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Social and Psychological Impact of the Covid-19 pandemic on UK medical and nursing students: Protocol for a national medical and nursing student survey

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Social and Psychological Impact of the Covid-19 pandemic on UK medical and nursing students: Protocol for a national medical and nursing student survey

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ABSTRACT

Introduction

Healthcare students have played a significant role in the NHS during the COVID-19 pandemic. We captured data on the wellbeing of medical students during the acute phase of the pandemic with the Social and Psychological Impact of COVID-19 on medical students: a national survey Evaluation (SPICE-19) study. We will evaluate changes in mental health and wellbeing of medical and nursing students one year after the study in order to understand the ongoing impact of the pandemic, and inform wellbeing policies.

Methods and Analysis

This study will be a national, multi-institution, cross-discipline study. An online, 53-item survey of demographics, mental health and wellbeing will be used to record responses. Students studying for a medical or nursing degree at any UK universities will be eligible to participate. The survey will be advertised through the Neurology and Neurosurgery Interest Group (NANSIG) national network. Participation is anonymous and voluntary, with relevant mental health resources made available to participants.

Ethics and Dissemination

Ethical approval was granted by the University of Oxford Central University Research Ethics Committee (R75719/RE001) on 21st May 2021. The findings of the study will be presented at national and international meetings, and submitted for publication in a peer-reviewed journal.

Strengths and limitations

- This is a multi-centre, national questionnaire-based survey of medical and nursing student mental health and wellbeing in the UK.
- This is the first study to assess mental health and wellbeing of the student multi-disciplinary team during the new normal after the Covid-19 pandemic.

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- The study results will provide valuable insight into healthcare workers, which can be used to identify and target further areas of wellbeing support and inform policy.
- Response bias may overestimate participation of students based on age, sex, and medical/nursing school, with those interested in neuroscience and mental health more likely to participate.

INTRODUCTION

Medical and nursing students in the UK have been significantly affected by the COVID-19 pandemic. During the first wave, many were active components of the clinical team, either by undertaking extending clinical placements, paid work in the NHS, or through voluntary roles, while others saw placements reduced, suspended, or cancelled completely.(1, 2) We evaluated medical student wellbeing and mental health during the acute phase of the pandemic with the Social and Psychological Impact of COVID-19 on medical students: a national service evaluation (SPICE-19) study,(3) a cross sectional study with a prospective component, which identified several points for service provision improvement based on 2275 responses across 34 medical schools in the UK.(4-6)

It is pertinent to re-evaluate the mental health of medical students, one year removed from SPICE-19, to explore how they are navigating their training, education, and the impact of adapting to the 'new normal' of medical education provision.(7, 8) It is also important to elucidate the effect of COVID-19 on the wellbeing and mental health of UK nursing students, many of whom were asked to volunteer on the front line in COVID wards,(2) and a large-scale study examining this has not been completed. A single centre survey in the US noted that nursing students reported increased levels of anxiety, reduction in concentration, and difficulties with academic workload throughout the pandemic,(9) and a large multi-institutional study is required to elucidate this further. This is in accordance with previously published work by the SPICE-19 research team. (10, 11)

Medical and nursing schools have each responded differently to the pandemic, with the accessibility of wellbeing and mental health services variable between universities.(12) A national survey assessing mental health and wellbeing in medical and nursing students, as well as support systems available for those facing mental health difficulty is required. Evaluating the mental health and wellbeing of the student multi-disciplinary team is vital for

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ensuring adequate service provision is provided - it is paramount to safeguard the wellbeing of the next generation of healthcare professionals.(13, 14)

The primary aim of this study is to comprehensively evaluate mental health and wellbeing of medical and nursing students during the evolving COVID-19 pandemic, one year after the initial outbreak. The secondary aims are to elucidate students' perceptions of institutional efforts to provide support, and accessibility and appropriateness of such support. The study logos are shown in Figure 1.

Figure 1. SPICE-20 study logos.

METHODS AND ANALYSIS

Study partners

NANSIG

The Neurology and Neurosurgery Interest Group (NANSIG) was formed in 2010. It is a student and junior doctor led interest group designed to increase participation, diversity and engagement in Neurosciences, and has over 1000 members internationally.(15) The organisation has an affiliation with the Society of British Neurosurgeons (SBNS) and the Association of British Neurologists (ABN) (www.nansig.org). The organisation led the SPICE-19 national cohort study last year, assessing wellbeing in 2275 medical students in response to the pandemic, and is familiar with survey design and distribution. The collective organisation runs established national and international events, and has published over 20 peer-reviewed publications.

Study design

SPICE-20 is a national, multi-institution, cross-sectional study. An online survey will be used to record participant responses. The survey contains 53 items - section 1 of the survey includes background and demographic information. Section 2 assesses wellbeing by asking participants to complete the Warwick-Edinburgh Mental Well Being Scale (WEMWBS); a 14-point, validated evaluation of wellbeing.(16) Section 3 encompasses the Patient Health Questionnaire-9 (PHQ-9) and Generalised Anxiety Disorder-7 (GAD-7). The PHQ-9 is a valid diagnostic and severity measure for depressive disorder,(17) and GAD-7 is a seven-item,

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3 validated assessment of generalised anxiety.(18, 19) Section 4 includes questions about
4 university support offered by each institution, if participants had accessed this support, and
5 any significant changes to teaching encountered during the pandemic.
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9 The survey was iteratively defined by the student-led study management team until a
10 consensus was reached. Based on our experience with SPICE-19 survey, we have reduced
11 the number of questions and limited the survey to validated measures of wellbeing and
12 mental health. The final, 53-item questionnaire is shown in Figure 2.
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19 Figure 2: Final SPICE-20 survey design.
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22 Survey piloting

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25 The survey was piloted by a group of 15 medical students from the NANSIG core committee.
26 These students were not involved in the design of the study and were consulted in order to
27 provide feedback, improve clarity and ensure objectivity. Data was analysed to identify any
28 points of concern, estimated completion time, and difficult survey items/questions. Students
29 were contacted to identify any suggestions for improvement, with none identified. Therefore,
30 no further alterations were made.
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38 Survey administration

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41 The survey was hosted on the Qualtrics™ survey platform (Provo, Utah, USA), a GDPR-
42 compliant online survey platform, that facilitates both mobile and desktop devices.
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48 Study dissemination

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51 To maximise distribution across the UK, a national network of SPICE-20 Collaborative
52 members were recruited, representing all 33 medical schools in the UK. Most held
53 concurrent committee or regional lead roles in NANSIG at time of recruitment. Each member
54 was asked to acquire the most up to date (as of April 2021) available resources, guidance
55 and support policies in place for their current medical school, plus an additional nursing
56 school. A standard advertising method was developed by the steering committee and based
57 on the successful recruitment strategy employed in the SPICE-19 study, which involved
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members contacting their respective medical school deans to request distribution of the survey at inception, as well as regular advertising over the 8-week study collection period, from 7st June 2021 to the 7rd August 2021. The distribution links for the survey includes university mailing lists, student society pages, and social media platforms. Figure 3 provides an example of the email template used to disseminate the survey through student mailing lists. Adverts will also be placed on NANSIG social media platforms, as well as the monthly NANSIG newsletter.

In the invitation to complete the study, based on their medical/nursing school, participants will also receive wellbeing, mental health, and guidance services specific to their institution, should they need to access them at any point. Participants will also be made aware of our patient and public involvement organisation, and their contact details. No incentives for participation will be offered.

Figure 3. Standard email template used for all survey dissemination through student email lists, developed by the study team and approved by the research ethics committee.

Eligibility and representation

All current students enrolled at UK medical schools recognised by the General Medical Council (GMC) and the Medical Schools Council (MSC) will be eligible to participate. Additionally, all current home and international students enrolled on an adult, child and mental health nursing degree at a UK university are eligible for inclusion. A list of eligible medical schools, and approved programmes by the Nursing and Midwifery Council (NMC) is included in the supplementary materials (document "Supplementary Material – MSC and NMC").

Consent and confidentiality

A patient information sheet will be shown on the first page of the study (supplementary material - patient information). This encompasses the rationale, purpose, and voluntary nature of participation. Participants must verify that they are over 18 years old and provide informed consent via tick box. It will be emphasised that participation is anonymous, confidential, voluntary, and that participants can withdraw consent at any time.

Data security

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All data will be collected and stored on the secure online server, Qualtrics™. Survey data will be extracted from the software to a password-protected, Microsoft Excel spreadsheet (Microsoft, California, USA) only available to the study team. Data handling and record keeping will adhere to the University of Oxford standards for data security.

Statistical analysis

Data will be analysed using SPSS statistics V25 and presented using RStudio V4.2. The overall wellbeing of medical and nursing students, as assessed using the WEMWBS, and mental health, using the PHQ-9 and GAD-7, will be presented using descriptive statistics. No information that identifies or is specific to institutions will be presented. Appropriate statistical methods will be selected based on the distribution and type of data; it is anticipated data will be non-parametric, and, will therefore be compared using tests such as χ^2 or Kruskal-Wallis tests. Differences between medical and nursing students will be compared using these statistical tests.

Sample size calculation

Approximate estimates of total UK medical and nursing students were calculated from yearly undergraduate intake figures. The total number of UK medical and adult nursing students was estimated to be 84,000. An online calculator was used to determine the sample size needed for the survey. The minimum sample size required from our target population for a margin error of 5% and a confidence interval level of 95% is 383, assuming a 50% response distribution for each question. For every medical student response, 1.28 nursing student responses would be needed to achieve a 50:50 distribution in response rate.

Patient and public involvement

As the study population was medical and nursing student wellbeing and mental health, we worked collaboratively with the Be Free Campaign - a mental health and wellbeing awareness charity, from study inception. Be Free were involved in the conception, design and development of the study. The charity works with young people and students, emphasising mental health and wellbeing, to tackle the stigma behind mental health, and promote expression of individual values (UK registered charity number 1189704). The

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3 charity director and clinical study team for the charity comprehensively reviewed the protocol
4 for appropriateness of content, question format, and ensured the questions asked were
5 sensitive and pertinent to medical and nursing students.
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9 Be Free have extensive knowledge of indicators of mental health, and the questions
10 selected (WEMWBS, PHQ-9 and GAD-7) were done so in concordance with their advice.
11 The number of questions, layout, and design were also prepared in accordance with their
12 suggestions. The charity inspired the conception of this study and approved the final survey
13 design. The charity founder and director (SK) is also a member of the steering committee for
14 this study.
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23 **DISCUSSION**

24 Study rationale

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27 This is the first national, multi-institutional study to evaluate the mental health of UK medical
28 and nursing students during the COVID-19 pandemic.(20) It will therefore be possible to
29 elucidate the mental health and wellbeing of healthcare students across the UK. By
30 comparing medical and nursing schools, it will be possible to evaluate the nature of
31 successful support, as well as students' confidence and ability to access this support. The
32 findings will inform service provision, and highlight areas where improvement is required.
33 The survey will also highlight local and national wellbeing resources available to students.
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44 Why assess medical and nursing student wellbeing and mental health?

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47 Medical and nursing students form the healthcare multi-disciplinary team of the future.
48 Mental health and wellbeing are positively correlated with job satisfaction, retention, and
49 performance, and is an essential component of good health.(21) If the NHS is to retain,
50 recruit and develop its workforce of the future, ascertaining their mental health at this point in
51 the COVID-19 pandemic is essential. Young people have been disproportionately affected
52 by the pandemic, and most medical and nursing students fall into this age category. As non-
53 emergency care is delayed and rescheduled, students will have to deal with the long acting
54 repercussions of the pandemic, including those directly affected by the virus itself, including
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3 long-COVID,(22) declining mental health in the population exacerbated by the pandemic,(23)
4 and implications of delayed access to healthcare.(24, 25)
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8 Many medical students may not be aware that such support exists, either at their respective
9 institution, or at a regional/national level, and we would do these students a disservice by not
10 highlighting existing mental health and wellbeing services.
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14 Benefits of a national medical student wellbeing survey

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17 Medical and nursing schools across the UK adopt heterogenous practices to achieve the
18 outcomes set in the GMC and NMC core competencies and curricula.(26) A survey of both
19 medical and nursing students on a national scale is the best way to evaluate mental health
20 and wellbeing. Many institutions reacted differently to the pandemic, and a survey is best
21 placed to simultaneously decipher wellbeing and mental health at each institution, while
22 assessing the impact of the pandemic on a national scale, and highlighting heterogeneity
23 between institutions. Furthermore, there is a need to appreciate that multi-institutional
24 studies of large magnitude are required to answer important clinical questions and elucidate
25 concerns not identified by smaller studies. Multi-centre studies are also less susceptible to
26 identity issues because the data is aggregated between multiple medical schools, and can
27 be presented as all centres.
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38 Limitations

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41 Online surveys have the advantage of ubiquitous presence, and increased accessibility to
42 medical and nursing schools in the UK. However, several limitations can arise from such a
43 study method.
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47 Firstly, those with an existing interest in wellbeing and mental health may be more likely to
48 engage with and complete the survey. This could lead to selection bias towards those
49 adversely affected by the pandemic. The anticipated magnitude of this effect is unclear. In
50 addition, as the survey is being distributed through NANSIG, there may be over-participation
51 from students with an interest in Neurosciences and their surrounding connections.
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56 In order to ameliorate this as best as possible, we have adopted a varied dissemination
57 approach. This includes having representatives at each UK medical school, survey
58 distribution to medical and nursing school bulletins, and newsletters. We hope this will
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3 improve visibility and participation. We decided not to incentivise participants with a potential
4 prize for completing the survey, as we wanted responses to be motivated by a desire to
5 complete the questions in as open a way as possible.
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9 The study is also limited by its cross-sectional design, and will therefore only provide a
10 snapshot of mental health and wellbeing at the time of survey completion. In addition, during
11 capricious times such as COVID, fluctuations in mental health may occur in accordance with
12 policy changes, as well as institutional policies towards placements and assessment, and we
13 will assess date of study completion as a potential confounder as a variable in our analysis.
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18 The self-reporting of symptoms, will also be a significant limitation, in addition to the fact that
19 the questions included are screening tools for mental health and wellbeing, and are not
20 immediately diagnostic.
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24 25 Ethics and dissemination

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27 Ethical approval for this study was granted by the Oxford Research ethics committee
28 [R75719/RE001]. The findings of the SPICE-20 study as described in this protocol, will be
29 presented at scientific conferences, and submitted for publication in a peer-review journal
30 once finalised.
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35 36 37 Acknowledgments

38
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41 and inspiration for components of the study. We also thank NANSIG and members of the
42 SPICE-20 collaborative, for their kind assistance disseminating the survey.
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52
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6 Competing interests' statement
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9 None to declare.
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12 Presented at: N.A.
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17 Author Contributions
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19

20 GER, CSG, and OM were responsible for initial drafting of protocol manuscript,
21 conceptualisation and designing the study. AC, SZYO, JP, ERB, IG, SB, and KS formed the
22 wider study group and reviewed and approved drafts of the manuscript. KS provided
23 supervision of the project. SK reviewed the manuscript and also provided PPI involvement
24 and approval for the study.
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30 Data Sharing Statement
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33 Data are available upon reasonable request. All data must be anonymised entirely prior to
34 any sharing request completion.
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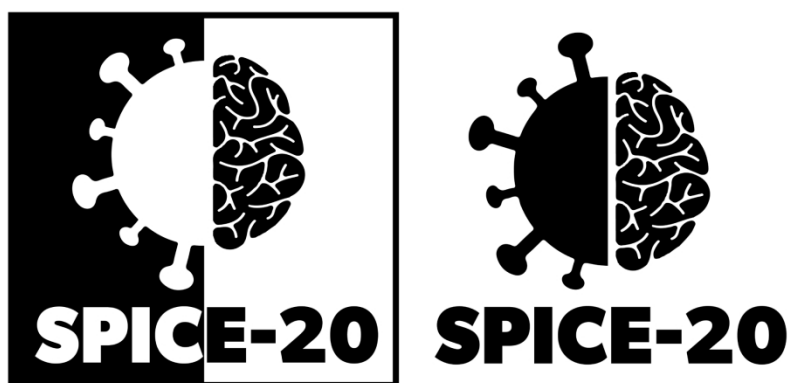


Figure 1. SPICE-20 study logos.

533x755mm (118 x 118 DPI)

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Section 1 – Background Information

- Are you a medical or nursing student?
 - Medical student
 - Which medical school are you currently enrolled in?
 - Response from dropdown of medical schools
 - Nursing Student
 - Which nursing school are you currently enrolled in?
 - Response from dropdown of nursing schools
 - How many years (if any) of your degree (excluding intercalation) have you completed so far?
 - Choose year of study from list
 - Are you currently undertaking an intercalated degree?
 - Respond yes or no
 - Have you previously undertaken an intercalated degree?
 - Respond yes or no
 - Free text box for age
 - What is your gender?
 - Choose from gender list with free-text box
 - What is your race or ethnicity?
 - Choose from list of ethnicities with free-text box
 - What is your religion?
 - Choose from list of religions with free-text box

Section 2 – Wellbeing and Mental Health

WELMHS

Participants are shown a series of statements and asked to choose an appropriate response from either: 1) None of the time, 2) Rarely, 3) Some of the time, 4) Often and 5) All of the time

- "I've been feeling optimistic about the future"
- "I've been feeling useful"
- "I've been feeling relaxed"
- "I've been feeling interested in other people"
- "I've had energy to spare"
- "I've been dealing with problems well"
- "I've been thinking clearly"
- "I've been feeling good about myself"
- "I've been feeling close to other people"
- "I've been feeling confident"
- "I've been able to make up my own mind about things"
- "I've been feeling loved"
- "I've been interested in new things"
- "I've been cheerful"

PHQ-9

Participants are asked, over the last 2 weeks, how often have you been affected by any of the following problems? Responses include: 1) Not at all (0-1 days), 2) Several days (2-6 days), 3) More than half the days (7-11 days), 4) Nearly every day (12-14 days)

- Little interest or pleasure in doing things?
- Feeling down, depressed or hopeless?
- Trouble falling or staying asleep, or sleeping too much?
- Feeling tired or having little energy?
- Poor appetite or overeating?
- Feeling bad about yourself – or that you are a failure or have let yourself or your family down
- Trouble concentrating on things, such as reading the newspaper or watching television?
- Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual?
- Thoughts that you would be better off dead or of hurting yourself in some way?

