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Abstract

Purpose: Surgical trainees are at increased risk of burnout and poor wellbeing compared to the general population. Few hospital wellbeing programs have been evaluated from the perspective of those delivering and receiving surgical training. The aim of this study was to evaluate the effectiveness of trainee wellbeing programs in Australian hospitals from supervisors' and trainees' perspectives.

Methods: A mixed-methods online survey was distributed to surgical trainees and trainers across Australia. Participants were asked to identify trainee wellbeing programs at their hospital and outline their views on program effectiveness. Qualitative data were analysed using an inductive-deductive process with the JD-R theory as a scaffold.

Results: One in five respondents (22%) were aware of one or more trainee wellbeing programs at their hospital. Most (70%) felt the program was ineffective or were unsure (23%). Workplace demands identified for prioritised targeting with future interventions included: (i) excessive working hours and workload; (ii) lack of support networks; (iii) demanding physical work environment; and (iv) demanding psychological work environment.

Conclusions: Few surgical supervisors and trainees are aware of wellbeing programs or initiatives in their hospitals, and initiatives that do exist are generally viewed as ineffective. Future interventions should target excessive working hours and lack of support networks to maximise effectiveness.

I INTRODUCTION

Surgery is an inherently high-demand career with patient outcomes depending on the skill and decision-making abilities of the surgeon. The demanding and stressful nature of a surgical career leads to increased rates of burnout and poor psychological wellbeing amongst surgeons compared to the general population, with surgical trainees at particular risk compared to more experienced surgeons (Benson et al., 2007; Galaiya et al., 2017). Burnout and poor wellbeing can have significant negative implications for individual trainee wellbeing, patient outcomes and the functionality of the broader healthcare system (Ripp et al., 2017). Risk factors commonly associated with poor wellbeing in surgeons include excessive work hours and workload, disruptive behaviour amongst colleagues, and lack of support from hospitals (Bui et al., 2020; Gleason et al., 2020; Lichstein et al., 2020). Poor trainee wellbeing has been further exacerbated by the negative impacts of the COVID-19 pandemic on the healthcare system (Hope et al., 2021).

In Australia, surgeons in training play a key role in the healthcare system. In 2022, there were 1264 active trainees enrolled in one of the nine surgical training programs of the Royal Australasian College of Surgeons (Royal Australasian College of Surgeons, 2022). A range of workplace interventions to address poor wellbeing in Australian surgical trainees have been reported in previous studies, including mentoring programs, fitness programs, and mindfulness training (Chanchlani et al., 2018; Kang et al., 2019; Taylor et al., 2022). However, most interventions are aimed at secondary or tertiary prevention and target the individual, despite previous literature stressing the importance of primary prevention models and multi-level interventions for successfully preventing burnout and improving wellbeing (Lebares et al., 2018).

Whilst research exists on various wellbeing interventions targeted at surgical trainees, most assess outcomes with quantitative survey data, and few have used a qualitative approach to explore trainer and trainee opinions regarding the effectiveness of wellbeing programs implemented in hospitals. This is particularly true of initiatives that were not implemented and purposefully evaluated as part of a study. The aim of this study was therefore to seek the views of Australian surgical trainers and trainees regarding: (i) their awareness of resources provided to trainees in their hospitals; (ii) their opinions of the effectiveness of said resources; and (iii) their views on the 'ideal' resources to address the key demands affecting trainee wellbeing in their departments.

A *Theoretical Framework*

The Job Demands-Resources (JD-R) theory is one of the most well-regarded frameworks for conceptualising burnout and wellbeing in the workplace (Bakker & Demerouti, 2017) and is a useful framework for understanding wellbeing in surgery and surgical training. The theory posits that each occupation has a set of specific risk factors associated with occupational stress, which can be broadly categorised as either *demands* or *resources*. Job demands are physical, psychological, social or organisational aspects of the job that require constant physical and/or psychological effort from the employee. Job resources are physical, psychological, social or organisational aspects that assist employees in meeting job demands and achieving goals whilst facilitating personal growth and development (Bakker & Demerouti, 2017). Job demands impact wellbeing through a health-impairment process, in which the employee's physical and psychological resources are exhausted and their energy depleted. Job resources impact wellbeing through an intrinsic and/or extrinsic motivational process, fostering growth and development and enabling employees to achieve work goals (Bakker & Demerouti, 2007).

