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Mental, physical, and social wellbeing of junior doctors: a qualitative study

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ABSTRACT

Objectives: This study aimed to uncover the strategies that junior doctors implement to maintain their mental, physical, and social wellbeing, and the barriers they experience in practicing these strategies.

Participants: Fifteen junior doctors in their postgraduate year 1 or 2 currently practicing in Australia were recruited.

Outcome measures: Semi-structured interviews were conducted, and the transcripts underwent thematic analysis.

Results: Three key themes emerged from thematic analysis: wellbeing strategies; barriers to wellbeing; and future interventions. Exercise, a healthy and balanced diet, quality sleep, and workplace organisations were frequently reported wellbeing strategies. High workload, unpredictable routines, lack of familiarity with the healthcare system, and ongoing stigma surrounding mental health were seen as barriers to wellbeing. Suggested interventions included increased control over rosters, subsidised access to facilities such as gyms, and increased internship preparedness programs organised by medical schools.

Conclusions: The findings from this study may assist in developing more personalised and targeted methods of assisting junior doctors maintain their mental, physical, and social wellbeing. Future studies may address the structural and systemic changes required to develop a workforce that fosters the wellbeing of junior doctors and reduces the institutional barriers to practicing wellbeing strategies.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- Online interviews allowed a greater range of participants, including those who were interstate working within different healthcare systems.
- Participants of this study are more likely to be passionate about self-care and wellbeing.
- Most participants were practicing in metropolitan areas, with only a few having any rural hospital experience, thus the unique setting of rural practice is not adequately explored.

INTRODUCTION

Medicine is an ever-evolving field wherein doctors work intensely to deliver for their patients. Numerous studies and surveys have demonstrated that the mental health of doctors is worse than that of the general population[1]. Junior doctors (postgraduate year (PGY) 1 or 2)) are particularly vulnerable to poor wellbeing and higher stress due to long working hours, stressful working environments, and difficulty balancing conflicting personal and work interests[2]. Junior doctors globally are facing the same problems. These systemic barriers are often accepted at face value, as the rigorous training that junior doctors undertake is seen as an initiation rite that all doctors must endure[1]. However, the stress and emotional toll that can negatively impact the physical, mental, and social well-being of junior doctors is not adequately addressed.

Physically, the high workload that junior doctors experience can significantly decrease their ability to maintain a healthy lifestyle[3]. Restrictions due to the workplace requirements impacts the ability to regularly exercise, get adequate sleep, participate in recreational and social activities, or eat nutritionally balanced meals[3]. In terms of their mental health, junior doctors are vulnerable to burnout, compassion fatigue and moral distress[3]. Work overload, lack of control over their work environment and long working hours contribute to the risk of burnout whilst compassion fatigue and moral distress are usually experienced due to the fast-paced, high-intensity care[3]. Socially, the stresses resulting from work such as long working hours, and night shifts can result in junior doctors experiencing a reduction in social interaction with their friends and family[4]. Maintaining healthy social relationships is important to improve mental health and allows the wellbeing and health behaviours of junior doctors to be monitored by their loved ones[4].

Overall, junior doctors can experience a multitude of negative impacts on various aspects of their wellbeing[5]. The wellbeing of junior doctors plays an important role in maintaining their professional and personal purpose, which includes their job engagement, compassion, and patient care and satisfaction[5]. Previous studies have indicated that junior doctors were worried about their own wellbeing as well as that of their colleague's[6]. While research indicates that most junior doctors would not leave the medical profession, there are increasing concerns that their wellbeing could impair their ability to have job satisfaction as well as treat patients with the best care possible[1]. One of the learning outcomes outlined by The Australian Curriculum Framework aims to address the behaviours of junior doctors and how they optimise wellbeing to mitigate the stress and fatigue associated with their work[7]. Despite this learning objective, the health of junior doctors has been consistently demonstrated to be below that of the general population[1].

Coping strategies that junior doctors currently use to manage the high stress levels in their work environment have been identified in existing studies[1]. A survey conducted across 15 hospital networks throughout ACT and NSW demonstrated that there are a wide variety of strategies to cope with work-related stresses[1]. These include both positive and negative coping strategies, such as spending time with friends and family, discussing concerns with a colleague, exercise, alcohol abuse, taking time off work, and nicotine and drug abuse[1]. The more common coping strategies identified were exercise and participation in social activities[1]. However, this raises concerns regarding the wellbeing of junior doctors when they are unable to engage in exercise and social settings due to long working hours[1]. Moreover, the frequency of nicotine, recreational drug and alcohol use was higher in individuals with more severe psychological distress, which can further exacerbate mental health problems[1]. In recent years, plans to enable greater holistic wellbeing among junior doctors have been put in place within Australia. This includes the Junior Medical Officer Be Well program, Basic Physician Trainee Okay program in New South Wales and the DRS4DRS website launched by the Medical Board of Australia[8]. Whilst there have been attempts to improve the wellbeing of junior doctors, analysis of studies undertaken indicate there is still high levels of concern regarding the physical, social, and mental wellbeing of junior doctors[8].

Previous systematic reviews have supported wellbeing initiatives to address mental health issues[9]. However, there is only a small amount of qualitative research investigating the underlying reason for the psychological distress of junior doctors and why, how and to what extent wellbeing initiatives are effective[8]. Therefore, this qualitative study aims at exploring junior doctors' experiences of keeping healthy and to identify the strategies that they use to

achieve a better well-being. Investigating these strategies can provide ideas for potential interventions to improve the wellbeing of junior doctors, which can lead to better patient care[10].

METHODS

Participants

Junior doctors within two years of graduating from medical school (PGY1 or PGY2) and currently practicing in Australia were recruited to participate in the study through hospital noticeboards, social media advertisements and word-of-mouth. Recruitment began from August 2020 and ceased upon reaching data saturation. All respondents fit within the criterion and were included in the study. Respondents were then invited by email to partake in the study, and were provided with a participant information sheet, demographic questionnaire, and consent form.

In total, 15 participants were interviewed (Table 1). Participants were not provided with any incentives to partake in the study.

Table 1: Demographic characteristics of qualitative study participants

Age (years)		
22-25	9	60%
26-30	4	27%
30-35	2	13%
Gender		
Male	8	53%
Female	7	47%
Country of origin		
Australia	8	53%
China	3	19%
Japan	1	7%
Singapore	1	7%
Sri Lanka	1	7%
Canada	1	7%
Primary language		
English	12	80%

Mandarin	2	13%
Sinhalese	1	7%
Junior doctor profile		
PGY1	11	73%
PGY2	4	27%
Type of facility		
Metropolitan	8	53%
Regional	6	40%
Rural	1	7%
State		
QLD	11	73%
NSW	2	13%
SA	1	7%
NT	1	7%

Data collection

Semi-structured interviews of approximately one-hour in length were conducted and recorded via Microsoft Teams. Interview recordings were first transcribed using transcription software including Microsoft Teams Transcription and Otter.ai. The transcript was then checked by the interviewer against the audio recording, and any text or grammatical errors were corrected.

The interview questions were developed by the research team after a systematic review of the literature. Seven members of the research team interviewed participants based on an interview guide which contained 24 interview questions evolving around five main topics: the strategies participants employ to maintain their wellbeing; the characteristics of an effective strategy; the barriers to practicing these strategies; the reasons for practicing these strategies; and what systematic interventions would improve the participant's wellbeing. The interview schedule was designed to allow subsequent discussion of a topic without restricting the participant from providing unique insights or comments relevant to the topic. The interview schedule is available upon request.

Prior to interviewing the participants, the research interviewers were trained in qualitative research methods and familiarised with the interview schedule by interviewing one another.

At the start of the interview, participants were encouraged to respond fully and truthfully by the interviewers advising them that there are no model answers and that they can skip a question or withdraw from the interview at any time. Interviewers took field notes during the interviews for the sole purpose of assisting in the conduction of the interview.

Data analysis

Transcripts of the interviews were de-identified then analysed based on the Braun and Clarke method of qualitative thematic analysis [11]. This process involved a researcher first reading the transcript in its entirety, then coding the data thematically. All codes were then collated onto an electronic spreadsheet, and recurrent themes were identified using an iterative, inductive, and cyclic process. Codes were combined and split and the frequency in which codes arose was noted.

First-order themes, (e.g., "prioritisation" "goal setting") derived directly from the codes, were categorised into second-order themes (e.g., "self-regulation"), which were then grouped into even broader third-order themes (e.g., "wellbeing strategies"). Any outlier codes were identified and have been reported verbatim. Seven researchers were involved in this process to minimise bias stemming from individual experience. Any disagreements between researchers in the identification of themes was discussed until a consensus was reached.

Ethics

This study involves human participants and received Griffith University Ethics Approval (GU Ref No: 2020/557). Written informed consent was obtained from all participants.

Patient + Public Involvement

Patients and the public were involved only in the interview phase of this research as participants. There were not involved in the design or conduct of the study, nor the choice of outcome measures. Some participants aided recruitment efforts by word-of-mouth.

