

BMJ Open Exploring the psychological impact of working during COVID-19 on medical and nursing students: a qualitative study

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ABSTRACT

Objectives To identify the psychological impact of working during the COVID-19 pandemic on medical and nursing students' psychological well-being. To inform recommendations for the provision of future student well-being support.

Design An interpretative qualitative, semistructured interview study employing maximum variation sampling, snowball sampling and a thematic analysis.

Setting A large West Midlands (UK) university with medical and nursing undergraduate and postgraduate programmes. Study undertaken between January and May 2020.

Participants A purposive sample of eight medical (six women and two men) and seven nursing (all women) students who worked >2 weeks in a healthcare setting during the COVID-19 pandemic (from 1 March 2020 onwards).

Results Four core themes with corresponding subthemes were identified: (1) COVID-19 sources of distress—working conditions, exposure to suffering, death and dying, relationships and teams, individual inexperience and student identity, (2) negative impact on mental health and well-being—psychological and emotional distress, delayed distress, exhaustion, mental ill health, (3) protective factors from distress—access to support, environment, preparation and induction, recognition and reward, time for breaks and rest and (4) positive experiences and meaningful outcomes.

Conclusions Student pandemic deployment has had a significant negative impact on students' psychological well-being, as a result of demanding working conditions, unprecedented exposure to death and suffering and lack of preparation for new job roles. Universities and healthcare organisations must formally acknowledge this impact and provide well-being support for distressed students working in such challenging contexts. They must also establish more supportive and inclusive healthcare environments for medical and nursing students in future pandemic and postpandemic circumstances, through the implementation of support systems and adequate preparation.

INTRODUCTION

The COVID-19 pandemic has caused global disruption to health services since it was declared a public health emergency by the

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ No previous qualitative study has explored the psychological impact of working during COVID-19 on medical and nursing students in the UK.
- ⇒ Maximum variation sampling and snowball sampling concurrent to data collection ensured a diverse sample, enhancing the transferability of study findings.
- ⇒ The sample size of 15, including 13 female participants compared with 2 male participants, may limit transferability of this study particularly with regards to gender.
- ⇒ Semistructured interviews facilitated rich data collection concerning an in-depth exploration of participants' feelings and an iterative, concurrent thematic analysis enabled thorough refinement of themes.
- ⇒ One researcher (LG) is a medical student deployed to work during the pandemic; therefore, their experiences and student identity may bias data collection and analysis; however, the employment of patient and public involvement and engagement and inter-coder reliability reduce such bias.

WHO.^{1,2} The UK has suffered from two severe peaks in mortality cases,^{3–5} with the National Health Service (NHS) facing significant strain on its services.^{6,7} In response, tens of thousands of medical and nursing students were recruited to meet these demands,^{8–10} undertaking new roles in hospitals, general practices, care homes and the NHS 111 service.^{11,12}

In the UK, prepandemic studies report high rates of work-related psychological distress among healthcare workers (HCWs).^{13–15} Previously identified sources of distress, including work pressures and emotional demands,^{16,17} have been further exacerbated by COVID-19.^{18,19} Meanwhile, circumstances unique to the pandemic, such as inadequate personal protective equipment (PPE) and staff redeployment, present additional stressors.^{20–22}

Recent evidence identifies a significant negative impact of working during the pandemic on the psychological well-being of HCWs, including burn-out, anxiety and depression.^{23–26} Those working on the frontline with increased exposure to COVID-19 care and excessive patient deaths are at particular risk of psychological distress.^{18 27} One meta-analysis found 46% of HCWs experienced psychological distress during the pandemic, with higher rates of anxiety and depression reported among women and nurses.²⁸

As a result of unprecedented exposure to the suffering and death of patients from COVID-19, there is potential for HCWs to experience vicarious trauma,^{29–31} a psychological response following prolonged exposure to the trauma of others.³² Additionally, some HCWs may experience moral injury following difficult ethical decisions regarding resource allocation between COVID-19 patients,^{33 34} which violate an individual's moral values.³⁵ Subsequent distress puts individuals at greater risk of mental illness, including depression and post-traumatic stress disorder (PTSD).³⁶

Medical and nursing students are recognised to be at high risk of poor mental health under pre-pandemic circumstances,^{37–39} owing to rigorous academic requirements and early clinical exposure.⁴⁰ The nature of student pandemic deployment has the potential to cause significant psychological distress, additional to that experienced by HCWs.^{41–43} The lack of adequate preparation, coupled with undertaking new roles beyond their existing skill level,⁴⁴ leave students particularly vulnerable.⁴²

Current evidence is mostly limited to quantitative, cross-sectional methodologies,^{43 45–49} which fail to consider the multifactorial contexts in which psychological distress has manifested among medical and nursing students. There is an evident need for complementing qualitative research to understand student mental health experiences in greater depth.⁵⁰ To our knowledge, no previous study has qualitatively explored the psychological impact of working during the pandemic on medical and nursing students in the UK.