GAD-7

Participants are asked, over the last 2 weeks, how often have you been bothered by the following problems? Responses include: 1) Not at all, 2) Several days, 3) More than half the days, 4) Nearly every day

- Feeling nervous, anxious or on edge
- Not being able to stop or control worrying
- Worrying too much about different things
- Trouble relaxing
- Being so restless that it is hard to sit still
- Becoming easily annoyed or irritable
- Feeling afraid as if something awful might happen

Other Questions

- How would you rate your mood before COVID-19 affected the UK (One year ago)? 0 being the worst mood you can imagine and 100 being the best mood you can imagine
 - Response via sliding scale from 0 to 100
- How would you rate your mood now? 0 being the worst mood you can imagine and 100 being the best mood you can imagine
 - Response via sliding scale from 0 to 100

Section 3 – Support

- Has your university provided any form of mental health and wellbeing support?
 - Yes
 - What support has the university provided you with? (please select one or more)
 - Multiple selection boxes with options and free text box for other
 - How confident do you feel accessing the support services available to you?
 - 5 point Likert scale from not confident at all to very confident
 - Have you accessed/used support that your university has provided?
 - Yes
 - Has your university support been useful?
 - Yes
 - In what way?
 - Free text response
 - No
 - Why not?
 - Free text response
 - No
 - Why not?
 - Free text response
 - No
 - Would you like your university to provide you with more wellbeing support?
 - Yes (please select one or more)
 - Multiple selection boxes with options and free text box for other
 - No
 - Why not?
 - Free text response

Section 4 – Changes

 - Is your teaching different now compared to before the pandemic (do not answer if in first year)?
 - Yes
 - Please select one or more of the following ways teaching/placements have changed:
 - Multiple selection boxes with options and free text box for other
 - Why not?
 - Free text response
 - Has there been any positive aspects of the changes to teaching?
 - Yes
 - Please detail the positive changes to teaching
 - Free text response
 - No
 - What changes could be made to teaching in medical school to improve your wellbeing?
 - Multiple selection boxes with options and free text box for other
 - Have you worked or are you currently working within a healthcare setting during the course of this pandemic?
 - Yes
 - Which of the following roles have you taken up?
 - Multiple selection boxes with options and free text box for other
 - Have you been offered wellbeing support in response to the role you have undertaken?
 - Yes
 - Who has provided this support? (please select one or more)
 - Multiple selection boxes with options and free text box for other
 - No
 - No
 - After the pandemic, are you more or less likely to continue in a career in Medicine/Nursing?
 - 5 point Likert scale from Much less likely to Much more likely
 - Have your future career plans changed since the start of the pandemic?
 - Yes
 - If Yes, how come?
 - Free text response
 - No

For peer review only - <http://bmjopen.bmj.com/site/about/guidelines.xhtml>

Figure 2: Final SPICE-20 survey design.

913x1291mm (118 x 118 DPI)

Dear Students,

We are a group of student researchers that are interested in investigating the current state of medical student mental health and wellbeing, one year on from the onset of the pandemic. We are inviting all UK medical students, from years 1 to 5 (and intercalating) to complete a short 15 minute survey to help us better understand how you are doing. Whilst completing the survey, you will be asked a variety of questions about your mental health and wellbeing, and the support that you have received. Your IP address will not be recorded and responses will be anonymous. There will not be any follow up survey. Useful links to support services have been provided along with the post-survey debrief. Additional information about the risks versus benefits of taking part in the survey can be found by following the study link below. **Please access the survey by the link below:**

https://psychiatryoxford.qualtrics.com/jfe/form/SV_eQmCH0FLewvbcWO

If you have any questions about the study or your involvement please contact a member of the study team at the following email and we will aim to reply within 24hrs:
hgricha@liverpool.ac.uk

Should you have concerns about your wellbeing do consider contacting you GP or accessing the resources available: <LOCAL SERVICE PROVISION INSERTED HERE>

Many thanks for taking the time to read this,

George Richardson
SPICE-20 Study Team



Figure 3. Standard email template used for all survey dissemination through student email lists, developed by the study team and approved by the research ethics committee.

554x668mm (57 x 57 DPI)

UK N.M.C Approved Adult Nursing Programmes

Approved education institution	Course
University Of Essex	Adult Nursing
University Of Essex	Adult Nursing (nursing degree apprenticeship route)
Edinburgh Napier University	Bachelor of Nursing (Adult)
University Of Wolverhampton	Bachelor of Nursing (BNurs (Hons)) Adult Nursing
University Of Wolverhampton	Bachelor of Nursing (BNurs (Hons)) Adult Nursing [Apprenticeship]
University Of Glasgow	Bachelor of Nursing (Honours)
University Of Manchester	Bachelor of Nursing (Hons) (Adult)
University Of Birmingham	Bachelor of Nursing (Hons) (Adult)
University Of Liverpool	Bachelor of Nursing (Hons) Nursing (Adult)
University Of Glasgow	Bachelor of Nursing (ordinary) [fall back award]
Cardiff University	Bachelor of Nursing Adult
University of Derby	Bachelor of Science (Honours) in Nursing (Adult)
University of Derby	Bachelor of Science (Honours) in Nursing (adult) (apprenticeship)
University Of Sheffield	BMed Sci (Hons) Nursing (Adult)
University Of Sheffield	BMedSci (Hons) Nursing (Adult) Apprenticeship route
University of Chester	BN (Hons) Adult Nursing
University of Chester	BN (Hons) Adult Nursing
University of Chester	BN (Hons) Adult Nursing
University of Chester	BN (Hons) Adult Nursing
University of Chester	BN (Hons) Adult Nursing

Approved education institution	Course
University of Chester	BN (Hons) Adult Nursing Apprenticeship
University of Chester	BN (Hons) Adult Nursing Apprenticeship
University Of Portsmouth	BN (Hons) Nursing (Adult)
University of Winchester	BN (Hons) Nursing (Adult)
Glyndwr University (formerly North East Wales Inst. of HE)	BN Nursing
University Of Edinburgh	BN nursing (adult)
University Of Edinburgh	BN nursing with Honours (adult)
University of Chester	BNurs (Hons) Adult
University of Chester	BNurs (Hons) Adult (part-time)
University of Chester	BNurs (Hons) Adult Apprenticeship
University Of Wolverhampton	BNurs (Hons) Adult Nursing
University Of Wolverhampton	BNurs (Hons) Adult Nursing Apprenticeship
University of West London	BNursing (Hons) Adult
University Of Hertfordshire	BSc Hons Nursing (Adult)
University Of Stirling	BSc (Honours) Nursing (Adult)
Coventry University	BSc (Hons) Adult Nursing
Coventry University	BSc (Hons) Adult Nursing (Degree apprenticeship)
Oxford Brookes University	BSc (Hons) (Adult)
London South Bank University	BSc (Hons) adult nursing
University of Suffolk	BSc (Hons) Adult Nursing
University of West of Scotland	BSc (Hons) Adult Nursing
Leeds Beckett University	BSc (Hons) Adult Nursing
University of Northampton	BSc (Hons) Adult Nursing
Bournemouth University	BSc (Hons) Adult Nursing

Approved education institution	Course
University of Roehampton	BSc (Hons) Adult Nursing
University Of Dundee	BSc (Hons) Adult Nursing
University of West of Scotland	BSc (Hons) Adult Nursing
University Of Greenwich	BSc (Hons) Adult Nursing
University of Bedfordshire	BSc (Hons) Adult Nursing
Bournemouth University	BSc (Hons) Adult Nursing (Apprenticeship)
University of Bedfordshire	BSc (Hons) Adult Nursing (apprenticeship)
University of Sunderland	BSc (Hons) Adult Nursing (blended)
University of Sunderland	BSc (Hons) Adult Nursing (blended)
Leeds Beckett University	BSc (Hons) Adult Nursing (degree apprenticeship)
Manchester Metropolitan University	BSc (Hons) Adult Nursing (Pre-registration)
University of Suffolk	BSc (Hons) Adult Nursing [degree apprenticeship]
Coventry University	BSc (Hons) Adult Nursing Blended Learning
Coventry University	BSc (Hons) Adult Nursing Blended Learning Nursing Degree Apprenticeship
University Of Greenwich	BSc (Hons) Adult Nursing Degree Apprenticeship
Solent University	BSc (Hons) Adult Nursing Practice – apprenticeship
University of Sunderland	BSc (Hons) adult nursing practice
Solent University	BSc (Hons) Adult Nursing Practice
University Of Huddersfield	BSc (Hons) Degree Apprenticeship - Registered Nurse Child (Blended Learning)
University Of Huddersfield	BSc (Hons) Degree Apprenticeship-Registered Nurse: Adult

Approved education institution	Course
BPP	BSc (Hons) Nursing (Adult) [Nursing Degree Apprenticeship]
BPP	BSc (Hons) Nursing (Adult) [pre registration nursing]
University of East Anglia	BSc (Hons) nursing - Adult
University Of Huddersfield	BSc (Hons) Nursing - Adult
University Of The West Of England, Bristol	BSc (Hons) Nursing - Adult
University of East Anglia	BSc (Hons) Nursing - Adult Degree Apprenticeship
Queen Margaret University	BSc (Hons) Nursing
University Of Plymouth	BSc (Hons) Nursing (Adult Health)
University Of Plymouth	BSc (Hons) Nursing (Adult Health) - Nurse Degree Apprenticeship
University Of York	BSc (hons) Nursing (Adult)
University of Salford	BSc (Hons) Nursing (adult)
University of Bolton	BSc (Hons) Nursing (adult)
University of Nottingham	BSc (Hons) Nursing (adult)
Buckinghamshire New University	BSc (Hons) Nursing (Adult)
Anglia Ruskin University	BSc (Hons) Nursing (Adult)
Swansea University	BSc (Hons) Nursing (Adult)
Edge Hill University	BSc (Hons) Nursing (Adult)
Edge Hill University	BSc (Hons) Nursing (Adult)
The Open University	BSc (Hons) Nursing (Adult)
The University of Hull	BSc (Hons) Nursing (Adult)
The University of Hull	BSc (Hons) Nursing (Adult)
University of Ulster	BSc (Hons) Nursing (Adult)

Approved education institution	Course
University Of East London	BSc (Hons) Nursing (Adult)
University Of Leeds	BSc (Hons) Nursing (Adult)
University College Birmingham	BSc (Hons) Nursing (Adult)
University Of Southampton	BSc (Hons) Nursing (Adult)
Canterbury Christ Church University	BSc (Hons) Nursing (Adult)
Birmingham City University	BSc (Hons) Nursing (Adult)
Anglia Ruskin University	BSc (Hons) Nursing (Adult)
Swansea University	BSc (Hons) Nursing (Adult)
The Robert Gordon University	BSc (Hons) Nursing (Adult)
University of Bradford	BSc (Hons) Nursing (Adult)
The Open University	BSc (Hons) Nursing (Adult)
The Open University	BSc (Hons) Nursing (Adult)
University of Gloucestershire	BSc (Hons) Nursing (Adult)
University Of Hertfordshire	BSc (Hons) Nursing (adult) - Nursing Degree Apprenticeship
The Open University	BSc (Hons) Nursing (Adult) - Nursing Degree Apprenticeship
Birmingham City University	BSc (Hons) Nursing (Adult) - Nursing Degree Apprenticeship
University of Gloucestershire	BSc (Hons) Nursing (Adult) (Apprenticeship)
University of Gloucestershire	BSc (Hons) Nursing (Adult) (Blended Learning)
Edge Hill University	BSc (Hons) Nursing (Adult) (fall back award)
University Of Leeds	BSc (Hons) Nursing (Adult) (International)
Canterbury Christ Church University	BSc (Hons) Nursing (Adult) (NDA)
University of Bolton	BSc (Hons) Nursing (Adult) (Part-time)

Approved education institution	Course
University of Bolton	BSc (Hons) Nursing (Adult) (Registered Nursing Higher Apprenticeship) (Part-time)
University of Bradford	BSc (Hons) Nursing (Adult) [fall back award]
Buckinghamshire New University	BSc (Hons) Nursing (Adult) Apprenticeship
University of Salford	BSc (Hons) Nursing (adult) Nurse Degree Apprentice
University of Bolton	BSc (Hons) Nursing (adult) nurse degree apprenticeship (NDA) route
Middlesex University	BSc (Hons) Nursing (adult) seconded pathway
De Montfort University	BSc (Hons) Nursing (Adult) with NMC Registration (Apprenticeship route)
University Of East London	BSc (Hons) Nursing (Adult)-Registered Nurse (Degree) Apprenticeship Route
Queen Margaret University	BSc (Hons) Nursing (fall back award)
University of Lincoln	BSc (Hons) Nursing (Registered Nurse - Adult)
University of South Wales	BSc (Hons) Nursing Adult
Nottingham Trent University	BSc (Hons) Nursing Adult
University Of Brighton	BSc (Hons) Nursing Adult
University of Worcester	BSc (Hons) Nursing Adult
Sheffield Hallam University	BSc (Hons) Nursing Adult (Part Time)
University Of The West Of England, Bristol	BSc (Hons) Nursing apprenticeship - Adult
University Of Huddersfield	BSc (Hons) Nursing Child (Blended Learning)
University of Sunderland	BSc (Hons) nursing degree apprenticeship (adult)
Nottingham Trent University	BSc (Hons) Nursing Degree Apprenticeship Adult
Swansea University	BSc (Hons) Nursing part-time (Adult)

Approved education institution	Course
University Of Northumbria At Newcastle	BSc (Hons) nursing science (adult)
University Of Northumbria At Newcastle	BSc (Hons) nursing science apprenticeship (adult)
Teesside University	BSc (Hons) Nursing Studies (Adult) (Pre-registration) Apprenticeship route
Glasgow Caledonian University	BSc (Hons) Nursing Studies: Adult Nursing
Liverpool John Moores University	BSc (Hons) Nursing with Registered Nurse Status (Adult)
Liverpool John Moores University	BSc (Hons) Nursing with Registered Nurse Status (Adult)
University of Cumbria	BSc (Hons) Nursing/RN:Adult Nursing
University of Cumbria	BSc (Hons) Nursing/RN:Adult Nursing (Apprenticeship)
Keele University	BSc (Hons) Nursing: Adult
Keele University	BSc (Hons) Nursing: Adult (NDA)
Kingston University & St George's University of London	BSc Adult Nursing
University Of Dundee	BSc Adult Nursing
University of West of Scotland	BSc Adult Nursing
University Of Greenwich	BSc Adult Nursing (Degree Apprenticeship) (fall back award)
University Of Greenwich	BSc Adult Nursing (fall back award)
Middlesex University	BSc Hons Nursing Adult
University of Highlands and Islands	BSc Nursing
City, University of London	BSc Nursing (Adult)
Oxford Brookes University	BSc Nursing (Adult)
The Robert Gordon University	BSc Nursing (Adult)

Approved education institution	Course
The Robert Gordon University	BSc Nursing (Adult)
University Of Stirling	BSc Nursing (Adult)
The Robert Gordon University	BSc Nursing (Adult) (fall back award)
Glasgow Caledonian University	BSc Nursing Studies: Adult Nursing
King's College London	BSc Nursing with Registration as an Adult Nurse
University of Ulster	BSc(Hons) Nursing (Adult)
University of Lincoln	Degree Science Nursing (Registered Nurse - Adult: Apprenticeship Route)
University of Salford	MA Nursing (adult)
University Of Wolverhampton	Master of Adult Nursing
University Of Wolverhampton	Master of Nursing (Adult Nursing)
University Of Birmingham	Master of Nursing (Adult)
University Of Wolverhampton	Master of Nursing (MNurs) Adult Nursing
University Of Birmingham	Master of Science in Nursing (Adult)
University of Derby	Master of Science in Nursing (Adult)
University of Derby	Master of Science in Nursing (adult) (apprenticeship)
University Of Manchester	Masters in Nursing (Adult)
University Of Edinburgh	Masters in Nursing with pre-registration (adult)
University Of Sheffield	MMedSci Nursing (Adult)
Queen Margaret University	MN Nursing
Edge Hill University	MNSW Adult Nursing and Social Work
University of Sunderland	MNurse (Adult)
University Of York	MNursing (Adult)
University Of Hertfordshire	MSc Hons Nursing (Adult)

Approved education institution	Course
University Of Northumbria At Newcastle	MSc (Hons) nursing science (adult)
University Of Dundee	MSc Adult Nursing
University Of Greenwich	MSc Adult Nursing
University of Chester	MSc Adult Nursing
University of Chester	MSc Adult Nursing
University of Chester	MSc Adult Nursing
University of Bedfordshire	MSc Adult Nursing
London South Bank University	MSc adult nursing
University of West of Scotland	MSc Adult Nursing
University of Chester	MSc Adult Nursing
Bournemouth University	MSc Adult Nursing
Kingston University & St George's University of London	MSc Adult Nursing
Coventry University	MSc Adult Nursing
University of Bedfordshire	MSc Adult Nursing (apprenticeship)
Birmingham City University	MSc Adult Nursing (pre-registration)
Manchester Metropolitan University	MSc Adult Nursing (Pre-registration)
University of Chester	MSc Adult Nursing Apprenticeship
Coventry University	MSc Adult Nursing Blended Learning (pre-registration)
Coventry University	MSc Adult Nursing Blended Learning (pre-registration) Nursing Degree Apprenticeship
University Of Southampton	MSc Nursing (Adult)
Canterbury Christ Church University	MSc Nursing (Adult)
City, University of London	MSc Nursing (Adult)

Approved education institution	Course
University Of Hertfordshire	MSc Nursing (adult) - Nursing Degree Apprenticeship (part time route)
University of Nottingham	MSc nursing (graduate entry) (adult)
University of Lincoln	MSc Nursing (Pre-Registration – Adult)
Edge Hill University	MSc Nursing (Pre-registration Adult)
University Of Huddersfield	MSc Nursing (pre-registration) - Adult
Swansea University	MSc Nursing Pre-registration (Adult)
Teesside University	MSc Nursing Studies (Adult Apprenticeship)
Glasgow Caledonian University	MSc Nursing Studies: Adult Nursing
University of Central Lancashire	MSc nursing with registered nurse (adult)
Liverpool John Moores University	MSc Nursing with Registered Nurse Status (Adult)
Liverpool John Moores University	MSc Nursing with Registered Nurse Status (Adult)
King's College London	MSc Nursing with Registration as an Adult Nurse
University Of Plymouth	MSc Pre-registration Nursing (Adult Health)
University Of Huddersfield	MSc Pre-registration Nursing apprenticeship-Adult
University Of Huddersfield	MSc Pre-registration Nursing Apprenticeship Child (Blended Learning)
University Of Huddersfield	MSc Pre-registration Nursing Child (Blended Learning)
University of Cumbria	MSc Pre-Registration Nursing/Registered Nurse: Adult Nursing
Edge Hill University	MSci Nurse Paramedic (Adult)
University Of Exeter	MSci nursing (adult)
University of Leicester	MSci Nursing with Leadership Adult Nursing

