COPE WM Public Zoom webinar 7 July 2022 13:00-14:00

Professor Peymané Adab: Welcome everyone to this webinar, where we're going to talk to you about some of the results from the COPE study and thank you for being here - I know many of you are participants who have helped to take part in this study and I hope this will be helpful. So I'm just going to start with a couple of words before I pass on. I'm Professor Peymané Adab, Professor of Public Health, and I was the lead for the COPE study which we're going to hear about just now, but there was a large team of researchers who were involved in this, and this study was funded by UKRI and NIHR, so we're grateful for the big team who've contributed to this as well.

As you all know, COVID has been with us now for just over two years and isn't going away. So this is the Johns Hopkins site, which has a dashboard that monitors cases around the world. And this is data from last week when I downloaded this, showing that at that point there had been over 550 million cases worldwide and just over 6, 6.3 million deaths. But, as we know, this problem is not distributed evenly, so there are variations across the world, but also amongst groups of people and one of the reasons that we've done the COPE study is that a group that's particularly affected by COVID is our health care professionals - so healthcare workers, amongst all workers, have one of the highest risks of severe COVID.

So the aim of this study was to, sorry so just to give a bit more background, there have been several studies now that have shown that the risk of infection in healthcare workers, compared to the general population, is much higher - so estimates are between three and seven times higher risk. And that both healthcare workers and their families have contributed to a higher proportion of people who've been hospitalized due to COVID, so two to three times higher risk, and compared to non essential workers, the risk in healthcare workers like I said is up to seven or more fold. And there are other groups who are also at risk. And there've been several studies that have tried to look at why this is, at things like adequacy of PPE, the clinical setting that healthcare workers work in, the characteristics of people who work in the healthcare system which might be around ethnicity and comorbidities, have all been areas that have been implicated, but a lot of the published studies are from the first few months of the pandemic, although more are emerging.

And what COPE is doing, which is slightly different to some of these other studies, is to look at how workplace risk compared to other risks and that's not fully known, and also within the workplace, what are the things that might help to mitigate risk or increase risk. So today we're going to just hear some of the results from the COPE study - the main results from the case control study, which was looking at the occupational versus other exposures on risk of COVID in healthcare workers. And the qualitative study, which was interviews with some healthcare workers and family members, including some people who are in management positions and Chris Poyner is going to talk about that, and Sarah Berhane will talk about the initial study. In between each of them we'll have some questions and answers and Margaret

O'Hara's here and is going to help to coordinate that session. Katie, did you want to just add something about the practicalities, and I will come out of this and hand over to Sarah.

Katie Youngwood: Yes, great - welcome everybody, it's really great that you're interested to hear the results of the COPE study. If you've got any questions for any of the speakers, please put them in the Q & A section of the webinar and we'll go through them after each speaker to respond, thank you.

Professor Peymané Adab: Thank you, and I'm going to hand over to Sarah please.

Dr Sarah Berhane: Can you see my slides?

Professor Peymané Adab: Yes, yes, Sarah, that's great.

Dr Sarah Berhane: Great. Hi everyone, I'm Sarah - I'm going to be presenting to you the results of the COPE WM analysis, looking at the relative contribution of occupational and other exposures on the risk of COVID-19 infection among amongst healthcare workers. So just to give you an overview of my talk, I'll first start with the study aims and then I'll look at the preliminary findings, beginning with the participant characteristics and exposures, and then I'll be looking at the relationship between the risk of COVID-19 infection and each of the different settings, as well as other characteristics. Also we're looking at how the use of face cover influences the risk of COVID-19 infection - with and without it, and also looking at the risk of the association between the risk of a COVID-19 infection with frequency, dose and duration of exposure at each setting, and then this will be followed up by the summary.

The aim, as Peymane already mentioned, the aim of COPE WM is to examine the relative contribution of the occupational versus other exposures on the likelihood of testing positive for COVID-19 among healthcare workers. Also looking at factors within the workplace contributing to higher risks. Some of you are probably familiar with this - this is the different sections of the questionnaire. There are eight sections, beginning with questions about demographics, like age/sex, followed by COVID-19 infection and testing experience, and then you've got section three and four, where it looks at exposures within the workplace and outside the workplace. And we looked at settings like indoor social gatherings, public transport and within each of these settings there are questions regarding those frequency and duration of contact, plus protective behaviours -protective measures in the two weeks prior to the antigen test. And then you've got section five - it's about work, and then followed by lifestyle habits and general health, and then you have another section on the home situation and, finally, household members' experience of COVID-19 tests and their routine.

For this analysis, we will be focussing on the seven different settings and their relative contribution to the risk of COVID-19 infection. So with those seven settings we're looking at how the relative importance of each on the risk of infection, while adjusting for other potential confounders as listed. And in order to compare those different settings we formed a scoring system where we summarised the exposure level per setting, and this is based on frequency, dose and duration of the close contacts.

