The Effect of the Educational Environment on the rate of Burnout among Postgraduate Medical Trainees – A Narrative Literature Review

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ABSTRACT

BACKGROUND: Burnout among postgraduate medical trainees is common. It is a syndrome characterised by emotional exhaustion, depersonalisation and reduced personal accomplishment. Burnout is seen as an organisational problem rather than the result of an individual’s ability to cope with the stress at work. The educational environment can play a pivotal role in the prevention of burnout among postgraduate medical trainees. This narrative literature review is aimed at assessing the effect of the educational environment on burnout in postgraduate doctors-in-training.

METHODS: A search of the databases Medline and PsycINFO for articles published between 2015 and 2020 was performed with the key words ‘burnout’ and ‘educational environment’ or ‘clinical learning environment’ or ‘postgraduate medical education’ or ‘learning environment’.

RESULTS: A total of 27 studies were identified and reviewed by the author. The prevalence of burnout reported varied widely between studies, ranging from 10% to 62%. Many of the factors that contribute to burnout form part of the educational environment, for example, hours worked, mistreatment, harassment and perceptions of injustice. Residency itself is a stressful period wherein trainees have to balance their responsibilities towards their patients with their responsibilities at home, all while furthering their studies and taking on new responsibilities. Interventions to prevent burnout and tackle existing burnout are multiple but very little solid evidence exists to attest to their efficacy. More research is needed to identify the most effective ways to deal with burnout in postgraduate medical trainees.

KEYWORDS: burnout, educational environment, clinical learning environment, postgraduate medical education, learning environment

Introduction

The well-being of doctors-in-training has received significant attention in the literature over the past couple of decades. The factors that influence the well-being of trainees are various but the role of the educational environment in the development of burnout in postgraduate medical trainees has been identified as one of the factors that can be modified and adjusted to achieve a better mental health in these trainees.

Educational environment

The American Medical Association defines educational environment as:

‘a social system that includes the learner, the individuals with whom the learner interacts, the setting(s) and purpose(s) of the interaction, and the formal and informal rules/policies/norms governing the interaction.’

When training health care professionals, learning in a clinical context remains essential to the training. Simulation may have helped in training. However, simulation cannot completely replace the learning experience trainees get from working with actual patients in a real clinical context.

Genn and Harden consider that although the concept of educational environment is rather abstract and not tangible, the effect it has is considerable, real and influential. The educational environment is one of the determinants of students’ behaviour. Genn further adds that to maximise the educational output, we need to foster a nurturing climate.

The work that these trainee doctors perform is also essential to the organisations, for example, hospitals, within which they work. Their input in patient care is critical and its absence would have deleterious effects on patient care.

It has been suggested that students become more cynical and less empathetic as they progress through medical school. The fact that the educational environment to which these students are exposed may be too task-oriented may play a role in this worrying development.

A clinical learning environment is therefore expected to be effective and supportive to ensure quality care to the patients, a healthy medical workforce and for the trainees’ learning and socialization into the profession to be encouraged. It is also expected to foster the ability of a student to empathise and identify with patients and the circumstances that they present.

The benefits of a sane educational environment are wide-ranging and include improved quality of care and prescribing habits of the trainees. Influence also extended to the use of health care services and resources and lower surgical complication rates.
The GMC\textsuperscript{12} is of the opinion that:

‘patient safety is inseparable from a good learning environment and culture that values and supports learners and educators’.

Many trainees learn and develop their clinical skills in educational environments that are subjected to problems of staffing, funding and overcrowning.\textsuperscript{13,14} An excessive workload will lead to a deterioration in trainee learning. Heavy workloads increase the prevalence of burnout, lower engagement and poorer health.\textsuperscript{15,16} Similarly heavier workloads were found to be linked to lower levels of patient satisfaction, poor standards of care and a higher mortality.\textsuperscript{17,18}

The complexity of the educational environment stems partly from the different components that it comprises. These include the physical surroundings and facilities, the organizational structure and culture, the education programme, the social dynamics and interactions and any digital provisions.\textsuperscript{5}

The organizational culture and structure can leave a profound effect on the educational environment. Collaboration and competition may be encouraged. A sense of belonging needs to be fostered for collaboration to be optimal. On the other hand, competition is paradoxically encouraged as only the individual efforts are recognized and rewarded.\textsuperscript{6}

The education environment can also be either supportive or punitive.\textsuperscript{6} Whereas previously students may have been left to their own devices, trying to find a solution to their own academic and personal problems with the hope of toughening them up, in recent years a move towards a more supportive educational environment has been noted. This ‘psychological safety’ for the trainee allows trainees to experiment, assess their own progress and identify lacunae in their knowledge.\textsuperscript{19}

The education programme itself also contributes to the educational environment. This contribution takes the form not only of the curriculum, including the hidden curriculum, but also all the various learner’s experiences and opportunities.\textsuperscript{6}

The educational environment is powerfully influenced by the social dynamics and interactions relating to the education programme. This includes the relationship between tutors and trainees, the role models provided by tutors and the peer-to-peer teaching. It also includes the recognition and rewarding of teaching commitment and expertise and the value placed on extracurricular activities.\textsuperscript{6}

**Burnout**

Burnout has been defined as by Maslach and Leiter\textsuperscript{20} as:

‘a syndrome of emotional exhaustion, feelings of depersonalization, and a lack of personal accomplishment, specifically in relation to one’s professional activity’.

