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Research Article

## South African Medical Students' Perspectives on COVID-19 and Clinical Training

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### INTRODUCTION

The COVID-19 pandemic has disrupted clinical training programmes for medical students globally.<sup>(1,2)</sup> Continuation of clinical training is important but should be weighed against the risk of transmission of COVID-19 infection from students to susceptible peers, healthcare workers (HCWs) and patients.<sup>(1–3)</sup> Furthermore, teaching of medical students may place an additional burden on busy clinicians during the pandemic and increase utilisation of personal protective equipment (PPE).<sup>(2–5)</sup>

All South African universities, including medical faculties, were forced to close when a national lockdown was implemented in March 2020. The Stellenbosch University Faculty of Medicine and Health Sciences (SU-FMHS) implemented a phased return to clinical training for senior students in May 2020 to ensure timely graduation; all other medical students continued the academic year via online learning. We conducted a cross-sectional survey of SU-FMHS Bachelor of Medicine and Bachelor of Surgery (MBChB) students' attitudes to and perceptions regarding the COVID-19 pandemic and clinical training.

### METHODS

#### Study setting

Prior to the COVID-19 pandemic, the MBChB programme at SU-FMHS was delivered through face-to-face teaching on campus for theory modules, and for clinical rotations, students attended ward rounds and bedside tutorials in hospitals and assisted with clinical work in the wards. Owing to the COVID-19 lockdown, the SU-FMHS

management and teaching teams needed to rapidly convert the curriculum to a partial (MBChB VI) or full (MBChB I–V) online learning platform (SUNLearn). All teaching engagements were held online, other than clinical tutorials which were conducted virtually on Microsoft Teams, to minimise students' presence in healthcare facilities.

#### Study design, respondents and analysis

SU-FMHS MBChB IV, V and VI students were invited via university email lists to participate in an anonymous 37-question electronic survey hosted on the REDCap platform in June 2020. Quantitative survey elements allowed for multiple possible answers or made use of a 5-option Likert scale. Responses to 10 open-ended questions were data coded by two independent researchers to identify emerging themes using framework analysis; participant quotations are indicated as "P". Survey responses were analysed with STATA Statistical Software version 13.0 IC (StataCorp LP, College Station, TX). Univariate analyses were described as frequencies and proportions. Associations between categorical variables were reported using the odds ratio with a *P*-value significance threshold of  $\leq 0.05$ . Ethical approval for the survey was granted by the SU-FMHS Health Research Ethics Committee (ref. no. U20/05/066).

### RESULTS

A total of 279/906 (30.8%) medical students completed the survey (Table 1). The respondents' median age was 23 years (interquartile range: 22–24) and majority were female

**Table 1:** Senior medical students' perceptions and attitudes regarding undergraduate teaching, clinical rotations, early graduation and volunteering during the COVID-19 pandemic

<b>Survey participation rates</b>	<b>n = 279</b>	<b>%</b>
MBCbB IV	69/293	23.5
MBCbB V	107/286	37.4
MBCbB VI	103/327	31.5
<b>Quality of online teaching</b>	<b>n = 236</b>	<b>%</b>
Satisfied with the quality of online teaching	35	14.8
No perceived difference in the quality of teaching	67	28.4
Dissatisfied with the quality of online teaching	134	56.8
<b>Quality of communication from the medical faculty</b>	<b>n = 268</b>	<b>%</b>
Good communication	92	34.3
Neutral	75	28.0
Inadequate communication	101	37.6
<b>Perceived needs for academic and other support</b>	<b>n = 255</b>	<b>%</b>
Expanded access to campus health services	71	27.8
Access to mental health services	48	18.8
Improved online and clinical teaching	47	18.4
Additional tutoring support	46	18.0
<b>Resumption of final year MBCbB training on the clinical platform<sup>#</sup></b>	<b>n = 97</b>	<b>%</b>
Final year students who supported a return to clinical training	30	30.9
<b>Clinical areas that final year students were assigned to on return<sup>#</sup></b>	<b>n = 83</b>	<b>%</b>
Returned to a tertiary hospital	64	77.1
Returned to primary health care, district and regional hospitals	19	22.9
Working in COVID low-risk areas <sup>‡</sup>	58	70.0
Working in COVID high-risk areas (no contact with COVID-19 infected patients <sup>§</sup> )	21	25.3
Participated in aerosol-generating procedures	4	4.8
<b>IPC in the clinical areas<sup>#</sup></b>	<b>n = 81</b>	<b>%</b>
I feel confident in the use of PPE	68	84.0
I have adequate access to alcohol hand rub, soap and water most or all of the time	73	90.1
I have had continuous access to all the required PPE	53	65.4
The hospital staff adhere to the recommended COVID-19 IPC measures	46	56.8
<b>Influenza vaccination uptake<sup>#</sup></b>	<b>n = 83</b>	<b>%</b>
Received the influenza vaccine in 2020	79	95.2
<b>Opinion of early graduation for medical students during the pandemic</b>	<b>n = 259</b>	<b>%</b>
Supportive of early graduation to contribute to the national healthcare workforce	79	30.5
Undecided	73	28.2
Opposed to early graduation to contribute to the national healthcare workforce	107	41.3
<b>Willingness to assist with clinical care patients not infected with COVID-19<sup>*</sup></b>	<b>n = 259</b>	<b>%</b>
Willing to assist unreservedly	114	44.0
Willing to assist, but only if it counts towards studies	93	35.9
Not willing to assist with clinical duties	25	9.7
Unsure	27	10.4
<b>Willingness to assist with direct care of COVID-19 infected patients<sup>*</sup></b>	<b>n = 259</b>	<b>%</b>
Willing to assist unreservedly	65	25.1

