

Outbreak Measures Taken by Medical Schools During the Coronavirus Pandemic in London, United Kingdom: A Qualitative Study

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Abstract

Background: Coronavirus disease (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was first reported in Wuhan, China in December 2019. On 11 March 2020, the World Health Organization (WHO) declared COVID-19 to be a pandemic. As of mid-March 2020, more than a total of 150,000 cases have been reported in 122 countries, including 1,543 in the United Kingdom. Within London, there are five universities with medical schools each faced with difficult decisions on how to respond to this unprecedented situation, having to balance the education of future doctors who will soon be joining the front lines and their safety. In this paper, the responses and timeliness of medical schools are collated and compared. This will help guide medical schools' responses in the future.

Methods: Information was gathered from the official university websites and social media platforms. Thematic analysis was performed to obtain overarching categories of responses by the medical schools.

Results: All five medical schools displayed similar responses to COVID-19, following guidance provided by Public Health England (PHE), Foreign & Commonwealth Office (FCO) and Medical Schools Council (MSC). Eight broad themes of responses were identified to have been undertaken by most London medical schools. Responses such as suspending clinical placements, keeping university facilities open and not banning on-campus events were universally adopted by all five medical schools. Other responses such as specific exam rearrangements and elective travel advice were more heterogeneous amongst the medical schools.

Conclusion: Medical schools must take extraordinary measures in response to a pandemic. The experience gained from the COVID-19 pandemic will help future administrations be more confident in providing a more rapid response to similar health crises.

Background

From the beginning of the coronavirus pandemic until present, 174,134 cases of pandemic coronavirus disease (COVID-19) with 6,684 deaths had been reported worldwide, mostly in China, Iran and Italy. The United Kingdom (UK) has a total of 1,543 cases, and so far, has resulted in 55 deaths.

Inevitably, this outbreak has affected medical schools and their respective universities associated with them, as medical students often have teaching delivered in clinical areas where ill patients are located. This study will aim to describe the effects of the coronavirus outbreak among medical students, with regard to what has been implemented in medical schools to control the spread of the virus. This study will be focusing on medical schools within London, as currently, London has the most cases and medical schools, and hence more medical students, compared to other cities within the UK. The interventions discussed are hoped to provide suggestions for medical schools elsewhere and in the case of another outbreak in the future. In addition, further actions will be suggested and discussed in this article. In outbreaks of infectious disease, medical students are easily overlooked, and thus this is the first article to focus on COVID-19 and its impact on medical students as well as their institutions.

The first case of COVID-19 in the UK was confirmed at the end of January 2020, and since then the number of affected patients has arisen. In response to this, the UK government has announced an action plan which comprises three steps: contain, delay and mitigate. The containment phase attempts to prevent the spread of infection by identifying the cases and undertaking contact tracing. However, as the number of cases increased significantly, the delay phase was introduced. This means reducing the rate of spread by social distancing. Examples include recommending those with minor symptoms to self-isolate and to advise elderly people to stay indoors. As a result, events are rescheduled, and it is recommended to stay at home if possible. If these measures are insufficient, the next phase of mitigation would follow. This involves methods to increase the workforce of the healthcare system.

Medical students should be considered at high-risk to the virus as they are placed in hospitals, general practice and nursing homes for their clinical attachments. In addition, London is a busy city with public transport that can condense a large population of people within the same location. This brings everyone to such close proximity from each other, which allows transmission of illnesses, and makes contact-tracing difficult to achieve. Consequently, medical students who rely on public transport, to travel from home to clinical attachments or university, would be in close contact with

many citizens. This can bring danger to the medical student, as well as those boarding the same train or bus. It is also important to note that universities in London have a high percentage of international students who are more likely to travel between different countries, such as China. Some students and staff have already been quarantined, such as those in King's College London. These students and staff members had been tested positive for COVID-19 (1). It is important to take this into consideration and to realise the consequences of acting when it is too late. Furthermore, previous experiences should be reflected upon. In 2003, the severe acute respiratory syndrome (SARS) outbreak in Hong Kong caused a number of medical students to be affected by the illness as they were working within the same hospital as the patients who tested positive for SARS (2). A previous study has recommended early interventions as healthcare professionals are vulnerable to emerging diseases due to insufficient control measures being put into place during the early stages of an outbreak. However, like others, this study by Suwantarat et al, also mainly focused on clinicians rather than medical students (3).