The concept of burnout originated from the work in the 1970s by Freudenberger,\textsuperscript{21} who described burnout as ‘a state of mental exhaustion caused by one’s professional life’. Freudenberger and Richelsen\textsuperscript{22} further describe burnout as consisting of 3 modalities: emotional exhaustion, depersonalization and a reduced sense of accomplishment or success.

Over the years the term burnout has evolved to describe job-related stress in any healthcare environment. In this way, the term has been used to describe the shared experience and stress that is experienced in the practice of medicine especially when research shows a high level of depressive symptoms among physicians.\textsuperscript{23}

Interest in burnout has increased when research was published showing that burnout is associated with increased medical errors, lower patient satisfaction, longer post discharge recovery times, and decreased professional work effort.\textsuperscript{21} Burnout has also been cited as a potential cause for a doctor to leave the profession. This decision is surely not taken lightly after years of hard work and studying. Its ramifications are also widespread and include potential unemployment, financial hardship and familial conflict.\textsuperscript{2}

Burnout in physicians has also been associated with substance abuse, aggression at work, violence at work, depression and a higher suicide rate.\textsuperscript{2} Malpractice suits may follow and complicate matters further especially in the light that suboptimal patient care practices have been associated with burnout.\textsuperscript{24} In a literature review on burnout among residents, Thomas\textsuperscript{25} comments that despite having readily embraced hard work during their years of studying, residents in their training years, experience high levels of burnout, possibly linked to long working hours, that leaves them emotionally exhausted, cynical and at times depressed with an effect on their performance and on patient care.

Besides burnout, exposure to severe and chronic stressors can increase the risk for doctors to develop mental health issues such as depression, anxiety, insomnia, alcohol and drug addictions and can possibly lead to marital dysfunction and increased risk of suicide. Compassion fatigue may also develop.\textsuperscript{26}

Research has identified a relatively higher degree of burnout among early career physicians during their first few years of training when compared to the general population.\textsuperscript{27} Similarly, this group of early career physicians have been found to be more likely to report depressive symptoms and high levels of fatigue.\textsuperscript{28} Not all physicians experiencing burnout are able to cope without consequences.\textsuperscript{2}

There is a definite relationship between work stress and burnout. While several positive aspects of the work environment are associated with a lower stress level, when these positive aspects are absent, stress levels are increased and so is the risk for burnout. Poorly functioning organisations may thus be conducive to burnout among their employees.\textsuperscript{29}

Positive aspects of the work environment may be subdivided into organizational functionality (eg, timely information relay within organisations), individual satisfaction (eg, provision of support from management and patient appreciation of efforts), family-work balance (eg, support for family life and lack of
intrusion on family life), opportunities for professional development and competent leadership.30

Burnout is also more common in environments that not only lack the above-mentioned aspects but also where excessive workloads, long hours of work, fatigue, emotional interactions, demands from the practice of medicine and restricted autonomy are left unchecked.31 Structural and organizational changes can affect clinical practice and result in increased rates of burnout.26

Though many causes of burnout can be seen as being organizational in nature, personal issues may also be involved. Mishandling of stress, idealism, perfectionism and a greater sense of responsibility have also been linked with burnout.32 Trainees in the first 5 years after graduation are at a greater risk of burnout if they possess the aforementioned characteristics.13

Patient factors that can also lead to burnout among doctors. Examples would include patients and relatives with unrealistic expectations, deterioration in the patient’s health and aggressive patients. Emotional detachment and burnout may also be aggravated by prolonged patient contact and the development of family-like relationships.2

Literature describes at least 3 models of burnout that are to be considered. The ‘transactional’ model, described by Chesniss,34 puts into the limelight the need of enhancing coping skills in our trainees. The transactional model sees burnout as a type of coping with work stress. Teaching coping skills to new trainees thus becomes very important.34 In the second model, known as the ‘sequential’ model, described by Leiter,35 emotional exhaustion develops against work demands. This emotional exhaustion then develops into depersonalization, diminished self-efficacy and personal accomplishment. This model maintains that identification of emotional exhaustion before the downstream spiral is important.36 The ‘Job Demands-Resources’ model described by Demerouti,37 on the other hand, suggests that burnout is the result of an imbalance of excessive job demands when compared to the available resources. This third model emphasizes the need to manage work expectations, while providing the necessary resources.38

