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ORIGINAL PAPER

Betwixt and between student and professional identities: UK medical students during COVID times

Kay Polidano[1] · Brianne Wenning[2] · Christian D. Mallen[3] · Lisa Dikomitis[4]. on behalf of the Q-COVID-19 Group

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Abstract

The COVID-19 pandemic lockdown in Spring 2020 brought about unprecedented disruption to medical education in the United Kingdom (UK). Medical students were encouraged to take up paid roles in the National Health Service to help with workforce shortages. This article explores medical students' views and experiences of the COVID-19 pandemic vis-à-vis their professional identity formation. Semi-structured interviews were conducted with 22 medical students from all five undergraduate years in one UK medical school, between April and June 2020. Three themes were generated: (1) disruption to medical education involving suspension of clinical placements, cancellation of assessments and ceremonial markers; (2) decision-making around joining the clinical workforce, decisions which were influenced by students' sense of professional obligation, perceived personal gains, and health and safety considerations; (3) experiences of working in clinical settings during the pandemic, including reflections about managing risks and challenges, learning on the job and becoming a better doctor. The findings provide evidence that the UK's first lockdown destabilised many medical students' expectations tied to their educational and career trajectory, requiring them to improvise to address gaps in learning and professional development. Taking on a paid healthcare role catapulted them into a liminal period, working in a space 'betwixt and between' a medical student and healthcare professional. This swift readjustment of roles and responsibilities accelerated their identity formation as 'future doctors'. Support for medical students around negotiating such dual role is important in present and future public health crises.

✉ Lisa Dikomitis
l.dikomitis@kent.ac.uk

[1] Department of Sociology, University of Malta, Msida, Malta

[2] Florence Nightingale Faculty of Nursing, Midwifery and Palliative Care, King's College London, London, UK

[3] School of Medicine, Keele University, Staffordshire, UK

[4] Centre for Health Services Studies and Kent and Medway Medical School, University of Kent, Canterbury, UK

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Background

In March 2020, the COVID-19 pandemic led to the first lockdown in the United Kingdom (UK). This had a significant impact on the education of medical students (Kinder and Harvey 2020). Traditional models of education, training and assessments were reshaped and transferred online at unseen speed. Clinical placements were also suspended, in line with the UK's Medical Schools Council (2020) recommendations. Concern has been expressed by medical educators about the educational and professional implications of this decision on current cohorts of UK medical students. Students missed out on valuable learning opportunities presented by the pandemic itself, such as crisis medicine, emergency preparedness, and communication in a context of fear and uncertainty (Anderson et al. 2020; Klasen et al. 2020).

UK medical schools rapidly adopted strategies to help address the urgent needs of the country's National Health Service (NHS), which was under considerable strain. Emergency arrangements were put in place for medical students to join the NHS workforce (Kinder and Harvey 2020). This included the recruitment of medical students into existing job roles, such as 'healthcare assistants' and 'nursing assistants' and the creation of new assistantship schemes in hospital settings (British Medical Association [BMA] 2020). The BMA expressed support for these schemes, whilst emphasising that medical students should not work beyond the limits of their competence (BMA 2020). Final year medical students graduated early and they were granted provisional registration with the General Medical Council (GMC). A new role was purposefully created to give these registered students the option to enter the Foundation programme early as Foundation Interim Year 1 (FiY1) doctors (GMC 2020a). Of the 7588 eligible medical students, 4662 (61.4%) took on an FiY1 post by July 2020 (GMC 2020b).

Various survey studies have been carried out with medical students worldwide on the pandemic's implications on medical education and training. Adapting to online education, changes to assessments, cancellation of placements, and becoming front-line healthcare workers, were among the challenges reported (Choi et al. 2020; Dost et al. 2020; Gallagher and Schleyer 2020; Olum et al. 2020). In this article, we build on this quantitative work by presenting the findings of a qualitative study conducted in the Spring of 2020, at the peak of the first lockdown. The research question we sought to address was: "What were the medical students' views and experiences of the COVID-19 pandemic in relation to their medical education and professional identity formation?"