Methods

The content of this qualitative paper was collated from official websites and social medias of the five London medical schools (Barts and The London School of Medicine and Dentistry (4), Imperial College School of Medicine (5), King's College London School of Medicine (6), St George's University of London (7) and UCL Medical School (8). Thematic analysis was conducted on the textual data collected following an inductive approach to produce themes of responses.

Other sources of information were Public Health England (PHE) (9), Foreign & Commonwealth Office (FCO) (10), Medical Schools Council (MSC) (11), the World Health Organization (WHO) (12) and an openly editable online document posted on an online forum for medical professionals and students. All collected data was accurate up to 16 March 2020.

All data was read and coded separately by both authors. Once each author fully coded the data to completion, they met to discuss and agree upon the same overarching themes. All collected data was accurate up to 16 March 2020.

Ethical approval was deemed unnecessary, according to UK national regulations, as there was no involvement of human or living participants.

Results

Eight different themes of actions that have been implemented emerged, which will all be discussed further under the specified headings.

Theme 1: Clinical placements

Although the MSC did not explicitly advise UK medical schools to suspend clinical placements, by 14 March 2020, all London medical schools have suspended clinical placements. There was a total of 1,140 confirmed COVID-19 cases in the UK as of that day. Some were suspended indefinitely whilst others were given provisional resumption dates ranging from 2 weeks to 2 months in the future. Some placements in high risk departments (e.g. Accidents & Emergency and Infectious Diseases) had already been suspended up to two weeks prior.

Theme 2: Teaching & Facilities

To protect the health and safety of students and staff, a few universities, such as UCL and Imperial, have suspended face-to-face teaching for the rest of the academic year. They will be replaced with remote learning platforms with software such as Zoom. Facilities including libraries and student accommodations have remained open across all universities. A few universities describe the situation as “business as usual”. Nonetheless, if the situation worsens, universities may need to close in accordance to governmental requirements to prevent large crowds of students and staff.

Theme 3: Increasing publicity and awareness

Through the use of social media, emails and the college website, institutions have frequently updated the current status and situation for COVID-19. All universities with a medical school, that are situated in London, have got a website dedicated towards COVID-19. Some, such as University College London (UCL), have listed many questions and answers to frequent queries that they have received up till present.

Theme 4: Hygiene

The frequency of cleaning service has been increased in public areas such as washrooms and libraries. In addition, universities, such as UCL, have stated that they are obtaining a larger supply of anti-bacterial soap, as well as hand sanitiser, to be supplied in all washrooms and kitchens on

campus. Other universities, such as Barts, have increased the number of hand sanitisation stations. Posters issuing official guidance from PHE on hand hygiene have been placed across all university campuses.

Theme 5: Exam rearrangements

Currently, the majority of final year medical students in the UK are about to sit their final examinations. The response of institutions within London have ranged from completely cancelling exams such as the national Prescribing Safety Assessment (PSA) to having examinations be taken remotely on personal devices. Easter exams at some universities have been cancelled and universities are currently discussing arrangements for summer exams. At present, practical exams such as Objective Structured Clinical Examination (OSCE) and Practical Assessment of Clinical Examination Skills (PACES) will not feature real patients and will have a reduced number of stations.

Theme 6: Events held on campus

The decision to cancel or postpone events held on campuses has been taken on a case-by-case basis by organisers. None of the universities have mandated events held at the campuses be cancelled, citing PHE's current stance of not banning large gatherings. However, the majority of officially run university events as well as student society organised events have been cancelled by organisers.

Theme 7: Electives

UK medical schools have students self-organise an elective placement usually undertaken in their final year as part of the requirements for graduation. In response to the current outbreak, many overseas electives have already been cancelled either due to FCO advice or withdrawal of the placement by the host institution. The MSC officially recommends all overseas electives to not be undertaken. Hence most London medical schools either cancelled the elective placement or made it optional. Some medical schools have yet to issue guidance on electives as of the time of writing.

