

In my time: A qualitative exploration of the junior doctor experience in Singapore over the years

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ABSTRACT

Introduction: Despite efforts to improve junior doctors' working conditions, burnout, distress and disillusionment persist, with implications for patient outcomes. This qualitative study analysed factors shaping the lived experiences of junior doctors in Singapore and their changes over time, thereby seeking to inform improvements to working conditions.

Method: Thirty purposively sampled respondents who were junior doctors in Singapore between 1975 and 2022 were interviewed. Respondents were grouped into 3 cohorts: (1) junior, (2) middle and (3) senior. Employing the framework method of qualitative analysis, open coding was performed with reference to the individual, interpersonal, institutional, community and policy levels of the socioecological model (SEM).

Four themes emerged: (1) inherent challenges of junior doctorship, (2) exacerbating factors, (3) alleviating factors and (4) responses of junior doctors to their experiences. Codes were reconstructed into a modified SEM, demonstrating trickle-down effects of interpersonal or structural forces on the individual doctor and pertinent factors evolving with time.

Results: Across cohorts, respondents echoed mental and physical challenges. While senior cohort doctors recounted higher patient-to-doctor ratios and longer working hours, junior cohort doctors cited new difficulties. These include a hostile medicolegal landscape, patients' increasingly complex needs and expectations, and higher administrative loads. Amid these difficulties, alleviating factors included good workplace relationships alongside institutional interventions. Doctors responded differently to their challenges. Some externalised difficulties through expression and advocacy; others internalised them, whether into fulfilment or distress.

Conclusion: While some facets of junior doctorship have improved with time, new challenges that warrant consideration are emerging. Junior doctors should be centred, listened to and empowered in shaping improvements to working conditions.

Keywords: burnout, junior doctors, medical education, mental health, qualitative research

CLINICAL IMPACT

What is New

- To the best of the authors' knowledge, this exploratory qualitative study is the first to examine the lived experiences of junior doctors in Singapore over several decades.
- Findings demonstrate factors in the junior doctor experience that have impacted junior doctors in Singapore from the 1980s to the present day.

Clinical Implications

- Through first-hand accounts from doctors themselves, this study lends deep insight to policymakers and senior management seeking to improve the experiences of junior doctors in Singapore, with notable downstream effects on patient safety.

INTRODUCTION

Junior doctor well-being is a prominent global issue.¹ Navigating the formative years of a career requiring expertise and high-stakes decisions, junior doctors are challenged considerably. These pressures impact patient outcomes and workforce retention.¹ Despite interventions intended to improve working conditions,² distress and disillusionment prevail.¹ COVID-19 spotlighted these concerns in the public eye.³ However, in the post-COVID era, junior doctor well-being remains under-addressed.⁴

Junior doctors in Singapore include house officers (recently-graduated doctors serving their year-long housemanship) and medical officers (either undergoing initial years of training in residency or non-specialty tracks, or rotating every 6 months via the national Medical Officer Posting Exercise).⁵ To pay subsidised tuition fees, graduates from local medical schools are

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bonded to the public healthcare system for 4–5 years following housemanship.⁶

Previous local studies have quantified junior doctor well-being and stress via survey instruments.^{2,7-9} These addressed specific contexts including COVID-19,⁹ individual specialties⁷ and institutions.² Recent qualitative study examines junior doctors' experiences in Singapore's public healthcare system¹⁰ via a priori framework concerning job demands and satisfaction. Singapore's healthcare landscape, cultural perceptions and institutional frameworks have evolved significantly.¹¹ Thus far, no local studies have explored junior doctors' experiences open-endedly across time.

This qualitative study aims to analyse the factors shaping the junior doctor experience in Singapore and their changes over time. It interprets junior doctors' experiences in their own words, capturing the interplay of environmental and individual forces. It also seeks to elicit variables promoting well-being or distress in Singapore's junior doctors, exploring how and why these have evolved. Through this, the aim of this study is to encourage systemic change towards a more conducive environment for junior doctors, thereby improving patient safety.

METHOD

This qualitative study comprised semi-structured interviews with doctors who graduated from 1980 to 2021 and became junior doctors in Singapore's public healthcare system thereafter. This study was approved by the National University of Singapore Institutional Review Board (2022-248) and reported according to the 2014 Standards for Reporting Qualitative Research.¹²

Theoretical approach

The framework method of qualitative analysis was adopted, which was formalised in 1994¹³ and has since been widely used in health research.¹⁴ This method was chosen because it allowed both a data-driven (inductive) and theory-driven (deductive) analytical approach.¹⁴

Our starting point was the socioecological model (SEM) first described by Bronfenbrenner in 1979.¹⁵ Widely featured in public health research, the SEM influences health interventions and demonstrates reciprocal relationships between individuals and environments.¹⁶ The interview guide was designed to centre on the lived experiences of junior doctors, and having respondents walk through their junior doctorship.

Our team comprised junior doctors and medical students. Cognisant of possibly prioritising our own narratives over participants, this risk was mitigated through regularly discussing the authors' relationships with the data, with close oversight from the principal

investigator, a senior clinician-educator. Simultaneously, identifying with this study afforded a critical lens for data collection and analysis.

Participant recruitment, data collection and data processing

Inclusion criteria required participants to be over 21 years old and to have worked as a junior doctor in Singapore's public healthcare system between 1975 and 2022. For recruitment, a junior doctor was defined as a house officer or medical officer. During interviews, participants could self-define "junior doctor."

Employing purposive sampling, participants were recruited online through a form circulated via the Singapore Medical Association. Forty responses were received, among which 9 respondents were subsequently uncontactable and 1 withdrew, leaving 30 participants. The participants were grouped into 3 time-based cohorts that reflect significant policy changes in Singapore's healthcare system: (1) senior cohort (1980–1999 graduates), (2) middle cohort (2000–2014 graduates) and (3) junior cohort (2015–2021 graduates). Policy changes that were considered included healthcare digitisation in the early 2000s, as well as duty hour mandates and the revision of remuneration in the mid-2010s.

Online interviews were conducted by 4 team members between September and November 2022. Verbal consent was sought in lieu of written consent, and interviewees could disable their video feeds for privacy. Study team members were briefed to identify signs of participant distress and alert the principal investigator if needed; participants were reminded of their ability to withdraw at any time. Interviews were audio-recorded, anonymised, and then transcribed using artificial intelligence (AI). AI-generated transcripts were manually corrected and proofread by medical student volunteers with direct reference to audio recordings. Participants were reimbursed with a SGD20 shopping voucher.

Data analysis

Our coding approach was both deductive and inductive. The layers of the SEM (from individual to policy) formed the skeleton of a coding frame, with an additional category representing factors that evolved over time. Open coding¹⁷ was performed by 5 team members and key codes were categorised into the coding frame skeleton. The coding frame was iteratively revised through discussion to resolve any inter-coder disagreement before consolidating overarching themes and generating a modified SEM. Thematic saturation was assessed through iterative team discussions regarding the emergence of new themes within each cohort. There was consensus

that code saturation had been achieved within each cohort, with no new meaningful codes generated after 11, 11 and 8 interviews within the senior, middle and junior cohorts, respectively.¹⁸ Thus, no additional participants were recruited.

RESULTS

Among the 30 participants interviewed, 11, 11 and 8 doctors were from the senior, middle and junior cohorts, respectively. Participant characteristics are presented in Supplementary Appendix S1. Across all cohorts, most respondents worked in tertiary care, although 4 middle cohort doctors practised in primary care. Most senior cohort doctors were senior consultants who had experience in both private and

public institutions; most middle cohort doctors were consultants, with a few resident physicians. Most junior cohort doctors were either medical officers or residents, with one locum.

System differences across generations

Participants surfaced key differences in junior doctors' work from day-to-day responsibilities to the broader sociocultural climate. These were corroborated with secondary sources^{19,20} and summarised in Fig. 1.

Key themes elicited were (1) the junior doctor experience as inherently challenging, (2) exacerbating factors, (3) alleviating factors and (4) responses of junior doctors to their experiences. These themes are discussed sequentially.

Fig. 1. Data gathered from interviews and secondary sources about the objective working conditions in each cohort of doctors' respective experiences.