The continuation of the COVID-19 pandemic and return of healthcare students to clinical placements highlight the need for research on this topic. Identifying the nature of psychological distress is crucial in developing targeted support for medical and nursing students in pandemic and postpandemic environments. This qualitative study aimed to identify the psychological impact of working during the pandemic on medical and nursing students' mental health and well-being. This paper reports findings as part of a larger qualitative study exploring psychological distress and access to support in this population.

METHODS

Study design and setting

An interpretative qualitative study design employing semi-structured interviews and a thematic analysis to explore

Table 1 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
Students enrolled at the University of Birmingham.	Unable to give informed consent.
Worked or volunteered in a healthcare setting during the COVID-19 pandemic (from March 1 2020) for >2 weeks.	First year medical students and recently graduated doctors.
Medical students currently in years 2–5 (including intercalating students) or BNurs and MNurs nursing students currently in year 3, for the 2020/21 academic year.	First and second year BNurs or MNurs students and recently graduated nurses.
Speak fluent English.	

medical and nursing students' experiences of working during the COVID-19 pandemic. The study setting was a large West Midlands (UK) university with medical and nursing undergraduate and postgraduate programmes. This study was undertaken between January and May 2020.

Sampling and recruitment

We employed virtual recruitment methods, advertising study information in student Facebook groups and via student year group emails. Interested students responded to this advertisement by contacting the primary researcher for further information. They then received the participant information leaflet and returned the eligibility questionnaire via email.

The eligibility criteria for participants are found in [table 1](#).

Maximum variation sampling was employed to purposively sample participants with a range of characteristics: age, gender, ethnicity, healthcare course, year of study, job role(s) and healthcare setting(s) worked in. As interviews were conducted, participants were purposively sampled according to demographics under-represented in already interviewed participants.

At week 3 of recruitment, responses from nursing students were insufficient (five responses). Therefore, snowball sampling was conducted to recruit nursing student participants, whereby interviewed nursing students referred peers who matched the inclusion criteria.

Selected participants received a study invitation, interview details and consent form, which participants signed and returned electronically. Interviews were arranged at a time convenient to the participant. All participants were given the opportunity to ask questions before the interview.

To begin each interview, the researcher informed the participant about how their data would be used and received verbal consent. A risk assessment protocol was in place in the event of a participant disclosing intent to self-harm or suicidal ideation. At the end of each interview, the researcher asked about the participant's current

1. **Introduction and background**
 - ▶ Describe recruitment and motivations to work, job role, duration of work.
2. **Experience of working during the pandemic**
 - ▶ Describe training received and typical working day in the role (hours, tasks) and presence of COVID-19 in the workplace.
 - ▶ Explore experience of working in the new role, working environment and surrounding team.
3. **Psychological impact of working on well-being**
 - ▶ Explore the past and ongoing impact of the period of work on mental health and well-being.
 - ▶ Explore sources of distress/the nature of distressing experiences.
 - ▶ Explore the positive outcomes: what was enjoyable or gained from the experience.
4. **Well-being support accessed**
 - ▶ Explore how participants managed psychological distress and distressing situations in the workplace.
 - ▶ Explore the different types of informal and formal support (peers, colleagues, mentors, supervisors, managers, University, well-being services) provided and accessed.
 - ▶ Explore the response and perceived benefit of support accessed.
 - ▶ Explore the nature of what made support accessible and preferences for support.
 - ▶ Explore the barriers preventing participants from accessing support.
5. **Recommendations for improvement**
 - ▶ Explore recommendations for improvement surrounding the general experience and specifically the support received.

Figure 1 Interview topic guide.

well-being. Information signposting participants to well-being support was emailed before and after interview.

Data collection

An interview topic guide (figure 1) was developed with input from the patient and public involvement and engagement (PPIE) group, comprising an in-depth exploration of participants' experiences. Minor adaptations to the topic guide were informed by the first interviews conducted.⁵¹ The guide aimed to explore participants' experiences of working during the pandemic, including the psychological impact and well-being support accessed and recommended improvements to support.

One-to-one semistructured interviews were conducted by LG on Zoom Meeting and visually recorded with consent using the software's virtual recording function. Intercoder reliability (RR) reviewed the first transcripts and provided feedback for future interviews. Recordings were stored in an encrypted and password-protected folder on a secure server and deleted after transcription. Participant identifiable data (participant questionnaires and consent forms) were stored separately and securely in the same manner to protect participant confidentiality. A key, linking research data to participants' personal data, was stored separately.