(Continued)

**Table 1:** Senior medical students' perceptions and attitudes regarding undergraduate teaching, clinical rotations, early graduation and volunteering during the COVID-19 pandemic (*Continued*)

<b>Willingness to assist with direct care of COVID-19 infected patients*</b>	<b>n = 259</b>	<b>%</b>
Willing to assist, but only if it counts towards studies	65	25.1
Not willing to assist with clinical duties	94	36.3
Unsure	35	13.5
<b>Areas in which students are willing to volunteer or have already volunteered</b>	<b>n = 207†</b>	<b>%</b>
COVID-19 centres with direct patient contact, e.g. screening and testing	69	33.3
COVID-19 centres without direct patient contact, e.g. data capture, call centres etc.	142	68.6
Clinical areas with low-risk for COVID-19, e.g. clinics, entrance screening	166	80.2
Community education, specimen logistics	7	3.4

Note: The denominator differs by question as the number of respondents answering each question varied.

\*Outpatient and inpatient departments.

§Triage, ICU, general wards.

†Only final year medical students completed this section of the questionnaire; PPE: personal protective equipment; IPC: infection prevention and control.

‡Without being compensated and within their scope of practice and skill set.

†Respondents could choose multiple options therefore n = each response.

(71%; 198/279). Most students were receiving online teaching (88.1%; 236/268) but only 14.8% (35/236) were satisfied with the quality thereof (Table 1). Although many students were worried about the lack of clinical exposure, almost half of the respondents believed that the clinical platform should be avoided entirely. Instead, students wanted more online teaching with a focus on case-based learning and discussions. Only one-third (34.0%; 90/265) of students agreed that they should return to the clinical platform. Some students felt that limited patient exposure in clinics and hospital was problematic, but in some clinical rotations, students alternated ward attendance to enable physical distancing. Many students highlighted the need to continue their training despite the risk of COVID-19 infection.

P044: 'We face patients with drug resistant TB every day ... never before did an infectious disease stop us from going to hospital. I don't think COVID-19 should come in the way of the education of a whole class of medical students.'

More than three-quarters of students expressed concern about contracting COVID-19 and disruption to their studies (77.9%; 204/262). Final year students were significantly more likely than that of the other years to be concerned about the academic impact of COVID-19 (88/94 [93.6%] vs 116/168 [69%];  $P < 0.0001$ ). Students highlighted additional needs for university support during the pandemic, including access to campus health and mental health services, online teaching and tutoring support (Table 1). Many students stressed the need to return to campus residences and study centres to facilitate learning, as they battled to study at home. Lack of technical skills, poor internet connectivity and data cost issues were cited as barriers to productive online learning. Students also wanted the university to provide more specific COVID-19 guidance and protocols and to display greater empathy for students struggling academically during the pandemic.

P130: 'I feel more should be done to address ... and take into consideration the toll COVID-19 has taken on the mental health of medical students. This impacts greatly on the ability to continue learning and studying ...'

Of the final year students who had returned to the clinical platform, three-quarters (64/83) felt that the quality of hospital teaching during the COVID-19 pandemic had declined. Most reported receiving adequate training in the use of PPE, although some students reported PPE shortages (Table 1). Poor compliance with infection prevention measures by hospital staff was reported by students, including lack of social distancing, inadequate hand hygiene, limited equipment cleaning and incorrect use of PPE. Most students (90.7%; 243/268) felt that they had moderate to very high knowledge levels regarding COVID-19, but only 58% (46/80) conducted daily self-monitoring for COVID-19 symptoms.