Trainee doctors are at a very critical stage in their professional life. They have now moved from the relatively sheltered undergraduate life to the postgraduate doctor who is required to adapt to different stressful situations.2 Professional and personal aspects of one’s life may start presenting conflicts. Practising medicine is well known to be stressful. This is further complicated by long working hours, a complex interaction in balancing work and family life issues and with many having to live on relatively low salaries with possibly large debts.36 Stressors that can affect doctors in training are numerous and include: high patient workload, poor work environments, lack of recreational activities within the hospital, lack of social support, difficult patients and gender related issues.39

The role of the educational environment in the development of trainees towards obtaining the ability to practice independently is pivotal.40 The educational environment has, however, also been touted as a possible driver of burnout.41 In their study among Belgian residents, van Vendeloo et al.41 have described how the perceived quality of the educational environment as perceived by the residents themselves was inversely associated with the risk of burnout. Thus, the lower the quality of the educational environment is perceived by the trainees, the higher the risk of burnout for these trainees.

The interest in the educational environment as a potential factor in the development of burnout has led to a number of studies over the years. This narrative review aims at explore the most recent literature on the interaction between the educational environment and burnout among early medical trainees.

Research Question
What evidence does the literature provide on the effect of the educational environment on burnout in postgraduate doctors-in-training?

Methodology
The aim of this dissertation was to use a narrative type of literature review to explore the effect of the educational environment on the rate of burnout among postgraduate medical trainees.

The narrative literature review method was chosen as a comprehensive synthesis of information published between January 2015 and August 2020. Narrative reviews have been shown to be useful educational articles as they can condense multiple articles into a readable format.42 Narrative literature reviews have been used as educational overviews and to present a broad perspective of a topic.43

As many authors of narrative literature reviews are often experts in their field, this type of literature review is many times the vehicle for presenting philosophical perspectives in a balanced manner that can help stimulate scholarly dialogue among readers.42

No formal guidelines on the methodology to be used when conducting narrative reviews were found. However, the guidelines for systematic reviews and meta-analyses published by PRISMA were used as a guide to ensure that systematic and explicit methods were used to identify, select, and critically appraise relevant research, and to collect and analyse data from the studies that are included in the review.44

Narrative literature reviews differ from systematic reviews in objectives, methods and application areas.45 A systematic review’s main objective is to formulate a well-defined question, based upon which the review provides a quantitative and qualitative analyses of the evidence available. This may be followed by a meta-analysis. In contrast a narrative review can address more than 1 question and the inclusion criteria may not be clearly identified. This subjectivity in the selection of studies remains one of the biggest weaknesses of a narrative literature review, potentially leading to bias.46 To reduce the risk of this bias, the inclusion criteria have been clearly defined.
When planning this narrative review, the author chose to analyse literature that could be accessed through searching 2 databases: Medline and PsycInfo. Medline was chosen as it is authoritative, peer-reviewed and complete. Psycinfo was chosen because of the wealth of information it provides in psychology and psychiatry. The search included articles in the English language published between January 2015 and August 2020. The main reason behind this approach was to keep the literature review manageable for the purpose of this paper and focus on recent studies in a language that the author could easily understand.

The MeSH keywords used were ‘burnout’ AND ‘educational environment’ OR ‘clinical learning environment’ OR ‘postgraduate medical education’ OR ‘learning environment’.

For articles to be considered for inclusion in this narrative review, they needed to fit the following inclusion criteria:

1. Published between January 2015 and August 2020
2. In the English language
3. Full text available through the University of South Wales or the University of Malta library
4. Concerned with the effect of the educational environment on burnout
5. In postgraduate trainees in the medical profession.
6. Peer reviewed

Exclusion criteria included publications that were abstracts, comments, letters to the editor. Publications where the full text was not available through either the University of South Wales library or the University of Malta library were also excluded.

A total of 365 articles were retrieved in the first search. The titles of all articles were scanned in the next step to identify those articles that did not fit the inclusion criteria. These articles were then eliminated. Duplicate articles were also eliminated. In the next step, the abstracts of the remaining 106 articles were read to ensure that the articles chosen for review strictly fitted the inclusion criteria. Following this exercise, 37 articles were left. The whole text of these 37 articles were read by the author as a sole reviewer. This latter exercise excluded a further 17 articles. 20 articles were thus left for inclusion in this study. A manual search of the references of these 20 articles, produced another 7 articles that fitted the inclusion criteria and which were, therefore, included. The total number of studies identified for this narrative review was 27.

A flow chart of the literature selection process for this narrative literature review is presented in Figure 1.