Interviews were transcribed verbatim, with the anonymisation of data and removal of personally identifiable information.⁵² Fifteen participants were interviewed, at

which point data saturation was deemed to have been reached and recruitment stopped.⁵³

Data analysis

Transcripts were analysed using the Thematic Analysis framework of Braun and Clarke⁵⁴ with an inductive approach.⁵⁵ Data analysis was conducted concurrently alongside data collection, facilitating an iterative process⁵⁴ until data saturation was reached and no new relevant data were emerged.⁵⁶

LG analysed all transcripts independently using NVivo V.12 software, devising an initial coding framework, which was expanded and refined as new data were collected and analysed. RR undertook intercoder reliability, independently reviewing the coded transcripts, which strengthens the credibility of findings.^{57 58} Finalised codes were grouped into preliminary themes according to patterns identified by repeated code comparison. Routine meetings facilitated discussion between researchers regarding codes and negative cases.⁵⁹ The higher level themes identified by LG were discussed with RR and a final list of themes and subthemes was agreed on.⁶⁰ An audit trail has been provided, establishing analysis transparency and confirmability.⁵⁵ This study is reported in keeping with the consolidated criteria for reporting qualitative research.⁶¹

Patient and public involvement statement

A PPIE group consisting of three medical and two nursing students was formed following a call for participation on

social media; three students were known to the primary researcher prior to consultation. The group's input provided an insight into the diversity of student experiences and informed design improvements. The group was consulted via Zoom Meeting during study development and each member gave feedback on the protocol and topic guide. Group members assisted in publicising the study to peer groups on social media. Following data analysis, the group met again to discuss the findings and dissemination strategy to participants and linked communities.

Reflexivity

LG kept a reflective diary throughout the research process.⁶² Both researchers discussed and identified the potential for their respective backgrounds to influence data collection and analysis. LG is a female medical student who was recruited to work during the pandemic and, thus, has a personal stake in the research question and findings. This may have orientated the data collection and analysis stages. As interviewer, LG was acquainted with one participant prior to interview. RR is a female social scientist and qualitative methodologist with expertise in NHS workforce well-being and, therefore, orientated to explore work-related distress and access to support.

RESULTS

Fifteen interviews were conducted with eight medical and seven nursing students, between February and April 2021. The mean duration was 51 min (range: 34–89). The demographic characteristics of participants are described in table 2. Thematic analysis of the interview transcripts identified four core themes, with corresponding sub-themes:

1. *COVID-19 sources of distress*—working conditions including workload, low staffing levels and lack of PPE; exposure to suffering, death and dying; relationships and teams; individual inexperience and student identity.
2. *Negative impact on mental health and well-being*—psychological and emotional distress; delayed distress; exhaustion; mental ill health.
3. *Protective factors from distress*—access to support; environment; preparation and induction; recognition and reward; time for breaks and rest.
4. *Positive outcomes and meaningful experiences*—the learning opportunities presented and benefits of a work routine.

COVID-19 sources of distress

All participants described workplace contexts of a distressing nature. These sources of distress were consistent between medical and nursing students across all healthcare environments, despite the diversity of environments and job roles undertaken by participants.

Table 2 Participant characteristics

Participant characteristics	N=15(% frequency)
Sex (female)	13(86.7)
Age (years)	
19	1(6.7)
20	2(13.3)
21	7(46.7)
22	3(20)
23	2(13.3]
Ethnicity	
Asian	1(6.7)
Black	1(6.7)
Chinese	1(6.7)
Mixed Asian and White	1(6.7)
White British	11(73.3)
Course of study	
Medicine	8(53.3)
Child BNurs	4(26.7)
Adult BNurs	1(6.7)
Adult MNurs	2(13.3)
Year of study	
2	2(13.3)
3	9(60)
4	2(13.3)
5	2(13.3)
Job role	
Healthcare assistant	3(20)
Medical student assistant	2(13.3)
NHS 111 call handler	1(6.7)
Porter	1(6.7)
Student nurse (paid)	7(46.7)
Multiple	1(6.7)

NHS, National Health Service.

Working conditions

Workload

The most frequently reported sources of distress were demanding working conditions. The high workload, comprised of multiple tasks and the responsibility for several patients' care, led to participants feeling overwhelmed and compromised patient care, as this participant indicates:

I've just been given too much responsibility and something's happened and it's not been my fault, I've just been told to have twelve patients and it's like 'what am I doing?' (P11, female nursing student, paid student nurse).

One participant reported moral distress as a result of urgent tasks interrupting the respectful completion of last

offices (care given to a body after death) for a deceased patient:

I think that was quite emotionally difficult to deal with because you wanted to obviously respect that person and um [pause] give them like a decent sort of send-off and you couldn't really because like there were so many other buzzers going on, there were so many other jobs that you want—like needed to do. And it was just a bit— everything was just rushed, which I think is quite challenging (P8, female nursing student, paid student nurse).