1970s ————— 2000s ————— 2020s —————>			
	Senior cohort	Middle cohort	Junior cohort
On-call system	30 to 36-hour call system - No restriction to number of calls per month, reports of up to 11 calls per month	- Majority 30 to 36-hour call system - Maximum of 8 calls per month	- Majority 30-hour call system - Minority with 24-hour call system or night float system - Between 4–8 calls per month
Day-to-day duties	Significant time spent on ward-based procedures (e.g. venepuncture, cannula setting)	Mix of administrative work (physical and digital) and ward-based procedures (e.g. venepuncture, cannula setting)	Significant time spent on digital documentation and patient/family communication
Patient load (day time)	Generally 20–40 patients per junior doctor during day time	Generally 10–20 patients per junior doctor during day time, but at times up to 30–40 patients	
Health records	Physical case notes	Mix of physical and electronic health records	Majority electronic health records
Supervision	Expected to perform complex procedures under minimal supervision (e.g. chest tube insertion, lumbar puncture)		Close supervision required for procedures; less experience with complex or uncommon procedures
Specialist training and career options	- BST versus (vs) AST system - Most non-specialist trainees would opt for general practice	- Transition towards residency system - Introduction of alternative career options to general practice vs specialist training (e.g. resident physician track)	- Residency system - Introduction of further alternative career options (e.g. hospital clinician scheme)
Medical decision-making	More paternalistic model of medicine	Shared decision-making with increasing health literacy	
Goals/priorities	- Professional development - Skill acquisition	Professional development, often directed towards selection for residency	- Work-life balance - Professional development, directed towards varied career end-points
Milestones	1978: Introduction of bond for doctors¹⁹ 1980s: Work-to-rule collective action (anecdotal) 1987: MOH Holdings established¹⁹ 1990s: Doctors paid for calls (anecdotal)	2000s: More nurses accredited for ward-based procedures²⁰ 2003: SARS 2000s–2010s: Transition to electronic medical records 2010s–2020s: Rise of blogs/social media	2010s–2020s: Rise of social media accounts 2019–2021: COVID-19 pandemic

AST: Advanced Specialist Training; BST: Basic Specialist Training; MOH: Ministry of Health; SARS: severe acute respiratory syndrome

Table 1. The junior doctor experience as inherently challenging.

Layer of modified SEM	Sub-theme	Quote
Individual Impression of work as a junior doctor	Perceived role as a junior doctor	“I think my role was largely to make sure all the changes were done. [...] Keep patients alive as much as we could. Keep relatives happy and the patients happy.” – Participant M7, middle cohort
		“The way I thought about it is that we are the workhorse and we are the buffers. Anything, we will try to, you know, take as much as possible, and just let a few things get escalated.” – Participant M8, middle cohort
Interpersonal Impact of relationships on self	Navigating hierarchy	“The thing about [being a] junior doctor is that you’re constrained by being junior. So a lot of times, plans from seniors, you don’t really agree [...] it’s not best practice; but a lot of times [we just] sort it out, just do it because the senior says so. Then there is a feeling of powerlessness, I guess, because you’re still beholden to the powers above you.” – Participant J8, junior cohort
		“Just because, you know, ‘I’m a registrar or consultant, I say this, therefore, just shut up and do it.’ I think that was one of the hardest for me to deal with because they can be wrong, right?” – Participant M3, middle cohort
		“Housemanship is a very arbitrary construct. You were at the bottom of the food chain.” – Participant S5, senior cohort
Individual Impression of work as a junior doctor	Steep learning curve	“On call, sometimes the MO (medical officer) is busy, the reg (registrar) is away, you can’t possibly call the consultant [...] you are really alone to make a decision. And you do not know enough, you do not know if this is within your role, is this really expected of you. Sometimes that’s really tough.” – Participant M4, Middle Cohort
		“One of the first realisations as a houseman is that you realise a lot of stuff that you learned in medical school didn’t really equip you for the day to day working as a doctor.” – Participant S6, senior cohort
		“[As a medical officer], I felt at least I needed to be a little bit more independent in decision-making, which would be different from being a house officer, where there was always a medical officer to turn to and say, ‘I don’t know what to do.’” – Participant S7, senior cohort
Individual Impression of work as a junior doctor	High stakes; reckoning with mistakes and limitations	“I guess the first low point was my first patient [who] died. That was really quite a terrible experience after up till now it’s still in my mind; I still have his name in my mind, I still know exactly what happened I know which ward, which bed [...] the first death is what you will never forget.” – Participant S3, senior cohort
		“Well, I think the main thing that made it traumatic was first of all [...] you actually were dealing with medicine. You are dealing with people in pain, you’re dealing [with] people who are, you know, who are frightened and they were worried. You’re dealing with some children who, you knew were terminal, and you know, the pain and, and it’s really there in front of you.” – Participant S6, senior cohort
		“There’s also difficulty when, when you make certain mistakes and the consequences [...] hopefully they don’t have lasting impact, but some of them do. And trying to learn from that and move on is sometimes can be, can be a struggle. Yeah, because it can potentially be like something that comes back to haunt you, you know, if a similar situation comes up.” – Participant J7, junior cohort
		“[Things feel] a bit futile at times. [...] When a patient [accumulates] a certain cluster of comorbidities, or they have a certain social circumstance tied in with those comorbidities, no matter what you do for them—and you can give them the correct treatment... y’all do everything correctly, evidence-based, and you get them well and out the hospital... but within a few weeks [or] a month or so, you probably see them back in the hospital again.” – Participant J7, junior cohort
Individual–institutional Physical and mental demands of being a junior doctor	Fatigue and stress	“Ahhh, the mental stress, I suppose, and the physical stress. I have friends who are on calls they get migraines and vomiting in the toilets. [...] You’re so tired, you haven’t eaten, you haven’t peed, you haven’t showered, you haven’t brushed your teeth. But you just have to keep going because there’s this whole list of things that needs to be done.” – Participant M6, middle cohort

Table 1. The junior doctor experience as inherently challenging. (Cont’d)

Layer of modified SEM	Sub-theme	Quote
		I think by the time you get to about 12[pm] to 2[pm], 12[pm] to 3[pm], that’s the time when it’s like a big struggle to stay awake. And that’s when a lot of mistakes happen [...] But there’re pharmacists also counter checking your work. So that’s a bit of a safeguard. And of course, the nurses will also look through the meds and make sure that it makes sense for the plan. – Participant J7, junior cohort
Individual–institutional Physical and mental demands of being a junior doctor	Impact on patient care	“If you’re rushed, you’re just thinking about the next thing that needs to be done, the next thing that’s waiting for you are the next call that’s going to come and all that [...] Whereas if you really have that time to sit and talk, [and] just spend that time interacting [with that] patient or that family member, then yeah, it makes a big difference. Yeah.” – Participant M11, middle cohort The whole year I was just on survival mode. [...] It’s a shame because I feel that your housemanship year [is] actually a very good opportunity for you to learn to relearn a lot of basics, [because in medical school, you never] really fully grasp all these concepts [like] clerking a patient and doing all the procedures until you are forced to do it, especially at night, but it’s a pity because the schedule was back then it was so packed that I didn’t feel like I had time to really sit down and reflect on my cases to learn.” – Participant M9, middle cohort
Individual–institutional Relationships outside of work	Sacrifice and compromise	“Hardly ever saw anybody because we were doing 1 in 3 [calls]. So as I used to say, no social life for the duration of the traineeship.” – Participant S4, senior cohort “Family? I think I’m non-existent to them.” – Participant M4, middle cohort “I mean, in that period of time, I got married as well. So it’s like that. I remember what my boss told me at that time, ‘Okay, you’re great, you got a 1-week honeymoon, take any more time and I’ll have to cancel your posting.’ He was kidding of course, but that having been said, it was a rule that in a posting the most you can get off is 1 week.” – Participant S2, senior cohort

SEM: socioecological model

Theme 1. The junior doctor experience as inherently challenging.

Table 1 summarises key quotations from participants about inherent difficulties to being a junior doctor. Across cohorts, participants described challenges arising from their duties and perceived role in the healthcare team. Duties were largely ward-based: attending ward rounds, performing bedside procedures, documenting progress and communicating with families and other professionals. To most, their responsibilities were to execute plans (referred to as “doing changes”) and minimise escalation to seniors. Some described administrative duties as “not very meaningful,” while others lamented following orders they sometimes disagreed with.