Results

Provision of service

Papers included in this narrative review used different instruments to measure the educational environment and burnout.47-52

van Vendeloo et al.47 performed a national Dutch cross-sectional online survey in 2015. They used the Scan of Postgraduate Educational Environment Domains (SPEED) to measure the learning environment on content, organization and atmosphere, and the Dutch version of the Maslach Burnout Inventory (UBOS-C) to measure burnout. The authors report that residents without burnout gave significantly higher SPEED domain scores (mean, SD: 7.44, 0.94) than residents with burnout (mean, SD: 6.73, 1.16)(95% confidence interval for difference; 0.56 to 0.86, P<.001). The authors adjusted the results for potential demographic and work-related predictors of burnout. The association between SPEED score and resident burnout remained both relevant and statistically significant (aOR 0.54 for each point higher on the SPEED, 95% CI 0.46 to 0.62, P<.001).47

In a different study by van Vendeloo et al.,48 all medical residents at a University Hospital in Leuven, Belgium were subjects to a replica of the previous study. However, this time the authors opted for the Dutch Residency Educational Climate Test (D-RECT) to measure the learning environment while again using the UBOS-C version of the MBI to assess burnout. 41.5% of residents in this study were found to be suffering from burnout. When considering the different scales, 53.0% had high emotional exhaustion and depersonalization scores with 23.4% recording low scores on the scale of personal accomplishment.

Papaefstathiou et al.49 studied the impact of the hospital educational environment and occupational stress on burnout among Greek medical residents. The instruments used were the Postgraduate Hospital Educational Environment Measure (PHEEM), the Greek version of the Job Stress Measure (JSM-G) and the Copenhagen Burnout Inventory (CBI). The results of this study showed medium level of means total CBI score (Mean = 46.97, SD = 11.28), personal burnout (Mean = 11.15, SD = 4.35) and work-related exhaustion (Mean = 12.98, SD = 5.68), with low level patient-related exhaustion being registered (Mean = 7.12, SD = 5.03). Papaefstathiou et al.49 reported that a positive perception of the educational environment is inversely related with burnout levels.

In a similar study, but in paediatric residents in Thailand, Puranitee et al.50 used the PHEEM and MBI as instruments together with the Work-Related Quality of Life Scale (WRQoL). Interestingly, the authors used a mixed method with a qualitative phase during which trainees with high scores in at least 2 domains of the MBI explored the perceived effect that the educational environment had on burnout. The figures resulting from this study show a rather low level of burnout with 17% perceiving high emotional exhaustion, 12% high depersonalization and 29% perceiving low personal achievement.

Dodson et al.51 used the shortened version of the MBI to measure burnout and the Abbreviated Workplace Climate Questionnaire and the Short Survey of Perceived Organisational
Support to assess the clinical learning environment in Otolaryngology residents in the United States. The authors failed to report on the rate of burnout in any of the 3 scales of the MBI but did report a negative relationship between plans for fellowship training and burnout.

Sum et al. report on their study among Singaporean Psychiatry Residents on the perception of the learning environment on the relationship between stress and burnout using PHEEM and the Oldenburg Burnout Inventory (OLBI) as measures. Unfortunately, the authors of this study
only give mean scores of the OLBI without offering any interpretation or prevalence values. The authors also fail to justify the use of OLBI instead of the gold standard measure of burnout, the MBI.

In a study in the same Singaporean psychiatry setting, Chew et al.33 used the same instruments as Sum et al.52 but over a longer period (June 2016 to June 2018 as opposed to June 2016 to September 2017). Chew et al.33 report a 54.8% prevalence of burnout with no statistically significant difference with gender, marital status, year of residency and age. The authors however fail to report on the two subscales of the OLBI – exhaustion and disengagement.

Factors associated with burnout. Several of the papers under review looked at identifiable risk factors for burnout in residents. Many of these were found to be related to the educational environment.

Puranitee et al.51 reported that work-related quality of life was moderately correlated with emotional exhaustion (r = 0.401, P < .009). Total work-related quality of life was significantly negatively correlated with emotional exhaustion (r = -0.41, P = .009) and with depersonalisation (r = -0.332, P = .034). The same authors failed to find an association between emotional exhaustion, depersonalisation and personal accomplishment with overall educational environment or the trainees’ perception of social support, teaching and autonomy but reported a strong association between the educational climate and the work-related quality of life (r = 0.678, P < .001).51

In the qualitative part of the above study, Puranitee et al.51 identified elements within the educational climate that trainees themselves perceived to be related with the risk of burnout. These included inappropriate tasks (eg, unnecessary paperwork); teachers (eg, those with aggressive verbal communications), teaching styles (eg, negative emotional responses in public) and their role as a teacher for medical students.