Due to time pressures of meeting these excessive demands, participants felt unable to take breaks during a shift:

I deliberately like chose not to have breaks because I knew that it would mean that I would fall behind (P1, male medical student, HCA).

I just felt like [pause] I can't really because when there was like no other HCAs, it's like if someone needs something, what am I doing? Like do you know what I mean? I'm in like a break like—it was, yeah that felt like it was—it was quite, it was quite hard to take those breaks (P8, female nursing student, paid student nurse).

All participants reported working directly or indirectly with COVID-19 cases. Those at higher risk of exposure through close contact with COVID-positive patients and sick staff reported fears about the possibility of infection:

I was worried about catching COVID at work, um particularly when we were short-staffed and we had to have agency staff in, because some of them worked at like lots of different homes (P15, female medical student, HCA).

Low staffing levels

Insufficient staffing was another significant contributor to stress, further compounded by excessive workload. Diminishing personnel in the face of escalating pandemic demands placed greater responsibility on participants:

when I've been on the ward during COVID, like it's actually scary sometimes the amount of staff that there is, like there will literally be one nurse for 36 patients and it's just like that [pause] like how is that possible? (P11, female nursing student, paid student nurse).

there were quite a lot of shifts I was on that I was aware if I wasn't there and having my own patients and stuff they really, really would have struggled (P12, female nursing student, paid student nurse).

This depletion in resources created an overwhelmed system in which many participants reported feeling helpless due to the limits of care they could provide:

it just felt like you were sentencing them to death as soon as they came onto the ward because you knew as soon as they... were pushed through the door that we didn't have the equipment to be able to support them and that, you know, effectively we were just sentencing them to death because there was nothing we could do (P13, female medical student, HCA).

Lack of PPE

Alongside low staffing levels, many participants reported a severe lack of adequate PPE, particularly evident in the first wave, as these participants indicate:

we weren't wearing any PPE and we were getting quite exposed—we were maybe being more exposed than those who were on named COVID wards because we weren't wearing any like masks or anything (P2, female medical student, medical assistant).

it was a bit of a shock being like 'but I've been told in my training that I need this, I want to protect myself and my family from COVID, so why am I not being provided with the correct PPE?' ... and then not being supplied it the next day was a bit like 'hold on wait a minute, I'm only given an apron and gloves?' (P9, female nursing student, paid student nurse).

However, while many participants experienced depleted resources, a minority described well-resourced environments with adequate PPE and staffing levels, as this participant indicates:

if anything it was um a much more pleasant experience compared to previous placements because it was a lot quieter (P14, female nursing student, paid student nurse).

Exposure to suffering, death and dying

All participants described exposure to the suffering and death of patients and/or staff as a major source of distress. Several participants undertook roles involving the handling of dead bodies, including those of patients previously under their care. The following participant expressed the impact of portering the body of a patient they had previously met:

there was one time that I [pause] was pushing a patient to and from imaging and then [pause] like two, three days later I was pushing the same patient down to the morgue. So like I was— that, that was the one time that where like I got really upset by because I kind of knew the person (P4, female medical student, porter).

This experience of death was on an unprecedented scale, with patient deaths often a daily occurrence, as these participants highlight:

whilst on placement we do see death anyway, um but for it to be every day it was a bit of a shock, like 'oh

[obscenity], like it's actually happening, it's actually bad' (P5, male medical student, multiple jobs).

there was like a couple of weeks when there was a lot of our last offices that had to be done, you know, we were having like—there was one awful day where we had like six or seven in the morning (P8, female nursing student, paid student nurse)

Some participants reported distress following the death of colleagues who had contracted COVID-19. One participant experienced the death of their supervisor and the subsequent mourning of staff, which was a source of significant distress:

halfway through my placement he [supervisor] then died of COVID. So I was quite um [pause] in kind of a shock and quite hard to process that ... So then working with his colleagues on those other days were—particularly after the day that the news was um broken—was quite hard because they were still processing what had happened. So I—it was kind of almost like the reverse in that I was having to support them, rather than them supporting me on-on some occasions. So like um I had a senior member of staff breakdown and cry on me er in her office (P9, female nursing student, paid student nurse).

Relationships and teams

Another common theme was reported by participants related to poor relationships with colleagues. Participants described a difficulty to integrate into the healthcare team as a new, temporary member of staff, leading to feelings of exclusion:

some of them like didn't really talk to me much at all—um I would just like, you know, I would just not really feel as comfortable working with them (P1, male medical student, HCA).

there were definitely quite a lot of times, where I very much felt like [pause] the student who's there for eight weeks and [pause] they're sort of not gonna bother getting to know me properly (P12, female nursing student, paid student nurse).