The JD-R theory suggests that for inherently high-demand occupations such as surgery, the risk of burnout can be reduced, and work engagement fostered by increasing the available job resources to compensate for the high demands (Bakker et al., 2005). Jobs that combine high demands with high resources can create high levels of engagement and motivation as they provide employees with both challenges and the resources to meet said challenges effectively (Bakker et al., 2014). To increase work-related wellbeing, resources must be tailored to meet the specific demands of each workplace, as demands will vary between work environments. In some

cases, a demand in one environment may be a resource in another. In addition, demands can be categorised into *challenges, hindrances* and *threats* (Cavanaugh et al., 2000; Tuckey et al., 2015). Challenge-related demands are those that can be considered stressful but also hold potential gains for employees, such as high workload and job scope (Tuckey et al., 2015). Challenge demands are positively associated with job satisfaction and performance, organisational commitment and negatively associated with turnover (Podsakoff et al., 2007). Hindrance demands, such as role ambiguity and organisational politics, are viewed as obstacles to task accomplishment and personal development (Podsakoff et al., 2007). Threat demands are those that undermine basic psychological needs and cause anticipation of future harm or loss to the self (Tuckey et al., 2015). Responding to threat demands requires an employee to deal with the immediate threat and associated emotions as well as attempt to prevent future harm or loss, which can be particularly exhausting and lead to anxiety and fear (Tuckey et al., 2017).

II MATERIALS AND METHODS

A *Design*

We conducted a cross-sectional mixed-methods survey of Australian surgical trainers and other healthcare workers involved in surgical training in Australia. As the study is focused specifically on perceptions of effectiveness rather than any quantifiable measure of effectiveness, a primarily qualitative survey questionnaire was chosen as the data collection tool. A survey was appropriate because it allowed for effective data collection with the small but geographically dispersed target population. In addition, surveys allow for anonymous responses on a potentially sensitive topics, which may encourage more participants to take part and provide honest responses compared to an interview (Braun & Clarke, 2021).

B *Participants and Recruitment*

An invitation to participate in the study was distributed via email to members of the General Surgeons Association, Australian Orthopaedic Association, Urological Society of Australia and New Zealand, and the Australian and New Zealand Society for Vascular Surgery. The survey was also advertised through the Royal Australasian College of Surgeons (RACS) Fax Mentis newsletter, on social media, and through the personal networks of the research team. The survey was targeted at surgical consultants and other hospital staff members working directly with surgical trainees at hospitals or private practice locations accredited to deliver training in one or more of the RACS specialty training programs. Australian trainees and pre-vocational registrars were also invited to participate. The survey was open from February to June 2021.

C *Ethics*

Ethical approval was obtained from the University of Wollongong Human Research Ethics Committee. Before accessing the survey, participants were provided with a Participant Information Sheet. Completion of the survey implied consent.

D *Data Collection*

Data were collected using a self-completed online Qualtrics questionnaire (Qualtrics, Provo, UT). Participants were asked if they were aware of any wellbeing programs at their hospital. Those that were aware were asked to describe the program's duration and target population, their opinion on the program's most and least valuable aspects, and its effectiveness in promoting wellbeing in surgical trainees. All participants were asked to identify one key change that they would implement in their department to improve trainee wellbeing, and any barriers to implementing this.

The questionnaire was first piloted with two trainees who provided feedback on face and content validity. Minor changes were made to the wording of the questions based on feedback. A copy of the questionnaire is included in Supporting Material 1.

E *Data Analysis*

Raw quantitative data were exported into Microsoft Excel to calculate frequencies. Open-ended responses were exported into NVivo v12 (QSR International, Victoria, Australia) for analysis and coding. The research team included a senior educator with a surgical education, training and research provider, a surgeon/head of department with surgical trainees, and a public health academic with expertise in mixed-methods research.

