Head Title: **Impact of the COVID-19 pandemic on radiography practice: Findings from the United Kingdom Radiography Workforce Survey**

Running Title: **Impact of the COVID-19 pandemic on radiography practice**

Abstract

Objectives
Radiographers are key patient-facing healthcare professionals involved in many aspects of patient care. The working patterns and professional practice of the radiography workforce (RW) has been altered during the COVID-19 pandemic. This survey aimed to assess the impact of the pandemic on radiography practice in the United Kingdom.

Methods
An online cross-sectional survey of the UK RW was performed (March 25th to April 26th, 2020). The survey sought information regarding 1. Demographics 2. Impact of the pandemic on professional practice 3. Infection prevention and control and 4. COVID-19 related stress. Data collected was analysed using the Statistical Package for Social Sciences (v.26).

Results
A total of 522 responses were received, comprising n=412 (78.9%) diagnostic and n=110 (21.1%) therapeutic RW categories from across the UK. 12.5% (n=65) of the respondents were redeployed. Redeployment did not contribute significantly (χ^2 = 11.65, df =10, p = 0.31) to work-related stress. Furthermore, perceived work-related stress did not differ significantly (χ^2 = 8.60, df = 10, p = 0.57) between the RW categories during the study period. Fear of contracting the infection and perceived inadequate personal protective equipment were identified as key contributors to work-related stress during the study period.

Conclusion
The most prevalent findings demonstrate a perceived increase in procedural volumes of chest radiographs and CT scanning leading to staff redeployment from departments involved in routine screening.

Advances in knowledge
Timely and adequate staff training and availability of PPE as well as psychosocial support during future pandemics would enhance quality patient care and safety.

Introduction

In December 2019, cases of pneumonia with an unidentified origin in a cluster of patients emerging from the Chinese City of Wuhan were reported to the World Health Organisation (WHO)[1,2]. A few days after these reports, the novel severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2]) was confirmed as the pathogenic cause of these cases, and the outbreak was subsequently named coronavirus disease (COVID-19)[2]. The first confirmed cases outside mainland China were reported to the WHO from Japan, South Korea and Thailand on January 20th, 2020[3]. The disease was subsequently reported in various continents, including Europe, with the United Kingdom (UK) reporting two cases on January 29th, 2020. The disease has spread rapidly across the globe and has led to widespread implementation of lockdown measures in most countries and restrictions on both local and international travel. The WHO declared the outbreak as a global health emergency on January 30th, 2020[3] because of the rapidly increasing number of cases and deaths associated with the virus globally. According to the COVID-19 Dashboard by the Centre for Systems Science and Engineering at Johns Hopkins University, there were XXXX cases and XXXX deaths reported worldwide, with XXXX confirmed cases and XXXX related deaths in the UK as at XXXXX[4].

The pathogenic mechanism of COVID-19 primarily involves extensive tissue damage of the respiratory system. Imaging, in particular chest radiographs (CXR) and computed tomography (CT), have emerged as key components of patient investigation and management pathways[5-7]. Pulmonary involvement is evidenced on typical imaging as multifocal, bilateral, peripheral ground-glass opacities and crazy paving consolidation[8]. These findings have also been widely reported in asymptomatic/presymptomatic patients[8-11]. The radiography workforce (RW), including assistant practitioners (APs), diagnostic and therapeutic radiographers are crucial patient-facing staff responsible for most diagnostic image acquisition, and delivery of daily radiotherapy treatments. In the pandemic, they are often involved in acquiring CXRs or CTs as part of the care of patients with known or suspected COVID-19. However, other diagnostic and therapeutic work, including imaging patients with medical emergencies and delivering components of cancer imaging and treatment has continued during the peak of the pandemic.

In most UK radiotherapy departments, the case mix and protocols have also been altered, with, for example, many prostate cancer radiotherapy treatments deferred for three months and widespread implementation of 'Fast Forward' protocols for patients with breast cancer[12]. Liang et al[13] show a higher percentage of patients with COVID-19 in the cancer cohort than in the general population due to the already compromised immune system of most patients undergoing multiple treatment regimens including radiotherapy. This generated several emergency appeals to government for clinical priority in the diagnosis and treatment of cancer in the UK during the pandemic[14,15].