On the flipside of this hierarchy lay another inherent challenge of junior doctoring—the steep learning curve. Key milestones included transitioning from student to house officer, and then to medical officer. Several participants across cohorts recounted feeling underprepared for their roles. Often, distress arose when participants had to function alone, whether due to emergencies or barriers in reaching seniors for help—real or perceived. Exacerbating these were the high stakes of medical decision-making, the narrow margin for error and the emotional intensity of the job.

One last challenge partially inherent to junior doctoring was its physical and mental demands. Long working hours and on-call duties were oft-cited stressors. Some respondents cited how fatigue compromised patient care and safety. Many participants described spending their junior doctor years in “survival mode” and making various “sacrifice[s].” Participants recognised that rigour was necessary for them to learn; simultaneously, some considered its extent unwarranted.

Theme 2. Exacerbating factors that made the junior doctor experience more challenging.

Table 2 details key interview excerpts regarding factors compounding the inherent challenges at work. Several participants raised concerns about manpower and patient loads, describing workplaces as running at or over capacity. Acknowledging recent institutional efforts to improve working conditions, participants observed barriers or gaps in implementation, including institution-to-institution variations and entrenched workplace norms.

Another issue, especially among middle and junior cohort doctors, was the heavy administrative load which some found disproportionately high compared to overseas. Alongside this were grievances concerning inefficiencies of the electronic medical records system.

Table 2. Exacerbating factors that made the junior doctor experience more challenging.

Layer of modified SEM	Sub-theme	Quote
Institutional Operational factors in healthcare institutions	Manpower, patient load and running at capacity	"It was very, very stressful. When someone was on leave, you're either pre-call, post-call or on call. So you're constantly doing calls." – Participant S10, senior cohort
		"Interviewer: With that doctor–patient ratio, did you have the bandwidth and the time to treat [your patients] as well as you wanted to? Respondent: Unfortunately, the answer [...] is no. You're just busy trying to settle your urgent changes. And like I always have to say, save one sinking <i>sampan</i> (Malay word for rowboat) at a time. It perpetually felt like things were on fire and you just had to put out the fire one at a time." – Participant M9, middle cohort
		"When I was studying overseas, in [the] UK, discharge issues [weren't] that common. I mean, patients wanted to go back home; that was the aim. [Here, a] lot of patients don't want to go back home, they are either home alone, or they don't have the support at home [...] The waiting time for like nursing homes, community hospitals is very long [...] which makes it difficult for junior doctors to try and offload the admissions and the patients in the hospital." – Participant J1, junior cohort
		"Sometimes I feel like [patients] just need someone to talk to. A lot of them keep coming in for, you know, 'I have pain in my back, I have pain in my back, I have pain in my back.' But everyone just says, 'okay, X-ray's normal, X-ray's normal, MRI is normal.' [...] But there must be a reason why they keep obsessing over it. [...] [In internal medicine,] every complaint has an origin, but [doctors] don't have enough time to address every single one of them. Because sometimes we have 20 patients [to round]. You can't spend that much time speaking to them. You know, it's tough, it's tough. Another issue is when you also get a text saying, 'bed occupancy rates is 120%, please discharge patients.' Which is like, how are you supposed to deal with that?" – Participant J3, junior cohort
		"I felt like maybe the media or the ministry itself portrayed that it was a COVID-related surge that caused a break in the healthcare system. But I mean, those of us who were in the system before, I think many colleagues could testify that it was already overflowing before. [...] Maybe not, not breaking yet, but there was close to overload before. Not entirely new to COVID [but] COVID probably did push it over the edge at the end." – Participant J2, junior cohort
Policy System-level rules and workflows	Unenforced policy	"Although <redacted: national employer of junior doctors> now is trying to get doctors to not see new patients after 24 hours, meaning to say we can work for like 30 hours but like the 6 [hours] past 24 hours we shouldn't be seeing any new patients according to the latest <redacted: employer> guidelines if I'm not wrong. [But] I think due to manpower shortages [...] most of the time, I mean like 90–95% of the time, we still have to run clinics or be in [the operating theatre] post-call [...] If you [were to] try and enforce [24-hour calls instead of 30-hour calls] with a lack of manpower on the ground, then the person that ultimately suffers is the patient. Let's say I go post-call sharp at 8 am sharp, then there's not enough MOs to provide coverage. See, then yeah, ultimately [it's] the patient's care that will be compromised." – Participant J5, junior cohort
		"Every clinic in [my list] right now [...] So, two o'clock is first appointment. 2:05 is the next one. Third appointment's 2:05. Fourth appointment's 2:05. Fifth appointment is 2:10. So [multiple] appointments are 2:05 to 2:10. Does that mean each patient gets less than 2 minutes?" – Participant J3, junior cohort
		"The culture of each hospital, the workload is all very different. And I feel like <redacted: national employer of junior doctors> as an overarching, organisational body, I felt like they were very ill equipped to deal with the differences." – Participant M9, middle cohort
		"But I think that there are a lot of so-called cultural things that in the practice of medicine, in the hospitals. So for example, the rounding before your MO, and rounding before your registrar, preparing those team lists, exiting late, making sure you finish all the changes before you go. I think those are cultural things." – Participant M5, middle cohort

Table 2. Exacerbating factors that made the junior doctor experience more challenging. (Cont'd)

Layer of modified SEM	Sub-theme	Quote
		"[As a resident, we were supposed to] log in hours, honestly, and of course, unsurprisingly, when I log in my hours, it always exceeded, there was always an alert because I always exceeded. So in the end, what happened was instead of the residency, so instead of coming to find out, you know, why am I reaching my hours all the time, this is a thing that should be looked into, things like that, they basically just told me to lie about my working hours, they told me to not log in more than what would exceed the hours you see. So I told her I was logging in my honest hours, and they just didn't care. They just asked me to not more than x number of, regardless of the true working hours." – Participant M10, middle cohort
Institutional Operational factors in healthcare institutions	Administrative load of junior doctors	"When I was meeting fellow junior doctors from other countries, they were allowed to do much more from what our local doctors are allowed to do. [What Singaporean doctors do instead], a lot of it is administrative work, isn't it? Like ordering medicine, taking history, organising scan, all those things are actually not, not very meaningful, learning wise. You'd be probably better if you spent that time learning how to do procedures under supervision." – Participant M5, middle cohort
		"Our healthcare system is very reliant on the compliance and the confidence of our medical profession. Yeah. So, for example, if let's say an operating theatre needs to be closed, and there are already patients there: in the UK, what happens is that there's a clerk who will rearrange everything. Slot the patient elsewhere, rearrange the anaesthesia review, financial counselling, and all that. In Singapore, you don't have that. Everything is up to the doctor." – Participant J4, junior cohort
		"I'm not trying to say we are damn great and do what, but it's like, you go through 5 years or 6 of med school and train, and then you end up filling forms and taking bloods, which can be taught in one day and you can start working you know? Some of my classmates, to earn extra money, they become phlebotomists on the weekend and you actually earn more than an on-call houseman." – Participant S11, senior cohort
Policy System-level rules and workflows	Electronic medical records	"The huge benefit of the computer system is that it brings information with it, but that is also its downfall, because there's so much information to sift through and to look through that sometimes that can make things even more complicated than it really is.... How did we even come up with 'pre-clerking'? [It's] because we have to go to the computer system to pick up all the information. [...] And because there are so many computer systems nowadays, this like, you have to look through every single one." – Participant J7, junior cohort
		"Can you see how inefficient it is? And unfortunately, I have to say the poor junior officers have to bear [the brunt of this] inefficiency [...] And who has put this in place? [...] They spend thousands and thousands and thousands, hundred thousands or millions of dollars on all these IT systems which sometimes crash or they're on maintenance. You know, and then who has to scramble? The poor junior doctor [...] But all the IT that I've seen. They don't work in favour of the doctor. [...] In fact, this comment by a medical officer recently, she said, you know, it's faster to handwrite when the system was down [...] This was just recently, I can tell you, a few months ago, because the system was under maintenance. How can you have a system that [is] under maintenance from five o'clock in the morning to one o'clock?" – Participant S7, senior cohort
Society/community Scope and nature of medical practice	Increasing complexity	"Globally speaking, we're talking about ageing population, much more elderly, much more complex, both medically [and] socially as well [...] [People have] smaller families, no caregiver, heavily dependent on foreign worker, which may or may not work out. [There are] long queues for nursing homes because there's no caregiver available. [...] Very often, [families are] asking the medical team to play a coordinating role in this and it can be very difficult to tie all these <inaudible> together into one plan." – Participant J6, junior cohort
		"The treatments are a lot more complex. For example, you only had sulfonylureas, metformin and insulins back then. There's no DPP4, there were no SGLT[-2 inhibitor]s, for example. There's no acarbose even, for diabetes, so the complexity in terms of drug decision making, in terms of the interactions, in terms of the complexity of choosing the right treatment, among the panoply of options, has gone up tremendously." – Participant S9, senior cohort