RESULTS

Thematic analysis identified three key themes- well-being strategies (Table 2); barriers to wellbeing (Table 3); and future interventions (Table 4).

Theme 1: Wellbeing strategies implemented by junior doctors

Table 2: Wellbeing strategies implemented by junior doctors.

Theme	Subtheme	Example
Physical wellbeing strategies	Exercise	I generally try to run everyday just to burn off the stress and the extra energy [D8, female].
	Diet	I think eating healthy and eating on time is really important [D4, female].
Social wellbeing strategies	Connection with family and friends	I've got my friends back home in Canada and my family – I keep in touch with them. I'll FaceTime my family probably once a week – like my parents. And then my friends, I will, almost you know, texting is super easy and so I'll text my friends pretty much all the time [D15, female].
	Social activities outside of work	Keeping in touch with other friends outside of work is really useful as well … to sort of offset the never-ending work talk with colleagues [D12, male].
	Supportive partner	I'm away from my wife as well. She's in Melbourne so again I don't have that major sort of pillar of support in my life when I really need that [D9, male].
	Hobbies outside of work	Being able to blow off steam in a non-work capacity is good [D12, male].

Mental health strategies	Sleep	I think changing the sleep cycle really messed my mood around [D8, female].
	Mindfulness	I just was feeling really teary at work and just really worried about hurting people and all sorts of things like my mind catching up with me. And let's just take a moment and reframe it so that [D8, female].
	Meditation	My meditation practice allows me to notice feelings before they overwhelm me and essentially catch it and then let it go [D13, male].
	Setting expectations of self	(You need to) temper your own expectations of yourself … most of our colleagues are relatively high achievers … and I guess one of the things that you realize coming into medicine … is just how things don't always go as planned. As I said, tempering your own expectations in terms of how much you can actually do or how much you actually know [B1, male].
	Separating work + personal life	If you don't have a process or separate that [personal life] from work, then it's pretty horrific [B13, male].
	Prioritisation	You like start your day knowing these are the things I have to do and then over the course of the day a million other things will come up and then you need to be able to keep track of everything and do things in a time critical matter and you'll need to be able to prioritize [D6, female].
Workplace wellbeing strategies	Debriefing	The junior doctors come to … vent about the hospital and work and that's really helpful [D8, female].
	Junior doctor societies	There's a social officer and they just organize drinks for us every second Friday and we all pitch in money from our pay check every week to pay for the free drinks [D8, female].

Most junior doctors reported exercise as a beneficial strategy for physical and mental wellbeing. The types of exercise varied from regular, shorter activities such as cycling, gym, high-intensity interval training and walking, and those less frequent, typically longer forms of exercise, such as hiking and bouldering. The reported benefits of exercise included improvement in sleep, providing an emotional outlet, and a social event in the case of team sport.

> *Exercise helps me to focus and makes me happy because I'm doing something with my body, and obviously the endorphins are being released … achieving goals and targets … make me really happy as well and give me the encouragement to be able to do other things [D6, female].*

Some junior doctors reported a healthy, balanced diet to be beneficial to provide energy and improve physical and mental well-being. Meal prepping and consciously being aware of eating and drinking water while on a shift were part of this strategy. This awareness at work extended to taking breaks as short as 5 minutes.

> *When I actually manage to eat regularly and drink water, especially when I'm working, it really helps me get through that shift [D8, female].*

Maintaining connections with family and friends, particularly those outside of medicine, was reported as very important by most participants. Social activities build a sense of community and fun activities are an outlet. Social activities with colleagues were also reported as vital due to the common understanding of the challenges of being junior doctors. Informal gatherings with colleagues to discuss issues and listen to each other also increases connection. The ability to connect and communicate with other junior doctors, allows them to feel less isolated with the problems that they may be facing. This in turn can effectively improve junior doctors' mental health.

> *It doesn't have to be a formal thing. It's just having the opportunity to ask others how they are going and listening to them when they're having a problem [D6, female].*

A handful of junior doctors reported having a supportive partner with whom they could openly discuss mental health and communicate deeper feelings often not discussed with friends. Partners also provide accountability with routines. One participant felt that they lost a "major pillar of support in [their] life" when they lived in different states than their partner.

If I'm feeling stressed, I'll try and talk to my partner. … Having a supportive partner definitely helps … to do the meal prep and actually have a good routine [D13, male].

Having hobbies outside of work was an important strategy for many junior doctors. Podcasts, and music, as well as video games which had a social aspect, were the most popular online activities. Common offline activities included chess, reading and outdoor activities such as camping and fishing.

It's not each individual thing is going to help but just having a variety of interests and activities. So that you're not just going to work and coming home and doing nothing else [D7, female].

There were multiple mental wellbeing strategies identified by junior doctors. Getting enough sleep allows for proficiency at work. Practising mindfulness regularly, especially when encountering a difficult situation at work, can be useful in setting a positive mindset to continue the day's work. It also reduces the likelihood of poor experiences with patients or colleagues from affecting one's work ethic for the rest of the day. Meditation was also reported by some junior doctors as beneficial to mental wellbeing.

I think it's good to just take a break and clear the mind for a little bit and be on your own and just reflect on whatever it is that's challenging you [D6, female].

If I'm at that high stress level at work, I kind of just do a little check in of like, "okay, you're really stressed, that's okay. You just need to breathe. Everything will be okay [D15, female].

Similarly, setting realistic expectations was identified as a key enabler of junior doctors' wellbeing. In addition, prioritising and compartmentalising work-related and personal tasks helps reduce the chances of feeling overwhelmed.

I guess one of the hardest things is trying to…set realistic expectations yourself [B1, male].

You need to sit there and physically stop and say to yourself what actually needs to be done right now and what doesn't and what can we wait till tomorrow or later in the week. The busier you are, the more you need to actually slow down and stop and take a breath and actually see what's going on, reprioritize and get going again [B1, male].

In addition, there were several beneficial wellbeing strategies identified within the workplace. A key strategy identified was debriefing with colleagues after encountering challenging situations. This allows junior doctors to share their feelings freely and comfortably, while gaining insight into the way their other colleagues feel or may handle a similar situation in the future. Junior doctors reported it useful to have a senior doctor who is vulnerable and shares their own experiences with self-care and coping with the trying lifestyle of a doctor.

> *I've had consultants say "that last patient you had was really stressful. Don't pick up another patient. Go take a break. Don't push yourself too hard. You just dealt with something very traumatising. You need to go and take 30 minutes … then come back." I feel like it's something that's really well understood, and easy to talk about between colleagues [D15, female].*

Lastly, the establishment of organisations such as Junior Doctor Societies within hospitals can encourage junior doctors to interact with their peers within the hospital and develop a support network of junior doctors.

> *Junior Doctors Society has a free lunch once every couple of weeks or so, and there's a bit of reminder … even if you only come and grab something, take 5 minutes out, actually have some food, have something to drink and carry on [B1, male].*

There were a small number of strategies mentioned by participants that have been identified as outliers. These include smoking cigarettes and consuming alcohol daily to cope with the stress of work as a junior doctor, and consuming sugary beverages during shifts to stay alert. Religious practice was mentioned by one participant as an important mental health strategy. Additionally, one participant reported that the work-life balance when working in a rural hospital is much better due to the reduced workload.

Theme 2: Barriers to wellbeing and using wellbeing strategies

Table 3: Barriers to wellbeing

Theme	Subtheme	Example
Workplace barriers	Workload	Sometimes you might have a 12-hour shift, which means once you've cooked and taken a shower, you

		might have absolutely no time to do any other things (selfcare) [D11, male].
	Changes to routine	If I want to do that activity, I have to find a time to fit it in around my work schedule, which is constantly changing [D15, male].
	Inconsistent payment of overtime	The hospital isn't paying for overtime at the moment … if there's work to be done then it's about patient care and patient service. But people aren't going to say, "I'm just going to leave at 4:30" if they've got a deteriorating or vulnerable patient who needs attention and care. So they will just stay back and work, unpaid [D12, male].
	Inflexible leave	They give you the option to be able to tell the admin people at the beginning of the term if you need a specific day or something off, but other than that you're kind of expected to work back when they tell you to work [D8, female].
	High expectations despite inexperience	It's quite confronting when you're just by yourself talking to a nurse and she's questioning your reasoning and you have to explain it [D8, female].
	Bullying + discrimination	I would say racism is the thing that has been the thing that I struggle with the most more than anything else … Almost every consultant has asked me "I know you're Canadian, but what are you really?" [D15, female].
	Stigma surrounding mental health	It's this huge stigma. People are really afraid that other people are going to find out [they are struggling] because I think then the assumption becomes that you can't cope with your job [D15, female].
Barriers to self-care	Confidentiality concerns	They say they're not going to find out but who really knows so [the nurses say] "Just don't bother using that service." [D15, female].

	Barriers to exercise	It's (going to soccer) something that I'm forced to do, even when I'm tired after a big day of work. It forces you to have something that's going to make you exercise really hard, which is good. You know, sign up at the gym, but when you finish at 5:30pm after a big day, you just don't feel enthused to go. But with soccer, then it sort of has something that you're forced to do [D13, male].
	Barriers to eating healthily	A lot of my friends don't do that (cook or meal prep) because they just can't be bothered or don't have enough time. I guess they're a bit stressed about lots of other things going on. They don't have the time to invest in doing that [D13, male].

