> The 11<sup>th</sup> revision of the International Classification of Diseases defined burnout as “a syndrome conceptualised as resulting from chronic workplace stress that has not been successfully managed”.<sup>8</sup> It is

characterised by three dimensions: overwhelming physical and cognitive fatigue, a sense of detachment or negativity towards an individual's work and a perceived decline in professional competence and impact.<sup>8</sup> Engagement, on the other hand, is the antithesis of burnout. Engagement is defined as “a positive, fulfilling, work-related state of mind that is characterised by vigor, dedication, and absorption”.<sup>9</sup> However, we do note that the distinction between burnout and engagement is complex and there can be overlap between them.<sup>10</sup>

Medical training is a rigorous period with many commitments and challenges. During the COVID-19 global pandemic, medical students' mental health and training experiences were significantly disrupted.<sup>11</sup> leading to isolation and uncertainty about educational decisions and pathways.<sup>12</sup> In particular, fewer hands-on learning opportunities, some increase in clinical responsibilities and the rise of online learning all had significant negative impacts on medical student mental health and their outlook on their training.<sup>11</sup> Understanding the factors affecting the wellbeing of our current and future health workforce and supporting them is a crucial step to improving healthcare systems<sup>13</sup> and medical education institutions are a key player in the need to address this problem.<sup>14</sup> The aim of this scoping review was to identify the common social and environmental factors that have impacted medical student burnout since the COVID-19 pandemic. We also aimed to clarify the concept and descriptions of ‘engagement’ since it is not commonly associated with being the “antithesis of burnout” as defined by Maslach.<sup>9</sup> These findings could act as a springboard to inform future reviews and interventional research, as well as provide insights for medical education institutions on how to foster student wellbeing in a post-COVID-19 pandemic world. In a preliminary search, we found no recent systematic or scoping reviews on burnout or engagement in medical students.

### ***Review Questions***

1. What are the gaps within and extent of the literature about medical student burnout and engagement since the COVID-19 pandemic?
2. What are the concepts and vocabulary used in relation to the term ‘engagement’?
3. To what extent do included studies align with the drivers of burnout or engagement in the Mayo Clinic model of clinician wellbeing?

## **Methods**

We followed Joanna Briggs Institute (JBI) guidelines<sup>15</sup> and the preferred reporting items for systematic reviews and meta-analyses extension for scoping reviews (PRISMA-ScR)<sup>16</sup>. We used the PCC framework<sup>15,16</sup> (population/participants: medical students; concept: studies concerning burnout and/or engagement; context: since the COVID-19 pandemic) to develop a comprehensive search strategy and determine inclusion and exclusion criteria.

### ***Eligibility criteria***

We considered original research articles that had a sample of solely ‘medical students’, which was defined as all undergraduate or pre-registration individuals studying for a medical degree and had either burnout or engagement as a focus. Words such as ‘dedication’, ‘vigor’, and ‘absorption’ were used to capture the essence of ‘engagement’ in our search criteria, whereas ‘burnout’ was used as a standalone search term due to the fact that it unambiguously refers to the concept discussed in the review as ‘engagement’ has multiple meanings, for instance in reference to professionalism or interest in a topic, we excluded articles that referred to engagement outside of a burnout context. All included articles must have had their data collected after the 30<sup>th</sup> of January 2020, the date that COVID-19 was declared a ‘Public Health Emergency of International Concern’ (PHEIC) by the WHO<sup>17</sup>. Included studies must have been published in English, due to a lack of reliable translation methods within the

resources of this review. Grey literature was excluded. Additionally, all research only published in abstract and poster form or as conference proceedings was excluded.

### ***Literature search***

Ovid MEDLINE, EMBASE, PsycInfo, and Cochrane Library were searched from the 30<sup>th</sup> of January 2020<sup>17</sup> to the 6<sup>th</sup> of December 2023. Potential search terms were tested during a preliminary search of databases. The final search strategies and terms used for each database are outlined in full in Appendix I. The management software used to collate and aid in screening of the included studies was RefWorks (ProQuest, MI, USA).

### ***Data extraction***

One reviewer (ZA) completed de-duplication and title/abstract screening under the supervision of another reviewer (FM) as part of a learning experience. All full texts were screened independently by two reviewers (ZA, JdZ). Conflicts were resolved through discussion at full reviewer meetings. One reviewer (ZA) ensured study independence by checking that no two studies utilised the same dataset.