We contextualise our findings within a theoretical framework of 'liminality' (Turner 1969; Bell 2021). This concept refers to a transitioning process between fixed points. It is an ambiguous state where 'liminal entities are neither here nor there; they are betwixt and between the positions assigned and arrayed by law,

custom, convention, and ceremonial' (Turner 1969). This concept, which was developed to make sense of rituals, has since been applied to a range of contemporary contexts (including COVID-19), characterised by uncertainty and ambivalence (Thomassen 2016; Bell 2021). Here, we argue that the series of events precipitated by the pandemic, particularly the UK's first lockdown, has led many medical students to navigate a state of 'in-betweeness', both in their medical education and professional development.

We focus on how operating in such liminal space impacted on the professional identity formation of medical students—that is how they come to *act, think,* and *feel* like physicians (Cruess et al. 2014). Various factors contribute to this identity formation, including transitional markers such as the white coat ceremony, first clinical placement, graduation, and significant 'firsts' (Monrouxe 2010; Lefroy et al. 2017); the rapidly adapted medical curriculum with its formal, informal and hidden aspects; and professional socialisation with peers, mentors and role models (Monrouxe 2010; Cruess et al. 2014). We investigate medical students' decision to take on a healthcare role (or not) during the COVID-19 pandemic vis-a-vis their professional identity as future physicians.

Methods

We adopted a qualitative research design, using semi-structured interviews, to gain an in-depth understanding of medical students' perspectives and experiences.

Sampling and recruitment

We recruited our participants from one UK medical school which offers a five-year Bachelor of Medicine and Bachelor of Surgery (MBChB) degree. This programme offers early clinical placements in primary and secondary care settings in Year 1 and 2, alongside teaching of biomedical, behavioural and social sciences, and clinical skills. Placements become more intensive from Year 3 onwards when more emphasis is placed on the acquisition of clinical knowledge and skills in a range of healthcare settings. To increase preparedness for the upcoming FY1, final-year students undergo a 25-week assistantship where they work alongside FY1 doctors in medicine and surgery, as well as 15 weeks in general practice. Another 5 weeks are spent in acute and critical care.

Initially, we approached medical students enrolled to all 5 years of the MBChB programme to ensure that a breadth of experiences is captured in our sample. For time efficiency, we relied on personal and professional networks, as well as utilised snowball sampling (Parker et al. 2019). Sampling became more purposeful as data collection progressed, to increase the sample's diversity (i.e., gender, age, living situation, year of study). The increased emphasis and time allocated to clinical placements in Years 3 to 5, and the pandemic's implications on these placements, motivated our decision to include a larger proportion of students from these upper-year groups into our sample. Recruitment was terminated when data

saturation was reached, that is when no new themes or subthemes emerged (Saunders et al. 2018).

Informed consent was initially obtained from all participants and later re-affirmed verbally at the beginning of each interview. Ethical approval was granted by Keele University's Faculty of Medicine and Health Sciences Research Ethics Committee (Ref. MH-200123). The study was conducted in accordance with the consolidated criteria for reporting qualitative research (COREQ) (Tong et al. 2007).

Research team

Our study was undertaken by a multidisciplinary research team comprised of a medical sociologist (KP), two anthropologists (BW, LD) and a general practitioner (CDM). All team members are both researchers and medical educators, who actively contribute to teaching and assessments in the MBChB degree.

Data collection

Interviews were carried out between April and June 2020, during the UK's first lockdown, by two social scientists (KP and LD). All interviews were conducted via an online platform of the participant's choice, and lasted between 20 and 48 min, with an average of 32 min. A topic guide was developed by medical educators, social scientists and clinicians. Questions were informed by: (1) literature about medical education during health crises, (2) ongoing experience of medical educators in the team and (3) rolling media coverage on COVID-19. The iterative design of qualitative studies allowed the topic guide to be refined during the data collection phase in light of emerging findings. Interviews were, with permission of the participants, audio-recorded, transcribed, pseudonymised and assigned unique study codes.