Many of the barriers to wellbeing identified by junior doctors were identified within the workplace.

A high workload is a significant cause of stress for junior doctors, and working long hours is tiring. Working overtime reduces the time available to consolidate learning and teaching during a shift, and limits time for sleep and self-care.

> *I think the biggest challenge is the workload. [D7, female].*

Planning and routine is important for self-care but is impacted by short notice changes to rosters and overtime shifts. Inconsistent shifts, particularly evident in Emergency rotations, make it very difficult to maintain a regular schedule which would enable more wellbeing strategies.

> *(Lack of) time and lack of routine can be hard … even if you have a lot of time, your routine is unpredictable. You're going to work a night shift, and then you might work a day shift and you might work a half day. It throws out everything, because you don't have consistency in your routine [D2, female].*

Furthermore, there is a fear of claiming overtime due to the opinion of senior staff, as well as inconsistent payment of overtime between hospitals and between departments and teams of the same hospital. This reduces the incentive to work overtime, despite the pressure to do so.

I feel that overtime is an issue at each hospital… I guess everyone does overtime. It is whether we submit it to be paid for it or not … there's a bit of a culture of you just sort of ask one of the senior doctors if they will pay overtime or not [D10, male].

The lack of flexibility of leave (i.e., having to take five weeks at once) and part-time work as a junior doctor not being an option, is a further barrier to well-being.

It's very hard to work part time as an intern. I have no intention of wanting to work part time, but for example, people trying to have a family or things like that, there's no option to do your internship part time [D10, male].

Inexperience is also unavoidable as a junior doctor. However, junior doctors carry a significant burden of responsibility, with little guidance on how to deal with it. Junior doctors often lack familiarity with the healthcare and computer systems, in addition to pressure from nurses to have answers, and the generally high expectations of knowing everything.

You get asked so many questions, especially by nursing staff and you are expected to know a lot of the answers which you may not necessarily know because you're only a junior … so sometimes you have to fake it till you make it [D6, female].

Some of the common stressors within the workplace experienced by junior doctors include becoming familiarised with the administrative processes of each department or hospital, the concern of harming patients, and the desire to be a safe junior doctor. Additionally, junior doctors are often faced with completing numerous menial tasks which can compound, contributing to overtime.

I think a lot of stress that we find as junior doctors isn't necessarily related to the biomedical things. A lot of it is actually just administrative processes that create a lot of sort of angst … What forms do I need to do? Where are they physically to be found? These are administrative, bureaucratic processes, and once you know them, they're very easy [D1, male].

It's a cultural thing, the fact that they (senior doctors) have you doing all of the work, like all of the notes and all of the referrals and all of that sort of thing which they are perfectly capable of doing. But I

guess the culture is that the younger, junior doctors do all that [D10, male].

Several junior doctors reported that bullying is accepted as a normal part of certain rotations and is considered necessary to be accepted by the team. Discrimination was also reported by several junior doctors, with most incidents being in the form of microaggression and cultural insensitivity.

I'm a surgically inclined junior doctor and bullying is part of the culture in surgery. It's like a boys boarding school where the guy gets bullied on the first day. You have to join the pack. You have to go through that phase. It's a kind of test [D9, male].

Almost every consultant has asked me "Like I know you're Canadian, but what are you really?" [D15, female].

While the culture amongst junior doctors themselves is generally good, the overall team culture depends on the senior staff and what they prioritise.

I don't do that (taking breaks) much myself, because other people in the team don't do it, and then it's very weird if you go do it [D6, female].

There is ongoing stigma regarding mental health amongst doctors, with the perception that a struggling doctor is a weak doctor. There is also a lack of open discussion with colleagues at work about mental health as a result. Junior doctors are often intimidated by senior staff and feel unsupported, leading to reluctance to ask for help.

Doctors don't like to be seen as weak or incompetent in managing their own issues, so they don't display them at all. They don't disclose it to other parties … it keeps growing in the background and eventually if they don't have a good outlet, the issue will burst, and they will run into trouble [D9, male].

While there is confidential counselling available to junior doctors and many participants reported that they believe it would be beneficial, there was a lack of perceived confidentiality, a fear of using such services impacting future job prospects, and a preference for external psychologists who are less likely to know and/or work with the junior doctors than internal psychologists.

They say it's [free counselling services offered to junior doctors] completely confidential, but some nurses that I work with have said …

"don't ever go to that service because you don't know if it's actually confidential." And then you're worried if you're struggling with something, is your employer going to find out? … There's a lot of fear around using that service that I've overheard other people talking about [D15, female].

Beyond the workplace, barriers to wellbeing strategies included barriers to exercise, such as tiredness, having to travel to the gym or sporting venue, a lack of time, and lack of accountability at the gym when compared to a team sport. A lack of facilities at the workplace to encourage active forms of transport to work such as cycling is also a barrier.

I would also feel bad if I didn't show up (to soccer). You're signing yourself up and forcing yourself to commit to something that is going to help you and also that you enjoy [D13, male].

Actually having to go to the gym is a barrier in itself. Even though I live a two-minute walk from the gym, you just can't be bothered sometimes. Being tired from a big day is a barrier [D13, male].

Barriers to eating a healthy, balanced diet included unhealthy options available at work, a lack of time to prepare healthy meals at home, and inconsistent eating times.

I try to consciously think about what type of food that I'm eating. I try and avoid all the high sugar high fat stuff that's available around the workplace spaces [B1, male].

Theme 3: Future interventions suggested by junior doctors to support wellbeing

Table 4: Future interventions to support wellbeing suggested by junior doctors.

Theme	Subtheme	Example
Workplace interventions	Rostering	Giving people time once a week or once a fortnight half a day off … just gives you a little bit of extra time to plan [D10, male].
	Financial subsidies	Discounted gym membership which should give you access to multiple gyms or health centres [D3, male].
	Hospital facilities	Some of that is very easy to do … not going to lock the change rooms after hours … going to provide exercise

		facilities at work, or enough secure bicycle storage etc. [B1, male].
	Hospital organised events	It was good that the hospital makes some efforts to have some social events, especially at the start of the year to try and help connect the doctors who are starting just create I guess that sense of collegiality [B1, male].
	Protected time	Wouldn't be nice if you could just talk to all of your colleagues in small groups about what you're going through on a monthly basis or something like that, without anyone from admin or the hospital being present because then you're always going to censor yourself when someone else is watching you [D15, female]
University interventions	Transition to internship	The med school should say "watch the interns every day and see what they do and prepare for that" [D13, male].

While some junior doctors have well-being strategies in place, there continues to be room for improvement to maintain and improve the well-being of junior doctors in the future.

Junior doctors suggested the ability for junior doctors to control their work scheduling to a degree can be effective as it allows them to take time off as required in order to practice wellbeing strategies and safeguard their mental health.

> *I think it would be useful to have a regular half day off … I think it's useful to have some time off even during the week, so you can go to appointments and things that don't open on the weekend [D10, male].*

Another intervention suggested was financial subsidies to encourage junior doctors to undertake self-care activities, such as gym memberships. Furthermore, facilities such as bike lockers and showers were suggested as interventions that could enable junior doctors to be more physically active and use active forms of transport to work.

> *With gym memberships, if there's financial incentive, like if it's cheaper to obtain, then people will be more likely to do it [D10, male]*

> *For people who cycle into work, having a shower and changing rooms and somewhere to lock up your bike would be helpful. [D1, male]*

Events and workshops organised within the hospital or community events were suggested by junior doctors to encourage participation from different members of the hospital. Additionally, providing complimentary food to junior doctors could also encourage them to engage in such events. Lastly, junior doctors reported that allocated time for junior doctors to discuss their mental wellbeing could be a useful workplace intervention.

> *We have social events for just the junior doctors, but I think having social events so you can meet the nurses and the physios and other staff on a personal level would really help build their professional relationship so that you could work with them more easily because [D8, female].*

> *15 minutes of time at the end of our intern education sessions which is protected to be able to actually just have a chat with some of your friends about what's been going on, how they are doing etc. … just 15 minutes where it's completely protected time in the room just amongst your peers, no administrators there, it's just some time to take for yourself to take a breath and share experiences with your colleagues [B1, male].*

There are also other interventions that can be implemented within medical schools to ease the transition from medicine into the internship year for junior doctors. This includes a clear description of the expectations of an intern so that they are not caught off guard when they start working in hospitals, and a transition placement in the final year of medical school.

> *I think as an intern, often you're a glorified administration assistant, and you don't really train to do that in medical school. A lot of the things that you do … you sort of have to learn on the job and they're very department and ward specific … there's lots of different processes that you need to learn quickly [D12, male].*

DISCUSSION

This study provides a deeper understanding of the physical, mental, and social strategies junior doctors use to maintain their wellbeing. This is important to note as traditionally, the medical profession has placed an implicit expectation on its doctors to prioritise the needs of their patients above their own[1]. However, in recent times, there has been a growing spotlight on the wellbeing of junior doctors[2]. Adding to the current literature on junior doctor

wellbeing, many of this study's participants attribute significant workplace stress in response to challenges inherent within the medical profession. This is consistent with the landmark Beyond Blue National Mental Health Survey which found that junior doctors suffer from greater rates of psychological distress and suicidal thoughts as they are particularly more vulnerable to poor mental health and burnout[2].

