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## Letter to the Editor

### Medical education, the COVID-19 pandemic, and infection prevention: There has never been a better time



Sir,

The COVID-19 pandemic has posed a huge challenge for healthcare systems worldwide and has significantly altered medical education [1]. This change has resulted in an increase in online medical education and a greater emphasis on infection prevention and control (IPC) measures on campus and at home, to prevent acquisition by students themselves, and transmission to teaching staff, friends, and family. Some students who volunteered to assist hospitals in managing the pandemic gained valuable experience and appreciation of the importance of IPC in the healthcare setting, as well as in their day-to-day lives [2]. However, now is the time to ask, are we confident that our medical students are competent in IPC?

We conducted a literature search on three occasions over the last 18 months to assess medical students' awareness of IPC issues related to COVID-19, specifically the prevention of COVID-19, the means of transmission, and the sources of COVID-19 information used. Using key words, including medical students, COVID-19, SARS-CoV-2, knowledge, understanding, infection prevention and control, etc., a literature search of Medline, CINAHL, and APA PsycInfo was conducted in August 2020 and in April and September 2021. This search resulted in 249 articles in total. From an assessment of titles, abstracts, and full papers, we excluded those that were opinion pieces or editorials, articles without data on medical students (e.g. trainee doctors only), and those not covering IPC issues. This screening resulted in 34 relevant papers, i.e. 11 in 2020, and 13 and 10 additional papers in April and September 2021, respectively. Of the total that involved surveys or questionnaires, 12 were from Asia, 8 from Europe, 5 from the Middle East, and the remaining 6 were from North, Central and South America, and Africa. Most of the papers relating to IPC measures to prevent COVID-19 (30/34, 88%), transmission of SARS-CoV-2 (19/34, 56%) and information sources (16/34 47%), were studies originally conducted from February to September 2020, even if some were eventually published in 2021.

Amongst the major themes and concerns that emerged were students' knowledge of IPC measures, including hand

washing, mask wearing, and social distancing; knowledge of COVID-19 transmission; and sources of COVID-19 information (Table 1).

In a UK survey of 2075 medical students and interim foundation year 1 students, 70% of respondents listed their university as their source of IPC training, but only 56% felt they had sufficient IPC training [3]. In another study of 592 participants in Jordan, over 90% knew the main presenting features of COVID-19, practised respiratory etiquette, and their sources of information were social media and the World Health Organisation for 34% and 20% of students, respectively [4]. Many of the student surveys suggested a relatively high level of self-reported compliance to appropriate IPC measures, although there were some discrepancies in knowledge about COVID-19, particularly surrounding the incubation period and routes of transmission. For example, in a Jordanian survey in March 2020 of 1404 participants, 87.0% reported often or always washing their hands regularly to protect against COVID-19, while only 19.3% agreed that wearing a face mask would prevent infection, with 9.7% often or always wearing a face mask [5]. Of these students, most used social media and online search engines to obtain COVID-19 related information [5]. This finding suggests that discrepancies in knowledge surrounding IPC measures could be potentially addressed through the strategic use of social media to disseminate accurate information.

While many of the papers were from relatively low-income countries, the themes and findings are likely to be universal, including a need for more education, such as on the wearing of personal protective equipment and the sourcing of information from social media amongst this relatively young population.

It is clear that never before in recent years have medical students been more aware of the importance of IPC measures and their need for education and instruction in this area. Given that medical doctors often have had poorer compliance rates with IPC measures than other healthcare workers, especially with hand hygiene, this pandemic is an ideal and unprecedented opportunity for medical educators, IPC practitioners and others, to shape a new generation of doctors in terms of their understanding and practice. Addressing this knowledge gap will in turn beneficially feed into the wider international healthcare system as doctors occupy key leadership roles in most countries. However, we must enthusiastically grab this opportunity through engaging with medical educators, and students themselves, to ensure that the educational approach is inter-disciplinary, before the focus of students and others

**Table 1**  
Main themes from relevant papers and the implications

Topic	Main findings	Comment
IPC measures	<ul style="list-style-type: none"> <li>• Awareness and compliance with IPC measures are variable [1,4,5].</li> <li>• Students want regular training from trusted staff [6].</li> <li>• IPC knowledge was weakest in preclinical years [7].</li> </ul>	<p>Time to make IPC training a core element of medical training. Utilise simulation for training.</p> <p>Focus IPC training in the preclinical years.</p>
Transmission	<ul style="list-style-type: none"> <li>• Nazar <i>et al.</i> showed improved knowledge of transmission over time in Poland [8].</li> <li>• This finding was not universal – others in Poland have shown poor knowledge and completion of IPC training in January 2021 [9].</li> </ul>	Varying levels of knowledge suggest confusion and inconsistency indicating a need for more structured and comprehensible education in IPC, including the use of personal protective equipment.
Sources of information	<ul style="list-style-type: none"> <li>• Few studies had detail on the sources of information.</li> <li>• Of those that did, the sources varied from official websites to social media [3–5]</li> </ul>	We need to direct students to reputable sources of information and provide guidance on social network platforms.

IPC, infection prevention and control.

switches elsewhere. There has never been a better time for this than now.

#### Author contributions

CC conducted two of the literature searches, reviewed papers, and contributed to the drafting of the manuscript. SOD conducted two of the literature searches, reviewed papers, and contributed to the drafting of the manuscript. HH oversaw the project, reviewed articles, and led in the drafting of the manuscript.

#### Conflict of interest statement

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