Following the creation of new pandemic job roles, some participants raised the lack of staff preparation for recruited students as a source of misunderstanding and distress:

at first, um maybe for the first week, I felt very like sticking out like a sore thumb, like nobody really knew my name and because the role of medical assistant was new, nobody really knew what my job was (P2, female medical student, medical assistant)

sometimes they don't even know you're a med student, they just think you're just like, I don't know, like a physician associate or some kind of more advanced [laughs] member of staff (P6, female medical student, medical assistant).

Individual inexperience and student identity

For some participants, the lack of preparation and their inexperience as unqualified students created additional sources of distress when undertaking new job roles in unfamiliar environments:

they were very willing just to throw me straight in without kind of any preparation and I'd never stepped foot onto an intensive care unit before, I'd never seen a ventilated patient before, so it was—it was quite a big shock (P13, female medical student, HCA).

I think particularly the way I did things—and it was probably just because I was inexperienced—but I took a lot more time with the things that I did ... I would usually take a bit longer than everyone else um and then I would feel as though I was taking too much time (P1, male medical student, HCA).

Negative impact on mental health and well-being

All participants expressed that working during the pandemic had a negative impact on their mental health and well-being. The nature and extent of this impact varied between participants, with both acute and long-term distress reported.

Psychological and emotional distress

All participants experienced psychological and emotional distress as a result of exposure to sources of distress previously described. Many participants experienced such distress in relation to a traumatic or stressful incident, as highlighted by the following participant who received verbal abuse from a caller when working as an NHS 111 call handler:

Um so obviously getting that call was quite daunting and so like when I'd had that call from him, my heart was literally beating, I could feel the palpitations in my chest because it was so threatening and so horrible what he was saying (P3, female medical student, NHS 111 call handler).

The same participant noted how experiencing emotional distress, markedly anxiety, impacted on her confidence and led to worries about her future competence in the medical profession:

I think at the time, I found it really like difficult, like it made me really doubt myself, I was like 'this isn't that hard and then I'm going to train to be a doctor and if this—that if I'm finding this so hard and so anxiety-inducing, how am I going to be a doctor?' (P3, female medical student, NHS 111 call handler)

Seven participants reported outward signs of distress, both in and out of the workplace. This most commonly manifested as crying, as identified by this participant:

I'd sort of just go to the loo and just take ten minutes kind of thing just [pause] to sort of stop yourself crying or like I think there was a couple of times when like [pause] we were doing last offices I'd cry because

I'd just feel like I've just had enough now [laughs], this is just too sad (P8, female nursing student, paid student nurse).

During one interview, a participant began to cry when expressing the challenges she had faced while working during the pandemic:

I really don't want to cry [laughs]. I think just coming to the end of it and just having such a crazy end—[whispers] I don't want to cry. [Cries] I didn't think I was gonna cry, I'm trying to hold it in (P11, female nursing student, paid student nurse).

Delayed distress

Another common theme reported among participants was a delay between exposure to stressors and experiencing or recognising related psychological distress. This delay either lasted the length of a shift or was prolonged until after the entire working period.

Some participants described blocking their emotional response to distressing situations as a coping mechanism to continue working during a shift. This would then be followed by a release of emotions on returning home:

it sounds bad but throughout the rest of the shift you kind of move on from it and forget about it and—cos you deal with about 30 patients throughout the day and you just, you don't remember because you've got to remember these things for these patients. And I went home and just sat down and had a shower and then, then it hit me that—what I'd saw, what I'd heard (P7, female medical student, paid student nurse).

I think it was just like—you almost go like a little bit numb in a way, like it would never be till I got home that it sort of really hit me what had happened (P8, female nursing student, paid student nurse).

Other participants described a longer delay, with some only acknowledging their experiences as psychological distress for the first time during their interview. One participant expressed her continued detachment from the experience, which has delayed her from processing related psychological distress:

it was just this period of time in my life that feels [pause] that—so part of me kind of feels a bit disconnected from sometimes, like I forget that that was me, I forget that I did that... the best way I can describe it really is kind of disconnected from it and it just felt a bit like a dream, like that it's not real, it didn't really happen (P10, female nursing student, paid student nurse).

The same participant later noted that the continuation of the pandemic is a major factor preventing the full comprehension of her experience and its psychological impact:

we are still living through COVID and um [clears throat] so it still feels like we're in it, like I can't have

fully processed it yet because I don't think I will for a few years (P10, female nursing student, paid student nurse).

Similarly, the following participant described the necessity of emotional detachment amidst patient suffering and the pressures of the intensive care environment, leading to a few months' delay in feeling an emotional response:

I think people liken it to a war zone and it did genuinely feel what I imagine that to be like, um you know there just wasn't time to be emotional about it in the moment... I think that's why I had such a delayed emotional reaction to it, it was only kind of you know two, three months down the line that it all started coming back to me (P13, female medical student, HCA).