Wellbeing strategies

This study demonstrated that eating a healthy diet with the use of meal-prepping, performing regular exercise, and creating a reliable support network were helpful for individuals for maintaining their wellbeing. It was also found that participants felt that their work commitments were exhausting and stated that once they finished work, "all [they could] do is eat dinner and go to bed". However, all participants viewed spending time with friends and family as a positive factor in supporting their wellbeing. Junior doctors valued spending time with friends and family, particularly when they could simply spend time together without the pressure of work and have a chance to recover. Friends and family can also be support persons who junior doctors can confide in and debrief with. These findings support the 2016 study by Edington et al, as well as an AMA junior doctor health survey conducted in 2008, which revealed that spending time with family and/or friends was the predominant strategy (59.5%) utilised by participants to maintain their wellbeing[12 13]. In contrast to findings of this study where house mates (e.g. both family and friends) were providers of strong social support, a multi-centre Malaysian study found that junior doctors who lived with at least one other person at home were at greater risk of developing burnout when compared to junior doctors who lived alone[14]. The contradictory findings could be explained by cultural differences. In the Malaysian contexts, authors hypothesised that these support persons may in fact be a source of emotional strain for junior doctors as they struggle to find time and energy to spend with friends and family in the context of their extensive work commitments. In our study, the social support was strong for emotional and physical difficulties, offering chill time and walks in nature, as well as help with maintaining healthy eating habits.

Self-monitoring is a key strategy identified in this study. This includes practicing mindfulness, debriefing with colleagues, prioritising and compartmentalising work-related and personal tasks, and setting realistic expectations of what can be achieved in a shift. Junior doctors reported these strategies reduce feelings of overwhelm and elevates mindset, which improves mental wellbeing. This supports the findings of a Canadian study which determined that doctors who effectively self-monitor can preserve a work-life balance better than doctors

who do not[15], and a German study which found that mindfulness and meditation reduced distress in healthcare workers[16].

Barriers to wellbeing

This study builds upon existing research that has investigated the significant wellbeing barriers that exist for junior doctors. It was found that the hospital workplace was the single most common barrier to their wellbeing and ability to implement self-care strategies of junior doctors. It has been identified that such culture normalises bullying and creates stigma against trying to preserve mental health. This supports a United Kingdom study by Quine[17], which reported that 84% of junior doctors had encountered at least one episode of bullying. Other studies have also suggested that most junior doctors will face bullying at work which is inevitably deleterious to their mental health[17-19]. Further, the Beyond Blue National Health Survey which found that 40.5% of participants believed that doctors with a history of mental health disorders were perceived as less competent by their peers and 44.8% believed that many doctors felt that experiencing a mental health condition was a sign of weakness[2].

Additionally, constantly changing environments in each hospital department and the burden of the expectation of competence despite being new to the workforce, creates an environment in which junior doctors do not feel able to practice self-care throughout their shifts. Coupling this with intimidation from senior doctors generates fear of being ridiculed or looked down upon by their seniors. This is also evident regarding claiming overtime. Many junior doctors reported frequently working overtime but were afraid to claim overtime payment. A Queensland study by Forbes et al. has suggested that up to 70% of overtime hours are not claimed by junior doctors, largely as a result of the perceived cultural expectations to not claim overtime[20]. This means they are working without adequate pay, which can be demoralising and negatively impact one's wellbeing. Furthermore, working overtime reduces the time available to junior doctors to practice self-care. Other workplace barriers including short notice changes to shifts, limited working hour flexibility, having undefined lunch breaks and a high workload environment are additional factors which adversely affect junior doctor wellbeing.

Additionally, participants reported a lack of guidance from universities in their transition towards starting work as a junior doctor, particularly in relation to the administrative processes of each department within the hospital. This was an unexpected finding given the extensive time students at Australian medical schools spend within hospitals throughout their

degree. One participant noted that a student's preparedness for internship was more dependent on their own initiative in involving themselves in placement rather than the medical degree itself. Further research is required to explore this gap and how the self-directed nature of university placement impacts the preparedness of junior doctors, and how universities may need to take more responsibility for student training in their clinical years.

Key recommendations

There are several key recommendations arising from this study. Firstly, junior doctors often feel lost, overwhelmed, and struggle to adapt to different departments due to being unfamiliar with the new workflow in the different teams, which contributes negatively to their wellbeing. Therefore, there should be a greater emphasis on a standardized orientation and informative induction process for each department in the hospital. Secondly, mandating the payment of overtime would improve junior doctor wellbeing as they would be getting appropriate renumeration for their work. Thirdly, mandatory workplace education programs could challenge the current culture that is present in hospitals and reduce the bullying and intimidation that junior doctors often face. Lastly, the most important recommendation would be to implement wellbeing promotion in the workplace. This could include regular workshops for mindfulness techniques, having subsidies towards activities that promote wellbeing such as gym memberships, implementing facilities to aid in wellbeing such as bike racks and showers within hospitals, and forming a representative junior doctor society at each hospital which can report back to the hospital board.

Limitations

There were several key limitations in this study. Firstly, many of the participants were working within the South-East Queensland metropolitan area with only a handful having any rural hospital experience. There are a unique set of barriers towards wellbeing strategies that are found for those who work rurally, such as being socially isolated and having limited accessibility to resources that could be implemented into wellbeing strategies, such as gyms. Secondly, the interviews were conducted online due to social distancing requirements during the COVID-19 pandemic. This did not seem to have a significant impact on the results, although doing in-person interviews would have been preferred as it may have created a more personal and dynamic experience for the participants. However, online interviews allowed a greater range of participants, including those who were interstate working within different

healthcare systems. Finally, this study is inherently subject to a degree of volunteer bias as participants of this study are more likely to be passionate about self-care and wellbeing. It is thought that by achieving data saturation, the results from this study adequately reflect the beliefs of most junior doctors.

CONCLUSION

The multifaceted variables that contribute to an individual's wellbeing makes it difficult to provide a solution for all individuals and workplaces, however it is hoped this study can help build towards greater wellbeing for junior doctors. Understanding the strategies junior doctors utilise to maintain their mental, physical, and social wellbeing is a critical step in the development of effective wellbeing interventions. It is well established that poor self-care among doctors ultimately translates to poor patient outcomes. Thus, it is not only in the interests of doctors but also their patients to better understand self-care strategies and their role in maintaining the wellbeing of junior doctors.

AUTHOR CONTRIBUTIONS

Conceptualisation - MH, SYL, CC, HZ, SJ, DT, GN, EB; methodology MH, SYL, CC, HZ, SJ, DT, GN, EB; data collection MH, SYL, CC, HZ, SJ, DT, GN; data analysis MH, SYL, CC, HZ, SJ, DT, GN, EB; writing (original draft preparation) MH, SYL, CC, HZ, SJ, DT, GN; writing (review and editing) - MH, CC, DT, EB; supervision - EB. All authors have read and agreed to the published version of the manuscript.

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COMPETING INTERESTS

The authors declare that they have no competing interests.

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DATA AVAILABILITY STATEMENT

All data relevant to the study are included in the article.

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Standards for Reporting Qualitative Research (SRQR)*

http://www.equator-network.org/reporting-guidelines/srqr/

	Page/line no(s).
Title and abstract	
Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	1
Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions	2
Introduction	
Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	2 - 3
Purpose or research question - Purpose of the study and specific objectives or questions	3
Methods	
Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**	3-5
Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability	4
Context - Setting/site and salient contextual factors; rationale**	4
Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**	4
Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	5
Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**	4-5

Data collection instruments and technologies - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	4
Units of study - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	4-5
Data processing - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	5
Data analysis - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale**	5
Techniques to enhance trustworthiness - Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale**	NA

Results/findings

Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	6 - 14
Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	6 - 14

Discussion

Integration with prior work, implications, transferability, and contribution(s) to the field - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	14 - 16
Limitations - Trustworthiness and limitations of findings	16

Other

Conflicts of interest - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	17
Funding - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	17

*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research.

**The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

Reference:

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The strategies Australian junior doctors use to maintain their mental, physical, and social wellbeing – a qualitative study

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ABSTRACT

Objectives: This study aimed to uncover the strategies that junior doctors implement to maintain their mental, physical, and social wellbeing, and the barriers they experience in practicing these strategies.

Participants: Fifteen junior doctors in their postgraduate year 1 or 2 currently practicing in Australia were recruited.

Outcome measures: Semi-structured interviews were conducted, and the transcripts underwent thematic analysis.