Kemper and Schwarz53 reported that when assessing for a relationship between burnout and mistreatment, burnout was found to be significantly related to bullying (P < .001), discrimination (P < .001), sexual harassment (P < .01) and any mistreatment (P < .001). The authors also reported an adjusted odds ratio for burnout associated with any mistreatment of 1.98 (95% confidence interval [CI] 1.62, 2.42). Kulayat et al.54 have suggested that perceptions of mistreatment vary along the duration of medical training, implicating clinical rotations in the indoctrination of students on the prevailing culture.

van Vendeloo et al.48 also identified that burnout was associated with the true number of hours worked per week (P = .05), satisfaction with work-life balance (P > .001) and overall quality of life (P < .001). They further identified a significant and strong exposure-response relationship between the educational environment and burnout (OR 0.47).

Dyrbye et al.55 based their assessment of burnout in residents at Mayo Clinic on two questions from the MBI – ‘I feel burned out from my work’ and ‘I’ve become more callous toward people since I started this job’. They had previously demonstrated that symptoms of burnout consistent with other measures were present in those who reported a once per week or more frequency on either item. Dyrbye et al.55 report that 26.3% had emotional exhaustion and 20.2% had high depersonalization, with 31.2% reporting overall burnout. Those who rated poorly their residency leadership team had higher prevalence of burnout.

Castanelli et al.56 identified training-specific stressors. These included securing future positions as consultants, the scholar role activity, and work-place based assessments. Significantly, Castanelli et al.56 reported that a lower perception of the learning environment was associated with higher degrees of emotional exhaustion (r = -0.51, P < .001), depersonalisation (r = -0.33, P < .001) and a lower sense of personal achievement (r = 0.44, P < .001). They also reported a significant negative correlation for burnout with the learning environment score (r = -0.56, P < .001). The most strongly correlated educational environment items with burnout were the social atmosphere, supervision, workplace-based learning and the teaching programme.

Trainees’ perceptions

Jennings and Slavin56 evaluate the role of the Clinical Learning Environment Review (CLER) of the Accreditation Council for Graduate Medical Education (ACGME) in tackling burnout in institutions. Based on the work of Maslach and Leiter,20 the authors suggest that six problem categories in the workplace can contribute to burnout, namely, workload, control, balance between effort and reward, community, fairness and values.

Trainees can suffer from work overload when demands exceed the person’s resources. Many factors can contribute to work overload including, patient complexity, new patients, documentation software, supporting staff, travelling between sites and supervising faculty. Trainees may also suffer from emotional burden. In their new roles, trainees are exposed to suffering and death and feeling incompetent when facing these scenarios.16

Trainees need to be engaged, whenever possible, in decisions that will bear an effect on them. This gives trainees a sense of control as otherwise they may feel that they have limited ability to influence decisions about the care of patients, about their
working schedules and about their working environment. Trainees are at an increased risk of burnout when they feel that their autonomy and self-efficacy at work are being undermined.16

Fair compensation is another factor associated with burnout. Trainees who felt financially stressed or were in debt were more likely to be burnt out. Pertinently, work-related rewards are not only financial but can also be intangible such as a sense of accomplishment.16

A perception of unfairness or injustice has been mentioned by Jennings and Slavin16 as increasing burnout. Lack of transparency in decision making and unfair distribution of resources are other possible causes of increased burnout.

Moral distress has been defined as when work does not support deeply rooted values. This happens, for example, when trainees are expected to be part of treatment which they consider to be suboptimal or unethical. Conflict may also arise when trainees try to balance their responsibilities caring for patients with their responsibilities at home or in a relationship.16

Ironside et al.54 in a series of focus groups among residents identified a number of other factors that can be linked to burnout. These include time spent on administrative tasks as opposed to direct patient care and an inability to follow up patients. Long hours, having to get to work early, limited time away from work and heavy workloads were acknowledged by this study as contributing factors to burnout.

The stigma of burnout itself and expectations for physicians to be ‘superhuman’ are also considered as causative factors for burnout in residents. Cultures that prioritize work over personal time may precipitate burnout especially in the younger generations (the Millennials and Y generation) who seem to be less tolerant than previous generations.54

Residency itself is a stressful period. Trainees have to face a very steep learning curve coupled with feelings of self-doubt and insecurity. Unrealistic expectations by faculty and the trainees themselves complicate this further and increase stress and anxiety in trainees.54

Interpersonal interactions both at work and at home may be jeopardised by the limited time available to spend with family and friends, the huge demands of the job and the juggling of multiple roles and responsibilities. This may lead trainees to feel disrespected and unappreciated and thus lead to the risk of burnout.54

It is believed that individual characteristics may also play a part in the development of burnout.57 Non-minority residents were more likely to have burnout than ethnic minority students. This could be related to the possibility that minority residents were exposed to life experiences that could have made them more resilient to the stress of traineeship. Female residents may be more prone to burnout or emotional exhaustion, whereas their male counterparts may be more prone to depersonalisation. Dyrbye and Shanafelt57 also include life stressors as contributors to burnout. These stressors include personal or family illness, divorce and financial problems.