So, excluding the home environment we have these six settings and, as you are aware from the questionnaire, you've got questions about frequency, meaning how many times you went to indoor, attended indoor social gatherings or how many trips using public transport, etc. And then you've got dose, close contact dose, meaning how many people were you in close, in close contact with, and duration, which we mean how long these close contacts were, and we assigned a score 0, 1 or 2 according to each of these per setting and then to get an overall score, we multiplied across them, leading to an exposure score of zero, medium and high.

So what you end up with is this: so you've got these four categories - you've got those who didn't attend the particular setting prior to that test, and then you've got low, meaning they attended the setting, but there was no close contact, medium attended the settings with close contact but under 15 minutes, and then you've got the high score meaning you've got, you attended the setting, there was close contact over 15 minutes. For the home environment they were scored differently, so you scored low if you lived alone; you score high, 2, if a member of your household tested positive for COVID-19, and medium - it's called medium if you live with others, but no one tested positive for COVID-19.

And now that you've got all the scores sorted, then we move on to the analysis, so this is the preliminary findings. So starting with the participant characteristics, so the majority, so the average, the median age was about 40. The majority being female - about 77 to 80%, white, and also the employment, with the biggest category for employment roles were the Ambulance and Registered Nurses and Midwives. And also with regards to vaccination, 8% of those who tested positive, about 9% of those who tested positive were vaccinated compared to 46% of those who tested negative. And then, with regards to household members testing positive for COVID, so 25% of those who tested positive had a household member testing positive, compared to 5%, so it's about a five fold increase.

So also another very stark difference is direct care for confirmed or suspected COVID-19 patients, this was 46% for those who tested positive and 27% for those who tested negative. For attendance of the different settings, you see that the majority of the participants did not attend indoor social gatherings or make trips using public transport, probably due to the lockdown was during the time. There was quite an attendance to, there were trips to shops and indoor markets, whereas for walking, jogging and cycling outdoors that was, there was much more even distribution amongst both, amongst both the negative and the positive tests, as well as within each group. And also the majority travelled to work.

So this is the output of logistic regression model. So a logistic regression model basically quantifies the association between each of these exposure levels per setting, and the outcome, and the outcome being a positive COVID-19 antigen test. And so it's, the measurement for quantifying this association is called the odds ratio, so in order to interpret the results of what we have here, if we start with the COVID-19 exposure, which is one of the most strong associations, you can see that compared to those who were not exposed to COVID-19 patients, scoring medium and high for exposure increased your odds of being positive for COVID-19 by 3.5

and 2.44 respectively. Whereas for the home environment, if you score high, compared to those living alone - meaning low - those scoring high had their odds of testing positive increase by five times. And another interesting result was regarding staff exposure, so compared to those who don't go to work, those scoring high for staff exposure had 10% lower odds for testing positive for COVID-19 so it's quite an interesting result, so we don't know, we probably, it may be due to those who are exposed to, who score high are probably less likely to be exposed to patients, so we're not sure of how to interpret, but basically you see the results that those who score high for staff exposure had some sort of lower odds.

Other interesting results is regarding outdoor open public spaces. So you see that there is some, so those who attend outdoor public spaces seem to have overall lower odds of testing positive so these were lower by 35, 39, and 42% respectively for the low medium and high, but these were not statistically significant. So besides the different settings, we also looked at the other characteristics which are potential confounders, like age. So this result says that with every increase in age, there is a 2% higher odds of testing positive for COVID-19. This was 11% lower for females compared to males but not statistically significant, but for testing positive was 58% higher for non-White compared to White - again, this was not statistically significant.

Another interesting is, another very interesting confounder which was very strongly associated with outcome was time of antigen test. So you can see that, compared to the first wave, those on the following, those who had their antigen test on the following periods, meaning those two periods here between June and August 2020 and September and November 2020, the odds of positive antigen test was 95% and 66% lower which probably reflects the graph here, and also the lower response is probably due to the influence of the lockdown. However, it was on the second wave with the alpha variant, we see that there is a 68% higher odds of testing positive compared to the first wave.

And finally, another very strong association was the vaccination - those who were vaccinated had 87% lower odds of testing positive compared to those who were not vaccinated. And all we also looked at the influence of face cover. So the other issue here is basically comparing those who wear face masks to those who do not wear face masks at each exposure level per setting, so within the indoor social gatherings those scoring high, so those within that group of high, scoring high in indoor social gatherings, those who wore face cover were 48% lower, had 48% lower odds of testing positive for COVID-19 compared to those who do not wear face masks. And this was for the public transport for low, medium, high - this was 83%, 94% and 53% respectively. So this, basically this whole table is showing that wearing face masks lower your odds of testing positive for COVID-19 compared to not wearing face masks, at each exposure level per setting. Of course, this might mean that, also it probably is not purely due to face cover, there probably are other factors that that shows that probably those who wear, those participants who wear face cover also have other protective measures that also might influence this, so wearing face masks is probably a surrogate way of measuring protective behaviour.