Approved education institution	Course
Middlesex University	Nurse Degree Apprenticeship Adult (4 year direct entry route)
Middlesex University	Nurse Degree Apprenticeship Adult (4 year part-time employed route)
University of West London	Nurse Degree Apprenticeship BNursing (Hons) Adult
University of Central Lancashire	Nursing Degree Apprenticeship route – Adult
Teesside University	Nursing Studies (Adult) (Pre-registration) BSc (Hons)
Teesside University	Nursing Studies (Adult) (Pre-Registration) MSc
University of West of Scotland	PG Dip Adult Nursing
London South Bank University	PG Dip adult nursing
University Of Greenwich	PG Dip Adult Nursing (fall back award)
University of South Wales	PG Dip Nursing Adult
University of West London	PG Diploma Nursing Adult
Edge Hill University	PgDip Nursing (second registration Adult)
University Of Southampton	Postgraduate Diploma Nursing (Adult)
The Queen's University Of Belfast	Pre-registration nursing - Adult
Sheffield Hallam University	Pre-registration nursing - Adult
The Queen's University Of Belfast	Pre-registration nursing - Adult (Graduate Entry)
Staffordshire University	Registered Nurse (Adult)
University Of Brighton	Registered Nurse Degree Apprenticeship (Adult)

UK M.S.C Approved Medicine and Surgery Programmes

Institution Name
University of Aberdeen School of Medicine and Dentistry
Anglia Ruskin University School of Medicine
Aston University Medical School
Barts and The London School of Medicine and Dentistry
University of Birmingham College of Medical and Dental Sciences
Brighton and Sussex Medical School
University of Bristol Medical School
University of Buckingham Medical School
University of Cambridge School of Clinical Medicine
Cardiff University School of Medicine
University of Dundee School of Medicine
Edge Hill University Medical School
The University of Edinburgh Medical School
University of Exeter Medical School
University of Glasgow School of Medicine
Hull York Medical School
Imperial College London Faculty of Medicine
Keele University School of Medicine
Kent and Medway Medical School
King's College London GKT School of Medical Education
Lancaster University Medical School
University of Leeds School of Medicine
University of Leicester Medical School
University of Liverpool School of Medicine
University of Manchester Medical School
Newcastle University School of Medical Education
Norwich Medical School
University of Nottingham School of Medicine

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3	University of Nottingham - Lincoln Medical School
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5	University of Oxford Medical Sciences Division
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7	Plymouth University Peninsula Schools of Medicine and Dentistry
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9	Queen's University Belfast School of Medicine
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11	University of Sheffield Medical School
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13	University of Southampton School of Medicine
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15	University of St Andrews School of Medicine
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17	St George's, University of London
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19	University of Sunderland School of Medicine
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21	Swansea University Medical School
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23	University of Central Lancashire School of Medicine
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25	University College London Medical School
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27	University of Warwick Medical School
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Patient Information Section

General information

The aim of this study is to determine the impact of the COVID-19 pandemic on the mental health of UK medical and nursing students, one year down the line from the initial outbreak. We are inviting all medical and nursing students enrolled at university in the UK to participate in this study. Please read the following section carefully before taking part. If you have any questions regarding the study please contact the research team via the following email: kate.saunders@psych.ox.ac.uk

What is the purpose of the study?

The purpose of SPICE-20 is to evaluate the continued impact of the COVID-19 pandemic on UK medical students, one year on from the SPICE-19 study. In addition, we aim to determine the effect on UK nursing students. In doing so we hope to provide feedback to UK medical schools and Nursing institutions about the current collective mental health of student healthcare professionals. We believe this information is vital to ensure adequate mental wellbeing service provision is in place at higher education institutions.

Why am I being invited to participate in this study?

You have been invited to take part in this study because we are recruiting medical and nursing students to participate and feedback on their continued mental wellbeing during the UK pandemic. You are eligible to participate if you are a current UK medical or nursing student in the UK and have access to the internet.

What happens if I choose to participate?

Participation in this study is entirely voluntary. To be involved you will be required to complete a short survey online. The survey will ask for general background details about you including: your current educational status, age, gender, ethnicity. Additionally, questions will ask about your current mood and mental wellbeing. Your decision to participate in this study will not have any academic impact and will be entirely anonymous. The survey is expected to take approximately 10-15 minutes to complete

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3 however it may be done as quick or slow as you like. There is no prior knowledge required to
4 participate. We will ask for your consent for collection and storage of data in accordance with General
5 Data Protection Regulation (GDPR) before the survey begins. More information regarding the rules
6 and regulations of GDPR can be found at www.gdpr-info.eu .
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11 12 13 Do I have to participate? 14

15 As stated above, participation in the SPICE-20 study is entirely voluntary and anonymous. Consent for
16 involvement may be withdrawn anytime prior to completion of the survey. To do so, simply close the
17 tab or browser containing the survey. Following this, no personal data provided up to that point in the
18 survey will be stored or used for research or any other purpose. Completion of all questions is entirely
19 optional. This means that participation is still possible even if there are certain questions you would
20 prefer not to answer. If there is a question you would like to omit from your responses, simply select
21 the option "Prefer not to answer". Any data collected will not be provided to your higher education
22 institution without being anonymised, meaning your feedback will not make you identifiable.
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32 33 Are there any risks of being involved? 34

35 Some of the questions included in the questionnaire may potentially cause some distress by bringing
36 up painful memories. If at any point during completion of the survey you are feeling distressed you
37 may stop or choose not to answer troubling questions. Included with the study information is mental
38 wellbeing support services that are available to access.
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45 46 Are there any benefits to being involved? 47

48 The completion of this survey will not provide any academic benefit at your respective institutions.
49 However, the results of SPICE-20 will be used to inform university wellbeing service provision. This
50 means that by participating in the study you have the opportunity to provide anonymous feedback to
51 your institution about what you feel is being done well, or could be done better to support students.
52 Additionally, this survey may provide be useful as a personal opportunity for reflection.
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How will my data be used?

Your answers will be completely anonymous and no identifiable data will be included. Data will be stored in a password protected file and will only be accessible by individuals on the steering/writing committee that have a reason to access it. IP addresses will not be stored. If you provide your email address, it will be deleted at the end of the study and not linked to any information you provide. Anonymised responses to the survey will be stored for a minimum of ten years after publication or public release.

Who will have access to your data?

Qualtrics is the data platform used for SPICE-20. They are the data controller in respect to the personal data they hold and as such they determine how personal data is used. Their privacy notice can be found at: www.qualtrics.com/privacy-statement. Qualtrics will share any email address you provide with the University of Oxford for the purposes of research only. Responsible members of the University of Oxford may be given access to your data for monitoring or audit of the study and ensuring that guidelines are complied with.

Where will the results be published?

The results of SPICE-20 may be published in a peer reviewed academic journal. In addition, the results of the study may be presented at conferences, either in oral or poster format. The study is targeting a completion date of September 2021. Following this provisional date a summary of the results and outcomes will be available on request to the study team.

Who do I contact if I have any queries or wish to make a complaint about the study?

Our study team aims to operate in a transparent manner. If you have any queries or complaints regarding the study aims, distribution, or any other aspect please contact the study team at kate.saunders@psych.ox.ac.uk and we will do our best to provide an adequate response. Our research team aims to reply within 10 working days. If you have any further issues or wish to escalate your inquiry please contact the Chair of the Medical Sciences Inter-Divisional Research Ethics Committee.

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2
3 Email: ethics@medsci.ox.ac.uk. Address: Research Services, University of Oxford, Wellington Square,
4
5 Oxford, OX1 2JD.
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10 Who do I contact for further details? 11

12 For any queries or other details, contact the principle investigator Professor Kate Saunders at
13
14 kate.saunders@psych.ox.ac.uk.
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19 **Please check the box to confirm you are the age of 18 years old or older**

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21 I certify that I am 18 years or older.
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26 **If you have read the information above and agree to participate with the understanding that the**
27 **data (including personal data) you submit will be processed accordingly, please check the relevant**
28 **box to get started**
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31 Yes, I agree to take part.
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BMJ Open

Social and Psychological Impact of the Covid-19 pandemic on UK medical and nursing students: Protocol for a national medical and nursing student survey

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2021-057467.R1
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Social and Psychological Impact of the Covid-19 pandemic on UK medical and nursing students: Protocol for a national medical and nursing student survey

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ABSTRACT

Introduction

Healthcare students have played a significant role in the NHS during the COVID-19 pandemic. We captured data on the wellbeing of medical students during the acute phase of the pandemic with the Social and Psychological Impact of COVID-19 on medical students: a national survey Evaluation (SPICE-19) study. We will evaluate changes in mental health and wellbeing of medical and nursing students one year after SPICE-19, in a cross-sectional study, to understand the impact of the pandemic, and inform wellbeing policies.

Methods and Analysis

This study will be a national, multi-institution, cross-discipline study. An online, 53-item survey of demographics, mental health and wellbeing will be used to record responses. Students studying for a medical or nursing degree at any UK universities will be eligible to participate. The survey will be advertised through the Neurology and Neurosurgery Interest Group (NANSIG) national network. Participation is anonymous and voluntary, with relevant mental health resources made available to participants.

Ethics and Dissemination

Ethical approval was granted by the University of Oxford Central University Research Ethics Committee (R75719/RE001) on 21st May 2021. Study findings will be presented at national and international meetings, and submitted for publication in a peer-reviewed journal.

Strengths and limitations

- This is a multi-centre, national questionnaire-based survey of medical and nursing student mental health and wellbeing in the UK.
- This is the first study to assess mental health and wellbeing of the student multi-disciplinary team during the new normal after the Covid-19 pandemic.

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- The study results will provide valuable insight into healthcare workers, which can be used to identify and target further areas of wellbeing support and inform policy.
- Response bias may overestimate participation of students based on age, sex, and medical/nursing school, with those interested in neuroscience and mental health more likely to participate.

INTRODUCTION

Medical and nursing students in the UK have been significantly affected by the COVID-19 pandemic. During the first wave, many were active components of the clinical team, either by undertaking extending clinical placements, paid work in the NHS, or through voluntary roles, while others saw placements reduced, suspended, or cancelled completely.(1, 2) We evaluated medical student wellbeing and mental health during the acute phase of the pandemic with the Social and Psychological Impact of COVID-19 on medical students: a national service evaluation (SPICE-19) study,(3) a cross sectional study with a prospective component, which identified several points for service provision improvement based on 2275 responses across 34 medical schools in the UK.(4-6)

It is pertinent to re-evaluate the mental health of medical students, one year removed from SPICE-19, to explore how they are navigating their training, education, and the impact of adapting to the 'new normal' of medical education provision.(7, 8) It is also important to elucidate the effect of COVID-19 on the wellbeing and mental health of UK nursing students, many of whom were asked to volunteer on the front line in COVID wards,(2) and a large-scale study examining this has not been completed. A single centre survey in the US noted that nursing students reported increased levels of anxiety, reduction in concentration, and difficulties with academic workload throughout the pandemic,(9) and a large multi-institutional study is required to elucidate this further. This is in accordance with previously published work by the SPICE-19 research team. (10, 11)

Medical and nursing schools have each responded differently to the pandemic, with the accessibility of wellbeing and mental health services variable between universities.(12) A national survey assessing mental health and wellbeing in medical and nursing students, as well as support systems available for those facing mental health difficulty is required. Evaluating the mental health and wellbeing of the student multi-disciplinary team is vital for

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ensuring adequate service provision is provided - it is paramount to safeguard the wellbeing of the next generation of healthcare professionals.(13, 14)

The primary aim of this study is to comprehensively evaluate mental health and wellbeing of medical and nursing students during the evolving COVID-19 pandemic, one year after the initial outbreak. The secondary aims are to elucidate students' perceptions of institutional efforts to provide support, and accessibility and appropriateness of such support. The study logos are shown in Figure 1.

Figure 1. SPICE-20 study logos.

METHODS AND ANALYSIS

Study partners

NANSIG

The Neurology and Neurosurgery Interest Group (NANSIG) was formed in 2010. It is a student and junior doctor led interest group designed to increase participation, diversity and engagement in Neurosciences, and has over 1000 members internationally.(15) The organisation has an affiliation with the Society of British Neurosurgeons (SBNS) and the Association of British Neurologists (ABN) (www.nansig.org). The organisation led the SPICE-19 national cohort study last year, assessing wellbeing in 2275 medical students in response to the pandemic, and is familiar with survey design and distribution. The collective organisation runs established national and international events, and has published over 20 peer-reviewed publications.

Study design

SPICE-20 is a national, multi-institution, cross-sectional study. An online survey will be used to record participant responses. The survey contains 53 items - section 1 of the survey includes background and demographic information. Section 2 assesses wellbeing by asking participants to complete the Warwick-Edinburgh Mental Well Being Scale (WEMWBS); a 14-point, validated evaluation of wellbeing.(16) Section 3 encompasses the Patient Health Questionnaire-9 (PHQ-9) and Generalised Anxiety Disorder-7 (GAD-7). The PHQ-9 is a valid diagnostic and severity measure for depressive disorder,(17) and GAD-7 is a seven-item,

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3 validated assessment of generalised anxiety.(18, 19) Section 4 includes questions about
4 university support offered by each institution, if participants had accessed this support, and
5 any significant changes to teaching encountered during the pandemic. Section 4 contains
6 study specific unvalidated questions. These questions were defined for the current study to
7 meet the specific secondary aims and were not adapted from the SPICE-19 survey, due to a
8 difference in study objectives.
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14 The survey was iteratively defined by the student-led study management team until a
15 consensus was reached. Based on our experience with SPICE-19 survey, we have reduced
16 the number of questions and limited the survey to validated measures of wellbeing and
17 mental health. The final, 53-item questionnaire is shown in Figure 2.
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24 Figure 2: Final SPICE-20 survey design.
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26 Survey piloting

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29 The survey was piloted by a group of 15 medical students from the NANSIG core committee.
30 These students were not involved in the design of the study and were consulted in order to
31 provide feedback, improve clarity and ensure objectivity. Data was analysed to identify any
32 points of concern, estimated completion time, and difficult survey items/questions. Students
33 were contacted to identify any suggestions for improvement, with none identified. Therefore,
34 no further alterations were made.
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43 Survey administration

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45 The survey was hosted on the Qualtrics™ survey platform (Provo, Utah, USA), a GDPR-
46 compliant online survey platform, that facilitates both mobile and desktop devices.
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52 Study dissemination

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55 To maximise distribution across the UK, a national network of SPICE-20 Collaborative
56 members were recruited, representing all 33 medical schools in the UK, using a purposive
57 sampling method. Most held concurrent committee or regional lead roles in NANSIG at time
58 of recruitment. Each member was asked to acquire the most up to date (as of April 2021)
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3 available resources, guidance and support policies in place for their current medical school,
4 plus an additional nursing school. A standard advertising method was developed by the
5 steering committee and based on the successful recruitment strategy employed in the
6 SPICE-19 study, which involved members contacting their respective medical school deans
7 to request distribution of the survey at inception, as well as regular advertising over the 8-
8 week study collection period, from 7st June 2021 to the 7rd August 2021. The distribution
9 links for the survey includes university mailing lists, student society pages, and social media
10 platforms. Figure 3 provides an example of the email template used to disseminate the
11 survey through student mailing lists. Adverts will also be placed on NANSIG social media
12 platforms, as well as the monthly NANSIG newsletter.

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21 In the invitation to complete the study, based on their medical/nursing school, participants
22 will also receive wellbeing, mental health, and guidance services specific to their institution,
23 should they need to access them at any point. Participants will also be made aware of our
24 patient and public involvement organisation, and their contact details. No incentives for
25 participation will be offered.

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30 Figure 3. Standard email template used for all survey dissemination through student email
31 lists, developed by the study team and approved by the research ethics committee.

32 33 34 35 Eligibility and representation

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38 All current students enrolled at UK medical schools recognised by the General Medical
39 Council (GMC) and the Medical Schools Council (MSC) will be eligible to participate.
40 Additionally, all current home and international students enrolled on an adult, child and
41 mental health nursing degree at a UK university are eligible for inclusion. A list of eligible
42 medical schools, and approved programmes by the Nursing and Midwifery Council (NMC) is
43 included in the supplementary materials (document "Supplementary Material – MSC and
44 NMC").