Results: Three key themes emerged from thematic analysis: wellbeing strategies; barriers to wellbeing; and future interventions. Exercise, a healthy and balanced diet, quality sleep, and workplace organisations were frequently reported wellbeing strategies. High workload, unpredictable routines, lack of familiarity with the healthcare system, and ongoing stigma surrounding mental health were seen as barriers to wellbeing. Suggested interventions included increased control over rosters, subsidised access to facilities such as gyms, and increased internship preparedness programs organised by medical schools.

Conclusions: The findings from this study may assist in developing more personalised and targeted methods of assisting junior doctors maintain their mental, physical, and social

wellbeing. Future studies may address the structural and systemic changes required to develop a workforce that fosters the wellbeing of junior doctors and reduces the institutional barriers to practicing wellbeing strategies.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- Online interviews allowed a greater range of participants, including those who were interstate working within different healthcare systems.
- Participants of this study are more likely to be passionate about self-care and wellbeing.
- Most participants were practicing in metropolitan areas, with only a few having any rural hospital experience, thus the unique setting of rural practice is not adequately explored.

INTRODUCTION

Medicine is an ever-evolving field wherein doctors work intensely to deliver for their patients. Numerous studies and surveys have demonstrated that the mental health of doctors is worse than that of the general population[1]. Junior doctors (postgraduate year (PGY) 1 or 2)) are particularly vulnerable to poor wellbeing and higher stress due to long working hours, stressful working environments, and difficulty balancing conflicting personal and work interests[2]. Junior doctors globally are facing the same problems. These systemic barriers are often accepted at face value, as the rigorous training that junior doctors undertake is seen as an initiation rite that all doctors must endure[1]. However, the stress and emotional toll that can negatively impact the physical, mental, and social well-being of junior doctors is not adequately addressed.

Physically, the high workload that junior doctors experience can significantly decrease their ability to maintain a healthy lifestyle[3]. Restrictions due to the workplace requirements impacts the ability to regularly exercise, get adequate sleep, participate in recreational and social activities, or eat nutritionally balanced meals[3]. In terms of their mental health, junior doctors are vulnerable to burnout, compassion fatigue and moral distress[3]. Work overload, lack of control over their work environment and long working hours contribute to the risk of burnout whilst compassion fatigue and moral distress are usually experienced due to the fast-paced, high-intensity care[3]. Socially, the stresses resulting from work such as long working hours, and night shifts can result in junior doctors experiencing a reduction in social

interaction with their friends and family[4]. Maintaining healthy social relationships is important to improve mental health and allows the wellbeing and health behaviours of junior doctors to be monitored by their loved ones[4].

Overall, junior doctors can experience a multitude of negative impacts on various aspects of their wellbeing[5]. The wellbeing of junior doctors plays an important role in maintaining their professional and personal purpose, which includes their job engagement, compassion, and patient care and satisfaction[5]. Previous studies have indicated that junior doctors were worried about their own wellbeing as well as that of their colleague's[6]. While research indicates that most junior doctors would not leave the medical profession, there are increasing concerns that their wellbeing could impair their ability to have job satisfaction as well as treat patients with the best care possible[1]. One of the learning outcomes outlined by The Australian Curriculum Framework aims to address the behaviours of junior doctors and how they optimise wellbeing to mitigate the stress and fatigue associated with their work[7]. Despite this learning objective, the health of junior doctors has been consistently demonstrated to be below that of the general population[1].

Coping strategies that junior doctors currently use to manage the high stress levels in their work environment have been identified in existing studies[1]. A survey conducted across 15 hospital networks throughout ACT and NSW demonstrated that there are a wide variety of strategies to cope with work-related stresses[1]. These include both positive and negative coping strategies, such as spending time with friends and family, discussing concerns with a colleague, exercise, alcohol abuse, taking time off work, and nicotine and drug abuse[1]. The more common coping strategies identified were exercise and participation in social activities[1]. However, this raises concerns regarding the wellbeing of junior doctors when they are unable to engage in exercise and social settings due to long working hours[1]. Moreover, the frequency of nicotine, recreational drug and alcohol use was higher in individuals with more severe psychological distress, which can further exacerbate mental health problems[1]. In recent years, plans to enable greater holistic wellbeing among junior doctors have been put in place within Australia. This includes the Junior Medical Officer Be Well program, Basic Physician Trainee Okay program in New South Wales and the DRS4DRS website launched by the Medical Board of Australia[8]. Whilst there have been attempts to improve the wellbeing of junior doctors, analysis of studies undertaken indicate there is still high levels of concern regarding the physical, social, and mental wellbeing of junior doctors[8].

Previous systematic reviews have supported wellbeing initiatives to address mental health issues[9]. However, there is only a small amount of research investigating the physical and social wellbeing of junior doctors, the underlying reason for the psychological distress of junior doctors and why, how and to what extent wellbeing initiatives are effective[8]. Therefore, this qualitative study aims at exploring junior doctors' experiences of keeping healthy and to identify the strategies that they use to achieve a better well-being. Investigating these strategies can provide ideas for potential interventions to improve the wellbeing of junior doctors, which can lead to better patient care[10].

METHODS

Participants

Junior doctors within two years of graduating from medical school (PGY1 or PGY2) and currently practicing in Australia were recruited to participate in the study through hospital noticeboards, social media advertisements and word-of-mouth. Recruitment began from August 2020 and ceased upon reaching data saturation. All respondents fit within the criterion and were included in the study. Respondents were then invited by email to partake in the study, and were provided with a participant information sheet, demographic questionnaire, and consent form. All participants who were emailed proceeded to the interview.

In total, 15 participants were interviewed (Table 1). Participants were not provided with any incentives to partake in the study. Some participants were personally known by a member of the research team, however, where possible another member of the research team conducted the interview to avoid collusion.

Table 1: Demographic characteristics of qualitative study participants

Age (years)		
22-25	9	60%
26-30	4	27%
30-35	2	13%

Gender		
Male	8	53%
Female	7	47%
Country of origin		
Australia	8	53%
China	3	19%
Japan	1	7%
Singapore	1	7%
Sri Lanka	1	7%
Canada	1	7%
Primary language		
English	12	80%
Mandarin	2	13%
Sinhalese	1	7%
Junior doctor profile		
PGY1	11	73%
PGY2	4	27%
Type of facility		
Metropolitan	8	53%
Regional	6	40%
Rural	1	7%
State		
QLD	11	73%
NSW	2	13%
SA	1	7%
NT	1	7%

Data collection

Semi-structured interviews of approximately one-hour in length were conducted and recorded via Microsoft Teams. Interview recordings were first transcribed using transcription software including Microsoft Teams Transcription and Otter.ai. The transcript was then checked by the interviewer against the audio recording, and any text or grammatical errors were corrected.

The interview questions were developed by the research team after a systematic review of the literature, including review of interview schedules of previous studies. Seven members of the research team (all medical students at Griffith University) interviewed participants based on an interview guide which contained 24 interview questions evolving around five main topics: the strategies participants employ to maintain their wellbeing; the characteristics of an effective strategy; the barriers to practicing these strategies; the reasons for practicing these strategies; and what systematic interventions would improve the participant's wellbeing. The interview schedule was designed to allow subsequent discussion of a topic without restricting the participant from providing unique insights or comments relevant to the topic. The interview schedule is available upon request.

Prior to interviewing the participants, the research interviewers were trained in qualitative research methods and familiarised with the interview schedule by interviewing one another.

At the start of the interview, participants were encouraged to respond fully and truthfully by the interviewers advising them that there are no model answers and that they can skip a question or withdraw from the interview at any time. Interviewers took field notes during the interviews for the sole purpose of assisting in the conduction of the interview.

Data analysis

Transcripts of the interviews were de-identified then analysed based on the Braun and Clarke method of qualitative thematic analysis [11]. This process involved a researcher first reading the transcript in its entirety, then coding the data thematically. All codes were then collated onto an electronic spreadsheet, and recurrent themes were identified using an iterative, inductive, and cyclic process. Codes were combined and split and the frequency in which codes arose was noted.

First-order themes, (e.g., "prioritisation" "goal setting") derived directly from the codes, were categorised into second-order themes (e.g., "self-regulation"), which were then grouped into even broader third-order themes (e.g., "wellbeing strategies"). Any outlier codes were identified and have been reported verbatim. Seven researchers were involved in this process to minimise bias stemming from individual experience. Any disagreements between researchers in the identification of themes was discussed until a consensus was reached.

Ethics

This study involves human participants and received Griffith University Ethics Approval (GU Ref No: 2020/557). Written informed consent was obtained from all participants.

Patient + Public Involvement

Patients and the public were involved only in the interview phase of this research as participants. There were not involved in the design or conduct of the study, nor the choice of outcome measures. Some participants aided recruitment efforts by word-of-mouth.

RESULTS

Thematic analysis identified three key themes- well-being strategies (Table 2); barriers to wellbeing (Table 3); and future interventions (Table 4).

Theme 1: Wellbeing strategies implemented by junior doctors

Table 2: Wellbeing strategies implemented by junior doctors.