We also looked at the relationship between frequency in the, association between positive COVID-19 tests and to each of the dose, frequency and duration for each exposure at each setting - so just to summarize, quickly summarize for this part, so what we found was the outcome of testing positive was strongly associated with specifically with dose of, with dose of close contact, so those who were exposed to large numbers of people (over 10) had higher odds of testing positive for COVID-19.

Just to summarize, so healthcare workers with COVID-19 mainly related to contact with COVID-19 patients in the workplace, also contact with household members which were positive was also important, and we also saw that wearing face coverings was protective against the risk of COVID-19 infection and also vaccination vastly reduced the risk of COVID-19 infection as well. Generally risk increased in settings with large numbers of people (over 10) in close contact. Thanks, I think that's the end of my slides.

Professor Peymané Adab: Thank you so much, Sarah. I know that was a lot of information, and I can see that some people found it difficult to follow as well, so we may have some questions, just to try and interpret some of those findings a bit more. Right Margaret, I don't know whether you wanted to take a lead on passing over? Thank you.

Margaret O'Hara: Yeah thanks, I'm just looking through to see - one of the questions is, “what is the start and stop time for the data - is this only in Phase one?” And that might have been answered later in the presentation - so you started gathering data, what was it, in June 2020? Was it before that?

Professor Peymané Adab: I think the period that we asked people to recall went from earlier in the year, in early 2020, but people were recruited from September 2020 up to a year later almost, so no - there was a long period, some pre-vaccine. It was all complicated because, obviously, things were changing. Sorry Sarah you might have the exact date, so I'll pass on.

Dr Sarah Berhane: The time for antigen tests, based on the categories here, I think it starts from early 2020 until August 2021.

Margaret O'Hara: So that's covering Wuhan, Alpha, and some of the other variants which I can't remember; does it cover Delta?

Professor Peymané Adab: I think there was one slide that showed the time periods, maybe we can just remind? I don't think it does include Delta, it was before that.

Dr Sarah Berhane: Ah yeah, it's before that. I think it's just in the beginning of the third wave from June I think, it just stopped there, so it's definitely not including Delta.

Margaret O'Hara: Okay, thanks and there's a question there - it seems that white people are more affected than people of colour, is that the case?

Dr Sarah Berhane: No, it's the opposite. So although this was not a statistically significant result, the odds of testing positive was about 58% higher for non white compared to white.

Margaret O'Hara: Ok. And any data on long Covid?

Dr Sarah Berhane: No.

Margaret O'Hara: That was, it wasn't, when the study was set up, it wasn't…?

Professor Peymané Adab: We did have a follow up, so some people may remember having completed another questionnaire. We didn't have a great response so we've got limited data, but it's in a follow up questionnaire, and it will be limited, because I think we had something like 20% response rate unfortunately for that.

Margaret O'Hara: Okay. And that follows on to the next question, what was the percentage of participants who completed all of the surveys?

Dr Sarah Berhane: And this is the results from the baseline, you mean the just the baseline survey? There was, there wasn't like a, there was a few missing data - there's quite a few missing data, so there isn't a total complete for everyone for each in the different sections, so there's the varying degrees of missingness. So they usually, the sections, the last, like section Seven and Eight, were the ones that were least filled, so I don't have the exact figure, but yeah you've got varying degrees of missingness.

Professor Peymané Adab: But I think even for the most incomplete we've got 8- or 900 responses. So, so the total possible amount is about 2500 and for some areas, it was it was more like 8- or 900. Ok, so still quite good numbers.

Margaret O'Hara: And what do you think are the main biases and confounders, which might impact on the results?

Dr Sarah Berhane: So for those table, which I probably wasn't clear enough, the table that you saw, the multi variable model, have adjusted for confounders listed on that slide so maybe, if I show again. Adjusted for, so the results you saw was after adjusting for the confounders. So this is the list of confounders - age, sex, ethnicity. So these are these, these are the variables we adjusted for.

Margaret O'Hara: So you've adjusted for quite a lot of confounders, but I suppose, this is difficult to know all of them. But you've tried to account for most of the ones that could be anticipated.

Dr Sarah Berhane: Yeah.

Margaret O'Hara: And, how would you change the study design now that you know the challenges? For example, for the next pandemic? Or is it not maybe...I wondered if we could leave that question until the end, after we've seen all of the presentations because that...

Professor Peymané Adab: Yeah.