Theme 8: Travel advice

Trips organised by universities have been postponed, and therefore all external international visitors have been asked to cancel their travel plans. Instead, it has been suggested that all collaborative activity should be made through online systems such as Skype. As students and staff have their own

right to freedom, universities cannot force everyone to cancel personal travel plans, however they have advised all to carefully consider whether the purpose of travelling is significant. Furthermore, universities have warned everyone that those who travel may be subjected to restrictions and may require to self-isolate upon their return. If students and staff do choose to travel overseas, universities have asked them to inform them beforehand to receive acknowledgement.

Discussion

The actions taken by the London medical schools were similar in some regards but varied slightly. Interestingly, all London medical schools decided to suspend clinical placements in the days following the WHO declaring COVID-19 pandemic status. By the time the last London medical school suspended clinical placements, the number of cases within the UK was greater than 1,000 and was spreading in the community. This suggests that the London medical schools are reactive, compared to the proactive stance medical schools in other countries such as Hong Kong has taken. In response to the first confirmed case of COVID-19 in Hong Kong, the University of Hong Kong suspended all teaching within hospital compounds, the next day (13). An analysis by Hatchett et al of the progression of the 1918 influenza pandemic in American cities demonstrated that the proactive measures taken by St. Louis (implemented two day after the first reported case) made a vast difference in mortality rates compared to the reactive measures taken by Philadelphia (implemented 16 days after the first reported case) (14).

Medical schools have suspended face-to-face teaching, some for the rest of the academic year. This is a stark contrast to the UK Department for Education's decision to keep schools open (15). With the uncertainty of the duration of the COVID-19 pandemic, medical schools are currently forced into exploring remote learning options to continue to deliver medical education especially to the pre-clinical cohorts. Some medical schools have been utilising online learning platforms to deliver certain modules for the past few years which undoubtedly puts them in an advantageous position to deal with the current situation. Despite facilities remaining open, there has been a sharp decline in their use.

All five universities have a dedicated webpage on coronavirus guidance for students and staff. They

have also been sending out many emails and posting on social media to disseminate information to members of the university community. The importance of utilising social media to provide accurate information is becoming more apparent in recent years as a study from 2016 showed that 62% of US adults get news from social media (16). Members of the general public have taken to social media to start online movements to slow the spread of COVID-19. One such example is the ‘#StayTheF*ckHome’ movement which stemmed from a disappointment in the slow centralised governmental response to COVID-19 (17).

Universities have taken steps to facilitate good hygiene practices for its students. This comes following advice from the WHO and PHE recommending frequent hand washing with either soap or alcohol-based hand rub for at least 20 seconds. Engdaw et al showed factors that affect hand hygiene compliance include availability and location of alcohol-based hand rub (18). Education also plays a large role in compliance of hand hygiene practices. Akingbola et al demonstrated that visual aids such as posters improved hand hygiene compliance significantly (19).

The MSC has advised the UK’s 42 medical schools to prevent delaying the process of qualifying final-year medical students in becoming doctors. This decision means that final-year exams can be simplified to aim for an increased number of doctors joining the workforce to aid the current increasing number of patients in hospitals. These exams are organised and require the support of many doctors, administrative staff and patients, and thus would expose them all to the virus if they were to be continued. Furthermore, clinical exams would encourage medical students to enter clinical sites to practise their clinical examinations and histories with patients which further increases their risk of contracting COVID-19. Cancelling exams would also help increase the current workforce as clinical academics would be able to prioritise their time to clinical services rather than teaching. Events, such as conferences, talks and workshops, organised by universities and medical schools have been postponed or cancelled. This aligns with the possibility of the UK government banning mass gatherings. Examples of this would include large public events, concerts and sports. The purpose of this is to encourage more people to stay indoors, and this can also aid the process of contact-tracing if an individual does contract the virus. Extreme measures have already taken place

to encourage social distancing in countries, such as China and South Korea, where they have imposed nationwide school closures. This level of action, involving quarantine, social distancing, and isolation of ill patients have been shown to be effective (20). Currently in the UK, those with minor symptoms are recommended to self-isolate, but this may not provide sufficient control as it is unknown as to how many asymptomatic cases are present. The European Centre for Disease Prevention and Control (ECDC) has stated that current evidence has shown that 80% of cases experience mild symptoms (21). Consequently, many cases may be unreported. As no-one can be sure of the progression of severity of the situation, it is unknown as to whether the UK will temporarily ban all events involving large crowds, and if this was the case, how long would this be implemented for.