Data was extracted using a draft charting table developed at the start of the scoping review by all reviewers. Data items included the country where the research was conducted, the study design, the concept addressed, participants' gender and their stage of medical school. Where applicable, the authors charted the stated definition of burnout or engagement, instruments used, any recorded prevalence of burnout and/or engagement and interventions studied. Additionally, a seminal study from the Mayo Clinic<sup>18</sup> proposed a model for engagement and burnout in physicians, comprising of seven drivers. We included these drivers (efficiency and resources, workload and job demands, control and flexibility, work-life integration, social support and community at work, organisational culture and values and meaning in work) in

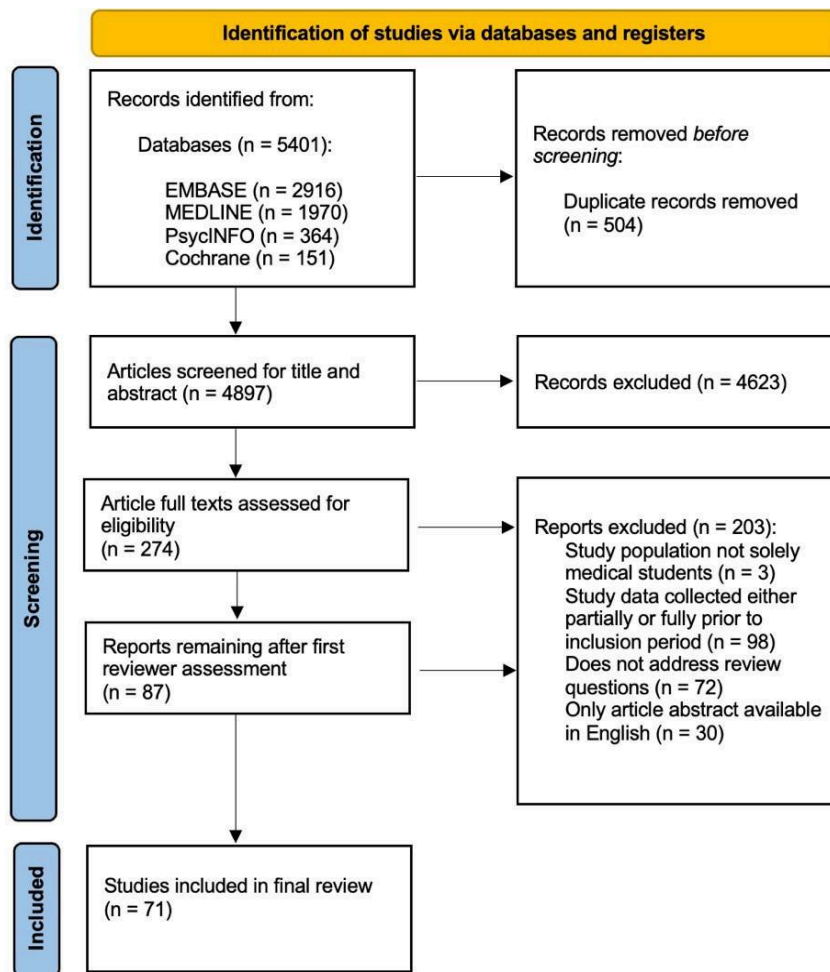
our data extraction table as an *a priori* framework to categorise drivers of burnout and engagement. One reviewer (ZA) then extracted the data as part of a learning process under the supervision of another (FM). Any unclear data was confirmed by a second independent reviewer (FM, EC or JdZ), and conflicts were resolved through discussion.

### ***Data synthesis***

A descriptive numerical summary analysis and a basic qualitative summary analysis were conducted on the extracted data to answer the review questions. We categorised each factor using our *a priori* framework, including a category for any studies where impacting factors might not fit this framework. Critical appraisal and quality assessment of included studies was not undertaken as this is not required of scoping reviews.<sup>15</sup>

### **Results**

Of 4897 initial titles, we identified 71 eligible studies of 62,892 total participants. The complete literature search strategy is shown in Figure 1. Details of the search strategies for all databases are listed in Appendix I. The final data charting table is shown in Appendix IV.