Data analysis

We applied a thematic analysis, which was an iterative and ongoing process throughout the study (Guest et al. 2012). The transcripts were first read in full to gain an overall perspective of the data. After a cycle of open coding by KP and LD, a preliminary coding scheme was developed, informed by the research question and emerging interpretation. This coding framework was subsequently refined and three overarching themes were developed. To add further depth and coherence to our interpretation, we later contextualised our findings in relation to relevant theoretical literature, in particular the concept of 'liminality' (Turner 1969). This theoretical orientation has not only helped to explicate the underlying processes behind our findings, but also to connect our study to an emerging body of literature about liminal identities in the COVID-19 pandemic, across a variety of contexts (Bell 2021; Atkinson et al. 2022; Cuervo et al. 2023).

Results

A total of 22 medical students from the 5 years of one MBChB programme were interviewed, namely: Year 1 (n = 2), Year 2 (n = 5), Year 3 (n = 3), Year 4 (n = 4), Year 5 (n = 8). Fifteen participants were female and seven were male, which reflects approximately the gender ratio of students enrolled in this medical school (61.5% female versus 38.5% male). Fourteen of 22 participants were working part-time in the NHS during the pandemic. Only three of these students held their posts prior to the onset of COVID-19. Nine students occupied healthcare/nursing/medical assistantship roles, while five final-year students took on FiY1 roles.

The three overarching themes we identified were:

1. Disruptions to medical education and training
2. Decision-making around joining the clinical workforce
3. Working in a clinical setting during the pandemic.

Disruptions to medical education and training

All medical students reflected on the impact that the pandemic and ensuing lockdown measures had on various aspects of their educational experience.

Clinical placements on hold

All medical students were disappointed and frustrated when clinical placements were abruptly cancelled at the start of the lockdown. However, students in the later years of their degree (Years 3–5) appeared to be more concerned over the implications this would have on their learning, including the missed opportunities to acquire new clinical skills and exposure to different clinical specialities. Below, two students, a first-year and a final-year, reflect on their missed placements:

> I believe that we did miss out on [some placements] after Easter, which is disappointing, but being it our first year, there's so much to time catch up, placement-wise, that's not my biggest concern. I'm not missing out on so much. I know there's lots of time to do it again [in the future]. (MS22, Year 1)

> I had to miss one of our acute medical placements, where we deal with quite sick patients. I always thought that that would be a placement to end the year on. I thought that would help me develop myself as a doctor and as a person […] Textbook reading was all that I could possibly do at the time. (MS20, Year 5)

Our data show that students tried to mitigate the losses of clinical placement in different ways; for instance, by practising clinical skills on family members or through working as an assistant during the pandemic:

> I felt like if I stepped out of the hospital environment and then go back into it in September […] it would be a big transition. So that's another reason why

> I decided to do it [take up the healthcare assistant role], to keep myself immersed in the hospital environment. (MS10, Year 3)

Cancelled assessments

Clinical exams were often perceived by students as a '*necessary evil'* (MS02, Year 2). The news that these were cancelled elicited ambivalent feelings of both relief and disappointment. For many non-final-year students, these exams served an educational purpose by allowing them to monitor their progress, whilst for final-year students, their last Objective Structured Clinical Examinations (OSCEs) engendered confidence in their transition to becoming a 'doctor':

> I was in two minds because there was a lot of joy that we didn't have to have the ordeal of [OSCE] exams. But it's kind of a necessary struggle so that we end up more confident when we do start working. […] It's kind of like the medical school saying that they trust you. It's like yes, mate, you can do it. (MS11, Year 5)

Passing this final assessment was described by fifth-year students as offering much-needed reassurance in the transition to their new identify—being a junior doctor. This was mainly by confirming their preparedness for practice, assessed against objective criteria set by the GMC, the professional regulator in the UK.