Exhaustion

Over half of participants reported experiencing exhaustion. Physical exhaustion related to long hours and manual tasks, coupled with the emotional exhaustion of witnessing patient suffering, impacted on participants' well-being:

it's physically draining as well as mentally draining being on placement (P7, female nursing student, paid student nurse).

I think exhausting is probably the word I'd use, um above anything, you know emotionally exhausting, physically exhausting. Um you know nursing shifts and kind of medical shifts are hard enough as it is, but then to add on the fact that you had, you know, four times as many patients, not enough staff, it—draining PPE, um I just—no matter how much sleep I got on my days off, I could not catch up with it and I'm still catching up with it now (P13, female medical student, HCA).

Mental ill health

For some participants, working during the pandemic contributed to, or, was the trigger for a decline in their mental health. The following participant described a deterioration in her mental health as a result of balancing course commitments alongside pandemic deployment:

I found myself didn't even want to—I didn't really want to speak to anyone, um having feelings and thoughts, quite intrusive thoughts to be fair. Um and it just got to a point where I was just sobbing and very, very low, um that one of my housemates kind of they—she really noticed a change in my behaviour (P7, female nursing student, paid student nurse).

One participant recollected her experience working in an overwhelmed intensive care unit, with four times the recommended bed capacity. She recalled one instance where she held a patient's hand while they struggled to breathe for over 30 min before passing away. Her experience triggered an episode of anxiety and depression,

compounded by flashbacks to distressing situations and the dying gasps of this patient:

I had quite a significant relapse with my depression and anxiety, um but a lot of it was surrounding flashbacks of what I'd seen in the ITU (P13, female medical student, HCA).

Suffering from mental illness and flashbacks has made her return to medical training and the clinical environment difficult, provoking further flashbacks:

I've been struggling with, you know, flashbacks to the patients I was seeing and you know emotionally not coping with death. Um and it's something that I've really struggled with this semester at placement because I've been seeing patients who aren't even particularly sick, but I've just been thinking the worst and kind of over-escalating it in my head because I've just been surrounded by so much death and hopelessness kind of within my previous hospital experience (P13, female medical student, HCA).

Protective factors from distress

All participants reported factors within and outside of the workplace, which prevented or minimised psychological distress. The most commonly reported protective factor was access to support, facilitated by an inclusive team culture. Many participants described feeling welcomed by staff and valued as an equal member of the healthcare team:

Um they were all very welcoming and really um lovely and they've—they all just opened me and embraced me with really open arms (P9, female nursing student, paid student nurse).

Um [pause] you know usually you find there's a massive divide between like the consultants and like the nursing staff, but like [pause] that completely changed, everyone was sort of on the same level playing field, er which was nice (P5, male medical student, multiple jobs).

Such inclusivity, in turn, created an environment in which participants felt able to access support:

I don't even know the right word for it – but it's just very inclusive and just very like supportive (P6, female medical student, medical assistant).

I always felt like there was the support there that I needed, that if I didn't know something they would—they would help me. In that respect I was still a student in that way and they-they understood that and they supported me (P14, female nursing student, paid student nurse).

Some participants expressed the benefits of taking time away from the working environment, either as shift breaks or days off. The ability to maintain a separation between work and home life allowed participants to rest

and reduced feelings of distress, as these participants highlight:

it was important to have those days off where you weren't—when you weren't at-at placement and you weren't thinking about it (P14, female nursing student, paid student nurse)

placement is placement, home is home—I've kind of separated that, which has been a big-big difference to me (P7, female nursing student, paid student nurse).

Preparation, in the form of job training and/or induction to the healthcare environment, was a significant protective factor from distress. This was particularly true for participants with less clinical experience, undertaking new and unfamiliar roles. One participant reported the benefit of shadowing colleagues before working independently:

when I started um I—I think for the first probably four or five shifts actually I was just shadowing someone else and that was really useful for me because I was kind of a bit worried that like I would be thrown in the deep end, but they were really like open with the fact that I could basically take as many like shadow sessions as I want (P1, male medical student, HCA).

However, it is important to note that many participants cited the limited utility of training provided, with some reporting a complete lack of preparation:

I kind of got there and I was like 'I don't know where I am, I don't know what I'm doing, um like it was definitely—I felt very unprepared (P12, female nursing student, paid student nurse)

they were very willing just to throw me straight in without kind of any preparation... I didn't even get training on kind of manual handling to prone the patients, I just sort of had to work it out myself [laughs] (P13, female medical student, HCA).

Positive outcomes and meaningful experiences

Although working during the pandemic had a significant negative impact on participants' psychological well-being, it is important to highlight that the majority of participants also expressed some form of positive outcome.

Many participants described the period of work, including its distressing contexts, as a unique learning opportunity:

I just found it really interesting and insightful experience. I'm glad I did it because I don't think I'll be um able to kind of do that stuff again (P4, female medical student, porter).