**Figure 1:** Flowchart of search result and source selection process.<sup>19</sup>

Most included studies were cross-sectional ( $n=55$ , 77.5%)<sup>20-74</sup> and evaluated the prevalence of burnout. Fewer studies were longitudinal ( $n=7$ , 9.9%)<sup>75-81</sup> and evaluated the prevalence of burnout before and after the COVID-19 pandemic. Five studies evaluated interventions for burnout or engagement ( $n=5$ , 7.0%)<sup>82-86</sup>. There were three opinion pieces ( $n=3$ , 4.2%)<sup>87-89</sup> and one letter to the editor ( $n=1$ , 1.4%)<sup>90</sup>.

Asia ( $n=32$ , 45.1%) was the most common continent where studies took place, followed by Europe ( $n=16$ , 22.5%) and North America ( $n=14$ , 19.7%). Due to the high proportion of studies conducted in Asia, with its large population and geographical area, Asia was split into 'East' ( $n=13$ , 18.3%), 'Southeast' ( $n=8$ , 11.3%), 'South' ( $n=5$ , 7.0%), and 'Central and



Western' ( $n=6$ , 8.5%) subregions. Only two studies (2.8%) included data from more than one country<sup>63,70</sup>.

Most studies included pre-clinical and clinical students ( $n=54$ , 76.1%). Seven studies (9.9%) assessed pre-clinical students only<sup>24,46,61,76,77,85,87</sup>, eight studies (11.3%) only assessed clinical students<sup>34,40,41,45,49,55,65,83</sup>, while two studies (2.8%) did not address this<sup>88,90</sup>. Most studies had a majority (>55%) of female participants ( $n=47$ , 66.2%).

Most studies focused on burnout ( $n=68$ , 95.8%)<sup>20-23,25,27,29-90</sup>, three (4.2%) reported on both burnout and engagement<sup>24,26,28</sup>, with none solely focusing on engagement. The Maslach Burnout Inventory<sup>11</sup> was the most common tool used to assess burnout ( $n=35$ , 49.3%). Of the three studies that assessed engagement, one each used the Utrecht Work Engagement Scale,<sup>28</sup> University Student Engagement Inventory,<sup>24</sup> and Undergraduate Professional Commitment Scale.<sup>26</sup> See Table 1 for more details of included study characteristics.

**Table 1:** Study characteristics.

| Article/study characteristics                               |           | Article/study characteristics                |           |
|-------------------------------------------------------------|-----------|----------------------------------------------|-----------|
| <i>n</i> / 71 (%)                                           |           | <i>n</i> / 71 (%)                            |           |
| Study type conducted                                        |           | Burnout assessment tool                      |           |
| Cross-sectional                                             | 55 (77.5) | Maslach Burnout Inventory                    | 35 (49.3) |
| Longitudinal                                                | 7 (9.9)   | Oldenburg Burnout Inventory                  | 10 (14.1) |
| Opinion piece                                               | 3 (4.2)   | Other                                        | 9 (12.7)  |
| Pre-post study                                              | 2 (2.8)   | Learning Burnout Scale (LBS)                 | 7 (9.9)   |
| Randomised controlled trial                                 | 1 (1.4)   | Copenhagen Burnout Inventory                 | 5 (7.0)   |
| Feasibility trial                                           | 1 (1.4)   | Not assessed                                 | 4 (5.6)   |
| Letter to the editor                                        | 1 (1.4)   | Oldenburg AND Copenhagen burnout inventories | 1 (1.4)   |
| Cross-sectional study followed by a separate pre-post study | 1 (1.4)   |                                              |           |

| Region study carried out in |           | Engagement assessment tool                  |           |
|-----------------------------|-----------|---------------------------------------------|-----------|
| Europe                      | 16 (22.5) | Not assessed                                | 68 (95.8) |
| North America               | 14 (19.7) | Utrecht Work Engagement Scale               | 1 (1.4)   |
| East Asia                   | 13 (18.3) | University Student Engagement Inventory     | 1 (1.4)   |
| Southeast Asia              | 8 (11.3)  | Undergraduate Professional Commitment Scale | 1 (1.4)   |
| Central and Western Asia    | 6 (8.5)   |                                             |           |
| South Asia                  | 5 (7.0)   |                                             |           |
| Africa                      | 3 (4.2)   |                                             |           |
| South America               | 3 (4.2)   |                                             |           |
| Multi-region                | 2 (2.8)   |                                             |           |
| Oceania                     | 1 (1.4)   |                                             |           |