Margaret O'Hara: Let's consider that in the rounds. Is there any data regarding changes in antibody levels over the time of the study? Is Alex going to talk about the antibody study?

Professor Peymané Adab: Unfortunately Alex is away this week. She was also part of the study group and has done some analysis, but I think one of the things she felt was that there's already been other studies that have looked at the antibody change over time we've got two levels, for I think about 7- or 800 people, and she would have to come back to us with that so I'm sure she could do, so we have got some limited data but there's probably better data around already on that.

Margaret O'Hara: And another one on confounders - recall bias? Do you account for recall bias, or do you just accept that that's going to be there?

Dr Sarah Berhane: It's very difficult to adjust for recall bias, I don't know - I guess it depends on how you design your study. Statistically speaking, I'm not sure if there's a way to...

Professor Peymané Adab: I guess there's a limitation of this sort of case control study is always going to be recall, and I suppose, by asking questions in different ways we've tried to get as full a picture as possible, but you are never going to completely get rid of it absolutely.

Margaret O'Hara: Yeah I mean, I think I could say as I, you know, as an NHS staff, things that happened during that period are kind of seared into the memory in a way that normally they wouldn't be. You know, you very much, you remember where you got COVID and if you were wearing a mask and if there were lots of people and, I don't know, for me, anyway, it's different from just your regular work and whether you would remember that, so yeah.

Dr Sarah Berhane: But yeah I guess, it's always a hazard.

Margaret O'Hara: So that's all the questions that are there for the moment. Thanks everybody for putting the questions in the chat.

Professor Peymané Adab: Lovely. Thank you, and in the interest of time, there may be more questions and we welcome any anybody who wants to get in touch as well, afterwards, but I will pass on to Chris, if that's okay, to...

Dr Chris Poyner: Hi everyone, my name is Chris Poyner, I'm a Researcher at the Institute of Applied Health Research, and I was a qualitative worker on the COPE study. I'm just going to take you through some of our key findings today and our key thematic areas. So just to begin with, quickly I wanted to just run through the aims and kind of some key information about the sample.

So the aim of the qualitative research was to explore the perceived risks and impact of working for the NHS during the COVID-19 pandemic, from the perspective of the workers themselves, as well as members of their families that they were living with at the time, so they were a member of their household. Semi-structured interviews were carried out with 38 NHS members of staff, both non clinical and clinical staff. So that's you know, people who may have been operating the phone lines for 111 and some people in the kitchens, as well as obviously people in ITU and frontline staff. Ambulance staff as well. And then 17 family members who lived in a household with at least one NHS worker who worked on site during the pandemic. And then data

was collected from May 2021 to January 2022. Data was analyzed using a thematic analysis approach.

So moving into our key thematic areas, the first one was about infection control measures and PPE access at work, so a key thing here was that we have to locate the first wave of the pandemic as a real key point for poor infection control. I'm sure as you're all aware, infection control was really quite difficult to begin with. But risk of infection was described heterogeneously with those working in frontline patient facing roles perceived at most risk, and risk was seen as much higher in this initial wave. Then what followed due to Trusts being unprepared. And the key issues related to that unpreparedness was PPE supply issues, so PPE being out of date, not enough PPE, requests to reuse PPE and some staff even having to defend their right to PPE because of there not being enough and being asked by senior leadership to give their PPE to different wards or different departments, so there was kind of an issue around who deserves it more or who needs it more.

Part of the issue there was just not really knowing at the time, enough about transmission or staff not being informed enough about transmission, who are making these decisions, so there's examples of staff working in aerosol generating procedures and surgical procedures and operations being asked to give up PPE, which was obviously really troubling at the time. There was no social distancing to begin with. And even things like real basic stuff like, masks weren't mandated in that initial wave of the pandemic, at least in the first kind of months. So there was a large strong acceptance of infection control measures within the Trusts despite discomfort, extra workload and the inconvenience of infection control. So they were seen as welcome and necessary, by the majority of our respondents, if not all of them, despite adding inconvenience and discomfort to the working day. For example, PPE wearing as unpleasant, social distancing measures as inconvenient and reducing the quality of working experiences.

As we'll see later, peer support was quite important to staff for their mental health and some of the distancing measures made that very, very difficult. However, participants did get used to the infection control measures and they were normalized after a time. Lots of examples of staff saying things like yeah, we got to used to it in the end, and, as I say, overall, really, really happy for the infection control to be implemented. Despite the real problems that there were in the first wave, staff tended not to kind of place the blame within Trusts internally - there was an understanding that the pandemic was kind of unprecedented and staff tended to point to external factors to explain the poor infection control. You know, there's a small quote here just saying 'it was all unknown wasn't it?', so there was as I say not much blame attached to the senior leadership for these issues.