I think I learnt a lot about myself and learnt um how to deal with things as well. So I think it was very um [laughs] progressive in my own—um in my nursing career almost and developing the skills that I can now take from those and then learn and apply them to

when I'm qualified as well (P9, female nursing student, paid student nurse).

Similarly, some participants reflected on their enjoyment of the experience, citing a sense of satisfaction in feeling helpful at a time of crisis:

I still feel incredibly proud and like proud of myself... to have been part of that and have been able to help and provide a service during this time that was just crazy for, you know, everybody... I wouldn't change it for the world, you know, you can um, you can list the negatives until you're blue in the face sometimes, but at the end of the day, you know, I felt very needed and very wanted and um I felt like I was doing a good job (P10, female nursing student, paid student nurse).

A minority of participants expressed that despite experiencing some level of distress, pandemic work had a net positive impact on their psychological well-being, as indicated by the following participant:

I think on the whole I have really enjoyed like the process and I think it's had like a positive, a net positive on probably like my personal development as well, which includes like my psychological well-being (P6, female medical student, medical assistant).

Among these participants, the most significant contributor to a beneficial experience was the routine provided by regular work, during a period of global uncertainty and national lockdowns:

it felt really good to have something to get up for, something to do every day and keep me occupied (P2, female medical student, medical assistant).

it was quite nice being able to like actually keep busy and like have a job and go out of the house, like it felt quite, to me, like quite normal (P15, female medical student, HCA).

DISCUSSION

These findings indicate that working during the pandemic has had a significant negative impact on the psychological well-being of medical and nursing students. The pandemic has exacerbated previously evidenced sources of distress^{16 17} and presented new stressors, including demanding working conditions and exposure to excessive death and suffering. These experiences remained consistent across different healthcare environments and are in keeping with previous studies reporting on COVID-19 healthcare settings.^{18 22} While some students benefitted from positive outcomes, the nature and extent of distress reported by all participants definitively points to a net-negative psychological impact. These findings are the first to describe the experience of COVID-19-related psychological distress in the UK medical and nursing student populations deployed to work in clinical settings.

The study findings prompt the need for improvements to the support offered to students in order to mitigate the psychological impact of working in such contexts.

Experiences of psychological distress were shared by both medical and nursing students, despite the respective subpopulations working in a diverse range of roles and environments. This forms an important bridge between previous studies describing distress within deployed medical and nursing student populations independently,^{45–48} suggesting the student experience presents unique mental health challenges during pandemic work. Participants described numerous challenges, some of which have been previously hypothesised,^{42 44} including inexperience, inadequate training and exclusion from healthcare teams. These findings evidence the vulnerability of recruited students, in addition to that of all HCWs during the pandemic.

A recent cross-sectional study found that HCWs in greater contact with COVID-19 were two times as likely to suffer from anxiety and depression than those with no exposure.²⁷ This is reflected in the experiences of more extensive psychological distress among participants who witnessed excessive patient suffering and death following greater exposure to COVID-19. In these cases of increased exposure, some participants expressed an internal conflict regarding the division of labour between equally sick patients (and in some circumstances, recently deceased patients). This provides early evidence of moral injury subsequent to violated moral values and lack of student preparedness, as previously postulated.^{63 64} Moreover, psychological distress stemming from the repeated exposure to suffering also indicates the potential involvement of vicarious trauma within student experiences, as has recently been reported among front-line nurses.³⁰

The varied coping strategies employed by HCWs have been extensively investigated pre-pandemic,^{65–69} with limited recent exploration.^{47 70} Among these are maladaptive coping strategies, including self-blame, denial and self-distraction.^{65 66} A coping culture of 'getting on with it' has been recognised within healthcare,⁷¹ despite the association of internalised stress with emotional exhaustion.⁶⁸ One qualitative study reported medical students to favour inaction alongside active suppression of emotions when faced with distressing situations.⁶⁹ This preference to internalise emotions may explain the delay in psychological distress reported by over half of participants. Many participants reported similar emotional blocking strategies, whereby emotional responses and the actualisation of distress (such as crying) were actively delayed until after a shift. With participants describing experiences from different healthcare settings, this research speaks to a wider systemic culture in which emotions are concealed and expressed behind closed doors.

Our findings of emotional avoidance are of particular concern due to its association with burnout,⁶⁶ and recognition as a symptom of PTSD.⁷² The prolonged avoidance described by some participants, including a disconnection from the 'surreal' working experience, continues

to prevent students from processing and resolving lived trauma. This paints a worrying picture amidst reports of PTSD^{22 49 73 74} and mental illness^{23 24 27 28} in HCW populations during the pandemic. While some participants described a decline in their mental health, others reported shorter term distress. It is perhaps too early to label students' distress as a longer term condition, but students may experience future psychological distress and mental illness following the full comprehension of delayed distress.