Electives for final year medical students have been made optional in many medical schools as many students have had their host institutions revoking the elective placements or are now unable to travel to the host country. This is in line with the recommendation provided by the MSC of discouraging foreign electives. In light of strain placed on the healthcare system, the MSC has also suggested medical schools to simplify final examinations to prioritise qualification of the new cohort of doctors. The Chief Medical Officer stated that final year medical students may be brought to the frontlines and have their responsibilities extended if the pressures on the National Health Service (NHS) increases (22).

Although universities cannot force a student's choice to travel abroad for their electives or to simply return back to where their families are, it is recommended for students to balance the risks and their reasons to travel. Kucharski et al has performed a mathematical analysis on multiple datasets on COVID-19 cases in Wuhan. They demonstrated that prior to travel restrictions, there was a reproduction number, the average number of secondary cases generated by an infectious individual, of between 1.5 to 4.5. However, after all the measures that took place, the reproduction number has been decreasing successfully (23). Nonetheless, all studies, including the analysis by Kucharski et al, are subjected to limitations such as the lack of information regarding the characteristics and epidemiology of this illness including how easily transmissible this virus is. As a result, further research studies, including reviews and meta-analyses, are required to gather more data from

patients who are tested positive for COVID-19.

Future Suggestions

When considering future plans, methods shown to have been effective in other countries should be considered. Hong Kong has one of the most densely populated countries in the world with a population density of 6,659 people per square kilometre. Furthermore, Hong Kong shares a border with China, the country currently with the highest number of cases. Despite this, with their experience with SARS in 2003, they have managed to slow down the spread of the virus, and as to now they have only 157 cases of COVID-19. This is because Hong Kong took rapid action and immediately closed schools since 27th January 2020 (24). Thus, medical students were removed from clinical sites and were told to stay at home. In comparison, medical schools in London have only told their medical students across all years to avoid hospital areas in March 2020. If the health and safety of medical students were to be considered a matter of utmost importance, new policies should be implemented and a pause to clinical placements should have been introduced earlier. As the EU directive has stated that all doctors must undergo a minimum of 5500 hours of training over at least five years (25), institutions should be prepared to teach through tutorials, lectures and online videos.

If medical schools do decide to continue lectures and tutorials, particularly in the pre-clinical years, strict monitoring systems should be held in place. Precautions should be made, such as repeated handwashing and supplying students with hand sanitisers and masks. Furthermore, institutions can designate staff with the roles of checking student's temperatures daily. It is also important to emphasise the need for implicating the same rules on the lecturers and other members of staff. Alternatively, another solution would be to perform remote lectures and tutorials whereby the staff and students are in separate rooms. Many medical schools already have the technology and software, such as Panopto used at Imperial College London. Advanced communication technology allows tutorials to be held live without the need for all participants to be in the same room. Platforms such as Skype, Adobe Connect and Google Plus are accessible to many students and does not require sophisticated prior knowledge or tools to operate.

Further issues arise, including whether final year students should continue their electives.

Continuation of electives pose a greater risk in contracting the virus as many students choose to travel abroad to embark on their electives. If the UK moves on to the mitigation phase, a larger workforce for the current NHS would be required. The Chief Medical Officer has recently said that recruitment of current final year medical students may be considered to work in hospitals if the situation worsens. One study collected data regarding infectious disease outbreaks via surveys, which were distributed to various healthcare students including medical, pharmacy and nursing students. It was reported that medical students demonstrated the greatest fear for the impact of the outbreak on their health. Medical students were also found to be the most knowledgeable and willing to work during an infectious outbreak. Explanations behind this could be that prior disaster training was received by 16% of the medical students, in comparison to 6% and 4% in nursing and pharmacy students respectively (26). Consequently, the study suggested that training for preparation of outbreaks are warranted and this could be introduced into the medical school curricula in the future. Services should be organised and provided to medical students, and especially for those that cannot travel back home if universities were to be closed down, such as international students. Support towards accommodation would need to be considered to ensure that students are placed in a safe environment, whether that is on or off-campus, that should be decided carefully by university staff. Access to mental health services would also be beneficial for many students, including medical students, as a pandemic as impactful as COVID-19 has not been experienced in their lifetime before. Some students may also know family members affected by COVID-19 or may be quarantined. A recently published systematic review analysed the negative psychological impacts of quarantine, and found that many studies reported stressors, which included stigma and being given inadequate information and supplies (27). Moreover, some studies identified some patients suffered through chronic effects on their mental wellbeing (27). The loss of a person's ability to interact with the wider society and being confused over the duration of the isolation and disease status can be upsetting. Consequently, information regarding welfare support and helplines should be delivered to students via emails, social media and offline bulletin boards.