In an attempt to respond to the pandemic, the National Health Service (NHS) workforce has come under extreme pressure[16]. The NHS pandemic response involved proactively postponing non-urgent work and screening programmes, redesign and relocation of services within hospitals and across regions, re-purposing of physical resources and redeployment of clinical staff to cover anticipated acute care demands[17,18]. Furthermore, a temporary register has been developed by the Health and Care Professions Council (HCPC) for automatic inclusion of all former registrants who have de-registered in the past three years and others, including final year radiography students on UK approved programmes who have completed clinical placements to join the workforce[19]. This temporary workforce is expected to operate within the limits of their skills, knowledge, and experience[20].

With growing global concerns about the pandemic and possibility of additional waves of infection, radiology departments have adopted several streamlined approaches towards practice to limit infection risk while optimising workflows, volumes and access[7,21-23]. In addition, it is essential for departments to prioritise the health and well-being of the workforce during the pandemic[24-27]. Previous studies that investigated work-related stressors among radiographers cited staff shortages, heavy workload and volume of patients as some of the key sources of occupational stress[28,29]. The current pandemic is likely to present additional work-related stressors for all patient-facing healthcare workers, including the RW, related to the risk of contracting the infection. Current recommendations emphasise the importance of appropriate use of personal protective equipment (PPE) and the implementation of strict infection control protocols for the management of this pandemic[7,21-23,30,31]. Of note, these will require adequate RW training to prevent hospital-related transmission as well as strengthening the psychosocial support structures at work for the mental well-being of the RW. The aim of this research is to assess the perceptions of the RW on the impact of the COVID-19 pandemic on practice in the UK.

Methods

Survey Design and distribution

A cross-sectional survey of UK radiographers, APs and those on the temporary register was considered the most appropriate method to access the information required for this study. The research team representatives of the UK nations (England, Wales, Scotland and Northern Ireland) outlined the questions (Appendix 1) required for the survey. These included structured questions with few options for comments relating to 1. Demographics 2. Impact of the pandemic on professional practice 3. Infection prevention and control and 4. COVID-19 related stress. This survey aimed to assess the perceptions of the RW on the pandemic in the UK; therefore, those on the temporary register and APs were eligible so far as they are engaged in current practice or volunteering during the pandemic. The academic RW is estimated at less than 2% of the overall therapeutic and diagnostic RW[32], and it was

hypothesised that a part of this cohort may be redeployed as part of the pandemic response. Furthermore, some academic radiographers are normally involved in clinical service provision through joint clinical/academic contracts and thus, they were also included.

The survey was conducted online using Google forms (https://docs.google.com/forms/). Prior to distribution, the online survey was piloted by three members of the research team, with amendments made to ensure the questions were explicit and clear. The link to the online survey was shared amongst radiology health board and NHS Trust leads across the UK via email and was advertised on social media platforms to maximise the response rate. In addition, a network of colleagues' personal contacts were also employed to promote the survey. The response time frame for the survey was four weeks (March 25th to April 26th, 2020) with weekly reminders on social media platforms. Due to the nature of the questionnaire which specifically asked about stress/anxiety relating to the pandemic and other concerns, a link was provided on completion of the questionnaire to a support page developed by a certified clinical psychologist, which encouraged participants to engage with a self-help survival guide[33]. Ethical approval was obtained from the Bournemouth University Research Ethics Committee (Ethics ID: 31818), and all the respondents provided electronic informed consent for participation in the study.

Statistical Analyses

The survey data was downloaded from Google forms into the Statistical Package for Social Sciences (SPSS) version 26.0 for Windows (SPSS Inc., IBM, New York, USA) for analyses.

Data obtained from the HCPC in accordance to the Freedom of Information Act 2000[34] reported a total of 27,041 diagnostic and 4,616 therapeutic radiographers in May, 2018. Snaith and colleagues[35] reported 257 accredited APs across diagnostic imaging practice in the UK. Furthermore, a report from NHS England showed a steady growth rate for diagnostic radiographers, ranging between 3% and 4% per year over the period with similar projections to 2027[36]. In a careful extrapolation analyses that assumed a 4% annual growth rate for the RW across the UK, it is suggested that there are approximately 34,241 radiographers [diagnostic (n=29,248) and therapeutic (n=4,993)] and 278 accredited APs currently in the UK. Of note, these figures should be interpreted with caution based on the assumptions. Using the Qualtrics® online sample size calculator (https://www.qualtrics.com/blog/calculating-sample-size/) and a population size, **P** = 34,519; confidence level, **Z** = 95% and margin of error, **E** = 5%, we estimated the required minimum sample size for the study. Based on our careful assumptions and calculations, a minimum of 380 valid responses were required for our UK-wide survey findings to be statistically robust for generalisations.