Table 2. Exacerbating factors that made the junior doctor experience more challenging. (Cont'd)

Layer of modified SEM	Sub-theme	Quote
		"We are doing a lot more than what we could do [previously]. The scope of medicine has expanded, things that used to be done in certain limited locations are expanded. For example, polyclinics have an ultrasound, where it was used to be only a tertiary hospital thing. We can do a lot more lab tests than what we did [before]..." – Participant M4, middle cohort
Society/community Patients and families	Expectations and attitudes	"But nowadays, you know, it's, it's never so straightforward. I mean, sometimes, yes, there are still family members who have implicit trust with the healthcare system and don't really question anything. But more [often] what actually happens is that there's a lot more questioning, nitpicking, I guess. Yeah. And, and Dr. Google always wants to have a say in these situations." – Participant J7, junior cohort
		"The workplace is increasingly hostile in terms of interactions with patients." – Participant S9, senior cohort
		"In my first week [...] I was told by the patient [that they would] report me to SMC, they were going to stop me, they were going to report me to Zaobao (local Mandarin newspaper). [...] When I was an MO (medical officer), [...] there was this patient's family who was very unreasonable. [...] They somehow got my private phone number, [and were] calling me at weird hours of the day. [...] I think they posed as a doctor and got my phone number. They were just calling me at all times of the day to try and scold me, and they wanted really unreasonable things. Like they wanted the on-call doctor to come and give their patient a foot massage. Like 11 plus, 12 plus at night." – Participant M8, middle cohort
		"I am a GP now and I do like to engage my patients. [But] some patients actually can be quite combative. They can actually believe the videos or whatever that they see on the internet, which says things like, '10 things your doctor doesn't want you to know', you know, or 'your doctor is actually secretly trying to kill you', you know, that sort of thing." – Participant S11, senior cohort
Society/community Patients and families	Expectations and attitudes	"Updating families is probably one of the changes that does occupy most of the time. Each phone call depends on how the patient is, how critically ill they are. One phone call can take an average of half an hour. And also some families requested to be updated, like more family members request to be updated for the same patient. So that can take some time." – Participant J1, junior cohort
Society/community Scope and nature of medical practice	Defensive medicine	"The practice of medicine has become, definitely, more defensive than [when] I first knew it. Everything is like because of medical, legal, [...] you can sue for anything now. Especially, I think it's just something that's imparted in from the (United) States, right. So definitely a lot more defensive than before. Therefore, that's why a lot of ancillary work has been done, like documentation, everybody is like running a lot of other things, tests additional stuff, just to make sure you don't miss out that 1%, that could come back and haunt you." – Participant M3, middle cohort
		"Sometimes patients suspected doctors are trying to make money and then the doctors are suspecting the patients are trying to sue them. So then it becomes a very unhealthy relationship." – Participant M7, middle cohort
		"Defensive medicine is not helpful to anyone, not to patients, to society, or public healthcare expenditure. [...] When these [medical lawsuits] become public, whether it's warranted or not, there's always a court of public opinion. So the media tends to publish the names of the doctors, everything, even before a conclusion has been made. And I think that's not good. [...] Yeah, our public healthcare expenditure is exploding." – Participant J4, junior cohort
		"I [spend] more time documenting, and I have to be a lot more careful when I document. [...] More time spent documenting means less time, for example, physically seeing the patient or compromising on time for the next patient, and things like that, especially in a clinic setting whereby we have to finish seeing the patients by a certain time." – Participant J5, junior cohort
		"The medical legal climate is very different. And I don't mind saying it's mainly because of the medical legal climate that I've decided to stop working." – Participant S7, senior cohort

Table 2. Exacerbating factors that made the junior doctor experience more challenging. (Cont’d)

Layer of modified SEM	Sub-theme	Quote
Interpersonal Impact of relationships on self	Workplace bullying	“We just get totally trashed by our registrar in particular... they were extremely, extremely, unreasonably demanding. [...] The registrar would expect, like absolute perfection for everything, even for things that shouldn’t matter. So for example, for the team list, that we print out for the team every morning, I remember once that she actually completely ripped the HO’s (house officer’s) apart, just because the lines—the columns that are outlining the boxes of the details on the team list—just because the lines were of different thickness. [...] Then the other things that they will pick on are like your seniors’ coffee orders, you know, the <i>kopi o kosong</i> (Singaporean term for black coffee) and everything for each person, every single coffee order, their breakfast order had to be, you know, perfectly done and listed. [...] The attacks became very personal... to a point where it’s not unusual to have vulgarities thrown at us. We not only [had] vulgarities thrown at us, but physical objects—we have the patient folders being thrown at us directly. And in the operating theatre, you have scalpels being thrown at you.”
		(In a later part of the same interview) “So [a mentor from a different department] actually tried to help me ask for help from my team senior but in the end what I got was more backlash, so I got bullied even more and got more crap thrown my way, and things got worse and eventually I couldn’t take it [...] I really couldn’t take it and at one of the exit rounds, I just went off to toilet and then I stole, before I went to the toilet I stole <redacted: medication> from drug stores and I tried to inject myself.” – Participant M10, middle cohort
		“[Redacted: department], I shall not name which hospital, wasn’t as friendly. Every day, every day I feel like we are taking an exam every day, we are afraid that the consultants would throw files at us and make us cry.” – Participant M4, middle cohort
		“But last time, generally there’s a lot of blaming culture on the junior doctors, because the seniors they always get away with their own—the consultants, not the reg—they get away of things, then they also don’t like to blame each other during the M&M (morbidity and mortality discussion), so every time it’s the fault, the slip-up will chunk all the MOs (medical officers) or sometimes the reg (registrar).” – Participant S11, senior cohort
Individual Policy relating to actual or anticipated career trajectory	Feeling trapped, sour or stagnant	“I thought that was the strength of the MOPEX (Medical Officer Posting Exercise) system in that every 6 months you can choose something else. So you can try you know radiology, psychiatry, anything that you choose. But it didn’t really work out in that sense, because a lot of the times you actually don’t really get what you chose.” – Participant J2, junior cohort
		“A lot of us feel that it’s very, that we feel that the bond is just to trap us in our system, for very practical reasons. Because they don’t want us to just get our full registration and leave and go [to the] private [sector], you see, they know that we will do that. [...] And it’s not, it doesn’t make sense that you know, that our local medical school fees are actually that expensive and governments are subsidising you. That was what we were told.” – Participant M10, middle cohort
		“It produces a lot of doctors that are quite sour. [...] The moment their bond ends, they leave.” – Participant S11, senior cohort
		“My year was the first year with a proper bond. [...] Some people felt there was like ‘slavery’ and so on. Because you know, not much, not that much pay compared to what you earn outside. And, of course, long hours and not being able to get or choose the postings that you want, and so on, so forth. So of course, it’s something that cuts both ways, your employment is guaranteed, but you have very little control over it.” – Participant S2, senior cohort
		“I think there are more options in terms of specialisation, but there’s also much more competition.... Because in old days, we wouldn’t write papers or participate in this kind of research, unless you are either a very senior MO trainee, or you’re a registrar.” – Participant S6, senior cohort
		“I was posted to <redacted: department> 3 times against my will.” – Participant M8, middle cohort