Conclusion

Medical schools have a duty to protect the safety of their students as well as to produce safe doctors. In unprecedented circumstances, extraordinary measures must be taken. Hong Kong medical schools were quick to proactively close in response to COVID-19 as the 2003 SARS outbreak set a precedence normalising medical school closure during a public health crisis. London medical schools only implemented measures reactively. The experience London medical schools will have gained from the COVID-19 pandemic will undoubtedly allow for more a rapid and decisive response to similar situations in the future.

Abbreviations

COVID-19: Coronavirus disease

SARS-CoV-2: Severe acute respiratory syndrome coronavirus 2

WHO: World Health Organization

PHE: Public Health England

FCO: Foreign & Commonwealth Office

MSC: Medical Schools Council

UK: United Kingdom

SARS: Severe acute respiratory syndrome

UCL: University College London

PSA: Prescribing Safety Assessment

OSCE: Objective Structured Clinical Examination

PACES: Practical Assessment of Clinical Examination Skills

GMC: General Medical Council

ECDC: European Centre for Disease Prevention and Control

National Health Service: NHS

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

ASJT and CLTH were responsible for planning the study, collection of data, analysis of data and writing the manuscript. All authors read and approved the final version of the manuscript.

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References

(1) King's College London. *Coronavirus: Confirmed Cases*. Available from:

<https://web.archive.org/web/20200316184520/https://www.kcl.ac.uk/news/statements/coronavirus-confirmed-cases>. Accessed 16th March 2020.

(2) Lee N, Hui D, Wu A, Chan P, Cameron P, Joynt GM, et al. A Major Outbreak of Severe Acute Respiratory Syndrome in Hong Kong. *The New England Journal of Medicine*. 2003; 348 (20): 1986-1994. Available from: doi: 10.1056/NEJMoa030685 .

(3) Suwantarat N, Apisarnthanarak A. Risks to healthcare workers with emerging diseases: lessons from MERS-CoV, Ebola, SARS, and avian flu. *Current Opinion in Infectious Diseases*. 2015; 28 (4): 349-361. Available from: doi: 10.1097/QCO.0000000000000183 .

(4) Queen Mary University of London. *Coronavirus advice and updates*. Available from:

<https://web.archive.org/web/20200316190835/https://www.qmul.ac.uk/coronavirus>. Accessed 16th March 2020.

(5) Imperial College London. *Coronavirus (COVID-19)*. Available from:

<https://web.archive.org/web/20200316185109/https://www.imperial.ac.uk/about/covid-19>. Accessed 16th March 2020.

(6) King's College London. *Coronavirus*. Available from:

<https://web.archive.org/web/20200316184906/https://www.kcl.ac.uk/coronavirus>. Accessed 16th March 2020.

(7) St. George's University of London. *Guidance for students*. Available from:

<https://web.archive.org/web/20200316190841/https://www.sgul.ac.uk/news/alerts/guidance-for-students/>. Accessed 16th March 2020.

(8) University College London. *Advice for staff and students who may have concerns about the outbreak of coronavirus*. Available from:

<https://web.archive.org/web/20200316191344/https://www.ucl.ac.uk/news/2020/mar/advice-staff-and-students-who-may-have-concerns-about-outbreak-coronavirus>. Accessed 16th March 2020.

(9) Public Health England. *Coronavirus (COVID-19): what you need to do*. Available from:

<https://web.archive.org/web/20200314164716/https://www.gov.uk/government/organisations/public-health-england>. Accessed 16th March 2020.

(10) Foreign and Commonwealth Office. *Coronavirus (COVID-19): what you need to do*. Available from:

<https://web.archive.org/web/20200316234008/https://www.gov.uk/government/organisations/foreign-commonwealth-office>. Accessed 16th March.