Staff felt that every effort was being made to ensure the working environment was the safest it could be within the constraints, and the knowledge and tools available at the time. The idea that people were doing the best they could, given the circumstances. And, as I say, it was rare for staff to critique internal management of the hospital for not implementing measures effectively during the initial stages of the pandemic. So, after this initial wave, the perception on the whole for the majority of

staff was that infection control measures were implemented effectively and vast improvements in access, availability of PPE and implementation of social distancing measures were reported and also protective measures for vulnerable staff and shielding were reported as well. There were concerns about things like colleagues not following protocols, as we'll see in a moment in relation to things like social distancing but also coming in, perhaps when they didn't, they had a cough and things like this as well.

So the second key thematic area was around experiences of communications and work processes following infection. So some staff, we had a quite varied picture here, but some staff felt like they were really well supported, particularly upon initial symptoms - so PCR tests were available, they got sent out to staff, there was a reassurance that there was no need to work from home. And there were regular phone calls from management to staff who were isolating due to an infection. In the majority of cases these were appreciated, but at times staff felt like they were being checked up upon to see you know, when are you going to be available to come back to work, so there was a small bit of cynicism there, within some of the people that we spoke to.

So, in terms of return to work, again there's a bit of a mixed picture. A lot of staff felt like they were well supported upon return to work, and felt that they could to go back to work and that they were ready to. But also a number of our participants felt that the to return to work was challenging. Some staff reported they were still struggling with fatigue and breathlessness, so I guess you could say some long Covid symptoms. And there was differences between support offered for some staff so again, some were really well looked after, and were offered phased returns, back to work meetings, whereas others were reported to have been phoned back in and were surprised and didn't have knowledge that they could have access to the support that was reported by some of that colleagues within different trusts. There were suggestions made for improvements of experience, specifically around things like parking spaces being closer to where people were working, working on just one floor for those with fatigue and breathlessness. I think it's interesting to know that one of the younger participants felt that their age impacted the support they were offered, and they went on to say if I was maybe 20 years older or 30 years older, I would have been given a bit more, I think they would have been a bit more careful or maybe would have done a phased return, so there may be some kind of age inequality here as well, but again, that that is just one individual suggesting that was their experience.

So in terms of the experience of working during the pandemic, a key theme here was around demand as outstripping capacity. Partly this was because of the types of patients that were being cared for this time - elective operations and procedures, surgeries were seen as cancelled, and patients tended to be more traumatic and or dying. There was higher levels of colleague absence reported contributing to the issue around capacity and partly due to self-isolation. So the environments were described in terms such as 'draining', and there was no chance for breaks. And GPs not seeing patients were seen as adding to the problem, and there was a negative tone in relation to GPs and how they were operating at this time, and it was seen as

adding to the capacity problems within the NHS and overwhelming some of the services such as A&E. So, as this participant here suggests, 'the minute the pandemic happened, that's the thing that gets me up a bit is the GP thing, as soon as the pandemic started they closed their surgeries, they weren't seeing anybody, they weren't even doing home visits' - so a bit of tension there.

The experience was punctured by the banning of family visitors and this was seen as extremely challenging, staff didn't enjoy this, they talked about it in negative terms and emotive language - which is as this person here who I've quoted saying they 'felt it was horrible'. This caused a large increase in phone calls to the wards, which was very stressful at times for those ward clerks operating the phones. They felt that they weren't very well supported in dealing with that - when we spoke to some of the ward clerks there was huge feelings of empathy and guilt described for the patients who died alone or for the family members that couldn't be with their family members when they died. There was one example of a nurse telling me that they was with someone when they died holding their hand, there was no family members there and they felt great, and you know, there was a feeling of solace that they could do that, but there was also the nagging feeling in the back of their head that if they weren't that a person would have died alone, and perhaps some people did, and it was the thought of those people that did die alone which really troubled that individual.

As I say, when working, peer support was seen as very, very important. Staff described being emotionally and morally supported by colleagues, despite the difficulties that social distancing kind of created with that on shift. And there was discussions around groups outside of work - WhatsApp groups to try and improve that camaraderie and, as I say, those who felt strong peer support tended to have more resilience.

OK, so there were decisions that were morally challenging in the workplace for staff. Tough choices with regard to patient care and personal safety and mental health needs, and line management decisions. So line management had to decide who was shielding, and had to make decisions about that, that was described as difficult at times. Ambulance staff described going into environments that had COVID within them, trying to, in critical situations, not necessarily knowing whether they had the time to put their PPE on to protect themselves, because there was someone in the setting they were about to enter, who was critical. So there was a real tension there between - okay, do I protect myself, or do I do, act as quickly as possible to help the individual in the community that needs medical support urgently. The majority however didn't describe having to make these decisions when I asked, and I don't know whether that's because those decisions weren't being made or if it was just quite hard to conceptualize the decisions that they make every day as difficult; maybe the questioning was a bit convoluted around this issue.