Theme	Subtheme	Example
Physical wellbeing strategies	Exercise	I generally try to run everyday just to burn off the stress and the extra energy [D8, female].
	Diet	I think eating healthy and eating on time is really important [D4, female].
Social wellbeing strategies	Connection with family and friends	I've got my friends back home in Canada and my family – I keep in touch with them. I'll FaceTime my family probably once a week – like my parents. And then my friends, I will, almost you know, texting is super easy and so I'll text my friends pretty much all the time [D15, female].
	Social activities outside of work	Keeping in touch with other friends outside of work is really useful as well … to sort of offset the never-ending work talk with colleagues [D12, male].

	Supportive partner	I'm away from my wife as well. She's in Melbourne so again I don't have that major sort of pillar of support in my life when I really need that [D9, male].
	Hobbies outside of work	Being able to blow off steam in a non-work capacity is good [D12, male].
Mental health strategies	Sleep	I think changing the sleep cycle really messed my mood around [D8, female].
	Mindfulness	I just was feeling really teary at work and just really worried about hurting people and all sorts of things like my mind catching up with me. And let's just take a moment and reframe it so that [D8, female].
	Meditation	My meditation practice allows me to notice feelings before they overwhelm me and essentially catch it and then let it go [D13, male].
	Setting expectations of self	(You need to) temper your own expectations of yourself … most of our colleagues are relatively high achievers … and I guess one of the things that you realize coming into medicine … is just how things don't always go as planned. As I said, tempering your own expectations in terms of how much you can actually do or how much you actually know [B1, male].
	Separating work + personal life	If you don't have a process or separate that [personal life] from work, then it's pretty horrific [B13, male].
	Prioritisation	You like start your day knowing these are the things I have to do and then over the course of the day a million other things will come up and then you need to be able to keep track of everything and do things in a time critical matter and you'll need to be able to prioritize [D6, female].

Workplace wellbeing strategies	Debriefing	The junior doctors come to … vent about the hospital and work and that's really helpful [D8, female].
	Junior doctor societies	There's a social officer and they just organize drinks for us every second Friday and we all pitch in money from our pay check every week to pay for the free drinks [D8, female].

Most junior doctors reported exercise as a beneficial strategy for physical and mental wellbeing. The types of exercise varied from regular, shorter activities such as cycling, gym, high-intensity interval training and walking, and those less frequent, typically longer forms of exercise, such as hiking and bouldering. The reported benefits of exercise included improvement in sleep, providing an emotional outlet, and a social event in the case of team sport.

> *Exercise helps me to focus and makes me happy because I'm doing something with my body, and obviously the endorphins are being released … achieving goals and targets … make me really happy as well and give me the encouragement to be able to do other things [D6, female].*

Some junior doctors reported a healthy, balanced diet to be beneficial to provide energy and improve physical and mental well-being. Meal prepping and consciously being aware of eating and drinking water while on a shift were part of this strategy. This awareness at work extended to taking breaks as short as 5 minutes.

> *When I actually manage to eat regularly and drink water, especially when I'm working, it really helps me get through that shift [D8, female].*

Maintaining connections with family and friends, particularly those outside of medicine, was reported as very important by most participants. Social activities build a sense of community and fun activities are an outlet. Social activities with colleagues were also reported as vital due to the common understanding of the challenges of being junior doctors. Informal gatherings with colleagues to discuss issues and listen to each other also increases connection. The ability to connect and communicate with other junior doctors, allows them to feel less isolated with the problems that they may be facing. This in turn can effectively improve junior doctors' mental health.

It doesn't have to be a formal thing. It's just having the opportunity to ask others how they are going and listening to them when they're having a problem [D6, female].

A handful of junior doctors reported having a supportive partner with whom they could openly discuss mental health and communicate deeper feelings often not discussed with friends. Partners also provide accountability with routines. One participant felt that they lost a "major pillar of support in [their] life" when they lived in different states than their partner.

If I'm feeling stressed, I'll try and talk to my partner. … Having a supportive partner definitely helps … to do the meal prep and actually have a good routine [D13, male].

Having hobbies outside of work was an important strategy for many junior doctors. Podcasts, and music, as well as video games which had a social aspect, were the most popular online activities. Common offline activities included chess, reading and outdoor activities such as camping and fishing.

It's not each individual thing is going to help but just having a variety of interests and activities. So that you're not just going to work and coming home and doing nothing else [D7, female].

There were multiple mental wellbeing strategies identified by junior doctors. Getting enough sleep allows for proficiency at work. Practising mindfulness regularly, especially when encountering a difficult situation at work, can be useful in setting a positive mindset to continue the day's work. It also reduces the likelihood of poor experiences with patients or colleagues from affecting one's work ethic for the rest of the day. Meditation was also reported by some junior doctors as beneficial to mental wellbeing.

I think it's good to just take a break and clear the mind for a little bit and be on your own and just reflect on whatever it is that's challenging you [D6, female].

If I'm at that high stress level at work, I kind of just do a little check in of like, "okay, you're really stressed, that's okay. You just need to breathe. Everything will be okay [D15, female].

Similarly, setting realistic expectations was identified as a key enabler of junior doctors' wellbeing. In addition, prioritising and compartmentalising work-related and personal tasks helps reduce the chances of feeling overwhelmed.

I guess one of the hardest things is trying to…set realistic expectations yourself [B1, male].

You need to sit there and physically stop and say to yourself what actually needs to be done right now and what doesn't and what can we wait till tomorrow or later in the week. The busier you are, the more you need to actually slow down and stop and take a breath and actually see what's going on, reprioritize and get going again [B1, male].

In addition, there were several beneficial wellbeing strategies identified within the workplace. A key strategy identified was debriefing with colleagues after encountering challenging situations. This allows junior doctors to share their feelings freely and comfortably, while gaining insight into the way their other colleagues feel or may handle a similar situation in the future. Junior doctors reported it useful to have a senior doctor who is vulnerable and shares their own experiences with self-care and coping with the trying lifestyle of a doctor.

I've had consultants say "that last patient you had was really stressful. Don't pick up another patient. Go take a break. Don't push yourself too hard. You just dealt with something very traumatising. You need to go and take 30 minutes … then come back." I feel like it's something that's really well understood, and easy to talk about between colleagues [D15, female].

Lastly, the establishment of organisations such as Junior Doctor Societies within hospitals can encourage junior doctors to interact with their peers within the hospital and develop a support network of junior doctors.

Junior Doctors Society has a free lunch once every couple of weeks or so, and there's a bit of reminder … even if you only come and grab something, take 5 minutes out, actually have some food, have something to drink and carry on [B1, male].

There were a small number of strategies mentioned by participants that have been identified as outliers. These include smoking cigarettes and consuming alcohol daily to cope with the stress of work as a junior doctor, and consuming sugary beverages during shifts to stay alert. Religious practice was mentioned by one participant as an important mental health strategy. Additionally, one participant reported that the work-life balance when working in a rural hospital is much better due to the reduced workload.

Theme 2: Barriers to wellbeing and using wellbeing strategies

Table 3: Barriers to wellbeing

Theme	Subtheme	Example
Workplace barriers	Workload	Sometimes you might have a 12-hour shift, which means once you've cooked and taken a shower, you might have absolutely no time to do any other things (selfcare) [D11, male].
	Changes to routine	If I want to do that activity, I have to find a time to fit it in around my work schedule, which is constantly changing [D15, male].
	Inconsistent payment of overtime	The hospital isn't paying for overtime at the moment … if there's work to be done then it's about patient care and patient service. But people aren't going to say, "I'm just going to leave at 4:30" if they've got a deteriorating or vulnerable patient who needs attention and care. So they will just stay back and work, unpaid [D12, male].
	Inflexible leave	They give you the option to be able to tell the admin people at the beginning of the term if you need a specific day or something off, but other than that you're kind of expected to work back when they tell you to work [D8, female].
	High expectations despite inexperience	It's quite confronting when you're just by yourself talking to a nurse and she's questioning your reasoning and you have to explain it [D8, female].
	Bullying + discrimination	I would say racism is the thing that has been the thing that I struggle with the most more than anything else … Almost every consultant has asked me "I know you're Canadian, but what are you really?" [D15, female].

	Stigma surrounding mental health	It's this huge stigma. People are really afraid that other people are going to find out [they are struggling] because I think then the assumption becomes that you can't cope with your job [D15, female].
Barriers to self-care	Confidentiality concerns	They say they're not going to find out but who really knows so [the nurses say] "Just don't bother using that service." [D15, female].
	Barriers to exercise	It's (going to soccer) something that I'm forced to do, even when I'm tired after a big day of work. It forces you to have something that's going to make you exercise really hard, which is good. You know, sign up at the gym, but when you finish at 5:30pm after a big day, you just don't feel enthused to go. But with soccer, then it sort of has something that you're forced to do [D13, male].
	Barriers to eating healthily	A lot of my friends don't do that (cook or meal prep) because they just can't be bothered or don't have enough time. I guess they're a bit stressed about lots of other things going on. They don't have the time to invest in doing that [D13, male].

Many of the barriers to wellbeing identified by junior doctors were identified within the workplace.

A high workload is a significant cause of stress for junior doctors, and working long hours is tiring. Working overtime reduces the time available to consolidate learning and teaching during a shift, and limits time for sleep and self-care.