χ^2 tests were used to investigate the relationship between the demographic variables across the radiography categories (diagnostic vs therapeutic). Again, it was used to assess the impact of redeployment on perceived stress levels among the workforce. A two-tailed α level of 0.05 was used for testing statistical significance.

Results

Response Rate and Demographics

Detailed data on demography, workplace setting, professional status and geographical location of respondents are presented in Table 1. Within the four-week survey period, a total of 526 responses were received; 4 respondents did not meet the inclusion criteria [Radiology registrar (n=1), clinical technologist (n=1), student (n=1) and researcher (n=1)] and were excluded from all our analyses, leaving 522 valid responses. This survey recorded 142 (27.2%) valid responses more than the required minimum sample size. The respondents comprise of 78.9% (n = 412) diagnostic and 21.1% (n = 110) therapeutic radiography categories from across all the UK nations with the highest response (n=317, 60.7%) from England. Of the respondents, 77.2% (n=403) were female and only 3.4% (n=18) were aged 60 years and above. A chi-square test of independence showed a significant relationship between the radiography categories and sex ($\chi^2 = 8.89$, df = 2, p = 0.01), age group ($\chi^2 = 10.09$, df = 4, p = 0.04) and workplace setting ($\chi^2 = 22.76$, df = 5, p = 0.0004). Furthermore, the temporary response register consists of 2.7% (n=14; all diagnostic radiographers) of the total valid respondents.

Perspectives of the radiography workforce on the impact of COVID-19 on practice

Table 2 shows that a higher proportion of respondents (n=447, 85.7%) strongly agree that radiographers are a part of the major frontline healthcare management team in response to the pandemic. The workload of 37.6% of respondents was reported as increasing during the survey period. A total of 12.5% (n=65) of the respondents [diagnostic: 11.9% (n=62) and therapy 0.6% (n=3)] have been redeployed to use other imaging/therapy modalities during the study period (Table 2). A review of the free-text comments provided by respondents for a detailed description of changes in workload and the general working environment of radiographers identified increasing workload and staff redeployment as dominant themes.

"Increased workload pattern with COVID-19 cases however reduced work pattern for non-COVID-19 cases."

[Respondent ID: 211, diagnostic radiographer]

"Reduced workload for routine outpatient work. Increased workload for general x-ray/CT inpatients. Radiographers being redeployed to assist in wards due to decreased workload in specialist modalities that mostly undertake 'routine' work."

[Respondent ID: 108, diagnostic radiographer]

"Screening ceased and redeployed to general radiography to do COVID cases."

[Respondent ID: 178, Assistant Practitioner]

"Loss of one treatment unit due to lack of workspace in console means increased workload on all other treatment units."

[Respondent ID: 309, therapeutic radiographer]

Within the survey period, a higher number of respondents reported increased pressure on procedural volumes of these diagnostic [CXR (n=385), CT (n=264)] and therapeutic [Linear accelerator (LINAC) (n=64) and RAD review (n=19)] services. Finally, 422 of the respondents reported that CXR was the main COVID-19 diagnostic tool for both the initial and follow-up investigations. Some of the respondents also reported that their sites were using CT (n=293) or MRI (n=11) or ultrasound (n=12) together with CXR for the clinical chest investigations.

Profile of COVID-19 related stress, it's impact and available support systems

As shown in Table 2, 63.2% (n=330) of respondents have started to experience work-related stress after the outbreak. 20.1% (n=105: diagnostic category) of the workforce rated their perceived stress levels to be high (9) on the 0 (low stress) – 10 (extreme stress) Likert scale (Table 3). However, the perceived levels of stress did not differ significantly ($\chi^2 = 8.60$, df = 10, p = 0.5710) between diagnostic and therapy radiography categories. Fear of contracting the infection and inadequate PPE were considered the major stressors by 37.5% (n=196) and 31.4% (n=164) of respondents, respectively (Figure 1). In addition, a review of the comments suggested staff redeployment as a dominant theme for the increase in the current perceived work-related stress.

"My job has completely changed as a Mammographer; I am expected to return to general radiography after working in breast screening for ten years. I feel de-skilled in general, especially with advancements in digital equipment. This is a huge ask for mammographers to change their working environment at a time of increased pressure and stress!"