So redeployment was a real key theme around the experience of working during the pandemic - a lot of staff as I'm sure you're aware ended up redeployed, and this caused quite a lot of anxieties. Not just in terms of being redeployed themselves, but just the spectre of it, the anticipation of it, the knowledge that it might happen, caused a lot of anxiety. So as this person here said, I wasn't sure if I was going to

get redeployed, I didn't know where I was going to be working - these things all reduced the quality of the experience working during the pandemic. Redeployed staff themselves when it happened felt anxious and emotional about being redeployed, which was often to higher risk settings. And they were concerned about the unfamiliarity of their environment, the lack of bond with colleagues - as I've already discussed, peer support was quite important; that was harder to do for those who were redeployed. And the unclear indirect nature of line management, so who's my line manager, is it someone where I've been redeployed, is it still where I normally work in my specialist area? So that was just a bit unclear for staff as well, and there was a lack of flexibility or choice in relation to these redeployment decisions. Factors weren't taken into account, which might have made it a bit smoother for staff, such as the location of the workplace, whether they can get there easily with transportation, whether they drove or this kind of thing wasn't taken into account, according to those we spoke to.

However, we don't want to paint too much of a negative picture - the majority reported that they were happy to redeploy, they seeked redeployment and they enjoyed the experience, and as this quote suggests, 'I really enjoyed it, even if they are COVID positive patients they are still happy people, even with their condition'.

Okay, so what was the impact on the mental health of working during the pandemic? The trend was to report a deterioration during the pandemic. The majority of staff described their mental health suffering due to working during the pandemic - factors contributing to this decline were cited as the lockdowns, changes to working patterns, exposure and risk of COVID, and experiencing of traumatic events while on shift. Some staff members described having to take antidepressants and seek counselling, despite never having suffered with their mental health previously, you know, despite obviously working in the NHS being quite a stressful occupation normally, let alone within a pandemic, so I thought that was quite poignant and profound. I kind of talked about this a little bit already, some of these themes do overlap, but there was an uncertainty during the pandemic, and we've talked about that already in relation to the spectre of redeployments. But there was also anxiety due to uncertainty, due to not knowing a huge amount about COVID in the early stages, yet being asked to work in an environment that was surrounded by COVID. They didn't know where they were working, again touched on that already, when they, when staff could take annual leave, they couldn't take it as they initially planned to. That was quite difficult. Not knowing how severely a COVID infection would impact health - you know there was colleagues who had experienced their friends and colleagues dying. So again, you know not only, I might get COVID, if I do get it, what happens? Everyone's experiences are so different. And then, finally, the uncertainty about when this would all end, would it end, when's it going to end - these all contributed to a decline in the mental health of those we spoke to.

So, moving on, another one of our key themes was mental health coping mechanisms being disabled. Some participants felt the impacts of social isolation, describing a range of activities they would usually perform to 'destress' or escape being disabled by the pandemic context, and these include socialising with friends, seeing family, annual leave, travelling and exercise. Some staff described increasing

unhealthy behaviours help them cope, such as an increased alcohol intake. So as this quote kind of demonstrates, 'wine [laughter] it's awful, I've definitely drank a lot more since we've been...it's just a bit of a coping mechanism'. For others, their faith was an important protective factor, which was not majorly impacted by the pandemic, despite the closures of places of worship. Others, sorry, for others, access to outdoor spaces and the good weather during some pandemic peaks were protective influences on their mental health. I think the key point here is to just state it wasn't just what staff were experiencing in their everyday work on shift that was influencing their mental health negatively, it was that combined with disablement of their coping mechanisms which really caused the deterioration in their mental health. But it wasn't just those working on site who thought that that mental health deteriorated, those who worked from home also described this as problematic. Some were forced to through shielding that we spoke to. And then as a result of that there was a feeling of quite intense guilt associated with it. And on top of that isolation, working from home, not being able to engage with colleagues, not getting that peer support, the isolation and the 'quietness' of the home environment, conflict with family members who also might be in the home at this time and not having that space for some was important, and that lack of routine and structure that you get at work, that was missing and again that was seen as a negative influence as well.

I just want to quickly touch on the vaccine perspectives, I don't know how much time I've got, but the views on the vaccine perspectives, as you would expect I'm sure, most of the staff were pro vaccine and reported being very positive about how the vaccine programmes rolled out. They discussed trying to educate those with anti vaxx views and talked about trying to encourage friends and family to get the vaccine as well, despite this there was a majority, sorry, a minority of our respondents who were what I would describe as initially vaccine hesitant and they described their reasons for this, and their rationale – so some of the staff who were vaccine hesitant talked about just being a bit wary at the beginning of the rollout, just that they didn't want to be the almost like guinea pigs, they were the first kind of group of us in society to receive the vaccine and there was worry, a worry about a lack of research and the quickness to which they became available and the swiftness at which they were developed. One participant, who was pregnant, was concerned as you could probably imagine. But staff did report kind of educating themselves to try and relieve anxieties and I think only one person I spoke to hadn't had the vaccine in the end.