Missed markers

Final year medical students expressed a sense of loss when they reflected on the unanticipated ways in which their undergraduate medical education came to an abrupt end. Key ceremonial markers such as electives, final exams and graduation ceremonies were missed as a result.

> I am absolutely gutted about the electives. From day one of med school, they say, you have five years and then you get this eight-week period where you can go to any part of the world. It's kind of a rite of passage […] I was even more gutted when they cancelled our graduation. That is a definite rite of passage, to have my family there, in your cap and your gown, and you get the picture for your mantelpiece. (MS17, Year 5)

Although an online ceremony was organised to mark their early graduation, without an *in situ* ceremony or graduation ball, this did not represent the same transitional marker: from medical student to doctor. Whilst all fifth-year students had already graduated as doctors at the time of study, this was not yet felt to be official.

Decision-making around joining the clinical workforce

Amidst this educational disruption, medical students were faced with the decision on whether or not to take up a healthcare role to ease pressure off the NHS. This decision-making process was based on weighing up pros and cons, and appraising

them within the context of their personal circumstances, such as health status, living situation and priorities.

Call to duty

All participants talked about their sense of professional duty to help the UK's strained NHS. As one medical student who applied for a medical assistant role explained: *'We felt that we were able to help and we could look back on this time and say, during this pandemic we stepped up. We helped take the pressure off'* (MS12, Year 4). A sense of collegiality featured as part of this professional duty, across the whole cohort. Here are the rationales from a first year and a final-year medical student:

> The main reason I went back [to working as a healthcare assistant during the pandemic] was because I knew they [NHS colleagues] needed the help. I knew they were really struggling with their workload. And I definitely did think 'these are my colleagues, and I know they're struggling'. […] So, even if I can help relieve someone's workload for a few hours, then I know that's making a difference for them. (MS22, Year 1)

> When I heard about the interim [FiY1] job, I applied for it, although I was nervous. But I knew I wanted to help. […] As a qualified doctor, I was like, yes, I might be of use to the hospital. I did obviously consider that it would be a steep learning curve, but I just knew that I wanted to go through it and help out. (MS15, Year 5)

A sense of duty towards patients was also emphasised. As one participant explained:

> That's what you go to med school for, you want to make people better. You want to help people and [now] there's a pandemic and the world is full of people who need help right now (MS07, Year 5).

Personal gains

Perceived benefits of working in the pandemic, including keeping busy instead of being 'locked down' at home, financial reward, learning opportunities, and serving the healthcare service during a crisis, influenced students' decision-making. Both assistantship roles and FiY1 posts were viewed as valuable opportunities to make up for lost learning caused by the cancellation of placements.

> When this [pandemic] came about, we still had to continue our learning, and I saw that I wouldn't be able to do my clinical skills. […] So, I think it's a win-win situation because I'm out of the house, I'm keeping on with my clinical skills and at the same time, I'm going to be earning some money (MS04, Year 3)

Indeed, the financial aspect was an important extrinsic motivator, especially for the graduate students who, unlike students for whom medicine was their first degree, are not eligible for government tuition fee loans in the UK and, therefore, have to self-fund their medical education.

Health, safety and wellbeing

The perceived benefits of joining the healthcare service during this time were weighed against the risk of coronavirus exposure. In the case of medical students who were in good health this was generally not considered a barrier. However, for a few participants in our study who suffered from underlying conditions or lived with people 'at high risk', such health concerns tended to override their sense of professional duty:

> If I didn't have my brother [with respiratory problems] who to worry about, I probably would be attempting to do something more. I've been a healthcare assistant before, so I would've considered going back. It's definitely something that I have wanted to do, I just haven't been able to, because obviously I'm more concerned about my brother's welfare. (MS06, Year 2)

With respect to the FiY1 post, two fifth-year students cited concerns relating to stress and mental wellbeing as reasons for not taking up this role:

> The [missed] elective was not only a chance to do placement, but also, a bit of chance to relax and rejuvenate before going into this job. I know that F1 is a hard year […] I didn't want to add three months onto that, without having had any break… I felt I could risk burnout. (MS17, Year 5)

In such cases, these two medical students chose to prioritise their wellbeing by preserving their energy and preparing mentally for what they anticipated to be a stressful transition from a medical student to a professional, especially in the context of a pandemic.