Table 2. Exacerbating factors that made the junior doctor experience more challenging. (Cont’d)

Layer of modified SEM	Sub-theme	Quote
Individual Policy relating to actual or anticipated career trajectory	Concerns about remuneration	“There were postings where I worked consecutively for 3 to 4 weekends, so that means like, I think the record was 27 days consecutively. Yeah so when you factor all those things together, then you realise, hey, you know, perhaps we should be a bit more fairly remunerated for our time. – Participant J4, junior cohort
		“You can’t even, you know, speak about stuff, if you’ve got a ridiculous mortgage. When I try to inspire younger people to say, “oh, do a bit of academic work, do teaching, do research...”, [They’d say], ‘sorry, I don’t have time or you know, I have to go private practice because my wife doesn’t work with 3 children.’ That’s astounding. That’s outrageous.” – Participant S5, senior cohort
		“It’s only when I started working then I realised for the amount of salary I’m getting and the pay, it’s really a pretty bad deal...and also [when] you compare to what your friends who are non-medical are making then the [disgruntlement] kind of comes in.” – Participant M9, middle cohort
Individual Impression of work as a junior doctor	International medical graduates’ experiences	“It took a lot to adjust to [the] Singapore hospital system. I mean, just I mean, just the fact that, you know, the computer system is totally new. And, you know, acronyms. Yeah, the way things are done, and [even] the patient demographic is so different. Right, right. And, yeah, I guess [the] culture as well.” – Participant J7, junior cohort
		“The patients are a lot sicker. There’s a lot more patients [...] [My experience overseas] was a breeze compared to what we’re doing here...” Participant M8, middle cohort

SEM: socioecological model

At a societal level, junior and middle cohort respondents described facing increasingly complex patient care, driven by an ageing population with multiple comorbidities alongside evolving caregiving norms. Treatment advancements further complicated clinical decision-making. Participants identified a shift towards shared decision-making, compounded by internet-driven public access to medical information. While beneficial, this demands effort in explaining medical decisions and combatting misinformation. Several participants even recounted “hostile” behaviours from patients and next-of-kin.

Hostility also came from colleagues, especially seniors. While hierarchy was unavoidable, abuse of this hierarchy led to distress. Anecdotes from senior and middle cohort doctors were harsher, ranging from verbal abuse to physical intimidation. For one respondent, severe workplace bullying contributed to an attempted suicide.

The last set of exacerbating factors concerned careers and finances. Several participants described feeling trapped by their bond or pushed into departments they were uninterested in through the medical officer posting system. Concerns surfaced regarding remuneration amid rising living costs and increasingly competitive specialist training. Additionally, overseas-trained doctors highlighted difficulties transitioning to work in Singapore.

Theme 3. Alleviating and protective factors that improved the junior doctor experience.

Table 3 details factors that ameliorated the difficulties that participants encountered as junior doctors. Many participants found motivation in witnessing patient recovery, expressions of gratitude or meaningful interactions. Participants appreciated having room to learn from mistakes and grow in clinical competence. Some drew spiritual meaning from their work, while others found support from loved ones or hobbies.

Camaraderie among junior doctors was a common source of strength, with shared struggles cementing lasting friendships. Support from supervisors, nurses and allied health staff was also frequently mentioned. Nurturing seniors were a critical protective factor. Notably, these accounts came more frequently from senior and middle cohorts.

At the institution and policy levels, many participants expressed satisfaction with simply using employment entitlements: taking leave, having feedback considered, or leaving punctually post-call. However, several participants qualified that these entitlements were not guaranteed or varied between departments. Some participants in formal training programmes appreciated departmental efforts to prioritise their learning. Others shared how their department’s discretion or concern benefited them. In contrast,

Table 3. Alleviating factors that improved the junior doctor experience.

Layer of modified SEM	Sub-theme	Quote
Individual Impression of work as a junior doctor	Successfully treating patients or contributing to their care	“Actually seeing your patients going home, especially the ones you’ve been taking care of for some time, like 1 month plus... You, you sort of see them facing issue after issue [...] When you finally get to discharge them back home or to some other disposition, it is quite rewarding and fulfilling. And sometimes you can just see the gratitude that patients do express.” – Participant J1, junior cohort
		“You know, when they come in, they’re like, oh, ‘I’m so sick’ [and they’re] delirious. [...] Then on the day of discharge, they are inviting you to go for a beer. [...] These are things which are fulfilling and things that I look forward to.” – Participant J7, junior cohort
		“That was fulfilling: that you were actually able to do something that was actually positive for patient care. You picked up the pneumo[thorax], then you ask your MO, you set the chest tube—there’s a sense of achievement when setting a chest tube. Yeah, you picked up the pneumo and saved this guy from like, having a worsening tension pneumo right. So I thought that was really, really helpful.” – Participant S9, senior cohort
		“Well, patient interaction. I always find it very satisfying when I empower patients with the knowledge of their own conditions, and help them down the patient journey.” – Participant J4, junior cohort
Individual Institutional development as a doctor	Growth and learning	“I guess it’s like, the idea that there was, there was growth, there was growth and development as a doctor. You came in as someone who’s basically, you know, supernumerary you weren’t terribly useful [...] and so and you can see yourself sort of developing [or] acquiring skills and acquiring some degree of clinical acumen. And I think that kept me going, in the sense that I could see that I was not the same person...” – Participant S6, senior cohort
		“I think for me [it] was the process of learning. As a junior, people will look out for you [or] they will check in on you, make sure you’re doing the right thing. And therefore, [I felt] safe to do things, to make mistakes.” – Participant M4, middle cohort
Individual Personal values, priorities and aspirations	Religion as a grounding force	“The biggest [thing that kept me going] was my faith. I’m a Christian, we believe that being called, being in [the] medical profession, it’s God’s calling, and that He would give me, God would give me the strength to be able to do what he wants me to do.” – Participant M4, middle cohort
		“What kept me going? Hmm...maybe also, like some of the writings, the writings of the Baha’u’llah kept me going like, you know, the betterment of the world can be accomplished through pure and goodly deeds, commendable and seemly conduct...” – Participant M7, middle cohort
Individual Impression of work as a junior doctor	Enjoying the (hard) work	“It sounds sadistic or whatever, but there was actually a lot of joy in working hard. You come out all ready to work hard, and they really make you work damn, damn hard. If all the hard work [had] been on more productive tasks, it would be even better.... Most of us don’t have problems working a bit hard when you need to, even though our mental health, everything, suffers a bit. But we do get the joy.” – Participant S11, senior cohort
		“Yeah, it was fun. It was fun. It was really fun. Yeah, a lot of procedures, accompanying patients to scans, accompanying patients to ICUs, is fun” – Participant M6, middle cohort
Interpersonal Healthcare team	Camaraderie	“What were my main motivators? I think, for me, it was a team like really, really the people around me. I was very affected by people around me. So I’ve had very good team[s], no matter what I knew we would get through this together because everybody was suffering. And we were all pulling the weight. So that really got me through one of the hardest postings.” – Participant M3, Middle Cohort
		It’s me versus 38 [patients] today, and, you know, the changes, everybody came in and helped me do changes. And it was good. So I think it’s yeah, the workload was horrible, but because everybody was working together, it wasn’t that bad.” – Participant M8, middle cohort

Table 3. Alleviating factors that improved the junior doctor experience. (Cont'd)