So I also wanted to touch on some of the household member perspectives - a lot of these did kind of overlap and reinforce and corroborate the experiences and the perspectives and the perceptions of the NHS workers we spoke to, for example, around inadequate PPE, that was also reported by family members, concerns about contracting COVID and the anxieties around that, experiences of having COVID which I haven't touched on today just due to time constraints, but we did get a lot data around what the experience of having COVID was like and the symptoms for etc., they again were mirrored by our household members. There were also concerned about redeployment of their loved ones, and their exposure to traumatic and dying patients, and they also reiterated the importance of outdoor space for their mental health resilience, for both themselves and their worker in the NHS. I just have

a small quote here to demonstrate that so, someone saying 'we have got the space to run around outside and I think that's critically important - if we lived in a high rise, it would have been a completely different picture. I probably would have hurt the children!', so that I guess sums up quite nicely the importance of outdoor space and I guess the inequality of those who are living in accommodation that didn't have outdoor space that was quite cramped, and for those living on their own as well, you know. It's one thing to be in lockdown when you've got your family with you, again, it might be more difficult if you're, if you're living on your own in a flat in London, for example. Household members of staff redeployed to ITU discussed the emotional impact and the traumatic nature of the role that was having on their loved one. So here a child was talking about their father, saying 'I remember my dad, I don't know whether he'd admit this now, but he was quite emotional towards the start of the pandemic and it had a big impact on us, he was chucked into the deep end I suppose, he hadn't worked in ITU before'.

Ok, so moving on to the stuff that was a little bit different to what the NHS workers reported, so household members reported changes to household dynamics, it was common for household dynamics to be reported as altered, either to better support the NHS worker or to prevent or control infection. Household members reported a change in the amount of chores they'd do around the house, often more emotional support, having more conversations about the day to day work that the NHS worker was doing, and described new infection control routines such as washing the work uniforms as soon as staff members came in through the door, some minority reported sleeping separately, they reported how their NHS worker would shower as soon as they got home from work, they'd help out with the travel routine if necessary, for example, if the NHS worker didn't want to use public transport. They would discuss using separate dwelling spaces, particularly when the staff member would initially return to work, and some different social distancing stuff as well. So here I've just got a short quote saying, 'we give each other hugs as we came, we used to give each other hugs when we came home kind of thing, but we don't do that now so that's probably the major change'. So it sounds like something small but, ultimately, you know that kind of physical contact and relationship that you have with the people that you love and your family members, not being able to do that, you know, is quite a major thing really if you think about it, I believe.

Interestingly, household members were more critical of the Trusts and the government than the NHS workers that I spoke to for a perceived failure to protect NHS workers from infection during the first wave, so one participant described NHS workers as being treated like 'cannon fodder'. Issues cited include mixed messaging around the need to wear masks, the procurement of inadequate PPE, and a lack of compassion. For NHS workers, schemes like Clap for Carers were welcomed by some household members at the time, however, with hindsight, many felt that was tokenistic. For example, a participant said, 'I think the Clap for Carers was alright, but it really didn't do anything'. And again a very common theme was it was felt more should have been done to reward the NHS workers for the sacrifices they made during the pandemic and all the work that they'd done, and everything they'd been through essentially to try and save and care for as many people who have

contracted COVID during the pandemic or during, and obviously we're still in the pandemic, but during the period that we spoke to people. Okay, so social networks as supportive - so on the whole household members did not feel that they were treated differently within their social networks due to having an NHS worker in their home. Okay, in contrast, some family members with a household member in the Ambulance did feel socially excluded, to a degree, so this is just highlighting the fact that those in the Ambulance Service were treated slightly differently by those in their in their networks during the initial waves of the pandemic, just because of how often they were face to face with COVID patients, so this was reported by multiple household members of those in the Ambulance, so one example: 'because he was in the Ambulance Service and could be face to face with COVID patients all the time, they didn't think it was safe for us to meet up or invite us to anything'.

And just finally there were silver linings. I just wanted to highlight this, just for balance really, but a minority of participants in the household did say that they did get spend a lot more time with their family members, just because of the lockdown context. So here I've got an example from a student who was talking about how fun it was during the first wave not having to go to school, but then obviously also talking about that wearing off as the pandemic dragged on and dragged on.