It can be seen that burnout is a complex phenomenon. Multiple factors may come into play in its causation—personal, professional and environmental. Any meaningful intervention to reduce the risk of burnout should, similarly, be multifaceted.

Discussion

General points

The literature reviewed has identified the effect the educational environment can have on burnout. The rate of burnout may be influenced by factors with the educational environment as inappropriate tasks, verbally aggressive teachers teaching styles and the trainees’ role as a teacher for medical students.50 Other identified factors included the presence of bullying, sexual harassment, discrimination and mistreatment.51 Long hours of work have been repeatedly identified as a risk factor for burnout among trainees.57-48

One of the difficulties encountered is the use of different scales to measure both burnout and the educational environment in the selected studies. Whether the creation of different measures for different educational environments adds much to the debate remains unclear.

Physicians are known to work for longer hours and are more dissatisfied with their work–life balance when compared to the general population.58 Doctors are chronically exposed to severe stressors that lead to a multitude of personal and social problems for example, depression, anxiety, sleep problems, addictions, marital dysfunction and suicide.26 They may also leave the profession.2 This is despite the fact that many risk factors for depression are not applicable to doctors (eg, low socioeconomic status, low education).59 With many of the published studies reporting a response rate of less than 30%, it is quite possible that the studies analysed are just showing the tip of the iceberg and that the true magnitude of burnout and mental health problems among physicians is much larger. Identification of physicians suffering from burnout (especially those in training) should aim to give these individuals advice on how to deal with burnout. Temporary leave should also be granted before any errors are committed or any patients come to harm.

Evidence supporting person– or work-directed interventions aimed at tackling burnout in an effective manner is limited. More research is needed. Improving the health of residents will have the beneficial effect of a healthier, more productive workforce and a decrease in the risk of medical errors, thereby improving patient care. The learning environment plays a key role in this respect considering that it could be an important driver for burnout60 and that organisational factors may be more important drivers of burnout than individual factors.61 Burnout is not to be considered as a personal failure but rather as a failing working or social conditions.62 Montgomery et al.63
further posit that burnout is ‘the outcome of the disconnect between medical training programmes and the realities of the need to work with colleagues, hospital personnel and patients who have different visions of how the healthcare organisation should operate’. This is thought to lead to the imbalance referred to earlier between job demands and job resources.

Interventions to improve the educational environment should probably focus on improving the support offered by supervisors and on improving the quality of coaching and assessment. Faculty staff development plays a pivotal role in achieving this aim.

There is a paucity of well-designed studies on which interventions work well when burnout is established in trainee doctors. A number of stress management programmes have been recommended. However, a systematic review by van-Wyk and Pillar Van-Wyk failed to identify any interventions with a recommended. However, a systematic review by van-Wyk and Pillar Van-Wyk failed to identify any interventions with a strong-quality evidence that support recommendation for use. It is pertinent to point out that while chronic exposure to stressors at work increases the risk of burnout developing, not all trainees exposed to the same stressors go on to develop burnout. It is evident that a number of personal and individual-related factors are in play too. These may include factors like personality and personal circumstances that may complicate the resistance to burnout in some individuals. The practice of mindfulness seems to be attracting particular attention. But so, it is in other spheres too. More solid evidence is needed and, to this effect, more research into the role of mindfulness in the prevention and treatment of burnout in trainees is recommended.

Relationship between educational environment and burnout

Training is a stressful period during which trainees have to juggle between their responsibilities towards patient care and their work and their responsibilities towards their families and life-associated commitments. This is further complicated by their need to pursue their education further, keep their portfolios up to date, get accreditation and pass more exams.

The job of a junior doctor is extremely demanding both qualitatively and quantitatively. Their workload may feel overwhelming. Job resources may seem to be scarce, for example, a lack of social support or autonomy. Burnout among US residents was found to be higher than in other same age college graduates. Additionally, junior doctors have described internship as ‘a steep learning curve’. An excessive workload is one where the physical, cognitive and emotional demands exceed the resources available to a person to meet these demands. In the case of trainee doctors this can include issues like number of patients seen, hours worked, patient complexity, ratio of newly admitted patients, efficiency of the technology being used, the quantity and quality of support staff, travel and the support from senior doctors. This is corroborated by the SWeAT study that confirmed the burden of non-clinical work as identified by anaesthesia trainees.

Doctors are also exposed to significant emotional burdens such as when a patient dies, seeing others suffering or when, at times, one may feel incompetent. Some trainees would benefit from the services of counsellors by being taught how to process emotions.