45 46 47 48 49 50 51 52 Consent and confidentiality

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55 A patient information sheet will be shown on the first page of the study (supplementary
56 material - patient information). This encompasses the rationale, purpose, and voluntary
57 nature of participation. Participants must verify that they are over 18 years old and provide
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3 informed consent via tick box. It will be emphasised that participation is anonymous,
4 confidential, voluntary, and that participants can withdraw consent at any time.
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8 Data security

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11 All data will be collected and stored on the secure online server, Qualtrics™. Survey data will
12 be extracted from the software to a password-protected, Microsoft Excel spreadsheet
13 (Microsoft, California, USA) only available to the study team. Data handling and record
14 keeping will adhere to the University of Oxford standards for data security.
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18 Statistical analysis

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22 Data will be analysed using R version 4.0.3. The overall wellbeing of medical and nursing
23 students, as assessed using the WEMWBS, and mental health, using the PHQ-9 and GAD-
24 7, will be presented using descriptive statistics. The scores of WEMWBS, PHQ-9 and GAD-
25 7, will be categorised using established cut off points into dichotomous groups, corresponding
26 to individuals expressing symptoms and those which do not. (20-22) No information that
27 identifies or is specific to institutions will be presented. Appropriate statistical methods will
28 be selected based on the distribution and type of data; it is anticipated data will be non-
29 parametric, and, will therefore be compared using tests such as χ^2 or Kruskal-Wallis tests.
30 Differences between medical and nursing students will be compared using these statistical
31 tests. To identify factors associated with an increased scores on WEMWBS, PHQ-9, and
32 GAD-7, multi-variate generalised linear regression will be used.
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43 Sample size calculation

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46 Approximate estimates of total UK medical and nursing students were calculated from yearly
47 undergraduate intake figures. The total number of UK medical and adult nursing students
48 was estimated to be 84,000. An online calculator was used to determine the sample size
49 needed for the survey. The minimum sample size required from our target population for a
50 margin error of 5% and a confidence interval level of 95% is 383, assuming a 50% response
51 distribution for each question, the most conservative response distribution for study power.
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58 Patient and public involvement

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3 As the study population was medical and nursing student wellbeing and mental health, we
4 worked collaboratively with the Be Free Campaign - a mental health and wellbeing
5 awareness charity, from study inception. Be Free were involved in the conception, design
6 and development of the study. The charity works with young people and students,
7
8 emphasising mental health and wellbeing, to tackle the stigma behind mental health, and
9 promote expression of individual values (UK registered charity number 1189704). The
10 charity director and clinical study team for the charity comprehensively reviewed the protocol
11 for appropriateness of content, question format, and ensured the questions asked were
12 sensitive and pertinent to medical and nursing students.
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19 Be Free have extensive knowledge of indicators of mental health, and the questions
20 selected (WEMWBS, PHQ-9 and GAD-7) were done so in concordance with their advice.
21 The number of questions, layout, and design were also prepared in accordance with their
22 suggestions. The charity inspired the conception of this study and approved the final survey
23 design. The charity founder and director (SK) is also a member of the steering committee for
24 this study.
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33 **DISCUSSION**

34 Study rationale

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39 International multi-institutional studies have demonstrated that during the initial COVID-19
40 outbreak, medical students were less likely to experience deterioration in mental health and
41 wellbeing when compared to non-medical students. (23, 24) This is the first national, multi-
42 institutional study to evaluate the mental health of UK medical and nursing students during
43 the COVID-19 pandemic.(25) It will therefore be possible to elucidate the mental health and
44 wellbeing of healthcare students across the UK. By comparing medical and nursing schools,
45 it will be possible to evaluate the nature of successful support, as well as students'
46 confidence and ability to access this support. The findings will inform service provision, and
47 highlight areas where improvement is required. The survey will also highlight local and
48 national wellbeing resources available to students.
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58 Why assess medical and nursing student wellbeing and mental health?

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3 Medical and nursing students form the healthcare multi-disciplinary team of the future.
4 Mental health and wellbeing are positively correlated with job satisfaction, retention, and
5 performance, and is an essential component of good health.(26) If the NHS is to retain,
6 recruit and develop its workforce of the future, ascertaining their mental health at this point in
7 the COVID-19 pandemic is essential. Young people have been disproportionately affected
8 by the pandemic, and most medical and nursing students fall into this age category. As non-
9 emergency care is delayed and rescheduled, students will have to deal with the long acting
10 repercussions of the pandemic, including those directly affected by the virus itself, including
11 long-COVID,(27) declining mental health in the population exacerbated by the pandemic,(28)
12 and implications of delayed access to healthcare.(29, 30)
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20 Many medical students may not be aware that such support exists, either at their respective
21 institution, or at a regional/national level, and we would do these students a disservice by not
22 highlighting existing mental health and wellbeing services.
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26 Benefits of a national medical student wellbeing survey

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30 Medical and nursing schools across the UK adopt heterogenous practices to achieve the
31 outcomes set in the GMC and NMC core competencies and curricula.(31) A survey of both
32 medical and nursing students on a national scale is the best way to evaluate mental health
33 and wellbeing. Many institutions reacted differently to the pandemic, and a survey is best
34 placed to simultaneously decipher wellbeing and mental health at each institution, while
35 assessing the impact of the pandemic on a national scale, and highlighting heterogeneity
36 between institutions. Furthermore, there is a need to appreciate that multi-institutional
37 studies of large magnitude are required to answer important clinical questions and elucidate
38 concerns not identified by smaller studies. Multi-centre studies are also less susceptible to
39 identity issues because the data is aggregated between multiple medical schools, and can
40 be presented as all centres.
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50 Limitations

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54 Online surveys have the advantage of ubiquitous presence, and increased accessibility to
55 medical and nursing schools in the UK. However, several limitations can arise from such a
56 study method.
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3 Firstly, those with an existing interest in wellbeing and mental health may be more likely to
4 engage with and complete the survey. This could lead to selection bias towards those
5 adversely affected by the pandemic. The anticipated magnitude of this effect is unclear. In
6 addition, as the survey is being distributed through NANSIG, there may be over-participation
7 from students with an interest in Neurosciences and their surrounding connections.
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12 In order to ameliorate this as best as possible, we have adopted a varied dissemination
13 approach. This includes having representatives at each UK medical school, survey
14 distribution to medical and nursing school bulletins, and newsletters. We hope this will
15 improve visibility and participation. We decided not to incentivise participants with a potential
16 prize for completing the survey, as we wanted responses to be motivated by a desire to
17 complete the questions in as open a way as possible.
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24 The study is also limited by its cross-sectional design, and will therefore only provide a
25 snapshot of mental health and wellbeing at the time of survey completion. In addition, during
26 capricious times such as COVID, fluctuations in mental health may occur in accordance with
27 policy changes, as well as institutional policies towards placements and assessment, and we
28 will assess date of study completion as a potential confounder as a variable in our analysis.
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34 The self-reporting of symptoms, will also be a significant limitation, in addition to the fact that
35 the questions included are screening tools for mental health and wellbeing, and are not
36 immediately diagnostic. Furthermore, a number of important variables including socio-
37 economic status, co-morbid psychiatric conditions, and levels of isolation, have not been
38 included within the survey. Omission of these and other variables may cause confounding of
39 study results. The decision not to include these variables was made to ensure minimal
40 barriers existed to completion of the survey, however we recognise that the results must be
41 interpreted within the context of this limitation. Finally, there are no imbedded security
42 measures to confirm a respondents medical or nursing school, and therefore we cannot
43 guarantee that all participants were UK medical or nursing students.
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50 Ethics and dissemination

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53 Ethical approval for this study was granted by the Oxford Research ethics committee
54 [R75719/RE001]. The findings of the SPICE-20 study as described in this protocol, will be
55 presented at scientific conferences, and submitted for publication in a peer-review journal
56 once finalised.
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Competing interests' statement

None to declare.

Presented at: N.A.

Author Contributions

GER, CSG, and OM were responsible for initial drafting of protocol manuscript, conceptualisation and designing the study. AC, SZYO, JP, ERB, IG, SB, and KS formed the wider study group and reviewed and approved drafts of the manuscript. KS provided supervision of the project. SK reviewed the manuscript and also provided PPI involvement and approval for the study.

Data Sharing Statement

Data are available upon reasonable request. All data must be anonymised entirely prior to any sharing request completion.

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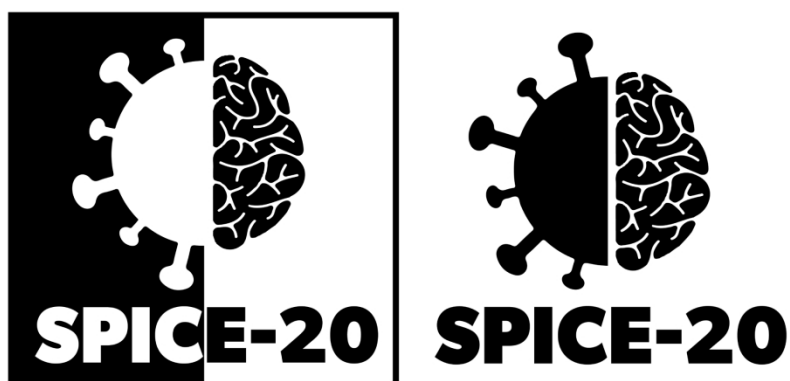


Figure 1. SPICE-20 study logos.

533x755mm (118 x 118 DPI)

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Section 1 – Background Information

- Are you a medical or nursing student?
 - Medical student
 - Which medical school are you currently enrolled in?
 - Response from dropdown of medical schools
 - Nursing Student
 - Which nursing school are you currently enrolled in?
 - Response from dropdown of nursing schools
- How many years (if any) of your degree (excluding intercalation) have you completed so far?
 - Choose year of study from list
- Are you currently undertaking an intercalated degree?
 - Respond yes or no
 - Have you previously undertaken an intercalated degree?
 - Respond yes or no
 - Free text box for age
- What is your gender?
 - Choose from gender list with free-text box
- What is your race or ethnicity?
 - Choose from list of ethnicities with free-text box
- What is your religion?
 - Choose from list of religions with free-text box

Section 2 – Wellbeing and Mental Health

WELMHS

Participants are shown a series of statements and asked to choose an appropriate response from either: 1) None of the time, 2) Rarely, 3) Some of the time, 4) Often and 5) All of the time

- "I've been feeling optimistic about the future"
- "I've been feeling useful"
- "I've been feeling relaxed"
- "I've been feeling interested in other people"
- "I've had energy to spare"
- "I've been dealing with problems well"
- "I've been thinking clearly"
- "I've been feeling good about myself"
- "I've been feeling close to other people"
- "I've been feeling confident"
- "I've been able to make up my own mind about things"
- "I've been feeling loved"
- "I've been interested in new things"
- "I've been cheerful"

PHQ-9

Participants are asked, over the last 2 weeks, how often have you been affected by any of the following problems? Responses include: 1) Not at all (0-1 days), 2) Several days (2-6 days), 3) More than half the days (7-11 days), 4) Nearly every day (12-14 days)

- Little interest or pleasure in doing things?
- Feeling down, depressed or hopeless?
- Trouble falling or staying asleep, or sleeping too much?
- Feeling tired or having little energy?
- Poor appetite or overeating?
- Feeling bad about yourself – or that you are a failure or have let yourself or your family down
- Trouble concentrating on things, such as reading the newspaper or watching television?
- Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual?
- Thoughts that you would be better off dead or of hurting yourself in some way?

GAD-7

Participants are asked, over the last 2 weeks, how often have you been bothered by the following problems? Responses include: 1) Not at all, 2) Several days, 3) More than half the days, 4) Nearly every day

- Feeling nervous, anxious or on edge
- Not being able to stop or control worrying
- Worrying too much about different things
- Trouble relaxing
- Being so restless that it is hard to sit still
- Becoming easily annoyed or irritable
- Feeling afraid as if something awful might happen

Other Questions

- How would you rate your mood before COVID-19 affected the UK (One year ago)? 0 being the worst mood you can imagine and 100 being the best mood you can imagine
 - Response via sliding scale from 0 to 100
- How would you rate your mood now? 0 being the worst mood you can imagine and 100 being the best mood you can imagine
 - Response via sliding scale from 0 to 100

Section 3 – Support

- Has your university provided any form of mental health and wellbeing support?
 - Yes
 - What support has the university provided you with? (please select one or more)
 - Multiple selection boxes with options and free text box for other
 - How confident do you feel accessing the support services available to you?
 - 5 point Likert scale from not confident at all to very confident
 - Have you accessed/used support that your university has provided?
 - Yes
 - Has your university support been useful?
 - Yes
 - In what way?
 - Free text response
 - No
 - Why not?
 - Free text response
 - No
 - Would you like your university to provide you with more wellbeing support?
 - Yes (please select one or more)
 - Multiple selection boxes with options and free text box for other
 - No
 - Why not?
 - Free text response
 - No

Section 4 – Changes

 - Is your teaching different now compared to before the pandemic (do not answer if in first year)?
 - Yes
 - Please select one or more of the following ways teaching/placements have changed:
 - Multiple selection boxes with options and free text box for other
 - Why not?
 - Free text response
 - Has there been any positive aspects of the changes to teaching?
 - Yes
 - Please detail the positive changes to teaching
 - Free text response
 - No
 - What changes could be made to teaching in medical school to improve your wellbeing?
 - Multiple selection boxes with options and free text box for other
 - Have you worked or are you currently working within a healthcare setting during the course of this pandemic?
 - Yes
 - Which of the following roles have you taken up?
 - Multiple selection boxes with options and free text box for other
 - Have you been offered wellbeing support in response to the role you have undertaken?
 - Yes
 - Who has provided this support? (please select one or more)
 - Multiple selection boxes with options and free text box for other
 - No
 - No
 - After the pandemic, are you more or less likely to continue in a career in Medicine/Nursing?
 - 5 point Likert scale from Much less likely to Much more likely
 - Have your future career plans changed since the start of the pandemic?
 - Yes
 - If Yes, how come?
 - Free text response
 - No

Figure 2: Final SPICE-20 survey design.

913x1291mm (118 x 118 DPI)

Dear Students,

We are a group of student researchers that are interested in investigating the current state of medical student mental health and wellbeing, one year on from the onset of the pandemic. We are inviting all UK medical students, from years 1 to 5 (and intercalating) to complete a short 15 minute survey to help us better understand how you are doing. Whilst completing the survey, you will be asked a variety of questions about your mental health and wellbeing, and the support that you have received. Your IP address will not be recorded and responses will be anonymous. There will not be any follow up survey. Useful links to support services have been provided along with the post-survey debrief. Additional information about the risks versus benefits of taking part in the survey can be found by following the study link below. **Please access the survey by the link below:**

https://psychiatryoxford.qualtrics.com/jfe/form/SV_eQmCH0FLewvbcWO

If you have any questions about the study or your involvement please contact a member of the study team at the following email and we will aim to reply within 24hrs:
hgricha@liverpool.ac.uk

Should you have concerns about your wellbeing do consider contacting you GP or accessing the resources available: <LOCAL SERVICE PROVISION INSERTED HERE>

Many thanks for taking the time to read this,

George Richardson
SPICE-20 Study Team



Figure 3. Standard email template used for all survey dissemination through student email lists, developed by the study team and approved by the research ethics committee.

554x668mm (57 x 57 DPI)

UK N.M.C Approved Adult Nursing Programmes

Approved education institution	Course
University Of Essex	Adult Nursing
University Of Essex	Adult Nursing (nursing degree apprenticeship route)
Edinburgh Napier University	Bachelor of Nursing (Adult)
University Of Wolverhampton	Bachelor of Nursing (BNurs (Hons)) Adult Nursing
University Of Wolverhampton	Bachelor of Nursing (BNurs (Hons)) Adult Nursing [Apprenticeship]
University Of Glasgow	Bachelor of Nursing (Honours)
University Of Manchester	Bachelor of Nursing (Hons) (Adult)
University Of Birmingham	Bachelor of Nursing (Hons) (Adult)
University Of Liverpool	Bachelor of Nursing (Hons) Nursing (Adult)
University Of Glasgow	Bachelor of Nursing (ordinary) [fall back award]
Cardiff University	Bachelor of Nursing Adult
University of Derby	Bachelor of Science (Honours) in Nursing (Adult)
University of Derby	Bachelor of Science (Honours) in Nursing (adult) (apprenticeship)
University Of Sheffield	BMed Sci (Hons) Nursing (Adult)
University Of Sheffield	BMedSci (Hons) Nursing (Adult) Apprenticeship route
University of Chester	BN (Hons) Adult Nursing
University of Chester	BN (Hons) Adult Nursing
University of Chester	BN (Hons) Adult Nursing
University of Chester	BN (Hons) Adult Nursing
University of Chester	BN (Hons) Adult Nursing

Approved education institution	Course
University of Chester	BN (Hons) Adult Nursing Apprenticeship
University of Chester	BN (Hons) Adult Nursing Apprenticeship
University Of Portsmouth	BN (Hons) Nursing (Adult)
University of Winchester	BN (Hons) Nursing (Adult)
Glyndwr University (formerly North East Wales Inst. of HE)	BN Nursing
University Of Edinburgh	BN nursing (adult)
University Of Edinburgh	BN nursing with Honours (adult)
University of Chester	BNurs (Hons) Adult
University of Chester	BNurs (Hons) Adult (part-time)
University of Chester	BNurs (Hons) Adult Apprenticeship
University Of Wolverhampton	BNurs (Hons) Adult Nursing
University Of Wolverhampton	BNurs (Hons) Adult Nursing Apprenticeship
University of West London	BNursing (Hons) Adult
University Of Hertfordshire	BSc Hons Nursing (Adult)
University Of Stirling	BSc (Honours) Nursing (Adult)
Coventry University	BSc (Hons) Adult Nursing
Coventry University	BSc (Hons) Adult Nursing (Degree apprenticeship)
Oxford Brookes University	BSc (Hons) (Adult)
London South Bank University	BSc (Hons) adult nursing
University of Suffolk	BSc (Hons) Adult Nursing
University of West of Scotland	BSc (Hons) Adult Nursing
Leeds Beckett University	BSc (Hons) Adult Nursing
University of Northampton	BSc (Hons) Adult Nursing
Bournemouth University	BSc (Hons) Adult Nursing

Approved education institution	Course
University of Roehampton	BSc (Hons) Adult Nursing
University Of Dundee	BSc (Hons) Adult Nursing
University of West of Scotland	BSc (Hons) Adult Nursing
University Of Greenwich	BSc (Hons) Adult Nursing
University of Bedfordshire	BSc (Hons) Adult Nursing
Bournemouth University	BSc (Hons) Adult Nursing (Apprenticeship)
University of Bedfordshire	BSc (Hons) Adult Nursing (apprenticeship)
University of Sunderland	BSc (Hons) Adult Nursing (blended)
University of Sunderland	BSc (Hons) Adult Nursing (blended)
Leeds Beckett University	BSc (Hons) Adult Nursing (degree apprenticeship)
Manchester Metropolitan University	BSc (Hons) Adult Nursing (Pre-registration)
University of Suffolk	BSc (Hons) Adult Nursing [degree apprenticeship]
Coventry University	BSc (Hons) Adult Nursing Blended Learning
Coventry University	BSc (Hons) Adult Nursing Blended Learning Nursing Degree Apprenticeship
University Of Greenwich	BSc (Hons) Adult Nursing Degree Apprenticeship
Solent University	BSc (Hons) Adult Nursing Practice – apprenticeship
University of Sunderland	BSc (Hons) adult nursing practice
Solent University	BSc (Hons) Adult Nursing Practice
University Of Huddersfield	BSc (Hons) Degree Apprenticeship - Registered Nurse Child (Blended Learning)
University Of Huddersfield	BSc (Hons) Degree Apprenticeship-Registered Nurse: Adult