### *Answers to review questions*

#### *1. Gaps within and extent of the Literature*

The literature had a narrow scope in terms of the study design and key areas of focus. Most studies were cross-sectional, with fewer longitudinal and interventional studies. Much of the literature focused solely on burnout rather than on burnout and engagement. In addition to the narrow extent of the literature in relation to both study design and key area of focus, the other main finding was an imbalance in the geographical distribution of studies. Most studies originated in Europe, North America and East Asia, while far fewer originated from South Asia, South America or Africa.

#### *2. Key concepts and vocabulary in relation to engagement*

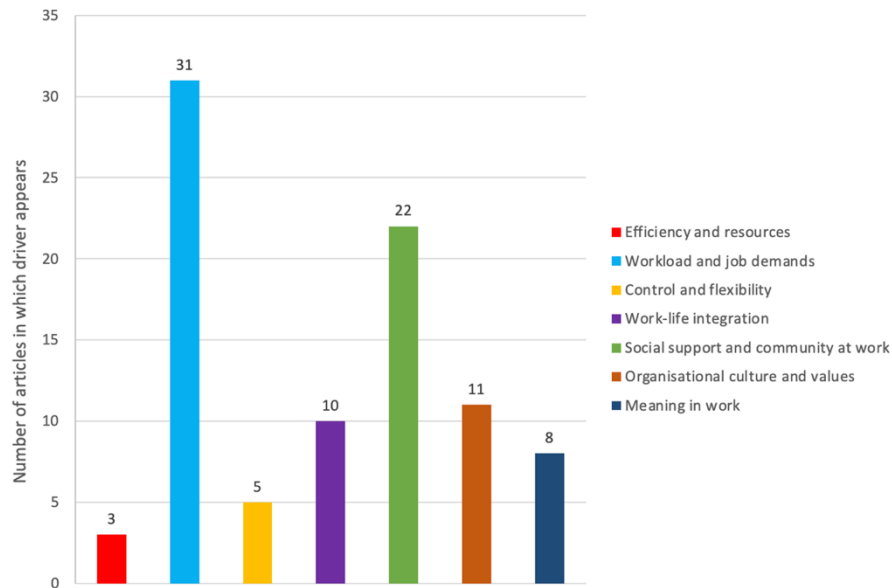
Three studies utilised engagement as a key concept alongside burnout. Two directly referred to the term “engagement”, with one defining it as “a positive, fulfilling, work-related state of mind”<sup>28</sup> and the other stating that engagement has “behavioural, emotional and cognitive” dimensions and that it “outlines student disposition to engage”<sup>24</sup>. The third study used the term “professional commitment”, stating “professional commitment encompasses the positive attitudes and behaviours expressed by students who identify with their chosen field of study”.<sup>26</sup> Regardless of the terminology, all three studies referred to a positive state, the antithesis to burnout.

#### *4. Extent of alignment of literature with the Mayo Clinic model of clinician wellbeing*

All the drivers outlined in the model were present to varying degrees in the literature.

#### ***Alignment of Literature Since the Pandemic with the Mayo Clinic Model***

The Mayo Clinic model provided a useful framework for our review, with all seven drivers being identified in the included studies. Some studies highlighted more than one factor. ‘Workload and job demands’ ( $n=31$ , 43.7%) was most frequently cited, followed by ‘Social support and community at work’ ( $n=22$ , 31.0%), ‘Organisational culture and values’ ( $n=11$ , 15.5%), ‘Work-life integration’ ( $n=10$ , 14.1%), ‘Meaning in work’ ( $n=8$ , 11.3%), ‘Control and flexibility’ ( $n=5$ , 7.0%), with ‘Efficiency and resources’ ( $n=3$ , 4.2%) being the least cited (Figure 2).