Okay, so, that was it guys. Thanks so much for listening - just in conclusion, I wanted to put in a little paragraph here around working for the NHS during the pandemic placing a significant risk to the mental health of staff, particularly those that worked in patient facing roles and or were redeployed, and this risk was exacerbated by the lockdown context due to the disablement of mental health coping mechanisms, and may have been felt more acutely for those without good access to outdoor space and support within their household at the times of strict household mixing restrictions. It is hoped our findings will be informative for those seeking to implement policy and improving working conditions for NHS workers if there are more pandemics in the future. Thank you.

Professor Peymané Adab: Thank you very much, Chris, that was a really helpful summary of the data we have. So I'll pass on to Margaret to coordinate some of the questions.

Margaret O'Hara: Yeah, so there's a couple of questions. I want to come to Sherwood and then go back to Adrian's question because I think that's a good sum-up question - did you find moral injury among staff having to provide substandard care?

Dr Chris Poyner: Again, we did ask about moral injury, but I felt that having looked at the data it was quite weak - I think when we asked about it, I don't think staff really knew what to say, I think it was a difficult question to ask people. So overall, as I say, the data was quite light in that area, unfortunately, even though we did initially anticipate it to be likely to be a theme that would be quite heavy within the data.

Margaret O'Hara: That's interesting, yeah, and Adrian if you don't mind I'll leave your GP question because I don't think we can answer that.

But your final question, the last of your questions, which is asking about how do we get the powers that be to see these the findings of this excellent research and take appropriate measures instead of it being buried in journals with no effective results? So maybe Peymane, maybe you could speak to that about our plans for who should see it?

Professor Peymané Adab: I mean, I guess this webinar's for participants in the Trusts that took part, but we are working on the papers, so that will happen, but we also at the last webinar had some really helpful suggestions for the audiences that should hear the findings, and we have a list of people that we'll have summaries to send to, so that includes various people in the Trusts and different government organizations and the professional bodies. So that's the plan, and if there are any other suggestions for groups that you think we should be sending some of this to, please do let us know. We also have a sort of group of oversight committee members who are experts who have some government roles, who are, have been sort of following what we're doing and are aware as well of some of these findings, and I'm sure they know as well.

Margaret O'Hara: The Chief Executives of all of the Trusts involved are on that list as well, to see the findings and who knows how many Health Secretaries we will have, by the time the findings are published, but whoever it happens to be that week, I'm sure will be contacted about the results as well, through the oversight team we have good connections.

And there's a question here as well about social care - friends in social care, who felt completely neglected; are we aware of any studies, with respect to their, so their COVID experience?

Dr Chris Poyner: So I know there are studies out there, looking at social care, and I agree with Ron it was, I'm fairly sure it was, they were completely neglected, and it was pretty horrific for those working in those settings. So Ron, if I pop my email address to you in the response and then, if you email me I'll get back to you with a paper on that, okay. I can't remember it off the top of my head right now, but I'll be able to do, to source something for you, okay.

Professor Peymané Adab: I think you're right, there was definitely more on NHS staff but there have been some studies that are...

Dr Chris Poyner: There definitely are studies on it, yeah I remember seeing them, it's just a case of remembering who wrote them and the titles and stuff.

Margaret O'Hara: And finally, there was a question about study design which we parked for the end, and again speaking to future pandemics, which will inevitably happen, so if you were doing the study again, in preparation for another situation like this, are there any major changes that you would make?

Professor Peymané Adab: I think all I would say, and I'd welcome any other thoughts as well, is that there've been lots of studies that were funded that have all looked at slightly different perspectives, so I guess it's bringing all those together and how do we make sure that, you know, the findings aren't isolated - and I think there's

some attempt to do that, so you know, we've looked perhaps more deeply at some of the data - there are others who contacted large numbers and got data, a smaller amount of data, on large numbers of people. I suppose, for us, the main thing that we might have been able, well I don't know how you'd do it differently, was time from, you know, knowing that we were going to do this to getting things started, was three months, despite all the sort of quick things that were in progression, and things were changing all the time, so actually, what I think was difficult was the governance sort of things around doing research, which meant that we couldn't just quickly get going and and then, as the pandemic changed, and the vaccines were introduced or whatever, some of the original bits of the questions were irrelevant, and having to change those quickly was difficult to navigate with the governance requirements.

So yeah, I think there are other studies that have been done that complemented this such as, you know, perhaps having a more agile way of getting data from large numbers of people and being able to look at things to roll out quickly.

Margaret O'Hara: So I think we are at time, and there's something in the chat there - "thank you for your time" from Rom, thank you.

Dr Chris Poyner: Thank you.

Professor Peymané Adab: Thank you so much everyone for being here and do contact us, if any, if there are any questions that you feel we haven't answered or want to discuss it more, and we will be having our website updated with more stuff as we publish and get things going as well. Thank you again, and thanks to Sarah, Chris and Margaret, and Katie for having organized it all as well - we really appreciate it. Bye for now.