A feeling of a lack of control may be experienced by trainees. While their responsibilities in patient care are significant, they then have limited ability in influencing decisions about care, about their schedules or the environment in which they work. Jennings has described how being able to influence others to achieve one’s goals is associated with a decrease in the level of perceived stress.

The rewards from work are not only financial, such as salaries and benefits, but can also be intangible, such as a sense of accomplishment. Many residents feel that they are not adequately compensated. Financial stressors have repeatedly been linked with an increased risk of burnout. Non-financial rewards can be utilized in a meaningful way by, for example, providing teaching from more senior doctors, respect from the rest of the staff and appreciation from patients. This will help develop a sense of meaning and of purpose that may help in the wellbeing and engagement of doctors.

The risk of burnout can also increase when the trainees feel they are unsupported, unappreciated or isolated. Burnout itself interferes with the ability to interact positively or to provide support to others. Training in interpersonal skills like, for example, how to resolve conflict and in the feedback process, can enhance communication within an organization thereby improving the quality of life of the members of that organization.

Similarly, burnout can be increased when residents perceive unfairness or injustice thereby evoking negative emotions and attitudes. Resources need to be seen to be transparently and fairly distributed to avoid residents having the perception that they are somehow being unfairly treated. Policies need to be instituted following an explanation to avoid resentment and a perception of disrespect.

Burnout may also ensue when one is asked to perform work that directly clashes with one’s own values with the resultant demoralization and stress. This may lead to moral distress and value conflicts that in physicians have been associated with burnout. This can include participation in care that the doctor may consider to be suboptimal or unethical. Doctors may also experience conflicting values when they are exposed to unprofessional conduct or when they are working in a low-quality environment with low safety standards.

Research has shown that burnout probably occurs early in the career with younger doctors experiencing higher burnout.
rates than older ones, with men showing a higher tendency towards depersonalisation than women. Martini et al. have reported that trainees in the first year of training had significantly higher rates of burnout than those who were more advanced in their training.

Educational environment interventions aimed at decreasing the risk of burnout

Although the literature review encountered several recommendations on how to reduce burnout in trainees, none of the retrieved articles reported on primary research. Instead references were made to secondary literature and will thus be discussed under this section. Interventions have been divided into preventive and therapeutic, and between individual choices, departmental changes and institutional support. This section will focus on departmental level interventions aimed at reducing levels of burnout among trainees.

Departmental-level strategies. The organisational approach at preventing or managing burnout of trainees involves a number of changes in the educational environment. Dyrbye and Shanafelt have recommended that these changes occur at 4 levels:

i. Curriculum
ii. New educational strategies
iii. Screening tools
iv. Access to care

Training curricula need to introduce concepts like self-care, well-being and resilience. Curricula can also help by teaching trainees how to identify peers at risk of burnout and when and how to intervene. Curricula that embrace programmes that increase resilience in residents are starting to emerge that incorporate courses like ‘Resiliency and Wellbeing for Health Professionals’ currently in use at the University of Minnesota and available online. Any changes to the curriculum should be evidence-based.

Any changes in the curriculum in dealing with work related stress must proceed hand in hand with identification of factors contributing to burnout and on how to address these factors. Failure of such a cohesive and simultaneous effort to do this can increase cynicism.

Educational environments can be optimised when controllable factors affecting trainees’ well-being are identified and addressed. Examples include the sequence of rotations, the mix of patients being cared for, adequate supervision, role modelling by seniors and offering trainees meaningful work and emotional support. Such measures are promoted by the ACGME CLER Pathway in the US. Ironside et al. have described how residents suggest a restructuring of the workload in a way that introduces meaningfulness, promoting positive work outcomes and encourages personal initiative.

Educational environments should aim at eliminating harassment and making reporting of mistreatment easier. A culture change may be needed in tackling harassment, discrimination and belittlement.

Supervisor behaviour also has a bearing on trainee burnout. It is, therefore, imperative that faculty are educated on the extent of burnout, its drivers, how to identify burnout and deal with referrals while maintaining confidentiality. Faculty also have the task of serving as role models by modelling self-care thereby reducing burnout among faculty.

Secondary prevention strategies involve the identification of burnout in trainees when it happens with the aim of preventing deleterious personal and professional consequences. Self-assessment tools like the 7-item Medical Student and Physician Well-Being Index have been validated and are used to help trainees self-calibrate and reflect. In this respect, Ironside et al. have described how allowing time for self-care is seen by residents as a way to manage high workloads and improve their control. Residents also feel the need of processes that identify trainees at risk and offer them support.