Layer of modified SEM	Sub-theme	Quote
Interpersonal Senior colleagues	Journeying alongside and mentoring junior colleagues	"I was very grateful that my MO stepped down and did some work. They clerked the case for me, [would] draw blood for me. And that really helped a lot, that I was not left alone to flounder. [...] That helped motivate me to say, 'Well, in order to be like them I need to get me to be as good as them, if not better.'" – Participant S3, senior cohort
		"(In a particular department), seniors focused a lot on our understanding, rather than just doing the work. I remember there were times where I made a wrong decision, [the] consultant would ask me, 'why did you do that?' [They] spent time to teach me [why] the decision wasn't so good. And because there was a lot of collaboration, the consultants would really listen to us during ward rounds; ward rounds [were] a discussion, rather than just following instructions." – Participant M4, middle cohort
		"The one that would that was a bit hard to enforce was the '1 in 7 rest days' (1 rest day every 7 days). Because [it] was actually sort of left to the teams [to enforce]. I know sometimes it was hard to get 1 day off in 7, but the registrars, to their credit, they tried to, they tried to give us that." – Participant J2, junior cohort
		"I remember this particular case [where] I actually couldn't figure out what was wrong with this patient [and] the patient didn't turn out so well. [By] the time the registrar was informed, she (the patient) was actually very, very ill. [...] [The registrar] had a private word with me [and] I never felt that I would be left on my own. [...] He actually worked out with me, [on] what we would say in the (morbidity and mortality) report." – Participant S7, senior cohort
		"Certain departments, the registrar will come around at 11 o'clock at night and say, let's all go out for supper. And we all go out into his car for supper. Yeah, but not every department [would] do that. Yeah. Yeah. And then now, I think the departments are too big. [...] I don't think that happens anymore." – Participant S7, senior cohort
Interpersonal Friends and family	Supportive presence of loved ones	"I really don't go home, but I feel, I mean I had a wonderful family who was very supportive of me, they message me, make sure I'm okay. I come home late and rush to work, I've always got a room to sleep in peacefully, very, very good support." – Participant M4, middle cohort
		"I guess the first thing I would say life outside of work? Even with less time but just whatever time you have with family and friends... I think that's what gets me going." – Participant J8, junior cohort
Institutional Employee and trainee management	Tangible measures to support learning, training and rest	"I will say my (residency) programme [is] quite good in terms of how they structured the postings, essentially making sure [...] we did most of our out-postings before our exams, to make sure that we got sufficient breadth of exposure before certain exams [...] and also making sure that the postings that we were in, like leading up to the exams, were ones that you can take leave in..."
		"(Later on in the same interview) The most helpful ones were things like, the extra off days that we got along the way. I think any time off is always very useful as a wellness initiative." – Participant M11, middle cohort
		"I think leave regulation was actually fairly well enforced. They did ask us to clear leave, which is pretty good. I think most, most people [didn't] get shortchanged for their leave." – Participant J2, junior cohort
		"[Some of] my rights will probably be to be able to go post call a certain time, I think that is generally quite well protected." – Participant M2, middle cohort
Institutional Employee and trainee management	Responding to needs and suggestions	"In particular, the good thing is that the Department of <redacted> is very—they do listen to us. If we do decide to suggest any changes, they're quite welcome to that." – Participant J1, junior cohort
		"After my first houseman posting at <redacted: hospital>, I actually requested for a lighter posting. Because I had some...my own medical problems. I had to see a psychiatrist and all that. And so <redacted: national junior doctor employer> was actually quite nice. They, they told me, yeah, let's try to give you a lighter posting. So they sent me to <redacted; hospital>, which is generally known to have lighter postings. And so that helped a lot. And I was very grateful for <redacted: national junior doctor employer> to do that." – Participant M7, middle cohort

Table 3. Alleviating factors that improved the junior doctor experience. (Cont’d)

Layer of modified SEM	Sub-theme	Quote
		“(As overseas medical graduates) But overall, I felt like we were taken care of. I mean, <redacted: national employer of junior doctors>. As a PGY-1 (post-graduate year 1 doctor), <redacted: national employer of junior doctors> did have like regular meetings, like I think at the 6th month mark and the end of the year, to sort of meet up with us, check up on us.” – Participant J1, junior cohort
Institutional Employee and trainee management	Accounts of historical management of junior doctors as trainees and employees	“When we were going to take our clinical exams, we had to arrange our own tutorials. So the training programme, the, well, the professor’s—the senior tutors, were not the ones who arranged these for us. We had to go and ask around. [...] So we had to go to the different hospitals, arrange all these sessions with them...” – Participant M1, middle cohort
		“I remember going down to the department one day before I was supposed to start work and sort of said, hello. And everybody said, well, okay, here you go. And then you [were] just tossed [into the] deep end [...] there was really no systematic kind of training programme for housemen. We were given the handbook of the department if you were lucky [...] the teaching was really very disorganised.” – Participant S6, senior cohort
		“And I guess, you know, at the time, there was not much welfare per se, you know, they didn’t think very much about how we will cope.” – Participant S10, senior cohort

SEM: socioecological model

senior cohort anecdotes revealed less institutional regard for junior doctors’ well-being or training.

Theme 4. Responses of junior doctors to their experiences.

Table 4 details the ways in which participants responded to their circumstances as junior doctors. Many respondents viewed junior doctorship as a rite of passage, which allowed them to develop requisite hard and soft skills. Despite the growth, most participants across cohorts agreed that the stress imposed was not completely warranted. A participant characterised this period as “one of the most traumatic experiences of my life”; many felt amazed that they managed to “survive”.

Respondents reacted in varied ways—some weathered the difficulties, others left their places of practice, and others escalated their concerns to authorities or vowed to improve things for their juniors. A notable minority suffered severe repercussions on their mental well-being.

Among the few respondents who expressed their concerns more openly, one ran a blog about their experiences; another recounted a 1980s work-to-rule collective action that preceded salary improvements; one wrote to the Ministry of Manpower and their employer regarding their contract; and another joined their Residents’ Welfare Committee. Among the respondents, some felt disillusionment about the possibility of change, including concerns around speaking out. In contrast, some individuals believed that coping with hardship was a personal prerogative.

Modified socioecological model (SEM)

A modified SEM was conceptualised (Fig. 2), encapsulating interconnected relationships between the individual level and interpersonal, institutional, community and policy levels. Instead of concentric circles, the modified SEM’s layers create a Venn diagram, with the individual layer in the middle. This centres the junior doctor’s lived experience and demonstrates trickle-down effects from other SEM layers. Furthermore, certain factors, which defy categorisation into a single layer, are situated between layers. The key factors within the SEM correspond with the salient sub-themes presented in Tables 1–4.

Encapsulating the modified SEM is a time period bubble highlighting how each junior doctor’s experience is situated within its unique time context.

DISCUSSION

Thematic analysis juxtaposed factors that worsened or improved the junior doctor experience, serving as a call to action to reduce exacerbating factors, enhance alleviating factors, and consider and mitigate inherent challenges. The modified SEM pinpoints the layers of stakeholders to engage in improving the junior doctor experience.

Comparisons between cohorts: Objectively different circumstances

Senior cohort experiences were characterised by long working hours, frequent overnight duties, heavy patient loads, minimal structured training or supervision and an entrenched culture that neglected well-

Table 4. Responses of junior doctors to their experiences.

Layer of modified SEM	Sub-theme	Quote
Individual Reflections on being a junior doctor	Rite of passage/formative experience	"You kind of have to go through that training to figure out what you want to do with your life" – Participant M2, middle cohort
		"But even if even if, let's say I went to HO (house officer) and then I left immediately after HO I just wouldn't feel confident in the private sector or doing locum." – Participant J2, junior cohort
		"I would say there will be some aspects [of being a junior doctor] that were not quite worth it. Yeah, but like some of the time pressure and some of the stress and all that, I would say [it was] not really worth it. But I would say overall, it's something that has helped me grow and helped me change and made me who I am." – Participant M11, middle cohort
		"I think it's made me who I am." – Participant J2, junior cohort
Individual Society/community Action and advocacy	Resolving to make things better/paying it forward	"Maybe some of it was necessary, otherwise, it wouldn't have been possible for you to make such a drastic transition in such a narrow; such a short period of time." – Participant S6, senior cohort
		"Even though the experience was very tough, I learned things from it. Like I learned how to care for patients in crunch. I know how to manage long patient lists. I know what kind of senior I don't want to be." – Participant M8, middle cohort
		"Just remember that, when your time comes to be on top, you think about your times and resolve to make it better for the next... rather than say, 'we went through it, so what's your problem?' That's not the way of looking at it." – Participant S2, senior cohort
		"I also hope that the juniors down the road, like you, right, would have a better experience... because sometimes I felt the environment was too discouraging [and] not helpful for personal growth." – Participant M7, middle cohort
Individual Reflections on being a junior doctor	Extent of difficulty encountered	"I always felt like I did it because I had no other choice [...] just because we went through it, does not justify, you know, perpetuating this toxic culture for the future generations." – Participant M9, middle cohort
		"I think it probably is one of most traumatic experiences of my life" – Participant S6, senior cohort
		"My classmate attempted suicide. She almost succeeded, if not for the fact that someone—she tried to off herself in the call room by injecting herself with [redacted: high-alert medication], it was only by sheer luck that one of our colleagues had to recover something from the call room, barged in and found her comatose and CPR her back and she survived. I'm not kidding." – Participant S9, senior cohort
		"I felt like I wasn't good enough to other house officers, I felt that I wasn't efficient enough. I wasn't as good at multitasking, you know. [...] It took me a very long while to realise that I'm not 100% fault-free for sure. But there were really a lot of things that went wrong with that posting in that department that were out of my control and that shouldn't [have] happened." – Participant M10, middle cohort
		"You know, not eating for like 12 hours, straight, things like that, it probably builds character. But again, I think you've got to make sure that it doesn't affect your welfare as well. Because I did come across other HOs who didn't take it so well. They do suffer from anxiety, depression. So it really depends... whether it's all worth it at the end." – Participant J1, junior cohort
		"I think it was just this sense of like how we're being exploited? The long hours, the low salary, just the stress of it all, the continuity. If you do this for 1 day a week, I think it's fine. But if you do it every single day without a proper break, it's really very taxing." – Participant M9, middle cohort