Working in a clinical setting during the pandemic

All 14 students who joined the clinical workforce during the COVID-19 pandemic reported being satisfied with their decision. Whilst they did reflect on the risks and challenges faced on the job, this was typically framed as a trade-off to the valuable opportunities these clinical roles offered.

Managing risks and challenges

Medical students took up their healthcare role with the awareness that they might be exposed to COVID-19. Initially, this caused hyperawareness and anxious feelings as they went about their working day, especially for those students who worked in 'red zones' of the hospital, where COVID-positive patients are cared for.

> I was talking to some of the nurses yesterday about viral load. They were talking about how young people tend to feel fine, but if their viral load increases, then suddenly, if they do get it, a lot of the damage could already be done and that's why a lot of young people are dying. Every day I used to come back [home] and I think, well, I feel fine, so it must be okay. But now, what she said made me think about it a bit more. Like, oh could I be quite at risk here? But I don't know […] whatever happens will happen. (MS16, Year 4)

Whilst all participants reported having access to PPE, many expressed doubts about its adequacy and effectiveness at protecting them from the virus. Indeed, one student who was initially working as a nursing assistant on a COVID-19 ward requested to be transferred to a 'green zone', where no COVID-positive patients were present, thus allaying her concerns and those of her family members. In the majority of cases, participants' fear and hypervigilance eventually subsided, as they reached acceptance that the risk of contracting COVID-191 is part and parcel of their job.

Another reported challenge concerns the weakened support system that was available to them because of the lockdown. All but one participant lived far away from home which meant that they had to go through this challenging experience of working with acutely ill patients without the close support of family and friends.

> That's obviously one of the most difficult things about lockdown. It's that you can't see your friends and family. And particularly the last couple of weeks, I've been challenged… starting work as a doctor and seeing patients die, and looking after patients with quite severe cases, it's been challenging. And normally the people you go to, your family, your friends, you can't. Luckily, technology allows us to Zoom and chat and keep in touch, but it isn't quite the same. Sometimes all you want is a hug and you can't get one. (M21, Year 5)

FiY1s in particular expressed disappointment at being unable to physically share with their families the significant milestone of becoming a doctor. Given their increased risk of contracting and spreading the virus, the majority of participants also explained that even when lockdown restrictions were eased, they did not visit family and friends to protect them.

Support and learning on the job

Some participants commented that despite the extraordinary circumstances, the hospital wards where they worked were less busy than usual, given a decline in patients admitted with non-COVID health issues and the deferral of non-urgent appointments. More time was therefore available for senior colleagues to provide additional supervision and ad-hoc teaching during working hours. As one FiY1 participant explained:

> There's a lot more supervision than normal. A lot of the more senior doctors are on the wards. […] They've organised weekly teaching. Whereas, otherwise, it would've been every few weeks, if not once a month. (MS20, Year 5)

Students in assistantship roles also reported extra learning opportunities:

> Because I'm still in the hospital and I'm still trying to sometimes act like a medical student if there's an opportunity. The other day, a patient came in with an ankle fracture and I just had nothing to do so I asked the consultant, 'I've missed my entire orthopaedic block, can I just come with you and see this patient and see how you manage it?'. And he said, 'yes, that's fine'. I feel like I'm not noticing as much not being on placement because I'm still trying to make it a little bit like it is [a clinical placement], which is maybe wrong. (MS13, Year 4)

As one participant noted, senior clinicians' willingness to offer teaching was part of a broader spirit of collegiality within the NHS, which developed whilst working together during the pandemic:

> I think there's more of a sense of teamwork and camaraderie these days. There's a sense that we are all in this together, no matter if you are a consultant or a [healthcare assistant]. (MS17, Year 4)

Becoming a better FY1 doctor

Medical students who worked as FiY1 doctors during the pandemic perceived this as a real positive for their future roles as FY1 doctors. This interim role helped our final-year participants to ease the transition from a medical student to a professional.