Open-ended responses were reviewed and manually coded thematically using an inductive-deductive approach according to Braun and Clarke's six step process (Braun & Clarke, 2006). using the JD-R theory as a scaffold for deductive coding. First, the research team reviewed the responses to familiarise themselves with the data and to identify initial codes. The first author conducted the first review and completed preliminary coding. The second author reviewed the code frame and dominant themes to identify differing or additional insights or meanings. Any disagreements were resolved by discussion and consensus.

III RESULTS

A total of 60 valid responses were received and included in the final analysis. The total number of potential participants (Australian hospital workers involved in surgical training) was not known, therefore calculating a response rate was not possible. There was a good spread of participants across Australia and staff roles. Table 1 displays the demographic information of participants. Participants were permitted to select more than one role. To protect participant anonymity, results from smaller states were combined with neighbouring larger states.

Table 1
Participant Information

Role*	State					TOTAL
	ACT or NSW	QLD	SA or NT	VIC or TAS	WA	
Trainee Supervisor	7	5	2	10	4	28
Head of a Surgical Department	2	3	4	4	0	13
Director of Training	4	3	2	3	2	14
Trainee	4	1	1	5	0	11
Unaccredited Registrar/intern	2	0	0	1	0	3
Surgeon/consultant	1	0	0	1	0	2
Head of Surgery	0	0	0	1	1	2
TOTAL *	18	10	7	21	4	

*Participants were permitted to select more than one role

A *Existing Wellbeing Programs*

A majority of respondents (*n* = 47, 78%) stated that they were not aware of any wellbeing programs at their hospital that are available to surgical trainees; thirteen (22%) were aware of at least one and only two of these were trainees. Programs varied and included counselling services, Employee Assistance Programs (EAPs), formal mentorship programs, lectures, wellbeing workshops, social events, and departmental welfare officers. In response to the question, *'In your*

opinion, has the program has been effective in promoting wellbeing in surgical trainees?', most respondents were either unsure (*n*=9) or did not feel that the program was effective (*n*=3). Common reasons for lack of effectiveness included lack of visibility and promotion, failure to address the root causes of poor wellbeing, and low trainee uptake due to time pressures or lack of awareness:

> Does not address the problems causing trainee stress/burnout. Only attempts to provide support after the fact and feels tokenistic. *(Trainee)*

> The events tend to run during office hours when the trainees are busy. *(Head of surgery/director of training/trainee supervisor)*

The frequency with which trainees rotate between hospitals was highlighted as a major barrier to program effectiveness, preventing the development of working relationships and support networks with colleagues:

> I think the promotion of such activities [singing groups at work, narrative storytelling groups, mindfulness workshops] helps to raise awareness of the importance of self-care. However, trainees move from unit and hospital on such a frequency that developing deeper relationships with coworkers may feel futile, and there is insufficient time to allow trust to develop. *(Head of surgery/director of training/trainee supervisor)*

The one respondent who did feel that the program was effective, described a proactive and comprehensive wellness program that prioritised linking junior doctors with their own general practitioner:

> Linking SMOs with GP's or providing them advice to see their GPs regularly is a simple example […] It is a neglected area and is overlooked before it is too late. The mental well-being of medical staff particularly is well structured and proactive. It worked with a recent JMO who had a complete turnaround of mental health with the assistance [of a GP]. *(Head of a surgical department)*

B *Improving Trainee Wellbeing*

All participants were asked to identify one change that they would make in their department, if provided with unlimited power and resources, to improve trainee wellbeing. Eleven central categories were identified within the responses, clustered under four key themes, or *demands*: (i) working hours and workload; (ii) lack of support networks; (iii) demanding physical work environment; and (iv) demanding psychological work environment. These are described below.

1 *Demand 1: Working Hours and Workload*

The most common demands identified by respondents were long working hours and heavy workloads. These demands were categorised as threat demands, as respondents saw them as causing fatigue, increasing stress and preventing optimal work-life balance:

> The JMOs do take on significant responsibilities, sometimes without adequate support and this increases stress levels and leads to mental issues that affects physical well-being too. (*Head of a surgical department*)

Respondents stated that trainee working hours were frequently excessive, and a reduction in hours would improve wellbeing by giving trainees time to rest, recharge and spend time on family and leisure pursuits. Most comments relating to work hours were from trainees, and highlighted how trainees were consistently undertaking unpaid additional work that was not in line with current Australian guidelines for safe work hours:

> Not 1 in 2 on call. With 2nd on call still practised within unit… It is not compliant with current guidelines. Means we are not recognised or paid for a significant proportion of oncall service, and likely not covered medicolegally by hospital. (*Trainee*)

An important method for mitigating this demand was active monitoring of actual trainee hours by department leaders and hospital administration:

> Be cognizant of the actual working hours of the JMOs and actively monitoring this. This will lead to recognizing fatigue earlier and active conversation leads to better understanding of dynamics of staff interactions. (*Head of department*)

Respondents also highlighted the importance of staff coverage to ensure that those who were away from work were protected from interruptions, therefore having sufficient time for rest and recovery:

> Allow doctors who are rostered to be off duty to not be expected to answer emails and respond to clinical issues. (*Trainee*)

Two participants specifically called for funded, protected time off for study and attendance at education courses. Flexible training, specifically job sharing, was also identified as a potential resource for trainees in busy rotations, however, ensuring continuity of care posed a challenge.

When asked to identify potential barriers to their proposed solutions, respondents acknowledged that the most significant barrier to decreasing work hours was the availability of funding for staff and resources. Increasing staffing levels was identified as a solution to excessive work hours in facilitating shift coverage for sickness and leave, reducing unnecessary overtime and promoting work-life balance. In addition, one participant noted that without careful planning, reduction in work hours may reduce a trainee's operative exposure and prevent them from demonstrating the competencies required to progress in their training.

2 *Demand 2: Lack of Support Networks*

Respondents felt that trainees lack professional support networks that would provide a resource for managing the demands of the work environment. Establishing and fostering support networks and systems for trainees were viewed as a crucial resource for supporting wellbeing. Mentorship programs were important as they provided a safe avenue to discuss personal and professional challenges, as well as an opportunity for career guidance:

> Allows someone to monitor wellbeing of trainee outside of work without pressures of performance/assessment, as well as having someone trainee can talk to/confide without fear (*Trainee supervisor*)

Respondents felt that a long-term mentoring relationship with scheduled regular contact points would provide the most benefit for trainees. Key challenges to implement a mentoring program included the time required for regular mentoring sessions and availability of suitable mentors.

The importance of regular, open communication between trainees and senior staff was a key factor in identifying and addressing poor wellbeing, but it was noted that this is often not put into practice. Regular, structured check-ins with trainees, such as supportive debriefs after challenging cases, were needed for trainees to seek support and feel like a valued member of the department. Communication was seen as particularly challenging in departments that did not have a consistent senior staff presence to support trainees:

> The general surgical unit at my hospital has many consultant surgeons who are on-site once or twice a month only. There are none with a weekly presence at the hospital. The trainee is therefore essentially the mainstay of the unit, with multiple seniors who provide support/guidance only intermittently. *(Head of surgery/director of training/trainee supervisor)*

One participant noted that most Australian surgical trainers work on a pro-bono basis, making it difficult to fit trainee support and mentoring around the demands of regular clinical duties:

> Have a trainee supervisor as a position that is not a voluntary "just when you have spare time" position i.e. remunerated by Health and has attached FTE [full time equivalent]. So, the Supervisor has dedicated quarantined time to spend with the trainees and work with them re a teaching program and global wellbeing and to help with their individual learning and psycho-social issues. (*Head of a surgical department/trainee supervisor*)

Professional psychological support, such as a nominated grievance officer or counsellor, was also identified as a potential resource. One respondent noted that existing services could be improved by provision of a simple and accessible booking system for trainees, as well as provision

of time off for trainees who wish to use the service. Another suggested a central communication portal for trainees to communicate with each other across hospitals, providing a peer support network which can be maintained as trainees rotate through different hospitals.