The extensive nature of psychological distress highlights the urgent need for universities and healthcare organisations to formally recognise and personally acknowledge the psychological impact of pandemic deployment on their medical and nursing students. Many participants noted that they have received no personal communication of gratitude from their university, nor an acknowledgement of the potential harms from undertaking this work. The delayed experience of distress demonstrates the need for students to be actively supported in recognising the nature and extent of their distress.

Accessible, extended well-being support must complement this recognition. The unique position of recruited medical and nursing students as HCWs under the care of two different bodies, their university and clinical placement, places a joint responsibility on these respective institutions to support students with pandemic-related distress and in postpandemic placements. Recommendations regarding the nature and implementation of such support are discussed in greater depth in a second paper reporting on the same study population.

Universities must adopt a curriculum, which prepares their medical and nursing students for moral distress and death, particularly in the COVID-19 context of high mortality and suffering.³⁻⁵ Adequate preparation, fully informing HCWs of job challenges, has been shown to reduce the risk of mental health problems.³³ Furthermore, healthcare education should look to move away from reinforcing the ideals of individual resilience,⁷⁵ as this further stigmatises help seeking and promotes the internalisation of shame and negative emotions. Moreover, such curriculum changes can foster the recognition of psychological distress and empower students to seek appropriate well-being support.

Healthcare organisations employing medical and nursing students as HCWs or providing their clinical education have an important role in establishing supportive and inclusive work environments, both during the pandemic and beyond. Participants who felt adequately trained for their job role expressed a reduction in distress, which emphasises the need for supportive training. Healthcare organisations must implement comprehensive, extended training in place of the 1-day inductions frequently reported by participants. A WHO report on pandemic mental health considerations recommended healthcare teams to pair inexperienced HCWs with more experienced colleagues.² Such a system can adequately train-up students' skill set, integrate new

students and monitor safety procedures,² all of which are essential for students undertaking new roles in unfamiliar environments. Equally, healthcare teams must be prepared for incoming students and their respective competencies to further facilitate safe integration.⁷⁶

It is important to note that despite significant psychological distress, many participants expressed positive outcomes from their period of work. Participants enjoyed the chance to undertake new responsibilities and experience different areas of healthcare, with some even describing distressing situations (such as death) as learning opportunities. However, the sudden and unprecedented exposure to high volumes of death during the pandemic contrasts greatly to the incremental exposure usually provided in non-pandemic education.⁴² Consequently, this exposure is likely to have caused greater psychological harm than educational benefit. Some participants echoed the existing belief that pandemic student deployment is a moral obligation,⁷⁷ with this duty providing fulfilment for some and harmful pressures for others. Though student recruitment has helped to meet the demands of the COVID-19 crisis,⁸ our findings highlight an unjustifiable lack of preparedness and negative psychological impact.

Universities and healthcare organisations must adequately support and prepare students for working in future pandemic and postpandemic circumstances. With thousands of doctors and nurses planning to leave their professions following the pandemic,^{78 79} we must listen to and support medical and nursing students as our future NHS workforce. We recommend future research to investigate the psychological impact of pandemic work on medical and nursing students on a national level, accompanied by a long-term follow-up exploring the impact of delayed psychological distress and trauma in this population.

There are several limitations to this study. First, the small study sample includes 13 female participants compared with 2 male participants, neither of whom were nursing students. This also reflects the gender disparity in expression of interest (31 female students and 4 male students). Moreover, the medical and nursing student cohort of this study's university setting has a greater proportion of women than men. Nevertheless, the small sample size, gender imbalance and single university setting may limit the transferability of findings. Second, the researcher (LG) is a medical student deployed to work during the pandemic; therefore, her experiences and student identity have the potential to bias data collection and analysis. However, the employment of reflexivity, PPIE and analyst triangulation (RR) reduces this researcher bias.

CONCLUSION

The recruitment of medical and nursing students into new roles and healthcare environments during the COVID-19 pandemic has had a significant negative impact on students' psychological well-being. Sources of

distress included pressured working conditions, sudden exposure to high volumes of death and student's lack of preparation for the role. Participants reflected on the experience and nature of their psychological distress, with many reporting a delay in distress due to emotional avoidance strategies. The scale and extent of psychological impact calls for universities and healthcare organisations to formally acknowledge this impact on their student populations, with accessible well-being support actively provided for distressed students. Universities and clinical placements must work together to implement support systems for medical and nursing students in future pandemic and postpandemic environments. More needs to be done to establish supportive and inclusive work environments, in which students are adequately prepared and integrated into the healthcare team. This can be achieved through comprehensive training, step-wise inductions and supportive leadership from experienced staff. Healthcare education must introduce curriculum changes, which prepare students emotionally and practically for professional challenges and promote help-seeking behaviour for distress.

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