Approved education institution	Course
BPP	BSc (Hons) Nursing (Adult) [Nursing Degree Apprenticeship]
BPP	BSc (Hons) Nursing (Adult) [pre registration nursing]
University of East Anglia	BSc (Hons) nursing - Adult
University Of Huddersfield	BSc (Hons) Nursing - Adult
University Of The West Of England, Bristol	BSc (Hons) Nursing - Adult
University of East Anglia	BSc (Hons) Nursing - Adult Degree Apprenticeship
Queen Margaret University	BSc (Hons) Nursing
University Of Plymouth	BSc (Hons) Nursing (Adult Health)
University Of Plymouth	BSc (Hons) Nursing (Adult Health) - Nurse Degree Apprenticeship
University Of York	BSc (hons) Nursing (Adult)
University of Salford	BSc (Hons) Nursing (adult)
University of Bolton	BSc (Hons) Nursing (adult)
University of Nottingham	BSc (Hons) Nursing (adult)
Buckinghamshire New University	BSc (Hons) Nursing (Adult)
Anglia Ruskin University	BSc (Hons) Nursing (Adult)
Swansea University	BSc (Hons) Nursing (Adult)
Edge Hill University	BSc (Hons) Nursing (Adult)
Edge Hill University	BSc (Hons) Nursing (Adult)
The Open University	BSc (Hons) Nursing (Adult)
The University of Hull	BSc (Hons) Nursing (Adult)
The University of Hull	BSc (Hons) Nursing (Adult)
University of Ulster	BSc (Hons) Nursing (Adult)

Approved education institution	Course
University Of East London	BSc (Hons) Nursing (Adult)
University Of Leeds	BSc (Hons) Nursing (Adult)
University College Birmingham	BSc (Hons) Nursing (Adult)
University Of Southampton	BSc (Hons) Nursing (Adult)
Canterbury Christ Church University	BSc (Hons) Nursing (Adult)
Birmingham City University	BSc (Hons) Nursing (Adult)
Anglia Ruskin University	BSc (Hons) Nursing (Adult)
Swansea University	BSc (Hons) Nursing (Adult)
The Robert Gordon University	BSc (Hons) Nursing (Adult)
University of Bradford	BSc (Hons) Nursing (Adult)
The Open University	BSc (Hons) Nursing (Adult)
The Open University	BSc (Hons) Nursing (Adult)
University of Gloucestershire	BSc (Hons) Nursing (Adult)
University Of Hertfordshire	BSc (Hons) Nursing (adult) - Nursing Degree Apprenticeship
The Open University	BSc (Hons) Nursing (Adult) - Nursing Degree Apprenticeship
Birmingham City University	BSc (Hons) Nursing (Adult) - Nursing Degree Apprenticeship
University of Gloucestershire	BSc (Hons) Nursing (Adult) (Apprenticeship)
University of Gloucestershire	BSc (Hons) Nursing (Adult) (Blended Learning)
Edge Hill University	BSc (Hons) Nursing (Adult) (fall back award)
University Of Leeds	BSc (Hons) Nursing (Adult) (International)
Canterbury Christ Church University	BSc (Hons) Nursing (Adult) (NDA)
University of Bolton	BSc (Hons) Nursing (Adult) (Part-time)

Approved education institution	Course
University of Bolton	BSc (Hons) Nursing (Adult) (Registered Nursing Higher Apprenticeship) (Part-time)
University of Bradford	BSc (Hons) Nursing (Adult) [fall back award]
Buckinghamshire New University	BSc (Hons) Nursing (Adult) Apprenticeship
University of Salford	BSc (Hons) Nursing (adult) Nurse Degree Apprentice
University of Bolton	BSc (Hons) Nursing (adult) nurse degree apprenticeship (NDA) route
Middlesex University	BSc (Hons) Nursing (adult) seconded pathway
De Montfort University	BSc (Hons) Nursing (Adult) with NMC Registration (Apprenticeship route)
University Of East London	BSc (Hons) Nursing (Adult)-Registered Nurse (Degree) Apprenticeship Route
Queen Margaret University	BSc (Hons) Nursing (fall back award)
University of Lincoln	BSc (Hons) Nursing (Registered Nurse - Adult)
University of South Wales	BSc (Hons) Nursing Adult
Nottingham Trent University	BSc (Hons) Nursing Adult
University Of Brighton	BSc (Hons) Nursing Adult
University of Worcester	BSc (Hons) Nursing Adult
Sheffield Hallam University	BSc (Hons) Nursing Adult (Part Time)
University Of The West Of England, Bristol	BSc (Hons) Nursing apprenticeship - Adult
University Of Huddersfield	BSc (Hons) Nursing Child (Blended Learning)
University of Sunderland	BSc (Hons) nursing degree apprenticeship (adult)
Nottingham Trent University	BSc (Hons) Nursing Degree Apprenticeship Adult
Swansea University	BSc (Hons) Nursing part-time (Adult)

Approved education institution	Course
University Of Northumbria At Newcastle	BSc (Hons) nursing science (adult)
University Of Northumbria At Newcastle	BSc (Hons) nursing science apprenticeship (adult)
Teesside University	BSc (Hons) Nursing Studies (Adult) (Pre-registration) Apprenticeship route
Glasgow Caledonian University	BSc (Hons) Nursing Studies: Adult Nursing
Liverpool John Moores University	BSc (Hons) Nursing with Registered Nurse Status (Adult)
Liverpool John Moores University	BSc (Hons) Nursing with Registered Nurse Status (Adult)
University of Cumbria	BSc (Hons) Nursing/RN:Adult Nursing
University of Cumbria	BSc (Hons) Nursing/RN:Adult Nursing (Apprenticeship)
Keele University	BSc (Hons) Nursing: Adult
Keele University	BSc (Hons) Nursing: Adult (NDA)
Kingston University & St George's University of London	BSc Adult Nursing
University Of Dundee	BSc Adult Nursing
University of West of Scotland	BSc Adult Nursing
University Of Greenwich	BSc Adult Nursing (Degree Apprenticeship) (fall back award)
University Of Greenwich	BSc Adult Nursing (fall back award)
Middlesex University	BSc Hons Nursing Adult
University of Highlands and Islands	BSc Nursing
City, University of London	BSc Nursing (Adult)
Oxford Brookes University	BSc Nursing (Adult)
The Robert Gordon University	BSc Nursing (Adult)

Approved education institution	Course
The Robert Gordon University	BSc Nursing (Adult)
University Of Stirling	BSc Nursing (Adult)
The Robert Gordon University	BSc Nursing (Adult) (fall back award)
Glasgow Caledonian University	BSc Nursing Studies: Adult Nursing
King's College London	BSc Nursing with Registration as an Adult Nurse
University of Ulster	BSc(Hons) Nursing (Adult)
University of Lincoln	Degree Science Nursing (Registered Nurse - Adult: Apprenticeship Route)
University of Salford	MA Nursing (adult)
University Of Wolverhampton	Master of Adult Nursing
University Of Wolverhampton	Master of Nursing (Adult Nursing)
University Of Birmingham	Master of Nursing (Adult)
University Of Wolverhampton	Master of Nursing (MNurs) Adult Nursing
University Of Birmingham	Master of Science in Nursing (Adult)
University of Derby	Master of Science in Nursing (Adult)
University of Derby	Master of Science in Nursing (adult) (apprenticeship)
University Of Manchester	Masters in Nursing (Adult)
University Of Edinburgh	Masters in Nursing with pre-registration (adult)
University Of Sheffield	MMedSci Nursing (Adult)
Queen Margaret University	MN Nursing
Edge Hill University	MNSW Adult Nursing and Social Work
University of Sunderland	MNurse (Adult)
University Of York	MNursing (Adult)
University Of Hertfordshire	MSc Hons Nursing (Adult)

Approved education institution	Course
University Of Northumbria At Newcastle	MSc (Hons) nursing science (adult)
University Of Dundee	MSc Adult Nursing
University Of Greenwich	MSc Adult Nursing
University of Chester	MSc Adult Nursing
University of Chester	MSc Adult Nursing
University of Chester	MSc Adult Nursing
University of Bedfordshire	MSc Adult Nursing
London South Bank University	MSc adult nursing
University of West of Scotland	MSc Adult Nursing
University of Chester	MSc Adult Nursing
Bournemouth University	MSc Adult Nursing
Kingston University & St George's University of London	MSc Adult Nursing
Coventry University	MSc Adult Nursing
University of Bedfordshire	MSc Adult Nursing (apprenticeship)
Birmingham City University	MSc Adult Nursing (pre-registration)
Manchester Metropolitan University	MSc Adult Nursing (Pre-registration)
University of Chester	MSc Adult Nursing Apprenticeship
Coventry University	MSc Adult Nursing Blended Learning (pre-registration)
Coventry University	MSc Adult Nursing Blended Learning (pre-registration) Nursing Degree Apprenticeship
University Of Southampton	MSc Nursing (Adult)
Canterbury Christ Church University	MSc Nursing (Adult)
City, University of London	MSc Nursing (Adult)

Approved education institution	Course
University Of Hertfordshire	MSc Nursing (adult) - Nursing Degree Apprenticeship (part time route)
University of Nottingham	MSc nursing (graduate entry) (adult)
University of Lincoln	MSc Nursing (Pre-Registration – Adult)
Edge Hill University	MSc Nursing (Pre-registration Adult)
University Of Huddersfield	MSc Nursing (pre-registration) - Adult
Swansea University	MSc Nursing Pre-registration (Adult)
Teesside University	MSc Nursing Studies (Adult Apprenticeship)
Glasgow Caledonian University	MSc Nursing Studies: Adult Nursing
University of Central Lancashire	MSc nursing with registered nurse (adult)
Liverpool John Moores University	MSc Nursing with Registered Nurse Status (Adult)
Liverpool John Moores University	MSc Nursing with Registered Nurse Status (Adult)
King's College London	MSc Nursing with Registration as an Adult Nurse
University Of Plymouth	MSc Pre-registration Nursing (Adult Health)
University Of Huddersfield	MSc Pre-registration Nursing apprenticeship-Adult
University Of Huddersfield	MSc Pre-registration Nursing Apprenticeship Child (Blended Learning)
University Of Huddersfield	MSc Pre-registration Nursing Child (Blended Learning)
University of Cumbria	MSc Pre-Registration Nursing/Registered Nurse: Adult Nursing
Edge Hill University	MSci Nurse Paramedic (Adult)
University Of Exeter	MSci nursing (adult)
University of Leicester	MSci Nursing with Leadership Adult Nursing

Approved education institution	Course
Middlesex University	Nurse Degree Apprenticeship Adult (4 year direct entry route)
Middlesex University	Nurse Degree Apprenticeship Adult (4 year part-time employed route)
University of West London	Nurse Degree Apprenticeship BNursing (Hons) Adult
University of Central Lancashire	Nursing Degree Apprenticeship route – Adult
Teesside University	Nursing Studies (Adult) (Pre-registration) BSc (Hons)
Teesside University	Nursing Studies (Adult) (Pre-Registration) MSc
University of West of Scotland	PG Dip Adult Nursing
London South Bank University	PG Dip adult nursing
University Of Greenwich	PG Dip Adult Nursing (fall back award)
University of South Wales	PG Dip Nursing Adult
University of West London	PG Diploma Nursing Adult
Edge Hill University	PgDip Nursing (second registration Adult)
University Of Southampton	Postgraduate Diploma Nursing (Adult)
The Queen's University Of Belfast	Pre-registration nursing - Adult
Sheffield Hallam University	Pre-registration nursing - Adult
The Queen's University Of Belfast	Pre-registration nursing - Adult (Graduate Entry)
Staffordshire University	Registered Nurse (Adult)
University Of Brighton	Registered Nurse Degree Apprenticeship (Adult)

UK M.S.C Approved Medicine and Surgery Programmes

Institution Name
University of Aberdeen School of Medicine and Dentistry
Anglia Ruskin University School of Medicine
Aston University Medical School
Barts and The London School of Medicine and Dentistry
University of Birmingham College of Medical and Dental Sciences
Brighton and Sussex Medical School
University of Bristol Medical School
University of Buckingham Medical School
University of Cambridge School of Clinical Medicine
Cardiff University School of Medicine
University of Dundee School of Medicine
Edge Hill University Medical School
The University of Edinburgh Medical School
University of Exeter Medical School
University of Glasgow School of Medicine
Hull York Medical School
Imperial College London Faculty of Medicine
Keele University School of Medicine
Kent and Medway Medical School
King's College London GKT School of Medical Education
Lancaster University Medical School
University of Leeds School of Medicine
University of Leicester Medical School
University of Liverpool School of Medicine
University of Manchester Medical School
Newcastle University School of Medical Education
Norwich Medical School
University of Nottingham School of Medicine

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3	University of Nottingham - Lincoln Medical School
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5	University of Oxford Medical Sciences Division
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7	Plymouth University Peninsula Schools of Medicine and Dentistry
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9	Queen's University Belfast School of Medicine
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11	University of Sheffield Medical School
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13	University of Southampton School of Medicine
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15	University of St Andrews School of Medicine
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17	St George's, University of London
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19	University of Sunderland School of Medicine
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21	Swansea University Medical School
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23	University of Central Lancashire School of Medicine
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Patient Information Section

General information

The aim of this study is to determine the impact of the COVID-19 pandemic on the mental health of UK medical and nursing students, one year down the line from the initial outbreak. We are inviting all medical and nursing students enrolled at university in the UK to participate in this study. Please read the following section carefully before taking part. If you have any questions regarding the study please contact the research team via the following email: kate.saunders@psych.ox.ac.uk

What is the purpose of the study?

The purpose of SPICE-20 is to evaluate the continued impact of the COVID-19 pandemic on UK medical students, one year on from the SPICE-19 study. In addition, we aim to determine the effect on UK nursing students. In doing so we hope to provide feedback to UK medical schools and Nursing institutions about the current collective mental health of student healthcare professionals. We believe this information is vital to ensure adequate mental wellbeing service provision is in place at higher education institutions.

Why am I being invited to participate in this study?

You have been invited to take part in this study because we are recruiting medical and nursing students to participate and feedback on their continued mental wellbeing during the UK pandemic. You are eligible to participate if you are a current UK medical or nursing student in the UK and have access to the internet.

What happens if I choose to participate?

Participation in this study is entirely voluntary. To be involved you will be required to complete a short survey online. The survey will ask for general background details about you including: your current educational status, age, gender, ethnicity. Additionally, questions will ask about your current mood and mental wellbeing. Your decision to participate in this study will not have any academic impact and will be entirely anonymous. The survey is expected to take approximately 10-15 minutes to complete however it may be done as quick or slow as you like. There is no prior knowledge required to participate. We will ask for your consent for collection and storage of data in accordance with General

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3 Data Protection Regulation (GDPR) before the survey begins. More information regarding the rules
4 and regulations of GDPR can be found at www.gdpr-info.eu .
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10 Do I have to participate?

11 As stated above, participation in the SPICE-20 study is entirely voluntary and anonymous. Consent for
12 involvement may be withdrawn anytime prior to completion of the survey. To do so, simply close the
13 tab or browser containing the survey. Following this, no personal data provided up to that point in the
14 survey will be stored or used for research or any other purpose. Completion of all questions is entirely
15 optional. This means that participation is still possible even if there are certain questions you would
16 prefer not to answer. If there is a question you would like to omit from your responses, simply select
17 the option "Prefer not to answer". Any data collected will not be provided to your higher education
18 institution without being anonymised, meaning your feedback will not make you identifiable.
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28 Are there any risks of being involved?

29 Some of the questions included in the questionnaire may potentially cause some distress by bringing
30 up painful memories. If at any point during completion of the survey you are feeling distressed you
31 may stop or choose not to answer troubling questions. Included with the study information is mental
32 wellbeing support services that are available to access.
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40 Are there any benefits to being involved?

41 The completion of this survey will not provide any academic benefit at your respective institutions.
42 However, the results of SPICE-20 will be used to inform university wellbeing service provision. This
43 means that by participating in the study you have the opportunity to provide anonymous feedback to
44 your institution about what you feel is being done well, or could be done better to support students.
45 Additionally, this survey may provide be useful as a personal opportunity for reflection.
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53 How will my data be used?

54 Your answers will be completely anonymous and no identifiable data will be included. Data will be
55 stored in a password protected file and will only be accessible by individuals on the steering/writing
56 committee that have a reason to access it. IP addresses will not be stored. If you provide your email
57 address, it will be deleted at the end of the study and not linked to any information you provide.
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3 Anonymised responses to the survey will be stored for a minimum of ten years after publication or
4 public release.
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9 Who will have access to your data?

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11 Qualtrics is the data platform used for SPICE-20. They are the data controller in respect to the personal
12 data they hold and as such they determine how personal data is used. Their privacy notice can be
13 found at: www.qualtrics.com/privacy-statement. Qualtrics will share any email address you provide
14 with the University of Oxford for the purposes of research only. Responsible members of the
15 University of Oxford may be given access to your data for monitoring or audit of the study and ensuring
16 that guidelines are complied with.
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23 Where will the results be published?

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25 The results of SPICE-20 may be published in a peer reviewed academic journal. In addition, the results
26 of the study may be presented at conferences, either in oral or poster format. The study is targeting a
27 completion date of September 2021. Following this provisional date a summary of the results and
28 outcomes will be available on request to the study team.
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36 Who do I contact if I have any queries or wish to make a complaint about the study?

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38 Our study team aims to operate in a transparent manner. If you have any queries or complaints
39 regarding the study aims, distribution, or any other aspect please contact the study team at
40 kate.saunders@psych.ox.ac.uk and we will do our best to provide an adequate response. Our research
41 team aims to reply within 10 working days. If you have any further issues or wish to escalate your
42 inquiry please contact the Chair of the Medical Sciences Inter-Divisional Research Ethics Committee.
43 Email: ethics@medsci.ox.ac.uk. Address: Research Services, University of Oxford, Wellington Square,
44 Oxford, OX1 2JD.
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53 Who do I contact for further details?