3 *Demand 3: Psychological Work Environment*

Some respondents stated that the general psychological work environment in surgical training was often detrimental to the wellbeing of trainees. This threat demand was linked to a culture within surgery, which allows bad behaviour towards trainees to perpetuate. Constant negative feedback impacted trainee wellbeing:

> The constant scrutiny is debilitating, especially if a trainee is different to the norm. Surgical training is all stick, no carrot - the majority of feedback I ever receive is negative, to the point where I now view positive feedback with suspicion. This method of surgical "training" has completely crushed me. I used to love this specialty, now I'm just bitter. Most surgeons refuse to believe in unconscious bias, and will only see trainees in a vacuum as an isolated agent. They've been training registrars for years after all, they don't need to be taught how to teach, what an insult. (*Trainee*)

Others felt there was a reluctance from senior staff members in the hospital to enact changes to improve the psychological work environment for trainees, or that some senior surgeons do not feel that there is a need for change:

> I strongly disagree that this should be a priority. I think the social science research is unequivocal on this topic: the more we do to make life easier and less stressful, the weaker we make people and the less able they are to cope and function with normal life. *(Head of a surgical department/director of training)*

> I honestly don't feel that things are that hard for trainees. *(Trainee supervisor)*

Some felt that targeted action to address and reduce bad behaviour and negative departmental culture within surgical training environments was needed and would be beneficial for promoting trainee wellbeing:

> Real consequences for problematic consultants who are implicated in bullying or repeated bad behaviour. Too many 'notorious' members of staff are allowed to continue practicing with bad behaviour for years in spite of complaints and failed remediation. *(Trainee)*

4 *Demand 4: Physical Work Environment*

Inadequate and inappropriate hospital facilities for trainees was a commonly recognised demand. Several respondents advocated for a dedicated space for junior doctors and trainees to rest and interact with each other during the work day:

> Proper JMO lounge. Space to eat, relax, store belongings, network, hand over, get consults, meet colleagues, display posters away from general public. Allows effective and safe networking without risking invading patient privacy. Place to belong. *(Surgeon)*

Such a space was seen as important for promoting relaxation and reducing burnout for trainees, as well as allowing time to consolidate and reflect on their learning. Other suggestions for physical resources included an on-site gym and better overnight accommodation to provide rest and privacy for trainees working overnight shifts:

> Nights suck. They represent the most vulnerable time to JMOs. It is intellectually, emotionally and physically stressful. A physical base with privacy and appropriate facilities are the basis for anyone coping. *(Trainee supervisor)*

IV DISCUSSION

This study investigated the perceptions of surgical supervisors and trainees on wellbeing programs and initiatives in Australian hospitals, which is lacking in the literature. We found that most surgical trainers and trainees are unaware of any initiatives or programs at their hospitals to promote and maintain wellbeing in surgical trainees. This highlights either a lack of available structured programs or a lack of sufficient promotion and communication regarding existing programs. Where wellbeing programs were identified, almost all participants felt that the program

was either not effective or were unsure of its effectiveness. This finding is supported by previous research indicating that programs focusing on the individual (such as resilience workshops and personal wellbeing instruction sessions), rather than the underlying systemic causes of poor wellbeing, are of limited effectiveness (Hoffman & Bonney, 2018), and that multi-level solutions are most effective (Lebares et al., 2021). Systemic change is more difficult to implement, requires long-term commitment and a collaborative approach, which may be the reason why easy, cheap and short-term interventions have been prioritised to date.

Our results are consistent with previous research highlighting how excessive working hours and high workloads are a significant demand in surgical training (Lau et al., 2017; Leu et al., 2020; Petrie et al., 2020). Whilst a heavy workload can be seen as a challenge demand in some environments, all respondents in this study who mentioned this demand identified it as a threat (that is, associated with loss or harm to the individual). It may be that some trainees are working long enough hours to create a threat to their personal wellbeing, rather than a challenge that can be overcome. The Australian Medical Association (AMA) has a National Code of Practice to govern the working hours of doctors, however, industrial agreements vary across states and territories. Our results suggest that these agreements do not prevent trainees from working excessive hours and unpaid overtime. This is supported by previous research indicating that trainees often work shifts longer than the 10 hours recommended by the AMA (O'Grady et al., 2012), miss meal breaks, and are discouraged from claiming overtime (Forbes et al., 2019). None of the existing programs mentioned by respondents in our study aimed to ensure appropriate working hours; in fact, some programs such as mindfulness workshops and yoga sessions, added more activities to an already full working day. Therefore, the resources currently provided to trainees to address burnout and poor wellbeing may not be meeting the most impactful demand in their work environment. Previous research shows that trainees find a 55-60 hour working week to be appropriate for meeting their training needs whilst allowing acceptable work-life balance (O'Grady et al., 2012). Hospital and regional policies alone are not sufficient in ensuring appropriate working hours. Instead, department leaders need to take an active role in monitoring actual hours worked and advocate for their trainees when working hours exceed the recommendations.