**Figure 2:** Frequency of drivers in the literature.

#### *A. Workload and job demands*

Studies citing workload and job demands<sup>23-28,30,32-33,37-39,43,46-48,55,60,64-65,69-71,73-74,77,79-81,88,90</sup> outlined associated factors such as the pressure of medical school or concern over grades and competitiveness. Five studies found that the pandemic increased medical student stress and burnout which, in some cases, was related to unrealistic expectations from their institution or needing to work on the frontline.<sup>37,55,73,88,90</sup> Conversely, three studies noted that burnout may have decreased during the pandemic due to decreased contact with patients and reduced time in the clinical environment.<sup>74,79,80</sup>

#### *B. Social support and community at work*

In studies citing social support and community at work,<sup>20,24,27-28,31,37,39,41,46,49,63,69,71,73,76,81-82,86-90</sup> the emergent theme was that socialisation and support from friends, family and teachers was a protective factor against burnout and in promoting engagement in medical students. Two studies discussed that being in a clinical environment with supervising clinicians who were

not supportive or socially distant correlated with student disconnection and increased burnout.<sup>28,89</sup> Conversely, one study noted that students who felt a sense of belonging experienced less burnout.<sup>81</sup> Five studies demonstrated that online learning and lockdowns were associated with reduced social support and exacerbated burnout.<sup>20,71,73,88,90</sup> However, one paper contradicted this view, reporting that the pandemic did not alter loneliness.<sup>76</sup>

### *C. Organisational culture and values*

Organisational culture and values was the next most common driver<sup>26,28,31,39,48,60,69,75,81,89,90</sup> and the prevailing theme to emerge was that a negative school and learning environment were associated with burnout, whereas a positive environment could be protective.<sup>31,60,69,81</sup> Similarly, one study highlighted that students who felt valued by their clinical teams tended to be more engaged.<sup>28</sup> Two studies specifically referenced student mistreatment and discrimination as factors contributing to burnout.<sup>39,89</sup> A further two studies noted that distance learning correlated with burnout due to a feeling of unfairness caused by online examinations and worries about the online learning environment.<sup>48,90</sup>

### *D. Work-life integration*

Work-life integration<sup>20,30,32,38,47,72,74,82,88,90</sup> encompassed the concept that having more time for leisure activities was predictive of less burnout. Four studies observed that due to online learning, students had reduced commute times and, therefore, increased time for self-care, leading to less burnout.<sup>20,76,88,90</sup> Sleep and exercise were cited by two studies as protective factors against burnout<sup>38,72</sup> and one specified that leaving the house more frequently was associated with less burnout.<sup>72</sup>

### *E. Meaning in work*

Eight studies<sup>26,28,32,48,52,67,77,79</sup> reported a sense of meaning in work. Two studies noted that the feelings of meaninglessness tended to increase with time, resulting in increased cynicism and burnout.<sup>32,79</sup> One study stated that the pandemic may have triggered boredom or loss of interest in learning.<sup>48</sup> A correlation was also noted between burnout and boredom.<sup>67</sup> Conversely, two protective factors against burnout and cynicism were holding student leadership roles and being trusted with important tasks,<sup>26,28</sup> whereas another noted that students' wishes to become a physician were encouraged by the pandemic.<sup>77</sup>

#### *F. Control and flexibility*

Control and flexibility<sup>20,48,64,79,81</sup> was identified in five studies, indicating that increased autonomy and self-determination for students was related to reduced burnout. One study reported that online learning correlated with reduced burnout as students felt in control of their schedules.<sup>20</sup> However, two studies noted that feelings of uncertainty and lack of preparation for the online learning environment were linked to higher levels of burnout.<sup>79,81</sup>

#### *G. Efficiency and resources*

Efficiency and resources was the least identified factor, only present in three studies, all of which reported positive effects.<sup>83,88,90</sup> Two studies noted that the pandemic positively impacted efficiency and resources via online learning, as well as the potential to multitask.<sup>88,90</sup> Another found that after a self-care program, students felt better equipped to tackle the pandemic.<sup>83</sup>

### **Discussion**

In this scoping review, we evaluated the extent and nature of the literature on medical student burnout and engagement conducted since the onset of the COVID-19 pandemic. We also specifically sought to map how often and in what way engagement is discussed, as well as to

evaluate the extent to which previously identified burnout drivers<sup>18</sup> are relevant to medical students since the pandemic.