[Respondent ID: 176, diagnostic radiographer]

Furthermore, 30.6% (n=160) of the respondents agreed that there are adequate social and support structures available at work for stress management during the study period (Table 2). However, only 32.7% (n=171) of the respondents disagreed that they would need professional help for the management of their recent work-related stress and 40.1% (n=209)

of the respondents agree that the current work-related stress is having a significant impact on their family and friends (Table 2).

Considering that redeployment emerged as a theme contributing to the perceived work-related stress during the pandemic, we investigated the relationship between redeployment and perceived levels of stress and its impact on family and friends. We observed that the perceived stress level of respondents did not differ across the workforce by redeployment during the study period, (χ^2 = 11.65, df =10, p = 0.31) and did not significantly, (χ^2 = 4.42, df = 4, p = 0.35) impact family/partners/friends (Table 3).

Understanding of COVID-19 transmission, infection control and availability of PPE

83.5% (n=436) of respondents agreed [strongly agree: 32.8% (n=171) or agree: 50.7% (n=265)] that they have a good understanding of the mode of transmission of the virus (Table 2). Furthermore, 62.4% (n=326) of the respondents agree [strongly agree: 11.4% (n=60) or agree: 51% (n=266)] that their current level of understanding of the principles of infection prevention and control was adequate to deal with the outbreak (Table 2). Less than half (n=252, 48.3%) reported receiving specific training for safe handling of COVID-19 patients during the study period. In addition, only half of the respondents (n=263, 50.5%) agreed [strongly agree: (n=69, 13.3%) or agree (n=194, 37.2%)] that there were adequate PPE available for use at work during the study period. A common theme from the free text comments suggests increased adherence to infection prevention and control protocols which has consequently increased perceived stress and examination times per a patient significantly.

"…there is a greater requirement for cleaning and the donning and doffing of PPE all adds to the workload, increasing the examination time per patient."

[Respondent ID: 412, diagnostic radiographer]

"…. there is increased frequency of general cleaning and minimal patient waiting times within our department..."

[Respondent ID: 193, diagnostic radiographer]

Discussions

This national survey is the first to comprehensively assess the perceptions of the radiography workforce on the impact of the COVID-19 pandemic on practice in the UK. The most evident of the findings demonstrate that there has been a perceived increase in procedural volumes of CXR, CT and LINAC services. The increase in procedural volume of these services lead to staff redeployment from other units such as those involved in routine screening to create extra capacity in dealing with the upsurge of cases and treatment of patients whose

alternative cancer treatments were cancelled. Fear of contracting the infection and perceived inadequate availability of PPE were identified as dominant themes for the cause of work-related stress among the UK RW during the study period.

Based on our careful sample size estimations, our response rate is 27% more than the required minimum sample size. This is considered satisfactory, although, there are varied response rates for different types of surveys[37], no clear standards exist for acceptable response rates specifically for online surveys[38]. The gender distribution of the respondents is identical to the entire NHS workforce with a 77% female composition[39]. Furthermore, the geographical distribution of the RW obtained from this study is comparable to the population distribution of the UK, with the least workforce in Northern Ireland. When age group and RW categories were compared, results demonstrate that the RW is generally youthful across both RW categories with only 3.4% (n=18) aged 60 years or more and thus an urgent succession planning is not warranted at the time of the study.

Medical imaging emerged as a key clinical decision tool in the diagnosis, triaging for appropriate treatment pathways [5,6] and follow-up monitoring of the severely ill patients[40]. A large proportion (85.7%) of the RW strongly agree that the radiographer is a part of the essential frontline response team in the management of COVID-19 patients. The workforce perceived an increase in procedural volumes of diagnostic imaging services when using CXR and CT patients during the study period. In contrast, findings from North America and Europe indicate a general decline in imaging procedural volumes, although, CXR and CT tended to be among the least affected[41].

Within the survey period, 58.2% (n=64/110) of the therapy RW perceived an increased pressure on procedural volume of the LINAC. This unexpected relative increase at some radiotherapy departments during the peak of the pandemic, potentially reflect deviations from standard practice for some cancer patients who would have normally been on multimodality treatment regimens including surgery or chemotherapy. However, this finding is contrary to another survey[42] which reported increased spare LINAC capacity since the COVID-19 pandemic in the UK. This inconsistency may be due to the different durations of these surveys, considering the quickly evolving nature of the pandemic as well as management guidelines.