I think the biggest challenge is the workload. [D7, female].

Planning and routine is important for self-care but is impacted by short notice changes to rosters and overtime shifts. Inconsistent shifts, particularly evident in Emergency rotations, make it very difficult to maintain a regular schedule which would enable more wellbeing strategies.

(Lack of) time and lack of routine can be hard … even if you have a lot of time, your routine is unpredictable. You're going to work a night shift, and then you might work a day shift and you might work a half day. It throws out everything, because you don't have consistency in your routine [D2, female].

Furthermore, there is a fear of claiming overtime due to the opinion of senior staff, as well as inconsistent payment of overtime between hospitals and between departments and teams of the same hospital. This reduces the incentive to work overtime, despite the pressure to do so.

I feel that overtime is an issue at each hospital… I guess everyone does overtime. It is whether we submit it to be paid for it or not … there's a bit of a culture of you just sort of ask one of the senior doctors if they will pay overtime or not [D10, male].

The lack of flexibility of leave (i.e., having to take five weeks at once) and part-time work as a junior doctor not being an option, is a further barrier to well-being.

It's very hard to work part time as an intern. I have no intention of wanting to work part time, but for example, people trying to have a family or things like that, there's no option to do your internship part time [D10, male].

Inexperience is also unavoidable as a junior doctor. However, junior doctors carry a significant burden of responsibility, with little guidance on how to deal with it. Junior doctors often lack familiarity with the healthcare and computer systems, in addition to pressure from nurses to have answers, and the generally high expectations of knowing everything.

You get asked so many questions, especially by nursing staff and you are expected to know a lot of the answers which you may not necessarily know because you're only a junior … so sometimes you have to fake it till you make it [D6, female].

Some of the common stressors within the workplace experienced by junior doctors include becoming familiarised with the administrative processes of each department or hospital, the concern of harming patients, and the desire to be a safe junior doctor. Additionally, junior doctors are often faced with completing numerous menial tasks which can compound, contributing to overtime.

I think a lot of stress that we find as junior doctors isn't necessarily related to the biomedical things. A lot of it is actually

just administrative processes that create a lot of sort of angst … What forms do I need to do? Where are they physically to be found? These are administrative, bureaucratic processes, and once you know them, they're very easy [D1, male].

It's a cultural thing, the fact that they (senior doctors) have you doing all of the work, like all of the notes and all of the referrals and all of that sort of thing which they are perfectly capable of doing. But I guess the culture is that the younger, junior doctors do all that [D10, male].

Several junior doctors reported that bullying is accepted as a normal part of certain rotations and is considered necessary to be accepted by the team. Discrimination was also reported by several junior doctors, with most incidents being in the form of microaggression and cultural insensitivity.

I'm a surgically inclined junior doctor and bullying is part of the culture in surgery. It's like a boys boarding school where the guy gets bullied on the first day. You have to join the pack. You have to go through that phase. It's a kind of test [D9, male].

Almost every consultant has asked me "Like I know you're Canadian, but what are you really?" [D15, female].

While the culture amongst junior doctors themselves is generally good, the overall team culture depends on the senior staff and what they prioritise.

I don't do that (taking breaks) much myself, because other people in the team don't do it, and then it's very weird if you go do it [D6, female].

There is ongoing stigma regarding mental health amongst doctors, with the perception that a struggling doctor is a weak doctor. There is also a lack of open discussion with colleagues at work about mental health as a result. Junior doctors are often intimidated by senior staff and feel unsupported, leading to reluctance to ask for help.

Doctors don't like to be seen as weak or incompetent in managing their own issues, so they don't display them at all. They don't disclose it to other parties … it keeps growing in the background and eventually if they don't have a good outlet, the issue will burst, and they will run into trouble [D9, male].

While there is confidential counselling available to junior doctors and many participants reported that they believe it would be beneficial, there was a lack of perceived confidentiality, a fear of using such services impacting future job prospects, and a preference for external psychologists who are less likely to know and/or work with the junior doctors than internal psychologists.

> *They say it's [free counselling services offered to junior doctors] completely confidential, but some nurses that I work with have said … "don't ever go to that service because you don't know if it's actually confidential." And then you're worried if you're struggling with something, is your employer going to find out? … There's a lot of fear around using that service that I've overheard other people talking about [D15, female].*

Beyond the workplace, barriers to wellbeing strategies included barriers to exercise, such as tiredness, having to travel to the gym or sporting venue, a lack of time, and lack of accountability at the gym when compared to a team sport. A lack of facilities at the workplace to encourage active forms of transport to work such as cycling is also a barrier.

> *I would also feel bad if I didn't show up (to soccer). You're signing yourself up and forcing yourself to commit to something that is going to help you and also that you enjoy [D13, male].*

> *Actually having to go to the gym is a barrier in itself. Even though I live a two-minute walk from the gym, you just can't be bothered sometimes. Being tired from a big day is a barrier [D13, male].*

Barriers to eating a healthy, balanced diet included unhealthy options available at work, a lack of time to prepare healthy meals at home, and inconsistent eating times.

> *I try to consciously think about what type of food that I'm eating. I try and avoid all the high sugar high fat stuff that's available around the workplace spaces [B1, male].*

Theme 3: Future interventions suggested by junior doctors to support wellbeing

Table 4: Future interventions to support wellbeing suggested by junior doctors.

Theme	Subtheme	Example

Workplace interventions	Rostering	Giving people time once a week or once a fortnight half a day off … just gives you a little bit of extra time to plan [D10, male].
	Financial subsidies	Discounted gym membership which should give you access to multiple gyms or health centres [D3, male].
	Hospital facilities	Some of that is very easy to do … not going to lock the change rooms after hours … going to provide exercise facilities at work, or enough secure bicycle storage etc. [B1, male].
	Hospital organised events	It was good that the hospital makes some efforts to have some social events, especially at the start of the year to try and help connect the doctors who are starting just create I guess that sense of collegiality [B1, male].
	Protected time	Wouldn't be nice if you could just talk to all of your colleagues in small groups about what you're going through on a monthly basis or something like that, without anyone from admin or the hospital being present because then you're always going to censor yourself when someone else is watching you [D15, female]
University interventions	Transition to internship	The med school should say "watch the interns every day and see what they do and prepare for that" [D13, male].

While some junior doctors have well-being strategies in place, there continues to be room for improvement to maintain and improve the well-being of junior doctors in the future.

Junior doctors suggested the ability for junior doctors to control their work scheduling to a degree can be effective as it allows them to take time off as required in order to practice wellbeing strategies and safeguard their mental health.

> *I think it would be useful to have a regular half day off … I think it's useful to have some time off even during the week, so you can go to appointments and things that don't open on the weekend [D10, male].*

Another intervention suggested was financial subsidies to encourage junior doctors to undertake self-care activities, such as gym memberships. Furthermore, facilities such as bike lockers and showers were suggested as interventions that could enable junior doctors to be more physically active and use active forms of transport to work.

> *With gym memberships, if there's financial incentive, like if it's cheaper to obtain, then people will be more likely to do it [D10, male]*

> *For people who cycle into work, having a shower and changing rooms and somewhere to lock up your bike would be helpful. [D1, male]*

Events and workshops organised within the hospital or community events were suggested by junior doctors to encourage participation from different members of the hospital. Additionally, providing complimentary food to junior doctors could also encourage them to engage in such events. Lastly, junior doctors reported that allocated time for junior doctors to discuss their mental wellbeing could be a useful workplace intervention.

> *We have social events for just the junior doctors, but I think having social events so you can meet the nurses and the physios and other staff on a personal level would really help build their professional relationship so that you could work with them more easily because [D8, female].*

> *15 minutes of time at the end of our intern education sessions which is protected to be able to actually just have a chat with some of your friends about what's been going on, how they are doing etc. … just 15 minutes where it's completely protected time in the room just amongst your peers, no administrators there, it's just some time to take for yourself to take a breath and share experiences with your colleagues [B1, male].*

There are also other interventions that can be implemented within medical schools to ease the transition from medicine into the internship year for junior doctors. This includes a clear description of the expectations of an intern so that they are not caught off guard when they start working in hospitals, and a transition placement in the final year of medical school.

> *I think as an intern, often you're a glorified administration assistant, and you don't really train to do that in medical school. A lot of the things that you do … you sort of have to learn on the job and they're*

very department and ward specific … there's lots of different processes that you need to learn quickly [D12, male].

DISCUSSION

This study provides a deeper understanding of the physical, mental, and social strategies junior doctors use to maintain their wellbeing. This is important to note as traditionally, the medical profession has placed an implicit expectation on its doctors to prioritise the needs of their patients above their own[1]. However, in recent times, there has been a growing spotlight on the wellbeing of junior doctors[2]. Adding to the current literature on junior doctor mental wellbeing, many of this study's participants attribute significant workplace stress to challenges inherent within the medical profession. This is consistent with the landmark Beyond Blue National Mental Health Survey which found that junior doctors suffer from greater rates of psychological distress and suicidal thoughts as they are particularly more vulnerable to poor mental health and burnout[2]. This focused on physical and social wellbeing of junior doctors, with these findings addressed an evident gap in the current literature.