Table 4. Responses of junior doctors to their experiences. (Cont'd)

Layer of modified SEM	Sub-theme	Quote
Individual Institutional Relationship with one's place of practice	Leaving their places of practice	"I prefer the outpatient setting [...] even then I also chose to leave [...] Because the numbers were too overwhelming, the time given is too short, you can't really do a good job. [...] I found going into primary care in private practice so much more fulfilling because you really develop relationships with the patients." – Participant S8, senior cohort
		"There were also health reasons and [...] I actually asked to take no-pay leave, but that was not granted unfortunately. [...] And so I had to choose between like deteriorating health and continue to work versus breaking the bond. So after discussing with family and all that decided to go with breaking the bond." – Participant M7, middle cohort
		"Pull [factors] [were] like, I just have quite a lot of family overseas [...]. I think part of that is my own aspiration [...] that I always kind of wanted to do residency overseas." – Participant J2, junior cohort
		"So I have a few friends that did decide to leave for like private practice, or go to GP, family medicine, things like that. I think it is <inaudible> individual experience and interest. Some of them didn't get their first choice, so [they] decided to choose an alternative path. A lot of them also decided to start a family early on, and wanted more of their work life balance." – Participant J1, junior cohort
Individual Society/community Action and advocacy	Concrete actions taken by junior doctors	"Before us, we—I think the housemen, MOs (medical officers), didn't get any night duty allowances. But if you look back in the history, somewhere around the 80s, early-to-mid 80s, there was actually a small sort of a strike, small work-to-rule kind of thing over allowances, among other things, and after that, we got something like, I can't remember the sums, but we got paid for the first, like, 4 night calls, a certain amount..." – Participant S2, senior cohort
		"(Regarding a meeting with the manpower ministry that they managed to secure) It was actually an open meeting, I think people were actually talking about it. There were, I think 40 or 50 participants at the town hall. And I remember it was quite well received... that the nurses [were] there as well. [...] I think many doctors are not that keen to risk their residency or ruin their reputation in the eyes of the faculty. So I don't think it was very popular at the time to form a union among my friends, so we didn't, I didn't go [down] that route. I just went directly to <redacted: manpower ministry> as a concerned citizen." – Participant M5, middle cohort
		"I raised, like 10 or 13, points to HR (human resources) of <redacted: national employer of junior doctors> to, to ask them about all these things that are not mentioned in [our] employment contract, even though there are some resources on the MOM website that stipulate that these things need to be stated. So I think, I think we just discussed the shortcomings with <redacted: national employer of junior doctors> HR. And I think they gave a reply to all the points. And I'm not sure [whether] they looked into it after that, because, yeah, I remember after we, I think they revise the pay from time to time." – Participant M5, middle cohort
		"I used to blog when I was an MO. And the, it's very interesting because when I blogged it was during SARS and that time blogging and social media were quite non-existent... so I was the only local doctor blogging..." – Participant M1, middle cohort
		"I think only recently, with like social media becoming more influential, <redacted: national employer of junior doctors> is finally like, getting all this news from junior doctors about our welfare, especially like call systems and all that can be improved. Okay, I mean <redacted: national employer of junior doctors> did recently, I think last year, to try and improve our welfare. Like they did increase the call pay—but that's only a small amount of improvement that can be done. Yeah." – Participant J1, junior cohort
		"(Regarding experiences on the Residents' Welfare Committee) The only thing that did probably had to be escalated to <redacted: national employer of junior doctors>, [...] I think it was a bit about financial compensation when you're working on public holidays. So certain hospitals... wouldn't compensate you for coming back on a public holiday to work. But I think that that was brought up to the, this was in <redacted hospital>. So that was brought up to the Chief [of the] Medical Board. And I think they eventually discussed with [redacted: government ministry]. And they did agree to reimburse us, financially compensate us, if we do come back to work on a public holiday." – Participant J1, junior cohort

Table 4. Responses of junior doctors to their experiences. (Cont’d)

Layer of modified SEM	Sub-theme	Quote
		“They put me in a few other committees to look at junior doctor welfare, gave me a lot of free rein [with] what I want to do with junior doctors, and if I now put my foot down and say no, my MOs (medical officers) are not doing this, [the senior management] really don’t do this. [...] You need [a] junior doctor voice there to tell [the senior doctors] what the junior doctors actually need. I think <redacted: healthcare cluster> now has a junior doctor committee or something. Yeah. And I was looking at the list, right? A lot of them are quite senior people. Yeah, these people aren’t junior at all.” – Participant M8, middle cohort
Individual Policy Relationship towards policies and structures in place	Coping with the state of affairs	“The prevailing attitude then was that suck it up and stop whining.” – Participant S9, senior cohort
		“If you’re unhappy with something, you can’t really escalate it [...] There was a lot of ‘This is the way it is. You know, last time I had it worse,’ that kind of thing. So you just felt like you can’t really complain much.” – Participant M8, middle cohort
		“I don’t really feel that the policy level is going to help much honestly, because I think that we will always be overworked, there will always be work for junior doctors to do. Maybe it’s pessimistic [to think] we’re not going to change much even if there’s anything, any further welfare[related] policies implemented. But it’s more of individuals, how we cope with this work ourselves. The system is not designed to benefit individual doctors, more designed to keep the system going and rooted in many years or so called in tradition, that you know, junior doctors are supposed to bear the grunt of the work and so on.” – Participant J8, junior cohort

SEM: socioecological model

being. Moreover, 36-hour calls—up to 11 per month— or having 30 inpatients per doctor were common. In contrast, junior cohort doctors had relatively shorter working hours, fewer overnight duties and improved doctor-patient ratios. Call shifts were 24 or 30 hours long, usually 4–7 times per month; having to manage 30 inpatients day-to-day was not the norm. Middle cohort doctors were at a transition point: 36-hour calls were phased out, stricter regulations around off-days were implemented, structured training programmes were established, and electronic medical records were introduced. These experiences correlate with policies since the 2010s, including 80-hour-weekly limits, some institutions establishing night float systems,²¹ and the transition to electronic medical records from the early 2000s.