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55 For any queries or other details, contact the principle investigator Professor Kate Saunders at
56 kate.saunders@psych.ox.ac.uk.
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3 **Please check the box to confirm you are the age of 18 years old or older**
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5 I certify that I am 18 years or older.
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10 **If you have read the information above and agree to participate with the understanding that the**
11 **data (including personal data) you submit will be processed accordingly, please check the relevant**
12 **box to get started**
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15 Yes, I agree to take part.
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STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No.	Recommendation	Page No.	Relevant text from manuscript
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	P1, Title	
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	P2, Abstract	
Introduction				
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	P3	
Objectives	3	State specific objectives, including any prespecified hypotheses	P4, Last Paragraph	
Methods				
Study design	4	Present key elements of study design early in the paper	From P4	
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	From P4 To P8	
Participants	6	(a) <i>Cohort study</i> —Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	N/A	
		<i>Case-control study</i> —Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls	N/A	
		<i>Cross-sectional study</i> —Give the eligibility criteria, and the sources and methods of selection of participants	P6	
		(b) <i>Cohort study</i> —For matched studies, give matching criteria and number of exposed and unexposed	N/A	
		<i>Case-control study</i> —For matched studies, give matching criteria and the number of controls per case	N/A	
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	P5	
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	P5	
Bias	9	Describe any efforts to address potential sources of bias	N/A	
Study size	10	Explain how the study size was arrived at	P7	

Continued on next page

Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	P7
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	P7
		(b) Describe any methods used to examine subgroups and interactions	N/A
		(c) Explain how missing data were addressed	N/A
		(d) <i>Cohort study</i> —If applicable, explain how loss to follow-up was addressed	N/A
		<i>Case-control study</i> —If applicable, explain how matching of cases and controls was addressed	N/A
		<i>Cross-sectional study</i> —If applicable, describe analytical methods taking account of sampling strategy	P5
		(e) Describe any sensitivity analyses	N/A
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	N/A
		(b) Give reasons for non-participation at each stage	N/A
		(c) Consider use of a flow diagram	N/A
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	N/A
		(b) Indicate number of participants with missing data for each variable of interest	N/A
		(c) <i>Cohort study</i> —Summarise follow-up time (eg, average and total amount)	N/A
Outcome data	15*	<i>Cohort study</i> —Report numbers of outcome events or summary measures over time	N/A
		<i>Case-control study</i> —Report numbers in each exposure category, or summary measures of exposure	N/A
		<i>Cross-sectional study</i> —Report numbers of outcome events or summary measures	N/A
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	N/A
		(b) Report category boundaries when continuous variables were categorized	N/A
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A

Continued on next page

Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	N/A
Discussion			
Key results	18	Summarise key results with reference to study objectives	N/A
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	From P9 To P10
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	N/A
Generalisability	21	Discuss the generalisability (external validity) of the study results	N/A
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	P11

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.

BMJ Open

Social and Psychological Impact of the Covid-19 pandemic on UK medical and nursing students: Protocol for a national medical and nursing student survey

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Primary Subject Heading:	Medical education and training
Secondary Subject Heading:	Medical education and training, Mental health
Keywords:	MENTAL HEALTH, MEDICAL EDUCATION & TRAINING, Child & adolescent psychiatry < PSYCHIATRY

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Manuscripts

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Social and Psychological Impact of the Covid-19 pandemic on UK medical and nursing students: Protocol for a national medical and nursing student survey

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2

Keywords: Wellbeing, Mental Health, Survey, Medical Students

ABSTRACT

Introduction

Healthcare students have played a significant role in the NHS during the COVID-19 pandemic. We captured data on the wellbeing of medical students during the acute phase of the pandemic with the Social and Psychological Impact of COVID-19 on medical students: a national survey Evaluation (SPICE-19) study. We will evaluate changes in mental health and wellbeing of medical and nursing students one year after SPICE-19, in a cross-sectional study, to understand the impact of the pandemic, and inform wellbeing policies.

Methods and Analysis

This study will be a national, multi-institution, cross-discipline study. An online, 53-item survey of demographics, mental health and wellbeing will be used to record responses. Students studying for a medical or nursing degree at any UK universities will be eligible to participate. The survey will be advertised through the Neurology and Neurosurgery Interest Group (NANSIG) national network. Participation is anonymous and voluntary, with relevant mental health resources made available to participants.

Ethics and Dissemination

Ethical approval was granted by the University of Oxford Central University Research Ethics Committee (R75719/RE001) on 21st May 2021. Study findings will be presented at national and international meetings, and submitted for publication in a peer-reviewed journal.

Strengths and limitations

- This is a multi-centre, national questionnaire-based survey of medical and nursing student mental health and wellbeing in the UK.
- This is the first study to assess mental health and wellbeing of the student multi-disciplinary team during the new normal after the Covid-19 pandemic.

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- The study results will provide valuable insight into healthcare workers, which can be used to identify and target further areas of wellbeing support and inform policy.
- Response bias may overestimate participation of students based on age, sex, and medical/nursing school, with those interested in neuroscience and mental health more likely to participate.

INTRODUCTION

Medical and nursing students in the UK have been significantly affected by the COVID-19 pandemic. During the first wave, many were active components of the clinical team, either by undertaking extending clinical placements, paid work in the NHS, or through voluntary roles, while others saw placements reduced, suspended, or cancelled completely.(1, 2) We evaluated medical student wellbeing and mental health during the acute phase of the pandemic with the Social and Psychological Impact of COVID-19 on medical students: a national service evaluation (SPICE-19) study,(3) a cross sectional study with a prospective component, which identified several points for service provision improvement based on 2275 responses across 34 medical schools in the UK.(4-6)

It is pertinent to re-evaluate the mental health of medical students, one year removed from SPICE-19, to explore how they are navigating their training, education, and the impact of adapting to the 'new normal' of medical education provision.(7, 8) It is also important to elucidate the effect of COVID-19 on the wellbeing and mental health of UK nursing students, many of whom were asked to volunteer on the front line in COVID wards,(2) and a large-scale study examining this has not been completed. A single centre survey in the US noted that nursing students reported increased levels of anxiety, reduction in concentration, and difficulties with academic workload throughout the pandemic,(9) and a large multi-institutional study is required to elucidate this further. This is in accordance with previously published work by the SPICE-19 research team. (10, 11)

Medical and nursing schools have each responded differently to the pandemic, with the accessibility of wellbeing and mental health services variable between universities.(12) A national survey assessing mental health and wellbeing in medical and nursing students, as well as support systems available for those facing mental health difficulty is required. Evaluating the mental health and wellbeing of the student multi-disciplinary team is vital for

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ensuring adequate service provision is provided - it is paramount to safeguard the wellbeing of the next generation of healthcare professionals.(13, 14)

The primary aim of this study is to comprehensively evaluate mental health and wellbeing of medical and nursing students during the evolving COVID-19 pandemic, one year after the initial outbreak. The secondary aims are to elucidate students' perceptions of institutional efforts to provide support, and accessibility and appropriateness of such support. The study logos are shown in Figure 1.

Figure 1. SPICE-20 study logos.

METHODS AND ANALYSIS

Study partners

NANSIG

The Neurology and Neurosurgery Interest Group (NANSIG) was formed in 2010. It is a student and junior doctor led interest group designed to increase participation, diversity and engagement in Neurosciences, and has over 1000 members internationally.(15) The organisation has an affiliation with the Society of British Neurosurgeons (SBNS) and the Association of British Neurologists (ABN) (www.nansig.org). The organisation led the SPICE-19 national cohort study last year, assessing wellbeing in 2275 medical students in response to the pandemic, and is familiar with survey design and distribution. The collective organisation runs established national and international events, and has published over 20 peer-reviewed publications.

Study design

SPICE-20 is a national, multi-institution, cross-sectional study. An online survey will be used to record participant responses. The survey contains 53 items - section 1 of the survey includes background and demographic information. Section 2 assesses wellbeing by asking participants to complete the Warwick-Edinburgh Mental Well Being Scale (WEMWBS); a 14-point, validated evaluation of wellbeing.(16) Section 3 encompasses the Patient Health Questionnaire-9 (PHQ-9) and Generalised Anxiety Disorder-7 (GAD-7). The PHQ-9 is a valid diagnostic and severity measure for depressive disorder,(17) and GAD-7 is a seven-item,

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3 validated assessment of generalised anxiety.(18, 19) Section 4 includes questions about
4 university support offered by each institution, if participants had accessed this support, and
5 any significant changes to teaching encountered during the pandemic. Section 4 contains
6 study specific unvalidated questions. These questions were defined for the current study to
7 meet the specific secondary aims and were not adapted from the SPICE-19 survey, due to a
8 difference in study objectives.
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14 The survey was iteratively defined by the student-led study management team until a
15 consensus was reached. Based on our experience with SPICE-19 survey, we have reduced
16 the number of questions and limited the survey to validated measures of wellbeing and
17 mental health. The final, 53-item questionnaire is shown in Figure 2.
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24 Figure 2: Final SPICE-20 survey design.
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26 Survey piloting

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29 The survey was piloted by a group of 15 medical students from the NANSIG core committee.
30 These students were not involved in the design of the study and were consulted in order to
31 provide feedback, improve clarity and ensure objectivity. Data was analysed to identify any
32 points of concern, estimated completion time, and difficult survey items/questions. Students
33 were contacted to identify any suggestions for improvement, with none identified. Therefore,
34 no further alterations were made.
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43 Survey administration

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45 The survey was hosted on the Qualtrics™ survey platform (Provo, Utah, USA), a GDPR-
46 compliant online survey platform, that facilitates both mobile and desktop devices.
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52 Study dissemination

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55 To maximise distribution across the UK, a national network of SPICE-20 Collaborative
56 members were recruited, representing all 33 medical schools in the UK, using a purposive
57 sampling method. Most held concurrent committee or regional lead roles in NANSIG at time
58 of recruitment. Each member was asked to acquire the most up to date (as of April 2021)
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3 available resources, guidance and support policies in place for their current medical school,
4 plus an additional nursing school. A standard advertising method was developed by the
5 steering committee and based on the successful recruitment strategy employed in the
6 SPICE-19 study, which involved members contacting their respective medical school deans
7 to request distribution of the survey at inception, as well as regular advertising over the 8-
8 week study collection period, from 7st June 2021 to the 7rd August 2021. The distribution
9 links for the survey includes university mailing lists, student society pages, and social media
10 platforms. Figure 3 provides an example of the email template used to disseminate the
11 survey through student mailing lists. Adverts will also be placed on NANSIG social media
12 platforms, as well as the monthly NANSIG newsletter.

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21 In the invitation to complete the study, based on their medical/nursing school, participants
22 will also receive wellbeing, mental health, and guidance services specific to their institution,
23 should they need to access them at any point. Participants will also be made aware of our
24 patient and public involvement organisation, and their contact details. No incentives for
25 participation will be offered.

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Figure 3. Standard email template used for all survey dissemination through student email lists, developed by the study team and approved by the research ethics committee.

Eligibility and representation

All current students enrolled at UK medical schools recognised by the General Medical Council (GMC) and the Medical Schools Council (MSC) will be eligible to participate. Additionally, all current home and international students enrolled on an adult, child and mental health nursing degree at a UK university are eligible for inclusion. A list of eligible medical schools, and approved programmes by the Nursing and Midwifery Council (NMC) is included in the supplementary materials (document "Supplementary Material – MSC and NMC").

Consent and confidentiality

A patient information sheet will be shown on the first page of the study (supplementary material - patient information). This encompasses the rationale, purpose, and voluntary nature of participation. Participants must verify that they are over 18 years old and provide

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3 informed consent via tick box. It will be emphasised that participation is anonymous,
4 confidential, voluntary, and that participants can withdraw consent at any time.
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7 Data security

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10 All data will be collected and stored on the secure online server, Qualtrics™. Survey data will
11 be extracted from the software to a password-protected, Microsoft Excel spreadsheet
12 (Microsoft, California, USA) only available to the study team. Data handling and record
13 keeping will adhere to the University of Oxford standards for data security.
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18 Statistical analysis

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21 Data will be analysed using R version 4.0.3. The overall wellbeing of medical and nursing
22 students, as assessed using the WEMWBS, and mental health, using the PHQ-9 and GAD-
23 7, will be presented using descriptive statistics. The scores of WEMWBS, PHQ-9 and GAD-
24 7, will be categorised using established cut off points into dichotomous groups, corresponding
25 to individuals expressing symptoms and those which do not. (20-22) No information that
26 identifies or is specific to institutions will be presented. Appropriate statistical methods will
27 be selected based on the distribution and type of data; it is anticipated data will be non-
28 parametric, and, will therefore be compared using tests such as χ^2 or Kruskal-Wallis tests.
29 Differences between medical and nursing students will be compared using these statistical
30 tests. To identify factors associated with an increased scores on WEMWBS, PHQ-9, and
31 GAD-7, multi-variate generalised linear regression will be used.
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43 Sample size calculation

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45 Approximate estimates of total UK medical and nursing students were calculated from yearly
46 undergraduate intake figures. The total number of UK medical and adult nursing students
47 was estimated to be 84,000. An online calculator was used to determine the sample size
48 needed for the survey. The minimum sample size required from our target population for a
49 margin error of 5% (around a 50% distribution) and a confidence interval level of 95% is 383,
50 assuming a 50% response distribution for each question, the most conservative response
51 distribution for study power.
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Patient and public involvement

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5 As the study population was medical and nursing student wellbeing and mental health, we
6 worked collaboratively with the Be Free Campaign - a mental health and wellbeing
7 awareness charity, from study inception. Be Free were involved in the conception, design
8 and development of the study. The charity works with young people and students,
9 emphasising mental health and wellbeing, to tackle the stigma behind mental health, and
10 promote expression of individual values (UK registered charity number 1189704). The
11 charity director and clinical study team for the charity comprehensively reviewed the protocol
12 for appropriateness of content, question format, and ensured the questions asked were
13 sensitive and pertinent to medical and nursing students.
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20 Be Free have extensive knowledge of indicators of mental health, and the questions
21 selected (WEMWBS, PHQ-9 and GAD-7) were done so in concordance with their advice.
22 The number of questions, layout, and design were also prepared in accordance with their
23 suggestions. The charity inspired the conception of this study and approved the final survey
24 design. The charity founder and director (SK) is also a member of the steering committee for
25 this study.
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35 **DISCUSSION**

36 Study rationale

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41 International multi-institutional studies have demonstrated that during the initial COVID-19
42 outbreak, medical students were less likely to experience deterioration in mental health and
43 wellbeing when compared to non-medical students. (23, 24) This is the first national, multi-
44 institutional study to evaluate the mental health of UK medical and nursing students during
45 the COVID-19 pandemic.(25) It will therefore be possible to elucidate the mental health and
46 wellbeing of healthcare students across the UK. By comparing medical and nursing schools,
47 it will be possible to evaluate the nature of successful support, as well as students'
48 confidence and ability to access this support. The findings will inform service provision, and
49 highlight areas where improvement is required. The survey will also highlight local and
50 national wellbeing resources available to students.
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Why assess medical and nursing student wellbeing and mental health?

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5 Medical and nursing students form the healthcare multi-disciplinary team of the future.
6 Mental health and wellbeing are positively correlated with job satisfaction, retention, and
7 performance, and is an essential component of good health.(26) If the NHS is to retain,
8 recruit and develop its workforce of the future, ascertaining their mental health at this point in
9 the COVID-19 pandemic is essential. Young people have been disproportionately affected
10 by the pandemic, and most medical and nursing students fall into this age category. As non-
11 emergency care is delayed and rescheduled, students will have to deal with the long acting
12 repercussions of the pandemic, including those directly affected by the virus itself, including
13 long-COVID,(27) declining mental health in the population exacerbated by the pandemic,(28)
14 and implications of delayed access to healthcare.(29, 30)

21
22 Many medical students may not be aware that such support exists, either at their respective
23 institution, or at a regional/national level, and we would do these students a disservice by not
24 highlighting existing mental health and wellbeing services.

25 26 27 28 Benefits of a national medical student wellbeing survey

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31 Medical and nursing schools across the UK adopt heterogenous practices to achieve the
32 outcomes set in the GMC and NMC core competencies and curricula.(31) A survey of both
33 medical and nursing students on a national scale is the best way to evaluate mental health
34 and wellbeing. Many institutions reacted differently to the pandemic, and a survey is best
35 placed to simultaneously decipher wellbeing and mental health at each institution, while
36 assessing the impact of the pandemic on a national scale, and highlighting heterogeneity
37 between institutions. Furthermore, there is a need to appreciate that multi-institutional
38 studies of large magnitude are required to answer important clinical questions and elucidate
39 concerns not identified by smaller studies. Multi-centre studies are also less susceptible to
40 identity issues because the data is aggregated between multiple medical schools, and can
41 be presented as all centres.

42 43 44 45 46 47 48 49 50 51 52 Limitations

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55 Online surveys have the advantage of ubiquitous presence, and increased accessibility to
56 medical and nursing schools in the UK. However, several limitations can arise from such a
57 study method.
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3 Firstly, those with an existing interest in wellbeing and mental health may be more likely to
4 engage with and complete the survey. This could lead to selection bias towards those
5 adversely affected by the pandemic. The anticipated magnitude of this effect is unclear. In
6 addition, as the survey is being distributed through NANSIG, there may be over-participation
7 from students with an interest in Neurosciences and their surrounding connections.
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12 In order to ameliorate this as best as possible, we have adopted a varied dissemination
13 approach. This includes having representatives at each UK medical school, survey
14 distribution to medical and nursing school bulletins, and newsletters. We hope this will
15 improve visibility and participation. We decided not to incentivise participants with a potential
16 prize for completing the survey, as we wanted responses to be motivated by a desire to
17 complete the questions in as open a way as possible.
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24 The study is also limited by its cross-sectional design, and will therefore only provide a
25 snapshot of mental health and wellbeing at the time of survey completion. In addition, during
26 capricious times such as COVID, fluctuations in mental health may occur in accordance with
27 policy changes, as well as institutional policies towards placements and assessment, and we
28 will assess date of study completion as a potential confounder as a variable in our analysis.
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34 The self-reporting of symptoms will also be a significant limitation, in addition to the fact that
35 the questions included are screening tools for mental health and wellbeing, and are not
36 immediately diagnostic. Furthermore, a number of important variables including socio-
37 economic status, co-morbid psychiatric conditions, and levels of isolation, have not been
38 included within the survey.(32, 33) These factors are known to be associated with adverse
39 mental health at baseline in young healthcare students,(34) and finances have been noted
40 specifically to contribute to adverse medical and nursing student wellbeing.(32) The reason
41 we omitted these from the survey, but included other variables such as ethnicity and religion,
42 was for two reasons. First, it was felt that, during the conception of the study, that including
43 religion and ethnicity as part of the participant demographics section was feasible, and would
44 not affect participants' responses. Second, it was felt that requesting participants to divulge
45 finances and report ongoing social isolation would be too intrusive, and is not a common
46 component of participant demographics for most surveys. Omission of these and other
47 variables may cause confounding of study results. The decision not to include these
48 variables was made to ensure minimal barriers existed to completion of the survey, however
49 we understand that the results must be interpreted within the context of this limitation.
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3 Finally, there are no imbedded security or validation measures to confirm the medical or
4 nursing school of each participant, and therefore we cannot guarantee that all participants
5 were UK medical or nursing student
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14 Ethics and dissemination

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17 Ethical approval for this study was granted by the Oxford Research ethics committee
18 [R75719/RE001]. The findings of the SPICE-20 study as described in this protocol, will be
19 presented at scientific conferences, and submitted for publication in a peer-review journal
20 once finalised.
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27 Acknowledgments

28
29
30 The authors would like to thank the SPICE-19 collaborative, whose work inspired this study,
31 and are grateful to the Be Free Campaign for their assistance with the conception, design
32 and inspiration for components of the study. We also thank NANSIG and members of the
33 SPICE-20 collaborative, for their kind assistance disseminating the survey.
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40 Funding statement

41
42 No external funding has been sought in the conception, design or implementation of this
43 study. CSG is a recipient of a grant from the Wolfson Foundation. GER is the recipient of
44 funding from North West Cancer Research. KS is supported by the NIHR Oxford Health
45 Biomedical Research Centre. The views expressed are those of the author(s) and not
46 necessarily those of the NHS, the NIHR or the Department of Health.
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54 Competing interests' statement

55
56
57 None to declare.
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60 Presented at: N.A.