Seventy-four per cent (207/279) of students were willing to volunteer or had already assisted during the pandemic. Student opinion was divided regarding early graduation for final year students to support the healthcare workforce, with 41.3% (107/259) opposed to the idea (Table 1). Lack of clinical competency was a major concern, since many key clinical rotations would be missed.

P245: 'It's worth considering the quality of healthcare worker that ... will graduate, if they decide to graduate them early. We shouldn't ... let ... sub-par students slip through the cracks, just because these are emergent times.'

## DISCUSSION

Although students expressed a high level of concern about lost academic time and clinical experience during the pandemic, many were reluctant to return to their clinical training. Students (both locally and internationally) cited fear for their own health, the impact on their studies, lack

of health insurance and potential to transmit the virus to patients, colleagues and family.(1) Ironically, although students were aware of the need to self-monitor, only half were doing so regularly; a formal screening protocol and mobile application was later implemented by the university.

Many surveyed students reported that the quality of clinical teaching had declined due to cancellation of elective procedures, routine appointments and the lack of staff. This may have contributed to a perception among students that the risk of COVID-19 exposure during training exceeded the benefits of teaching received.(4) Students were concerned that resumption of training may lead to COVID-19 transmission from asymptomatic/pre-symptomatic students to susceptible HCWs and patients further disrupting services and increasing the workload for the remaining staff.(2,4,5) Most medical faculties globally, including SU-FMHS required multiple adaptations to clinical teaching rotations to reduce the physical presence of students in healthcare facilities by using smaller teaching groups, moving to online clinical teaching and shifting clinical teaching to a later stage in the curriculum.(4)

Many students expressed their dissatisfaction with the quality of the online learning provided. However, this survey was sent out soon after students commenced online learning, thus reflecting students' early impressions of the revised clinical training programme. Most of the barriers to effective online learning were technical and have since been successfully addressed by the university. Of concern was the number of students who requested access to mental health services, indicating the toll that the pandemic, training disruption and accompanying uncertainty had on students' mental well-being.(2)

In some countries, the graduation of final year medical students has been fast-tracked for them to serve as HCWs.(2–6) At SU-FMHS, half of the final year students felt that they would not feel prepared for internship if required to graduate early. Despite these concerns, many students locally and internationally were willing to assist or had already contributed to health service delivery during the pandemic.(2,4) Allowing students to actively participate in clinical and

support work during the pandemic may help one to instil important values such as responsibility towards patients, altruism and solidarity with fellow HCWs. However, student participation should be voluntary, within their scope of practice and abilities, and performed under close supervision.(3,4)

This study is limited by the single university surveyed, possible self-selection bias and a low response rate of 30%. However, the survey provided useful information to inform curriculum planning, improved communication and planning for student support needs during the pandemic.

## CONCLUSION

Ongoing engagement regarding students' preferences and perceptions of online engagements, clinical teaching and COVID-19 risk mitigation measures, is important to ensure optimal learning and support to medical students during the pandemic.

## REFERENCES

1. Compton S, Sarraf-Yazdi S, Rustandy F, Krishna LKR. Medical students' preference for returning to the clinical setting during the COVID-19 pandemic. *Med Educ.* 2020; 54(10):943–950. <https://doi.org/10.1111/medu.14268>.
2. Dedeilia A, Sotiropoulos MG, Hanrahan JG, et al. Medical and surgical education challenges and innovations in the COVID-19 era: a systematic review. *In Vivo.* 2020; 34(3):1603–1611. <https://doi.org/10.21873/invivo.11950>.
3. Miller DG, Pierson L, Doernberg BA. The role of medical students during the COVID-19 pandemic. *Ann Intern Med.* 2020; 173:145–146. <https://doi.org/10.7326/M20-1281>.
4. Rose S. Medical student education in the time of COVID-19. *JAMA.* 2020; 323(21):2131–2132. <https://doi.org/10.1001/jama.2020.5227>.
5. DeWitt DE. Fighting COVID-19: enabling graduating students to start internship early at their own medical school. *Ann Intern Med.* 2020; 173(2):143–144. <https://doi.org/10.7326/M20-1262>.
6. Choi B, Jegatheeswaran L, Minocha A, et al. The impact of the COVID-19 pandemic on final year medical students in the United Kingdom: a national survey. *BMC Med Educ* 2020; 20(1):206. <https://doi.org/10.1186/s12909-020-02117-1>.