Although junior and middle cohort doctors generally experienced lighter absolute patient loads and hours, present-day conditions exert a significant toll on physical and mental well-being. Crucially, conditions remain poorer or only on par with international standards in high-income countries.²² For example, the Australian Medical Association’s 2016 National Code of Practice recommends that shifts be a maximum of 14 hours long.²³ Singapore’s 80-hour work limit mirrors the US,²⁴ and it is far from the 48-hour weekly limit in the UK, where resident doctors follow the European Working Time Directive by default.²⁵ While Singapore does not enforce protected rest time at work, both the UK and Australia

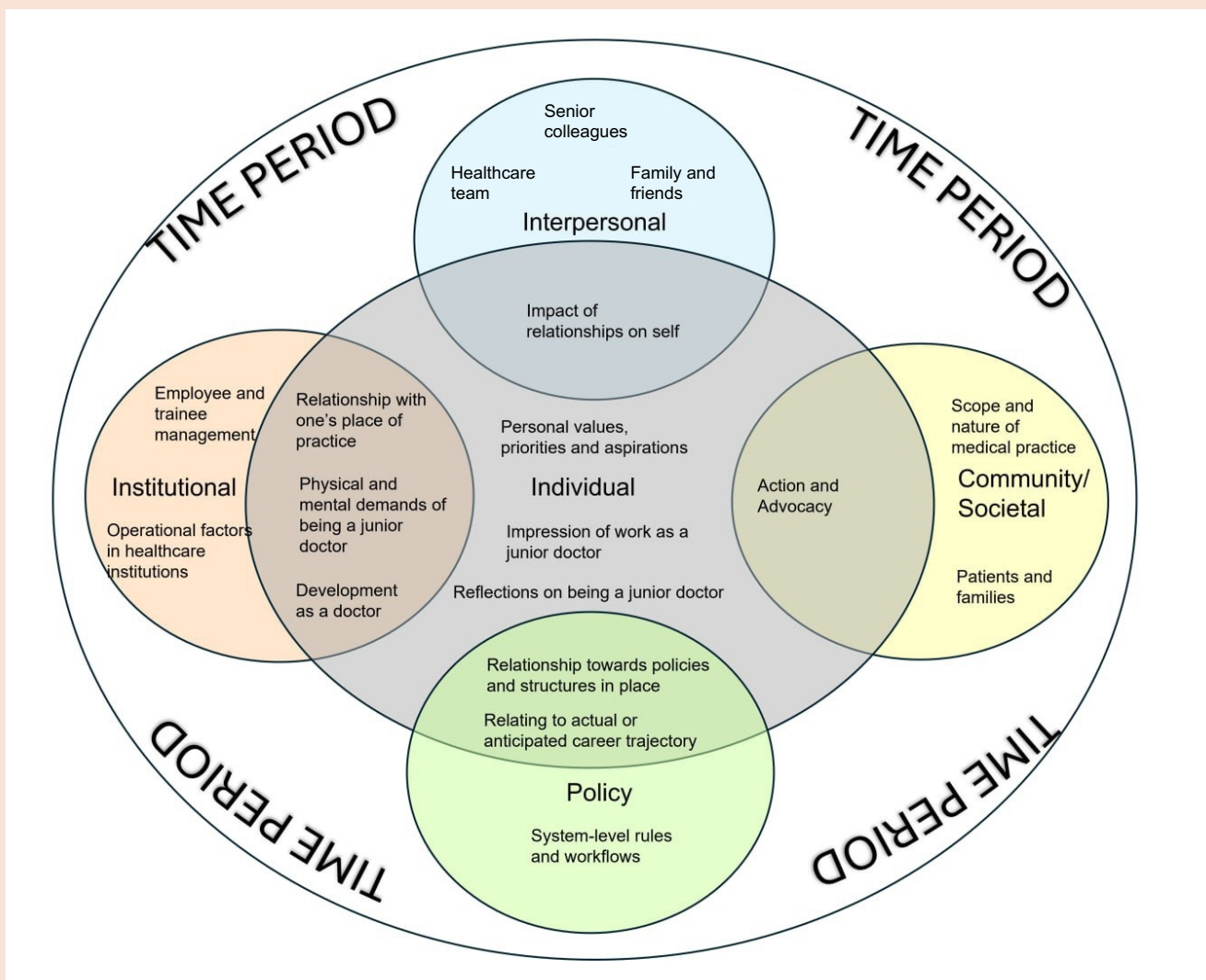
have explicit recommendations or requirements for rest.

For junior and middle cohort doctors, new challenges have emerged, such as healthcare digitisation,²⁶ a hostile medicolegal climate and defensive medicine,²⁷ increasingly complex medical care²⁸ and evolving patient expectations. Traditionally defined by a fear of malpractice litigation, defensive medicine encompasses “self-protective” decisions that physicians make, stemming from a “fear of patient dissatisfaction” or “overlooking a severe diagnosis”, among others.²⁹ Defensive medicine promotes unnecessary investigations, interventions and specialist referrals, alongside a tendency to avoid patients or procedures deemed riskier.³⁰ This trickles down to both patients and doctors alike: more tests need to be paid for (and interpreted), and more consultations must be attended (and documented). Many middle and junior cohort doctors recounted juggling extensive medical documentation while being sandwiched between the demands of both seniors and patients. Some also felt “trapped” in these circumstances by their 5-year bond, a feature unique to countries with mandatory service requirements like Singapore.

Comparisons between cohorts: Subjectively similar experiences

It is this interplay of improvements, setbacks and the inherent challenges of junior doctorship that may have contributed to most respondents looking back

Fig. 2. Modified socioecological model (SEM) constructed as a Venn diagram.



"Time Period" denotes each junior doctor's experience within its unique time context.

at their experiences with similar sentiments despite different contexts. Distress pervaded all cohorts. Still, many felt fulfilled "coming out on the other side" of these years. Some doctors externalised this through writing or advocacy. Conversely, others internalised their distress, sometimes harming themselves—notably, 2 separate accounts of attempted suicide surfaced during our interviews. Junior doctors' distress warrants urgent action.

Efforts to improve the junior doctor experience

Significant steps have been taken to improve junior doctors' experiences in Singapore: workgroups have been established, remuneration has improved, and efforts are underway to reduce consecutive work hours. Simultaneously, doctors and students are increasingly advocating for themselves through various

platforms including social media. Our findings highlight the need to centre junior doctors in improving working conditions, empowering them to be involved without fear of penalisation.

This study raises several potential suggestions for local and international institutions. Workplaces should proactively foster relationships that support junior doctors, such as peer-to-peer, interprofessional and senior-to-junior support. Simultaneously, disruptive behaviour and abuse—whether from patients and next-of-kin or colleagues—should not be tolerated. Working hours and remuneration should match international gold standards; well-intentioned policies must be properly enforced. Institutions with overnight calls may consider alternative night-duty systems such as night floats. Careful watch must be kept on junior doctors' administrative burdens³¹ and on priori-

tising structured professional development for all. Within and outside the medical community, active efforts should be made to mitigate defensive medicine.

As echoed by many participants, improving junior doctors' experiences is not only a meaningful end in itself, but is crucial for patient safety through reducing attrition, burnout and errors.³² The economic costs of burnout have been quantified previously and should not be underestimated.³³ Amid disillusionment, many participants still found deep fulfilment from their work—this sense of purpose must be safeguarded.

Strengths, limitations and future research

The merit of this study lies in its ability to delve deep into the lived experiences of current and former junior doctors across generations in Singapore. This study captures evolving challenges that may be missed in single-time-point studies. While these findings may not be entirely generalisable to an international audience, a key strength is precisely the specificity of the analysis to Singapore's junior doctors.

This study has limitations. AI transcription may have compromised accuracy, which was mitigated through manual proofreading. While purposive sampling enabled exploration of experiences across cohorts, hindsight bias in the senior cohort may be present, further amplified by its smaller size. Future studies may consider recruiting more senior participants. Given the shared backgrounds of participants with the study team, reflexivity bias and social desirability bias are worth considering. Reflexivity bias was mitigated through inter-coder reflection, alongside consolidating and corroborating themes with objective data. Selection bias is another limitation, with certain profiles, such as those with advocacy interests or with distressing experiences more likely to self-select. Rather than representing a comprehensive scope of doctors in Singapore, this study forms the basis for future studies to evaluate junior doctors' experiences in specific domains identified from our qualitative inquiry.

Future research may explore solutions to emerging issues, from defensive medicine to healthcare digitisation. Studies with longer time horizons could also follow a fixed cohort of junior doctors via qualitative longitudinal research methods,³⁴ investigating the influence of evolving contextual factors across time.

CONCLUSION

This study uniquely demonstrates Singaporean junior doctors' experiences over the past decades. Despite material improvements to working conditions, further development is warranted. Emerging challenges

also call for thoughtful solutions that consider their implications for junior doctors.

Supplementary material

Appendix S1. Participant characteristics.

Ethics statement

This study was approved by the National University of Singapore Institutional Review Board (2022-248).

Declaration

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