In line with guidance to minimise non-urgent work[17,18], some routine imaging services for diagnostic screening including mammography, MRI, nuclear medicine and ultrasound were closed. Consequently, 12.5% of respondents were redeployed, mostly to CXR and CT units to create extra capacity in response to the surge in COVID-19 patients. Furthermore, the temporary HCPC register has allowed the recruitment of 2.7% (n=14) extra diagnostic radiographers to the much-needed workforce during the study period. Staff redeployment emerged from our thematic analyses as a contributing factor to the perceived stress of the

workforce who have to adjust to new work protocols, environments and technology. However, further statistical analyses indicated that the perceived stress levels among the workforce did not differ significantly by redeployment during the study period. Furthermore, the perceived stress levels did not differ significantly between diagnostic and therapy radiography categories of the workforce. However, 20.1% (n=105: diagnostic category) of the workforce rated their perceived stress levels to be high during the study period.

The pandemic has presented a working environment of flux and uncertainty with major changes to routine departmental protocols and this is likely to have contributed to the general increase in work-related stress. Previous studies showed that epidemics can lead to the development of new or worsening psychiatric symptoms such as fear, anxiety, panic attacks and depression[25]. In the UK context, a recent survey demonstrated greater levels of coronavirus specific stress and anxiety within the population, although they appeared mostly resilient in the initial stages of the pandemic[43]. However, most respondents (n=330, 63.2%) of the current study reported to have started experiencing work-related stress after the pandemic. Similarly, medical professionals in China reported elevated levels of stress and anxiety during this outbreak[26,27]. However, only 31% (n=160) of the workforce agreed that there are adequate psychosocial support structures at work for the management of stress. It is important that institutional structures are strengthened to mitigate the impact of the pandemic related stressors on both physical and psychological wellbeing[24-27,44]. Previous studies[24,26] suggested timely training and regular evaluation of stress, depression, and anxiety among health workers involved in the care of patients/victims during pandemics. In response to the pandemic, the Society of Radiographers (UK)[45] developed a rapid training programme with experiences from disaster response, crisis psychology and human performance under conditions of extreme stress for use by its members as part of health, safety and well-being management.

Overall, our findings suggest that a large proportion of the RW (n=436, 83.5%) have good knowledge of the mode of transmission, including the potential of cross-infection within the radiology department. This is broadly consistent with other studies[46-48] that similarly reported a higher understanding of infection prevention, control and compliance among healthcare workers. This finding potentially implies a high standard of radiography education or that the majority of the workforce is up-to-date with continuous professional development on the principles of infection prevention and control. However, only 62.4% (n=326) of the workforce considered their level of understanding as adequate for handling patients during the pandemic. In addition, only less than half (n=252, 48.3%) of the respondents received specific guidance and training for safe handling of patients at work during the study period. This has potentially contributed to the anxiety and created discrepant practices both between and within institutions during the period of our study. Our findings further demonstrate that only half (n=263, 50.5%) of the respondents perceived access to PPE required for work as adequate. This finding agrees with other surveys[42,49] conducted among a broad array of

radiology staff, including imaging and oncology professionals. Zanardo and colleagues recently reported in a technical note, their experiences in infection control for the management of suspected or confirmed COVID-19 patients within a radiology department, including strict adherence to a PPE protocol[22]. Our findings indicate that the UK RW was mostly stressed due to the perceived inadequate availability of PPE and the fear of contracting the infection especially at work during the period of the study. Although strict adherence to these protocols (including increased PPE use and equipment decontamination) are thought to increase examination times per patient, and thus, contributing to the perceived stress, they are fundamental for keeping both patients and the workforce safe[7,21-23,30,31].

We acknowledge a number of strengths and limitations associated with this study. To the best of our knowledge, this is the first and largest survey that comprehensively assessed the impact of the pandemic on radiography practice in a highly representative national sample of the RW recruited over a relatively long period during the pandemic. The sample is representative of the RW on demographic, professional status, workplace setting and geographical location and thus, our findings can be considered robust and broadly transferable. We acknowledge the limitations associated with the use of a subjective stress rating scale in this study and thus future studies would benefit from the use of standardised tools. Furthermore, this study is limited by our inability to quantify the actual changes in procedural volumes of the various imaging modalities over the survey period. However, it is acknowledged that this information would be useful for future surveys.

Conclusions

Radiology departments must, therefore, recognise the critical need to protect all patient-facing staff including the RW with appropriate PPE, timely training and strengthen institutional structures for the management of work-related stress and anxiety in the future. Finally, the temporary register by the HCPC provided recruitment flexibility which has added to the capacity of the RW, and this is highly recommended for future health emergencies.