> From a career progression aspect, I actually think COVID-19 situation has added a lot more than taking away due to having these extra three months to practise out as a doctor. I'm definitely pleased to have started working earlier, particularly with this interim job, which I do feel like, to have that little bubble around you, 'oh they're an interim F1 doctor, they're not a real F1 yet'. So actually, when it comes to August, I will be able to manage a little bit better (M15, Year 5)

Whilst the stress tied to becoming a doctor was expected to be amplified given the pandemic context, all FiY1s recognised that the interim role offered them a protected and supportive environment in which they could ease into the upcoming role of a junior doctor.

Discussion

We explored the views and experiences of UK medical students during the COVID-19 pandemic in Spring 2020 during the country's first lockdown. A sense of disruption with respect to learning and professional development, especially in

the early months of the pandemic outbreak, prevailed in our dataset. Dilemmas around how students can learn effectively, what their role and responsibilities are, and their perceived competence and preparedness to work in a clinical setting stand out.

Comparison with existing literature

To date, an abundance of academic work has debated the role of medical students in public health emergencies (Rasmussen et al. 2020; Stetson et al. 2020; Yu et al. 2020). Some contend that students should not be expected to share the same risks and responsibilities as healthcare professionals, whilst others emphasise the invaluable clinical experience for their learning and development (Klasen et al. 2020; Patel et al. 2020; Stetson et al. 2020). Medical students were faced with similar dilemmas during the COVID-19 pandemic. The disruption that the lockdown had on their learning, in particular the suspension of clinical placements and cancellation of OSCE exams, was highlighted. For participants who decided against pursuing a healthcare role during this time, the overall effects of the pandemic on their education and professional development have been largely negative. This was less so among students in their earlier years who believed to have sufficient time to make up for this loss of clinical exposure over the remainder of their degree. In contrast, students in the later years of their degree acknowledged the gaps this might have on their (perceived) competence and preparedness as future doctors. This supports existing views of clinical placements and examinations as offering medical students 'opportunities for rehearsal' (Lefroy et al. 2017); serving to bolster not only self-efficacy but also their identity as 'tomorrow's doctors' (Yardley et al. 2020).

In the face of such disruption, most of our participants acknowledged the value of joining the NHS workforce during this pandemic for their learning and professional development. Similar to earlier survey findings, our study also found a moral and professional obligation underpinning this decision to join the clinical workforce, akin to a 'call of duty' (Kalet et al. 2020; Khamees et al. 2020; Stetson et al. 2020; Yu et al. 2020). Medical students viewed themselves as human resources who could contribute to a healthcare service under pressure (Findyartini et al. 2020). It is notable that for all medical students, regardless of the year of their training, this sense of obligation towards patients and colleagues, at times overrode concerns about the risk of contracting COVID-19. This suggests that professional identity formation—the process of internalising the medical professions' core values and beliefs—is already present in the earlier years of medical training (Compton et al. 2020; Findyartini et al. 2020; Stetson et al. 2020). For students at the start of their medical education, who in non-pandemic times would have only spent a limited amount of time on a clinical placement, these 'assistant' roles helped them to gain exposure to healthcare settings, gain crucial clinical skills and plenty of opportunities to interact with doctors, role models and mentors. Similarly, senior medical students used their new job to compensate for the clinical experience they would have otherwise gained on placement. For all, these new healthcare roles held the potential to accelerate their identity formation as 'future doctors'. Patient exposure

in clinical settings, the spirit of camaraderie and collegiality, and the increased opportunity for professional socialisation, could contribute to this. This supports other research showing that a public health emergency, like the COVID-19 pandemic, may represent a catalyst for professional identity formation (Compton et al. 2020; Kalet et al. 2020).