Negative psychological work environments were also identified as a threat demand for trainees and is consistent with previous research demonstrating that Australian surgical trainees frequently face bulling, discrimination and harassment (Crebbin et al., 2015). This culture is difficult to address due to underreporting of bad behaviour and an unwillingness by many senior surgeons to recognise that a problem exists (Gianakos et al., 2022). Exposure to negative psychological work environments can lead to significant health concerns for healthcare workers and their ability to function effectively at work (Lever et al., 2019). Respondents in our study felt that swift and stern action against perpetrators of bad behaviour should be prioritised. However, this may be difficult when trainees do not feel empowered to report the behaviour (Gianakos et al., 2022), and formal reporting of bad behaviour rarely results in discontinuation of said behaviour (Crebbin et al., 2015). Whilst these suggest that prevention strategies are key, there is a paucity of research to support the efficacy of such strategies (Halim et al., 2018), and robust research on prevention and education strategies is urgently required.

Support networks were also identified as an important resource for trainees, and consistent with other research (Gleason et al., 2020), is not being addressed by many existing wellbeing programs. Respondents noted that clear communication and open support from supervisors and department leaders was key to maintaining trainee wellbeing, but that this is often not experienced in practice. This may be partly due to a lack of formal leadership and management training for practicing Australian surgeons and trainees and is supported by research illustrating a link between effective leadership and trainee wellbeing (Torres-Landa et al., 2022). Given that many surgeons display a desire for leadership training opportunities (Clark et al., 2021), offering such opportunities may be an effective resource for improving the wellbeing of trainees and other members of surgical departments. To encourage participation, it may be more effective to integrate these opportunities into existing frameworks such as scientific meetings or continuing

professional development programs. Retired or semi-retired surgeons could also be utilised to provide mentoring (Kim et al., 2021). Leadership training should also be more purposefully integrated into the existing surgical training program to upskill the department leaders of the future.

Mentorship was identified as another potential source of social support and career guidance for trainees, however, setting up and maintaining such relationships was time-consuming and added another commitment to the already full schedules of the mentor and mentee. This is consistent with findings in previous research (Entezami et al., 2012; Szabo et al., 2019). Other challenges include a scarcity of qualified and willing mentors, lack of mentors from underrepresented groups (such as women and First Nations people), lack of mentorship training, and lack of measurement tools for tangible outcomes to encourage ongoing participation (Entezami et al., 2012). To overcome the time commitment barrier to mentoring, hospitals and training institutions may need to prioritise mentoring by providing paid protected time for mentoring sessions.

A *Limitations*

This study has some limitations. Gender was not collected and it is possible that response bias was present. However, as Australian surgeons and surgical trainees are predominantly male, it is unlikely that the sample was particularly biased. Five of the nine surgical specialty associations declined to distribute the survey or did not respond when approached, which limited the reach of the study, and responses may not be representative of all surgical specialties. The survey was distributed during the COVID-19 pandemic, during which surgeons and trainees were asked to participate in many research surveys on wellbeing. Therefore, survey fatigue may have also influenced participation and responses (de Koning et al., 2021; Wiebe et al., 2012).

This study provides an important contribution to the scant research on perceptions of wellbeing programs in Australian hospitals. We show that few programs exist and opinions of the effectiveness of those that do exist are generally poor. Resources and funding should be directed at interventions that will address the common demands of surgical training that impact wellbeing, such as long and unpaid working hours, lack of support networks and poor psychological working environments. Success will require collaborative development and promotion of resources across healthcare organisations with long-term support and funding.

Declaration of Interest

The authors declare that they have no competing or conflicting interests in relation to this study.

Data, Materials and/or Code Availability

The participants of this study did not give written consent for their data to be shared publicly, so supporting data is not available.

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Authors' Contribution

All authors contributed to the design and implementation of the research and analysis of the results. The lead author drafted the manuscript and all authors contributed to the final version.

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