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Appendix 1 – Summary of the Questionnaire

Participant Demographics

1. What is your gender?
    a. Female
    b. Male
    c. Prefer not to say
2. What is your age?
    a. 18 – 29 years old
    b. 30 – 39 years old
    c. 40 – 49 years old
    d. 50 – 59 years old
    e. 60 years and above
    f. Prefer not to say
3. Which part of the UK do you work?
    a. England
    b. Wales
    c. Scotland
    d. Northern Ireland
4. Which setting best describes your workplace?
    a. Public: Community Clinic Setting
    b. Public: Rural/District Setting
    c. Public: Urban Setting
    d. Public: University/Academic Setting
    e. Private Facility
    f. Others ……
5. Which best describes your accreditation/registration status with the Society of Radiographers/Health and Care Professions Council Register?
    a. Registered Radiographer
    b. Temporary COVID-19 registered Radiographer (retired)
    c. Temporary COVID-19 registered Radiographer (student)

d. Other…….

6. What is your category of radiography practice?
    a. Diagnostic Radiography
    b. Therapy Radiography

7. Which medical imaging/therapy facilities are available at your place of work? (Tick all that apply)
    a. General X-ray
    b. Computed Tomography
    c. Magnetic Resonance Imaging
    d. Ultrasound
    e. Linear Accelerator
    f. Proton Therapy
    g. Brachytherapy
    h. Rad Review
    i. Others …….
8. Which medical imaging/therapy facilities do you use for your daily work or are you competent at using for your assigned roles? (Tick all that apply)
    a. General X-ray
    b. Computed Tomography
    c. Magnetic Resonance Imaging
    d. Ultrasound
    e. Linear Accelerator
    f. Proton Therapy
    g. Brachytherapy
    h. Rad Review
    i. Others …….

General Perspectives on COVID-19

9. Radiographers are a part of the major frontline healthcare management team in response to COVID-19.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree
10. Which of the following best describes your workload pattern after the COVID-19 outbreak in the UK?
    a. Increasing pattern
    b. Decreasing pattern
    c. No change
    d. Irregular pattern

e. Other …….

11. Which medical imaging/therapy facilities do you feel is under the most pressure at your department?
    a. General X-ray
    b. Computed Tomography
    c. Magnetic Resonance Imaging
    d. Ultrasound
    e. Linear Accelerator
    f. Proton Therapy
    g. Brachytherapy
    h. Rad Review
    i. Other.....
12. Have you had to use other imaging modalities apart from the ones you use for your daily work after the COVID-19 outbreak?
    a. Yes
    b. No
13. According to your local protocols, which of the following medical imaging modality (s) do you use for both the initial and follow-up investigations of COVID-19 patients?
    a. General X-ray
    b. Computed Tomography
    c. Magnetic Resonance Imaging
    d. Ultrasound
    e. Not applicable
    f. Others …….
14. I have a great understanding of how the COVID-19 virus is transmitted.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree
15. My understanding of the principles of infection prevention and control as a radiographer is adequate to deal with the COVID-19 outbreak.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree
16. Have you had any training specifically to prepare you for handling patients during the COVID-19 outbreak?
    a. Yes
    b. No

17. My facility has made available adequate personal protective equipment (PPE) for work during the COVID-19 outbreak.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree

Impact of COVID-19

18. Do you feel Stressed about work lately due to the COVID-19 outbreak?
    a. Yes, always
    b. No
    c. Sometimes
19. Please rate how stressed you feel at the moment regarding the COVID-19 outbreak while at work.

No stress 0 1 2 3 4 5 6 7 8 9 10 Extreme stress

20. What do you consider as the major stressor at work since the COVID-19 outbreak?
    a. Fear of getting infected with the COVID-19 virus
    b. Increasing workload
    c. Inadequate personal protective equipment
    d. NHS' response towards staff COVID-19 testing
    e. Other issues ……..
21. I feel I may be in need of professional help to deal with stress during the COVID-19 outbreak.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree
22. My family/partner/friends are being significantly affected by this recent work-related stress.
    a. Strongly agree
    b. Agree
    c. Neutral
    d. Disagree
    e. Strongly disagree
23. There are adequate social and psychological support structures at work for dealing with stress.
    a. Strongly agree
    b. Agree
    c. Neutral

d. Disagree
e. Strongly disagree

Comments
Kindly provide additional comments about this study/topic in the space below.