Author Contributions

GER, CSG, and OM were responsible for initial drafting of protocol manuscript, conceptualisation and designing the study. AC, SZYO, JP, ERB, IG, SB, and KS formed the wider study group and reviewed and approved drafts of the manuscript. KS provided supervision of the project. SK reviewed the manuscript and also provided PPI involvement and approval for the study. Neurology and Neurosurgery Interest Group (NANSIG) forms a collaborative that advised the conceptualisation, and initial design of the study. SPICE-20 Collaborative informed and approved the draft of the manuscript, and will ensure participant recruitment and completion of the final study.

Collaborators

Neurology and Neurosurgery Interest Group (NANSIG): Conor S Gillespie, Emily R Bligh, Soham Bandyopadhyay, Jay J Park, Setthasorn ZY Ooi, George E Richardson, Abigail Clynch, Oliver Burton, Avani Shanbhag, Moritz Steinruecke, William Bolton, Bharti Kewlani, Alvaro Yanez Touzet, Hannah Redpath, Seong Hoon Lee, Abdullah Egiz, Joshua Erhabor, Orla Mantle.

SPICE-20 Collaborative: Gideon Adegboyega, Soham Bandyopadhyay, Mohammed Talha Bashir, Prithvi Bahu, Emily Bligh, Oliver Burton, Yasmin Cantwell, Catinca Ciuculete, Abigail Clynch, George Davies, Anjali Deepak, Rosaline de Koning, Ritika Dilip, Tomas Ferreira, Ioannis Georgiou, Shankari Gnanakumar, Anita Golash, Conor S Gillespie, Hanya Ghazi, Rohan Gupta, La-Dantai Henriques, David Henshall, Tom Hess, Dana Hutton, Neslihan Isleyen, Fareha Khalil, Mehdi Khan, Shantanu Kundu, Electra Lerou, Cora Lowe, Orla Mantle, Setthasorn Zhi Yang Ooi, Mc Stephen Padilla, Jay J. Park, Jacob Porter, Hannah Redpath, George E Richardson, Sumaiya Rizaam, Kate E.A. Saunders, Jashan Selvakumar, Ishta Sharma, Amy Schranz, Anson Wong, Robyn Wilcha,

Data Sharing Statement

Data are available upon reasonable request. All data must be anonymised entirely prior to any sharing request completion.

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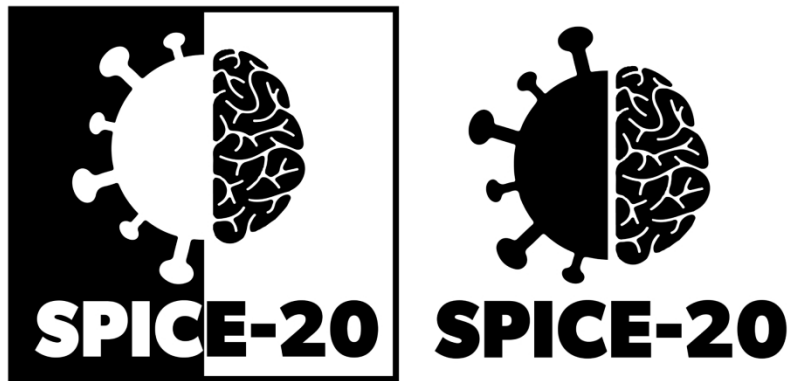


Figure 1. SPICE-20 study logos.

533x755mm (118 x 118 DPI)

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Section 1 – Background Information

1. Are you a medical or nursing student?
 - a. Medical student
 - i. Which medical school are you currently enrolled in?
 1. Response from dropdown of medical schools
 - b. Nursing Student
 - i. Which nursing school are you currently enrolled in?
 1. Response from dropdown of nursing schools
2. How many years (if any) of your degree (excluding intercalation) have you completed so far?
 - a. Choose year of study from list
3. Are you currently undertaking an intercalated degree?
 - a. Respond yes or no
 - i. Have you previously undertaken an intercalated degree?
 1. Respond yes or no
 - b. Free text box for age
5. What is your gender?
 - a. Choose from gender list with free-text box
6. What is your race or ethnicity?
 - a. Choose from list of ethnicities with free-text box
7. What is your religion?
 - a. Choose from list of religions with free-text box

Section 2 – Wellbeing and Mental Health

WELMHS

Participants are shown a series of statements and asked to choose an appropriate response from either: 1) None of the time, 2) Rarely, 3) Some of the time, 4) Often and 5) All of the time

1. "I've been feeling optimistic about the future"
2. "I've been feeling useful"
3. "I've been feeling relaxed"
4. "I've been feeling interested in other people"
5. "I've had energy to spare"
6. "I've been dealing with problems well"
7. "I've been thinking clearly"
8. "I've been feeling good about myself"
9. "I've been feeling close to other people"
10. "I've been feeling confident"
11. "I've been able to make up my own mind about things"
12. "I've been feeling loved"
13. "I've been interested in new things"
14. "I've been cheerful"

PHQ-9

Participants are asked, over the last 2 weeks, how often have you been affected by any of the following problems? Responses include: 1) Not at all (0-1 days), 2) Several days (2-6 days), 3) More than half the days (7-11 days), 4) Nearly every day (12-14 days)

1. Little interest or pleasure in doing things?
2. Feeling down, depressed or hopeless?
3. Trouble falling or staying asleep, or sleeping too much?
4. Feeling tired or having little energy?
5. Poor appetite or overeating?
6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down
7. Trouble concentrating on things, such as reading the newspaper or watching television?
8. Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual?
9. Thoughts that you would be better off dead or of hurting yourself in some way?

GAD-7

Participants are asked, over the last 2 weeks, how often have you been bothered by the following problems? Responses include: 1) Not at all, 2) Several days, 3) More than half the days, 4) Nearly every day

1. Feeling nervous, anxious or on edge
2. Not being able to stop or control worrying
3. Worrying too much about different things
4. Trouble relaxing
5. Being so restless that it is hard to sit still
6. Becoming easily annoyed or irritable
7. Feeling afraid as if something awful might happen

Other Questions

1. How would you rate your mood before COVID-19 affected the UK (One year ago)? 0 being the worst mood you can imagine and 100 being the best mood you can imagine
 - a. Response via sliding scale from 0 to 100
2. How would you rate your mood now? 0 being the worst mood you can imagine and 100 being the best mood you can imagine
 - a. Response via sliding scale from 0 to 100

Section 3 – Support

1. Has your university provided any form of mental health and wellbeing support?
 - a. Yes
 - i. What support has the university provided you with? (please select one or more)
 1. Multiple selection boxes with options and free text box for other
 - ii. How confident do you feel accessing the support services available to you?
 1. 5 point Likert scale from not confident at all to very confident
 - iii. Have you accessed/used support that your university has provided?
 1. Yes
 - a. Has your university support been useful?
 - i. Yes
 1. In what way?
 - a. Free text response
 - ii. No
 1. Why not?
 - a. Free text response
 2. No
 1. Why not?
 - a. Free text response
 - iv. Would you like your university to provide you with more wellbeing support?
 1. Yes (please select one or more)
 - a. Multiple selection boxes with options and free text box for other
 2. No
 - a. Why not?
 - i. Free text response
 - b. No

Section 4 – Changes

 1. Is your teaching different now compared to before the pandemic (do not answer if in first year)?
 - a. Yes
 - i. Please select one or more of the following ways teaching/placements have changed:
 1. Multiple selection boxes with options and free text box for other
 - ii. Why not?
 1. Free text response
 - b. No
 - i. Why not?
 1. Free text response
 2. Has there been any positive aspects of the changes to teaching?
 - a. Yes
 - i. Please detail the positive changes to teaching
 1. Free text response
 - b. No
 3. What changes could be made to teaching in medical school to improve your wellbeing?
 - a. Multiple selection boxes with options and free text box for other
 4. Have you worked or are you currently working within a healthcare setting during the course of this pandemic?
 - a. Yes
 - i. Which of the following roles have you taken up?
 1. Multiple selection boxes with options and free text box for other
 - ii. Have you been offered wellbeing support in response to the role you have undertaken?
 1. Yes
 - a. Who has provided this support? (please select one or more)
 - i. Multiple selection boxes with options and free text box for other
 2. No
 - b. No
 5. After the pandemic, are you more or less likely to continue in a career in Medicine/Nursing?
 - a. 5 point Likert scale from Much less likely to Much more likely
 6. Have your future career plans changed since the start of the pandemic?
 - a. Yes
 - i. If Yes, how come?
 1. Free text response
 - b. No

Figure 2: Final SPICE-20 survey design.

913x1291mm (118 x 118 DPI)

Dear Students,

We are a group of student researchers that are interested in investigating the current state of medical student mental health and wellbeing, one year on from the onset of the pandemic. We are inviting all UK medical students, from years 1 to 5 (and intercalating) to complete a short 15 minute survey to help us better understand how you are doing. Whilst completing the survey, you will be asked a variety of questions about your mental health and wellbeing, and the support that you have received. Your IP address will not be recorded and responses will be anonymous. There will not be any follow up survey. Useful links to support services have been provided along with the post-survey debrief. Additional information about the risks versus benefits of taking part in the survey can be found by following the study link below. **Please access the survey by the link below:**

https://psychiatryoxford.qualtrics.com/jfe/form/SV_eQmCH0FLewvbcWO

If you have any questions about the study or your involvement please contact a member of the study team at the following email and we will aim to reply within 24hrs:
hgricha@liverpool.ac.uk

Should you have concerns about your wellbeing do consider contacting you GP or accessing the resources available: <LOCAL SERVICE PROVISION INSERTED HERE>

Many thanks for taking the time to read this,

George Richardson
SPICE-20 Study Team



Figure 3. Standard email template used for all survey dissemination through student email lists, developed by the study team and approved by the research ethics committee.

554x668mm (57 x 57 DPI)

UK N.M.C Approved Adult Nursing Programmes

Approved education institution	Course
University Of Essex	Adult Nursing
University Of Essex	Adult Nursing (nursing degree apprenticeship route)
Edinburgh Napier University	Bachelor of Nursing (Adult)
University Of Wolverhampton	Bachelor of Nursing (BNurs (Hons)) Adult Nursing
University Of Wolverhampton	Bachelor of Nursing (BNurs (Hons)) Adult Nursing [Apprenticeship]
University Of Glasgow	Bachelor of Nursing (Honours)
University Of Manchester	Bachelor of Nursing (Hons) (Adult)
University Of Birmingham	Bachelor of Nursing (Hons) (Adult)
University Of Liverpool	Bachelor of Nursing (Hons) Nursing (Adult)
University Of Glasgow	Bachelor of Nursing (ordinary) [fall back award]
Cardiff University	Bachelor of Nursing Adult
University of Derby	Bachelor of Science (Honours) in Nursing (Adult)
University of Derby	Bachelor of Science (Honours) in Nursing (adult) (apprenticeship)
University Of Sheffield	BMed Sci (Hons) Nursing (Adult)
University Of Sheffield	BMedSci (Hons) Nursing (Adult) Apprenticeship route
University of Chester	BN (Hons) Adult Nursing
University of Chester	BN (Hons) Adult Nursing
University of Chester	BN (Hons) Adult Nursing
University of Chester	BN (Hons) Adult Nursing
University of Chester	BN (Hons) Adult Nursing

Approved education institution	Course
University of Chester	BN (Hons) Adult Nursing Apprenticeship
University of Chester	BN (Hons) Adult Nursing Apprenticeship
University Of Portsmouth	BN (Hons) Nursing (Adult)
University of Winchester	BN (Hons) Nursing (Adult)
Glyndwr University (formerly North East Wales Inst. of HE)	BN Nursing
University Of Edinburgh	BN nursing (adult)
University Of Edinburgh	BN nursing with Honours (adult)
University of Chester	BNurs (Hons) Adult
University of Chester	BNurs (Hons) Adult (part-time)
University of Chester	BNurs (Hons) Adult Apprenticeship
University Of Wolverhampton	BNurs (Hons) Adult Nursing
University Of Wolverhampton	BNurs (Hons) Adult Nursing Apprenticeship
University of West London	BNursing (Hons) Adult
University Of Hertfordshire	BSc Hons Nursing (Adult)
University Of Stirling	BSc (Honours) Nursing (Adult)
Coventry University	BSc (Hons) Adult Nursing
Coventry University	BSc (Hons) Adult Nursing (Degree apprenticeship)
Oxford Brookes University	BSc (Hons) (Adult)
London South Bank University	BSc (Hons) adult nursing
University of Suffolk	BSc (Hons) Adult Nursing
University of West of Scotland	BSc (Hons) Adult Nursing
Leeds Beckett University	BSc (Hons) Adult Nursing
University of Northampton	BSc (Hons) Adult Nursing
Bournemouth University	BSc (Hons) Adult Nursing

Approved education institution	Course
University of Roehampton	BSc (Hons) Adult Nursing
University Of Dundee	BSc (Hons) Adult Nursing
University of West of Scotland	BSc (Hons) Adult Nursing
University Of Greenwich	BSc (Hons) Adult Nursing
University of Bedfordshire	BSc (Hons) Adult Nursing
Bournemouth University	BSc (Hons) Adult Nursing (Apprenticeship)
University of Bedfordshire	BSc (Hons) Adult Nursing (apprenticeship)
University of Sunderland	BSc (Hons) Adult Nursing (blended)
University of Sunderland	BSc (Hons) Adult Nursing (blended)
Leeds Beckett University	BSc (Hons) Adult Nursing (degree apprenticeship)
Manchester Metropolitan University	BSc (Hons) Adult Nursing (Pre-registration)
University of Suffolk	BSc (Hons) Adult Nursing [degree apprenticeship]
Coventry University	BSc (Hons) Adult Nursing Blended Learning
Coventry University	BSc (Hons) Adult Nursing Blended Learning Nursing Degree Apprenticeship
University Of Greenwich	BSc (Hons) Adult Nursing Degree Apprenticeship
Solent University	BSc (Hons) Adult Nursing Practice – apprenticeship
University of Sunderland	BSc (Hons) adult nursing practice
Solent University	BSc (Hons) Adult Nursing Practice
University Of Huddersfield	BSc (Hons) Degree Apprenticeship - Registered Nurse Child (Blended Learning)
University Of Huddersfield	BSc (Hons) Degree Apprenticeship-Registered Nurse: Adult

Approved education institution	Course
BPP	BSc (Hons) Nursing (Adult) [Nursing Degree Apprenticeship]
BPP	BSc (Hons) Nursing (Adult) [pre registration nursing]
University of East Anglia	BSc (Hons) nursing - Adult
University Of Huddersfield	BSc (Hons) Nursing - Adult
University Of The West Of England, Bristol	BSc (Hons) Nursing - Adult
University of East Anglia	BSc (Hons) Nursing - Adult Degree Apprenticeship
Queen Margaret University	BSc (Hons) Nursing
University Of Plymouth	BSc (Hons) Nursing (Adult Health)
University Of Plymouth	BSc (Hons) Nursing (Adult Health) - Nurse Degree Apprenticeship
University Of York	BSc (hons) Nursing (Adult)
University of Salford	BSc (Hons) Nursing (adult)
University of Bolton	BSc (Hons) Nursing (adult)
University of Nottingham	BSc (Hons) Nursing (adult)
Buckinghamshire New University	BSc (Hons) Nursing (Adult)
Anglia Ruskin University	BSc (Hons) Nursing (Adult)
Swansea University	BSc (Hons) Nursing (Adult)
Edge Hill University	BSc (Hons) Nursing (Adult)
Edge Hill University	BSc (Hons) Nursing (Adult)
The Open University	BSc (Hons) Nursing (Adult)
The University of Hull	BSc (Hons) Nursing (Adult)
The University of Hull	BSc (Hons) Nursing (Adult)
University of Ulster	BSc (Hons) Nursing (Adult)

Approved education institution	Course
University Of East London	BSc (Hons) Nursing (Adult)
University Of Leeds	BSc (Hons) Nursing (Adult)
University College Birmingham	BSc (Hons) Nursing (Adult)
University Of Southampton	BSc (Hons) Nursing (Adult)
Canterbury Christ Church University	BSc (Hons) Nursing (Adult)
Birmingham City University	BSc (Hons) Nursing (Adult)
Anglia Ruskin University	BSc (Hons) Nursing (Adult)
Swansea University	BSc (Hons) Nursing (Adult)
The Robert Gordon University	BSc (Hons) Nursing (Adult)
University of Bradford	BSc (Hons) Nursing (Adult)
The Open University	BSc (Hons) Nursing (Adult)
The Open University	BSc (Hons) Nursing (Adult)
University of Gloucestershire	BSc (Hons) Nursing (Adult)
University Of Hertfordshire	BSc (Hons) Nursing (adult) - Nursing Degree Apprenticeship
The Open University	BSc (Hons) Nursing (Adult) - Nursing Degree Apprenticeship
Birmingham City University	BSc (Hons) Nursing (Adult) - Nursing Degree Apprenticeship
University of Gloucestershire	BSc (Hons) Nursing (Adult) (Apprenticeship)
University of Gloucestershire	BSc (Hons) Nursing (Adult) (Blended Learning)
Edge Hill University	BSc (Hons) Nursing (Adult) (fall back award)
University Of Leeds	BSc (Hons) Nursing (Adult) (International)
Canterbury Christ Church University	BSc (Hons) Nursing (Adult) (NDA)
University of Bolton	BSc (Hons) Nursing (Adult) (Part-time)