Self-assessment tools need to be followed by access to help to be effective. Educational environments need to provide mental health professionals who are not involved in the trainees’ assessment. Protected time needs to be provided to facilitate access. Confidentiality needs to be maintained and stigma tackled possibly by providing access to external mental health services. This concurs with the findings by Ironside et al. that residents feel that it is important to introduce changes to the educational environment that reduce stigma and encourage self-care.

The programme director plays a pivotal role in the perceived organisational support. Trainee participation at educational subcommittees, increased educational and electronic resources and mentorship programmes have a role in enhancing the perception of the organisational support.

Resilience was also strengthened when clinical psychologists with an understanding of the work being done were introduced on some maternity units.

Institutional-level strategies. Trainees may be asked to participate on institutional committees in the hospital as a way of showing institutional support. Institutions may also offer trainees facilities like gym membership and child care centres as a way to facilitate the work-life balance and thereby reduce the risk of burnout.

Flexibility in training programmes and more bedside care have also been described as reducing the risk of burnout. Trainees have different backgrounds, enter training with different priorities and have different lifestyles. Support to trainees may also be offered by reducing administrative tasks, lightening the burden of tasks, providing clerical support and tackling systemic inefficiencies. Thus, more time can be available to the trainees to go ‘back to the bedside’, an initiative that has been...
proved to be ‘conducive to developing clinical mastery and progressive autonomy’.86

Reflections
Further research is needed to establish a causative relationship between specific educational environment factors and burnout. Identification of educational environment factors that have a causative relationship with burnout (as opposed to association) will help focusing interventions to achieve maximum effect. Research is also needed to identify which interventions have the highest potential of reducing burnout in residents.

Medical trainees in the early postgraduate years are continuing with their studies and are constantly undergoing assessments, both formative and summative. New assessment tools need to be identified aiming at having tools that better prepare residents for independent practice while at the same time safeguarding the well-being of residents during their years in training and beyond.

The COVID-19 pandemic must have produced new challenges to the educational environment and is potentially a significant recent risk factor for burnout. Research is needed to identify the role of the pandemic in the development of burnout in residents subjected to working and learning under the stress that the pandemic has brought into the learning environment. This research will then inform of any changes that may be carried out to improve the educational environment and reduce its impact on the development and perpetuation of burnout.

Long duty hours have been banned in many places with the ACGME establishing a maximum shift hour of 16 hours in the US and the EU introducing the European Working Time Directive. Studies on the effect of these measures on the rate of burnout may shed a light on their effectiveness and on the possible need for further measures.

Education remains an important tool in the prevention and management of burnout. Education will involve raising the awareness of burnout and the causes leading to burnout among the trainees themselves and among administrators. The latter will be in a better position to understand factors that have an impact on the trainees’ well-being and on measures to mitigate any negative effects. Research into which educational interventions are more effective in this setting is therefore needed.

Limitations
Limitations of this study include the limited time period for inclusion, key articles may have been missed, only one author reviewed the articles and decided upon inclusion or exclusion and no search under the name of authors of key articles was carried out. Having missed articles written before 2003, it is very likely that the effect of working hours has been underestimated. 2003 saw the introduction of new European regulations on duty hours. Comparison between studies reporting on prevalence in training programmes having different hours was difficult. Another limitation is that this study has not looked at the possibility of having a different prevalence of burnout at different stages of the residency.

This narrative review was conducted in part fulfilment for a Masters in Medical Education at the University of South Wales. As a result, only one author worked on this narrative review. To keep the narrative review manageable, the author did not search under the name of authors of key articles.

Conclusion
Burnout among postgraduate medical trainees is common. It has been shown that burnout is both an organisation problem and an individual problem. Effects of trainee burnout are widespread and include mental health issues in the trainees and an increased risk of medical error that can put patients’ well-being at risk. Trainees suffering from burnout are at an increased risk of depression, anxiety, sleep disturbances and even suicide. The contribution of the educational environment to burnout can be significant. Supervisory support, coaching and assessment, mindfulness training, a reduction in duty hours and psychiatry guided self-development have all been proposed to reduce burnout. More research is needed so that interventions to tackle burnout have a solid evidence base. It is recommended that policymakers and health authorities use the evidence to identify trainees that are more susceptible to burnout, identify those suffering from burnout and offer the needed structural, organisational and individual support to those in need. Education of both trainees and management will increase the awareness of burnout, identify factors leading to burnout and facilitate interventions that can help prevent or mitigate the effects of burnout.

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APPENDIX A—Selected articles

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**APPENDIX B**

*Search strategy using Medline Proquest and Psycinfo*

1. Burnout/
2. Educational Environment/
3. Clinical Learning Environment/
4. Postgraduate Medical Education/
5. Learning Environment/
6. 1 AND 2 OR 3 OR 4 OR 5
7. Limit 6 Peer-reviewed
8. Limit 7 to English Language
9. Limit 7 to between 2015 and 2020