Medical students in our study, who took on a paid healthcare role, were seen to creatively maintain a 'role duality' (Holland 1999)—that of a student and a healthcare worker—during their work shifts. Several authors, writing in the context of students/healthcare assistants, caution about a potential confusion around role definition and boundaries (Watts and Waraker 2008; Wareing 2010). This duality also appeared to give rise to an 'in-between' state, indeed betwixt and between educational and professional responsibilities. Such ambiguity of roles is indicative of a liminal period, 'a state in between states' (Bell 2021), where medical students' expectations about how their educational and career trajectory would ordinarily unfold no longer apply. Our findings suggest that medical students navigated this duality constructively, by using this ambiguity in their favour. Whilst the identity of a healthcare professional was used to demarcate the boundaries of their professional responsibilities, the medical student identity was strategically emphasised to both self and others as a means of strengthening their educational experience via ad-hoc teaching and support. The 'extraordinary' circumstances in which these roles were taken up, including their transitory nature and the clear guidance released by the BMA (2020) around what should be expected from medical students working during the pandemic, may explain why role clarity was maintained.

Our study, however, also demonstrates that the pandemic may, conversely, have had mixed repercussions on the professional identity formation of final-year medical students. This is due to the disruption of the anticipated progression markers in their transition from students to doctors. The disappointment expressed at the cancellation of final exams, electives, and deferral of the graduation ceremony reveals the symbolic meaning of such events for medical students. This resonates with Monrouxe's (2010) framing of these markers as 'rites of passages'; perceived by students as granting entry, as well a sense of belonging, to the medical profession. The disruption of COVID-19 meant that final-year UK medical students missed these 'rites of passage', which are regarded as essential in becoming a doctor.

Moreover, the creation of FiY1 posts, taken up by the majority of our study participants, meant that the transition from medical students to doctors was accelerated. In a survey with final-year medical students across the UK, Choi et al. (2020) found that starting formal work as a doctor sooner than expected was met with lower levels of confidence and preparedness. Whilst this perceived lack of preparedness did not emerge so saliently in our findings, this could be attributed to the later timing at which our participants were interviewed, meaning that they would have had more time to settle down in their FiY1 role and gain more confidence. That said, the consequences of such early graduation and entry into the clinical workforce were highlighted by all our final-year participants. Although their MBChB was completed, and most were already working as FiY1

doctors in the NHS, they did not fully perceive themselves as 'doctors' yet. Instead, their experiences suggest a sense of being 'betwixt and between' a medical student and a doctor (Olum et al. 2020). This liminal space, however, came with its own opportunities, including increased support and supervision from senior clinicians. In parallel to how theories of liminality view transition as potentially leading to positive changes in the post-liminal phase, conceptualised by Stenner as a process of 'becoming' (Stenner 2018), medical students who took up the FiY1 role also regarded this interim phase as an important part of their professional development. Similar to other findings (Choi et al. 2020; Rasmussen et al. 2020), our participants viewed this as a learning opportunity allowing them to become better doctors. This FiY1 role provided a further 'opportunity for rehearsal' (Lefroy et al. 2017), only that under these exceptional circumstances, this rehearsal did not *approximate* but was *in fact* the 'real deal' (i.e., working as a qualified doctor). This boosted their confidence and the new graduates felt more prepared to start their career as FY1 doctors on 1st August 2020.

For medical students across the 5 years of the undergraduate medical education, the COVID-19 period, characterised by scarce resources, personnel and information has spurred improvisation and the adoption of creative strategies to address personal gaps in clinical learning and systemic gaps in healthcare provision. The unexpected demands of a pandemic, requiring a swift re-adjustment to roles and responsibilities, has ultimately led medical students to hone attributes that are imperative to their professional identity as physicians—thus accelerating its formation by way of heeding the call of duty (Kalet et al. 2020).

Strengths and limitations

The study's qualitative design allowed for an in-depth exploration of medical students' concerns and experiences, which so far had been predominantly reported in quantitative studies. Our study sample, which covered all 5 years of undergraduate medical education, ensured broad and balanced representation of medical students.