Wellbeing strategies

This study demonstrated that eating a healthy diet with the use of meal-prepping, performing regular exercise, and creating a reliable support network were helpful for maintaining wellbeing. These strategies have not been documented in the literature previously but align with the established benefits of exercise and healthy eating for general wellbeing[12]. It was also found that participants felt that their work commitments were exhausting and stated that once they finished work, "all [they could] do is eat dinner and go to bed". However, all participants viewed spending time with friends and family as a positive factor in supporting their wellbeing. Junior doctors valued spending time with friends and family, particularly when they could simply spend time together without the pressure of work and have a chance to recover. Friends and family can also be support persons who junior doctors can confide in and debrief with. These findings support the 2016 study by Edington et al, as well as an AMA junior doctor health survey conducted in 2008, which revealed that spending time with family and/or friends was the predominant strategy (59.5%) utilised by participants to maintain their wellbeing[13, 14].

Self-monitoring is a key strategy identified in this study. This includes practicing mindfulness, debriefing with colleagues, prioritising, and compartmentalising work-related and personal tasks, and setting realistic expectations of what can be achieved in a shift. Junior doctors reported these strategies reduce feelings of overwhelm and elevates mindset, which improves mental wellbeing. This supports the findings of a Canadian study which determined that doctors who effectively self-monitor can preserve a work-life balance better than doctors who do not[15], and a German study which found that mindfulness and meditation reduced distress in healthcare workers[16]. It was noted that the junior doctors who reported these beneficial strategies had been using these strategies prior to being a junior doctor, including throughout medical school. This brings into question whether there is a correlation between wellbeing and wellbeing strategies prior to being a junior doctor including through medical school, and as a junior doctor. Future studies will need to explore this.

Barriers to wellbeing

This study builds upon existing research that has investigated the significant wellbeing barriers that exist for junior doctors. It was found that the hospital workplace was the single most common barrier to their wellbeing and ability to implement self-care strategies of junior doctors. It has been identified that over half (57.5%) of junior doctors in Australian hospitals have experienced bullying at work[17]. Some of the reasons identified for not reporting bullying by the participants include normalisation of this behaviour and fear of reprisal. Additionally, participants reported a perceived stigma surrounding mental health. These findings align with the Beyond Blue National Health Survey which reported 40.5% of junior doctors believe doctors with a history of mental health disorders were perceived as less competent by their peers and 44.8% believe many doctors feel that experiencing a mental health condition was a sign of weakness[2]. Although not reported by the participants of this study, it has been reported in the literature that a fear of reprisal is particularly evident in the context requiring referees for career progression, as is the perceived need to be seen to cope with the stress of being a doctor[17-19].

Constantly changing environments in each hospital department and the burden of the expectation of competence despite being new to the workforce, creates an environment in which junior doctors do not feel able to practice self-care throughout their shifts. Coupling this with intimidation from senior doctors generates fear of being ridiculed or looked down upon by their seniors. This is also evident regarding claiming overtime. Many junior doctors reported frequently working overtime but were afraid to claim overtime payment. A

Queensland study by Forbes et al. has suggested that up to 70% of overtime hours are not claimed by junior doctors, largely as a result of the perceived cultural expectations to not claim overtime[10]. The hours worked by junior doctors are poorly recorded, with the National Mental Health Survey of Doctors and Medical Students[2] reporting the average working hours for doctors aged 18 to 30 years was 49.8 hours despite full time work being defined as 40 hours. The survey also suggested that due to the under-claiming, this average is likely an underestimate[2].This means they are working without adequate pay, which can be demoralising and negatively impact one's wellbeing. Furthermore, working overtime reduces the time available to junior doctors to practice self-care. Other workplace barriers which this study identified include short notice changes to shifts, limited working hour flexibility, having undefined lunch breaks and a high workload environment are additional factors which adversely affect junior doctor wellbeing.

Participants reported a lack of guidance from universities in their transition towards starting work as a junior doctor, particularly in relation to the administrative processes of each department within the hospital. This was an unexpected finding given the extensive time students at Australian medical schools spend within hospitals throughout their degree. One participant noted that a student's preparedness for internship was more dependent on their own initiative in involving themselves in placement rather than the medical degree itself. Given the lack of literature about the transition from medical school to work in the hospital in Australia, further research is required to explore this gap and how the self-directed nature of university placement impacts the preparedness of junior doctors, and how universities may need to take more responsibility for student training in their clinical years.

Recommendations

There are several key recommendations arising from this study which are thought to be practical and implementable within hospitals. Firstly, junior doctors often feel lost, overwhelmed, and struggle to adapt to different departments due to being unfamiliar with the new workflow in the different teams, which contributes negatively to their wellbeing. Therefore, there should be a greater emphasis on a standardized orientation and informative induction process for each department in the hospital. Secondly, mandating the payment of overtime would improve junior doctor wellbeing as they would be getting appropriate renumeration for their work. Thirdly, mandatory workplace education programs could challenge the current culture that is present in hospitals and reduce the bullying and intimidation that junior doctors often face. Lastly, implement wellbeing promotion in the

workplace. This could include regular workshops for mindfulness techniques, having subsidies towards activities that promote wellbeing such as gym memberships, implementing facilities to aid in wellbeing such as bike racks and showers within hospitals, and forming a representative junior doctor society at each hospital which can report back to the hospital board. Additional long-term changes that would improve junior doctor wellbeing include public hospitals ensuring adequate staffing levels, safe rostering practices, and the development of a 'no blame' culture wherein junior doctors can seek support without judgement or fear of detriment to training opportunities and career progression.

Limitations

There were several key limitations in this study. Firstly, many of the participants were working within the South-East Queensland metropolitan area with only a handful having any rural hospital experience. There are a unique set of barriers towards wellbeing strategies that are found for those who work rurally, such as being socially isolated and having limited accessibility to resources that could be implemented into wellbeing strategies, such as gyms. Secondly, the interviews were conducted online due to social distancing requirements during the COVID-19 pandemic. This did not seem to have a significant impact on the results, although doing in-person interviews would have been preferred as it may have created a more personal and dynamic experience for the participants. However, online interviews allowed a greater range of participants, including those who were interstate working within different healthcare systems. Finally, this study is inherently subject to a degree of volunteer bias as participants of this study are more likely to be passionate about self-care and wellbeing, resulting in a generally healthier sample. There was no disclosure of suicidal thoughts, self-prescribing medications or seeking professional support from the participants.

CONCLUSION

The multifaceted variables that contribute to an individual's wellbeing makes it difficult to provide a solution for all individuals and workplaces, however it is hoped this study can help build towards greater wellbeing for junior doctors. Understanding the strategies junior doctors utilise to maintain their mental, physical, and social wellbeing is a critical step in the development of effective wellbeing interventions. It is well established that poor self-care among doctors ultimately translates to poor patient outcomes. Thus, it is not only in the

interests of doctors but also their patients to better understand self-care strategies and their role in maintaining the wellbeing of junior doctors.

AUTHOR CONTRIBUTIONS

Conceptualisation - MH, SYL, CC, HZ, SJ, DT, GN, EB; methodology MH, SYL, CC, HZ, SJ, DT, GN, EB; data collection MH, SYL, CC, HZ, SJ, DT, GN; data analysis MH, SYL, CC, HZ, SJ, DT, GN, EB; writing (original draft preparation) MH, SYL, CC, HZ, SJ, DT, GN; writing (review and editing) - MH, CC, DT, EB; supervision - EB. All authors have read and agreed to the published version of the manuscript.

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COMPETING INTERESTS

The authors declare that they have no competing interests.

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DATA AVAILABILITY STATEMENT

All data relevant to the study are included in the article.

ETHICS APPROVAL

This study obtained Griffith University Ethics Approval (GU Ref No: 2020/557).

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Standards for Reporting Qualitative Research (SRQR)*

http://www.equator-network.org/reporting-guidelines/srqr/

	Page/line no(s).
Title and abstract	
Title - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended	1
Abstract - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions	2
Introduction	
Problem formulation - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement	2 - 3
Purpose or research question - Purpose of the study and specific objectives or questions	3
Methods	
Qualitative approach and research paradigm - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**	4-5
Researcher characteristics and reflexivity - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability	4
Context - Setting/site and salient contextual factors; rationale**	4
Sampling strategy - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**	4
Ethical issues pertaining to human subjects - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues	5
Data collection methods - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**	5

Data collection instruments and technologies - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	4
Units of study - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	4-5
Data processing - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	5
Data analysis - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale**	5
Techniques to enhance trustworthiness - Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale**	NA

Results/findings

Synthesis and interpretation - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	6 - 14
Links to empirical data - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	6 - 14

Discussion

Integration with prior work, implications, transferability, and contribution(s) to the field - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	14 - 16
Limitations - Trustworthiness and limitations of findings	16

Other

Conflicts of interest - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	17
Funding - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	17

*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research.

**The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

Reference:

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014
DOI: 10.1097/ACM.0000000000000388