(11) Atherton J, Reed M, Petty-Saphon K. *Advice from Medical Schools Council to UK Medical Schools on actions surrounding Covid-19*. Medical Schools Council. 2020.

(12) World Health Organisation. *Coronavirus*. Available from:

<https://web.archive.org/web/20200315010434/https://www.who.int/health-topics/coronavirus>. Accessed 16th March 2020.

(13) Hong Kong University. *The Latest from HKU Med on COVID-19*. Available from:

<https://web.archive.org/web/20200316225859/https://www.med.hku.hk/en/The-Latest-from-HKUMed->

on-COVID-19/Faculty-Announcements. Accessed 16th March 2020.

Hatchett RJ, Mecher CE, Lipsitch M. Public health interventions and epidemic intensity during the 1918 influenza pandemic. *Proceedings of the National Academy of Sciences, USA*. 2007; 104 (18): 7582-7587. Available from: <https://search.proquest.com/docview/19663506> .

(14) Department for Education. *COVID-19: guidance for education settings*. Available from: <https://web.archive.org/web/20200313160446/https://www.gov.uk/government/publications/guidance-to-educational-settings-about-covid-19/guidance-to-educational-settings-about-covid-19>. Accessed 16th March 2020.

(15) Pew Research Center. *News Use Across Social Media Platforms 2016*. Available from: <https://web.archive.org/web/20200306201436/https://www.journalism.org/2016/05/26/news-use-across-social-media-platforms-2016>. Accessed 16th March 2020.

(16) #StayTheFuckHome. *A Movement to Stop the COVID-19 Pandemic*. Available from: <https://web.archive.org/web/20200314175107/https://staythefuckhome.com>. Accessed 16th March 2020.

(17) Engdaw GT, Gebrehiwot M, Andualem Z. Hand hygiene compliance and associated factors among health care providers in Central Gondar zone public primary hospitals, Northwest Ethiopia. *Antimicrobial Resistance & Infection Control*. 2019; 8 (1): 1-190. Available from: doi: 10.1186/s13756-019-0634-z .

(18) Akingbola OA, Singh D, Srivastav SK, Plunkett DS, Combs MM. The Impact of Hand Hygiene Posters on Hand Hygiene Compliance Rate among Resident Physicians: A Brief Report. *Clinical Pediatrics: Open Access*. 2016; 1 (4): Available from: doi: 10.4172/2572-0775.1000113 .

(19) Torous J, Keshavan MS. Coronavirus disease 2019 (COVID-19) Situation Report - 44. 2020; 210 1-2. Available from: doi: 10.1016/j.schres.2019.07.051 .

(20) European Centre for Disease Prevention and Control. *Daily risk assessment on COVID-19, 13 March 2020*. Available from: <https://web.archive.org/web/20200316192227/https://www.ecdc.europa.eu/en/current-risk->

assessment-novel-coronavirus-situation. Accessed 16th March 2020.

(21) GP Online. *Medical students and recently retired doctors could help coronavirus response, says CMO*. Available from:

<https://web.archive.org/web/20200316192008/https://www.gponline.com/medical-students-recently-retired-doctors-help-coronavirus-response-says-cmo/article/1676062>. Accessed 16th March 2020.

(22) Kucharski AJ, Russell TW, Diamond C, Liu Y, Edmunds WJ, Funk S, et al. *Analysis and projections of transmission dynamics of nCoV in Wuhan*. Available from:

<https://web.archive.org/web/20200316234316/https://cmmid.github.io/topics/covid19/current-patterns-transmission/wuhan-early-dynamics.html>. Accessed 16th March 2020.

(23) Chan C. *Extension of Chinese New Year Holidays*. Education Bureau, Government Secretariat, The Government of the Hong Kong Special Administrative Region, The People's Republic of China. 2020.

(24) The European Parliament. *Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications*. Official Journal of the European Union. 2005.

(25) Patel R, Wattamwar K, Kanduri J, Nahass M, Yoon J, Oh J, et al. Health Care Student Knowledge and Willingness to Work in Infectious Disease Outbreaks. *Disaster medicine and public health preparedness*. 2017; 11 (6): 694-700. Available from: doi: 10.1017/dmp.2017.18.

(26) Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *The Lancet*. 2020; Available from: doi: 10.1016/S0140-6736(20)30460-8.