Some limitations are also present. Firstly, this is a single-institution study and hence some of our findings may be contingent on particular decisions, procedure and practices of this UK medical school. However, most decisions (such as cancellation of clinical placements and early graduation) were taken at a national level. Secondly, each participant was only interviewed at one time-point. We recognise that students' views are likely to change over time, and future research is required to follow up on the longer-term impact of this experience. Finally, as in all qualitative research, the findings presented here must be interpreted within the context of our sample, thus limiting generalisations in comparison with findings from, for instance, survey studies.

Implications for educational practice

The mantra 'no going back' is widely expressed in both the UK's higher education sector and the country's NHS, and it is indeed very likely that medical education,

clinical training and health workforce organisation in the post-COVID era will look different.

As we have shown in this article, the disruption brought about by the pandemic extended beyond the delivery of educational content. More fundamentally, it impacted the way students perceived themselves as future professionals. Work placements are known to play a crucial role in professional identity formation, not only to medical students but other helping professions such as nursing, allied health and teaching, amongst others (Leeferink et al. 2019; Sicora 2019; Gray et al. 2020; Tomlinson and Jackson 2021). The decision across the higher education sector to cancel such placements in order to protect students' safety was difficult but necessary at the time. In the wake of this pandemic, as we gather and evaluate evidence in preparation for the next crisis, turning our attention to the experience of medical students in the COVID-19 pandemic, as presented in this article, may be a useful case study.

One by-product of the pandemic highlighted in our study has been the opportunities for growth to professional identity development. Medical students across the UK, faced by moral and professional imperatives, contributed to the NHS in times of pressing need and scarcity. Our findings demonstrate how medical students worked flexibly and creatively under stress. This creates a further justification for medical schools to assess personal attributes and non-cognitive traits, such as responsibility, problem solving and moral orientation, in their admission process (Lumsden et al. 2005; Finn et al. 2018; Shulruf et al. 2020). Attracting prospective students with dispositions to adapt, cope and respond effectively under pressure and uncertainty guarantees a workforce that is fit for purpose during public health emergencies.

Our findings also confirm the need for thoughtful consideration around the involvement of medical students in clinical settings during a public health crisis, emergencies, and in times of extreme pressure on the health system. It is particularly important for students to be aware of the responsibilities and expectations of their role, be it as learners or full contributors to care delivery. Professional identities can otherwise become blurred if no clear delineation between a student responsible for learning and a professional in charge of patient care is made. For final-year medical students in particular, our findings have highlighted the importance of ensuring that missed rituals (such as graduation ceremony) are acknowledged and, where possible, replaced by alternative rituals to mark significant milestones and achievements. The symbolic meaning of rites of passage help to prevent the perception of having this liminal identity, 'betwixt and between' a student and a doctor, and would enhance and strengthen the professional identity formation of medical students during health emergencies.

In 'ordinary' pre-COVID-19 times, the transition from medical student to junior doctors in the UK has long attracted the attention of medical educators, given the reported stresses and challenges associated with this phase (Brennan et al. 2010). The positive outcomes of the FiY1 role reported in this study and elsewhere (Nazeer et al. 2020; Youssef et al. 2020), bears the question of whether a similar bridging programme, allowing graduates to work in a speciality of their choice, before the official start of their FY1, should be carried forward beyond COVID

times. This however requires further examination as it cannot be assumed that the perceived success of the FiY1 initiative is entirely divorced from the 'extraordinary' context in which this was rolled out. After all, students' autonomy to *choose* whether to take part or not, and the sense of professional duty that was uniquely elicited by this public health emergency, were crucial in shaping the positive attitudes reported in this study.

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Data availability The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethical approval This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by Keele University's Faculty of Medicine and Health Sciences Research Ethics Committee (Ref. MH-200123).

Consent to participate Informed consent was obtained from all individual participants included in the study.

Competing interests The authors have no competing interests to declare that are relevant to the content of this article.

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