Although the *a priori* model used in this study was originally designed for physicians, we found that the drivers of burnout and engagement aligned well with the medical student participants in this review; however we cannot conclusively state that it is applicable to students. A model constructed specifically for medical students regarding burnout and/or engagement would be useful for teasing apart the nuances of medical students compared with clinicians, but in the meantime the Mayo Clinic physician model provides a useful starting framework that education providers can utilise to maximise student engagement and help answer the call to focus interventions on the drivers of burnout.<sup>91</sup>

We were intrigued to find that only three of our included studies investigated medical student engagement, with the remainder focusing on student burnout. Literature on medical student burnout and engagement since the pandemic primarily focuses on student burnout and its negative psychological effects within medical training environments. Whilst protective factors and potential interventions for burnout are often discussed alongside this, they are rarely the focus of the research. This raises the possibility that the way the field considers medical student burnout might benefit from a change toward focusing more on the positive construct of engagement and other similar terms that describe the antithesis of burnout.<sup>92</sup> Our findings underscore the importance of strengthening the evidence base regarding ways in which students might thrive, including measuring the prevalence of positive constructs like engagement.

Recent data suggests that a majority of New Zealand medical students suffer from disengagement and exhaustion as burnout dimensions, with prevalences at 68 and 77 percent respectively.<sup>93</sup> Additionally, when comparing pre-clinical to clinical medical students,

disengagement scores were significantly higher in the clinical group. This potentially suggests that as New Zealand medical students progress through their studies, they are experiencing worsened burnout as a result of them.<sup>93</sup> Therefore, our findings are important for educators, researchers and New Zealand medical students. The medical education learning environment is comprised of campus learning and hospital or community settings and is known to contribute to burnout in students.<sup>94</sup> This provides medical educators and institutions with an opportunity to influence these environments and optimise students' wellbeing. In turn, this will hopefully result in them having reduced burnout and increased work engagement as clinicians in the future and have a positive impact on the healthcare system.<sup>1,2</sup>

We recommend that additionally to investigating drivers of burnout or documenting trends, future researchers explore positive constructs alongside investigating interventions that target burnout or enhance engagement. This would enable a shift away from a focus on 'measuring, preventing or managing burnout' and towards the concept of a pendulum which can move in either a positive or negative direction in terms of what drives burnout. It might also be possible to consider shifts in the relative prominence of the different drivers and whether these proportions are changing over time.

### ***Study limitations***

A strength of this scoping review was that it included burnout and engagement as antithetical terms and approached the topic through a positive and negative lens. This is appropriate, given the importance of adopting a strength-based approach to youth.<sup>95,96</sup> However, there were several limitations, for example, the heterogeneity of burnout and engagement assessment instruments did not allow for comparison of burnout levels between studies. Although all included articles collected their data after the WHO declared COVID-19 a



PHEIC, the COVID-19 burden and restrictions within a country at the time of data collection were not accounted for. Therefore, some included articles may be less relevant to COVID-19 than others, despite meeting the inclusion criteria equally. There was a large discrepancy in the volume of literature originating from geographical regions when compared to the medical school population of those regions.<sup>97</sup> Therefore, the evidence is unlikely to be representative of the global medical student population.<sup>97</sup> Most studies chose to report participant gender in a binary format or reported participant sex rather than gender. A non-binary format would more accurately represent all gender identities of the students being surveyed.

Furthermore, the period since the pandemic is a relatively short timeframe in which to conduct and publish high-quality intervention research. Limitations for inter-rater reliability included subjective bias, time and resource demands. For instance, screening and data extraction were primarily performed by a single reviewer, with subsequent verification from other reviewers. Additionally, the review had limited resources, which restricted the number of searched databases, and did not allow us to include non-English language publications.

## **Conclusion**

We have conducted a scoping review of literature concerning medical student burnout and engagement since the COVID-19 global pandemic. Our findings suggest that the literature around medical student burnout and engagement is limited in its breadth of design, topic, and geographical distribution, despite the novel stressors placed on students over this unprecedented period. We conclude that while it is likely that the drivers in medical students resemble those described in earlier models for doctors, further research is required to understand the nuances of medical student life. We also point out that little interventional research has been conducted in this field and suggests that the measurement of positive constructs has been largely overlooked.

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## Appendices

- i) Search strategies for the four databases searched in conducting this review.
- ii) List of excluded studies following the full-text assessment and reason for their exclusion.
- iii) Details of the criteria used to conduct the review.
- iv) Data extraction table for all included articles.