Approved education institution	Course
University of Bolton	BSc (Hons) Nursing (Adult) (Registered Nursing Higher Apprenticeship) (Part-time)
University of Bradford	BSc (Hons) Nursing (Adult) [fall back award]
Buckinghamshire New University	BSc (Hons) Nursing (Adult) Apprenticeship
University of Salford	BSc (Hons) Nursing (adult) Nurse Degree Apprentice
University of Bolton	BSc (Hons) Nursing (adult) nurse degree apprenticeship (NDA) route
Middlesex University	BSc (Hons) Nursing (adult) seconded pathway
De Montfort University	BSc (Hons) Nursing (Adult) with NMC Registration (Apprenticeship route)
University Of East London	BSc (Hons) Nursing (Adult)-Registered Nurse (Degree) Apprenticeship Route
Queen Margaret University	BSc (Hons) Nursing (fall back award)
University of Lincoln	BSc (Hons) Nursing (Registered Nurse - Adult)
University of South Wales	BSc (Hons) Nursing Adult
Nottingham Trent University	BSc (Hons) Nursing Adult
University Of Brighton	BSc (Hons) Nursing Adult
University of Worcester	BSc (Hons) Nursing Adult
Sheffield Hallam University	BSc (Hons) Nursing Adult (Part Time)
University Of The West Of England, Bristol	BSc (Hons) Nursing apprenticeship - Adult
University Of Huddersfield	BSc (Hons) Nursing Child (Blended Learning)
University of Sunderland	BSc (Hons) nursing degree apprenticeship (adult)
Nottingham Trent University	BSc (Hons) Nursing Degree Apprenticeship Adult
Swansea University	BSc (Hons) Nursing part-time (Adult)

Approved education institution	Course
University Of Northumbria At Newcastle	BSc (Hons) nursing science (adult)
University Of Northumbria At Newcastle	BSc (Hons) nursing science apprenticeship (adult)
Teesside University	BSc (Hons) Nursing Studies (Adult) (Pre-registration) Apprenticeship route
Glasgow Caledonian University	BSc (Hons) Nursing Studies: Adult Nursing
Liverpool John Moores University	BSc (Hons) Nursing with Registered Nurse Status (Adult)
Liverpool John Moores University	BSc (Hons) Nursing with Registered Nurse Status (Adult)
University of Cumbria	BSc (Hons) Nursing/RN:Adult Nursing
University of Cumbria	BSc (Hons) Nursing/RN:Adult Nursing (Apprenticeship)
Keele University	BSc (Hons) Nursing: Adult
Keele University	BSc (Hons) Nursing: Adult (NDA)
Kingston University & St George's University of London	BSc Adult Nursing
University Of Dundee	BSc Adult Nursing
University of West of Scotland	BSc Adult Nursing
University Of Greenwich	BSc Adult Nursing (Degree Apprenticeship) (fall back award)
University Of Greenwich	BSc Adult Nursing (fall back award)
Middlesex University	BSc Hons Nursing Adult
University of Highlands and Islands	BSc Nursing
City, University of London	BSc Nursing (Adult)
Oxford Brookes University	BSc Nursing (Adult)
The Robert Gordon University	BSc Nursing (Adult)

Approved education institution	Course
The Robert Gordon University	BSc Nursing (Adult)
University Of Stirling	BSc Nursing (Adult)
The Robert Gordon University	BSc Nursing (Adult) (fall back award)
Glasgow Caledonian University	BSc Nursing Studies: Adult Nursing
King's College London	BSc Nursing with Registration as an Adult Nurse
University of Ulster	BSc(Hons) Nursing (Adult)
University of Lincoln	Degree Science Nursing (Registered Nurse - Adult: Apprenticeship Route)
University of Salford	MA Nursing (adult)
University Of Wolverhampton	Master of Adult Nursing
University Of Wolverhampton	Master of Nursing (Adult Nursing)
University Of Birmingham	Master of Nursing (Adult)
University Of Wolverhampton	Master of Nursing (MNurs) Adult Nursing
University Of Birmingham	Master of Science in Nursing (Adult)
University of Derby	Master of Science in Nursing (Adult)
University of Derby	Master of Science in Nursing (adult) (apprenticeship)
University Of Manchester	Masters in Nursing (Adult)
University Of Edinburgh	Masters in Nursing with pre-registration (adult)
University Of Sheffield	MMedSci Nursing (Adult)
Queen Margaret University	MN Nursing
Edge Hill University	MNSW Adult Nursing and Social Work
University of Sunderland	MNurse (Adult)
University Of York	MNursing (Adult)
University Of Hertfordshire	MSc Hons Nursing (Adult)

Approved education institution	Course
University Of Northumbria At Newcastle	MSc (Hons) nursing science (adult)
University Of Dundee	MSc Adult Nursing
University Of Greenwich	MSc Adult Nursing
University of Chester	MSc Adult Nursing
University of Chester	MSc Adult Nursing
University of Chester	MSc Adult Nursing
University of Bedfordshire	MSc Adult Nursing
London South Bank University	MSc adult nursing
University of West of Scotland	MSc Adult Nursing
University of Chester	MSc Adult Nursing
Bournemouth University	MSc Adult Nursing
Kingston University & St George's University of London	MSc Adult Nursing
Coventry University	MSc Adult Nursing
University of Bedfordshire	MSc Adult Nursing (apprenticeship)
Birmingham City University	MSc Adult Nursing (pre-registration)
Manchester Metropolitan University	MSc Adult Nursing (Pre-registration)
University of Chester	MSc Adult Nursing Apprenticeship
Coventry University	MSc Adult Nursing Blended Learning (pre-registration)
Coventry University	MSc Adult Nursing Blended Learning (pre-registration) Nursing Degree Apprenticeship
University Of Southampton	MSc Nursing (Adult)
Canterbury Christ Church University	MSc Nursing (Adult)
City, University of London	MSc Nursing (Adult)

Approved education institution	Course
University Of Hertfordshire	MSc Nursing (adult) - Nursing Degree Apprenticeship (part time route)
University of Nottingham	MSc nursing (graduate entry) (adult)
University of Lincoln	MSc Nursing (Pre-Registration – Adult)
Edge Hill University	MSc Nursing (Pre-registration Adult)
University Of Huddersfield	MSc Nursing (pre-registration) - Adult
Swansea University	MSc Nursing Pre-registration (Adult)
Teesside University	MSc Nursing Studies (Adult Apprenticeship)
Glasgow Caledonian University	MSc Nursing Studies: Adult Nursing
University of Central Lancashire	MSc nursing with registered nurse (adult)
Liverpool John Moores University	MSc Nursing with Registered Nurse Status (Adult)
Liverpool John Moores University	MSc Nursing with Registered Nurse Status (Adult)
King's College London	MSc Nursing with Registration as an Adult Nurse
University Of Plymouth	MSc Pre-registration Nursing (Adult Health)
University Of Huddersfield	MSc Pre-registration Nursing apprenticeship-Adult
University Of Huddersfield	MSc Pre-registration Nursing Apprenticeship Child (Blended Learning)
University Of Huddersfield	MSc Pre-registration Nursing Child (Blended Learning)
University of Cumbria	MSc Pre-Registration Nursing/Registered Nurse: Adult Nursing
Edge Hill University	MSci Nurse Paramedic (Adult)
University Of Exeter	MSci nursing (adult)
University of Leicester	MSci Nursing with Leadership Adult Nursing

Approved education institution	Course
Middlesex University	Nurse Degree Apprenticeship Adult (4 year direct entry route)
Middlesex University	Nurse Degree Apprenticeship Adult (4 year part-time employed route)
University of West London	Nurse Degree Apprenticeship BNursing (Hons) Adult
University of Central Lancashire	Nursing Degree Apprenticeship route – Adult
Teesside University	Nursing Studies (Adult) (Pre-registration) BSc (Hons)
Teesside University	Nursing Studies (Adult) (Pre-Registration) MSc
University of West of Scotland	PG Dip Adult Nursing
London South Bank University	PG Dip adult nursing
University Of Greenwich	PG Dip Adult Nursing (fall back award)
University of South Wales	PG Dip Nursing Adult
University of West London	PG Diploma Nursing Adult
Edge Hill University	PgDip Nursing (second registration Adult)
University Of Southampton	Postgraduate Diploma Nursing (Adult)
The Queen's University Of Belfast	Pre-registration nursing - Adult
Sheffield Hallam University	Pre-registration nursing - Adult
The Queen's University Of Belfast	Pre-registration nursing - Adult (Graduate Entry)
Staffordshire University	Registered Nurse (Adult)
University Of Brighton	Registered Nurse Degree Apprenticeship (Adult)

UK M.S.C Approved Medicine and Surgery Programmes

Institution Name
University of Aberdeen School of Medicine and Dentistry
Anglia Ruskin University School of Medicine
Aston University Medical School
Barts and The London School of Medicine and Dentistry
University of Birmingham College of Medical and Dental Sciences
Brighton and Sussex Medical School
University of Bristol Medical School
University of Buckingham Medical School
University of Cambridge School of Clinical Medicine
Cardiff University School of Medicine
University of Dundee School of Medicine
Edge Hill University Medical School
The University of Edinburgh Medical School
University of Exeter Medical School
University of Glasgow School of Medicine
Hull York Medical School
Imperial College London Faculty of Medicine
Keele University School of Medicine
Kent and Medway Medical School
King's College London GKT School of Medical Education
Lancaster University Medical School
University of Leeds School of Medicine
University of Leicester Medical School
University of Liverpool School of Medicine
University of Manchester Medical School
Newcastle University School of Medical Education
Norwich Medical School
University of Nottingham School of Medicine

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5	University of Oxford Medical Sciences Division
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7	Plymouth University Peninsula Schools of Medicine and Dentistry
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9	Queen's University Belfast School of Medicine
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11	University of Sheffield Medical School
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Patient Information Section

General information

The aim of this study is to determine the impact of the COVID-19 pandemic on the mental health of UK medical and nursing students, one year down the line from the initial outbreak. We are inviting all medical and nursing students enrolled at university in the UK to participate in this study. Please read the following section carefully before taking part. If you have any questions regarding the study please contact the research team via the following email: kate.saunders@psych.ox.ac.uk

What is the purpose of the study?

The purpose of SPICE-20 is to evaluate the continued impact of the COVID-19 pandemic on UK medical students, one year on from the SPICE-19 study. In addition, we aim to determine the effect on UK nursing students. In doing so we hope to provide feedback to UK medical schools and Nursing institutions about the current collective mental health of student healthcare professionals. We believe this information is vital to ensure adequate mental wellbeing service provision is in place at higher education institutions.

Why am I being invited to participate in this study?

You have been invited to take part in this study because we are recruiting medical and nursing students to participate and feedback on their continued mental wellbeing during the UK pandemic. You are eligible to participate if you are a current UK medical or nursing student in the UK and have access to the internet.

What happens if I choose to participate?

Participation in this study is entirely voluntary. To be involved you will be required to complete a short survey online. The survey will ask for general background details about you including: your current educational status, age, gender, ethnicity. Additionally, questions will ask about your current mood and mental wellbeing. Your decision to participate in this study will not have any academic impact and will be entirely anonymous. The survey is expected to take approximately 10-15 minutes to complete however it may be done as quick or slow as you like. There is no prior knowledge required to participate. We will ask for your consent for collection and storage of data in accordance with General

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3 Data Protection Regulation (GDPR) before the survey begins. More information regarding the rules
4 and regulations of GDPR can be found at www.gdpr-info.eu .
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10 Do I have to participate?

11 As stated above, participation in the SPICE-20 study is entirely voluntary and anonymous. Consent for
12 involvement may be withdrawn anytime prior to completion of the survey. To do so, simply close the
13 tab or browser containing the survey. Following this, no personal data provided up to that point in the
14 survey will be stored or used for research or any other purpose. Completion of all questions is entirely
15 optional. This means that participation is still possible even if there are certain questions you would
16 prefer not to answer. If there is a question you would like to omit from your responses, simply select
17 the option "Prefer not to answer". Any data collected will not be provided to your higher education
18 institution without being anonymised, meaning your feedback will not make your identifiable.
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28 Are there any risks of being involved?

29 Some of the questions included in the questionnaire may potentially cause some distress by bringing
30 up painful memories. If at any point during completion of the survey you are feeling distressed you
31 may stop or choose not to answer troubling questions. Included with the study information is mental
32 wellbeing support services that are available to access.
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40 Are there any benefits to being involved?

41 The completion of this survey will not provide any academic benefit at your respective institutions.
42 However, the results of SPICE-20 will be used to inform university wellbeing service provision. This
43 means that by participating in the study you have the opportunity to provide anonymous feedback to
44 your institution about what you feel is being done well, or could be done better to support students.
45 Additionally, this survey may provide be useful as a personal opportunity for reflection.
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53 How will my data be used?

54 Your answers will be completely anonymous and no identifiable data will be included. Data will be
55 stored in a password protected file and will only be accessible by individuals on the steering/writing
56 committee that have a reason to access it. IP addresses will not be stored. If you provide your email
57 address, it will be deleted at the end of the study and not linked to any information you provide.
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3 Anonymised responses to the survey will be stored for a minimum of ten years after publication or
4 public release.
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9 10 Who will have access to your data?

11 Qualtrics is the data platform used for SPICE-20. They are the data controller in respect to the personal
12 data they hold and as such they determine how personal data is used. Their privacy notice can be
13 found at: www.qualtrics.com/privacy-statement. Qualtrics will share any email address you provide
14 with the University of Oxford for the purposes of research only. Responsible members of the
15 University of Oxford may be given access to your data for monitoring or audit of the study and ensuring
16 that guidelines are complied with.
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25 Where will the results be published?

26 The results of SPICE-20 may be published in a peer reviewed academic journal. In addition, the results
27 of the study may be presented at conferences, either in oral or poster format. The study is targeting a
28 completion date of September 2021. Following this provisional date a summary of the results and
29 outcomes will be available on request to the study team.
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36 Who do I contact if I have any queries or wish to make a complaint about the study?

37 Our study team aims to operate in a transparent manner. If you have any queries or complaints
38 regarding the study aims, distribution, or any other aspect please contact the study team at
39 kate.saunders@psych.ox.ac.uk and we will do our best to provide an adequate response. Our research
40 team aims to reply within 10 working days. If you have any further issues or wish to escalate your
41 inquiry please contact the Chair of the Medical Sciences Inter-Divisional Research Ethics Committee.
42 Email: ethics@medsci.ox.ac.uk. Address: Research Services, University of Oxford, Wellington Square,
43 Oxford, OX1 2JD.
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53 Who do I contact for further details?

54 For any queries or other details, contact the principle investigator Professor Kate Saunders at
55 kate.saunders@psych.ox.ac.uk.
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3 **Please check the box to confirm you are the age of 18 years old or older**
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5 I certify that I am 18 years or older.
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10 **If you have read the information above and agree to participate with the understanding that the**
11 **data (including personal data) you submit will be processed accordingly, please check the relevant**
12 **box to get started**
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15 Yes, I agree to take part.
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STROBE Statement—checklist of items that should be included in reports of observational studies

	Item No.	Recommendation	Page No.	Relevant text from manuscript
Title and abstract	1	(a) Indicate the study’s design with a commonly used term in the title or the abstract	P1, Title	
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	P2, Abstract	
Introduction				
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	P3	
Objectives	3	State specific objectives, including any prespecified hypotheses	P4, Last Paragraph	
Methods				
Study design	4	Present key elements of study design early in the paper	From P4	
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	From P4 To P8	
Participants	6	(a) <i>Cohort study</i> —Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	N/A	
		<i>Case-control study</i> —Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls	N/A	
		<i>Cross-sectional study</i> —Give the eligibility criteria, and the sources and methods of selection of participants	P6	
		(b) <i>Cohort study</i> —For matched studies, give matching criteria and number of exposed and unexposed	N/A	
		<i>Case-control study</i> —For matched studies, give matching criteria and the number of controls per case	N/A	
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	P5	
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	P5	
Bias	9	Describe any efforts to address potential sources of bias	N/A	
Study size	10	Explain how the study size was arrived at	P7	

Continued on next page

Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	P7
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	P7
		(b) Describe any methods used to examine subgroups and interactions	N/A
		(c) Explain how missing data were addressed	N/A
		(d) <i>Cohort study</i> —If applicable, explain how loss to follow-up was addressed	N/A
		<i>Case-control study</i> —If applicable, explain how matching of cases and controls was addressed	N/A
		<i>Cross-sectional study</i> —If applicable, describe analytical methods taking account of sampling strategy	P5
		(e) Describe any sensitivity analyses	N/A
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	N/A
		(b) Give reasons for non-participation at each stage	N/A
		(c) Consider use of a flow diagram	N/A
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	N/A
		(b) Indicate number of participants with missing data for each variable of interest	N/A
		(c) <i>Cohort study</i> —Summarise follow-up time (eg, average and total amount)	N/A
Outcome data	15*	<i>Cohort study</i> —Report numbers of outcome events or summary measures over time	N/A
		<i>Case-control study</i> —Report numbers in each exposure category, or summary measures of exposure	N/A
		<i>Cross-sectional study</i> —Report numbers of outcome events or summary measures	N/A
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	N/A
		(b) Report category boundaries when continuous variables were categorized	N/A
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A

Continued on next page

Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	N/A
Discussion			
Key results	18	Summarise key results with reference to study objectives	N/A
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	From P9 To P10
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	N/A
Generalisability	21	Discuss the generalisability (external validity) of the study results	N/A
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	P11

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at <http://www.plosmedicine.org/>, Annals of Internal Medicine at <http://www.annals.org/>, and Epidemiology at <http://www.epidem.com/>). Information on the STROBE Initiative is available at www.strobe-statement.org.