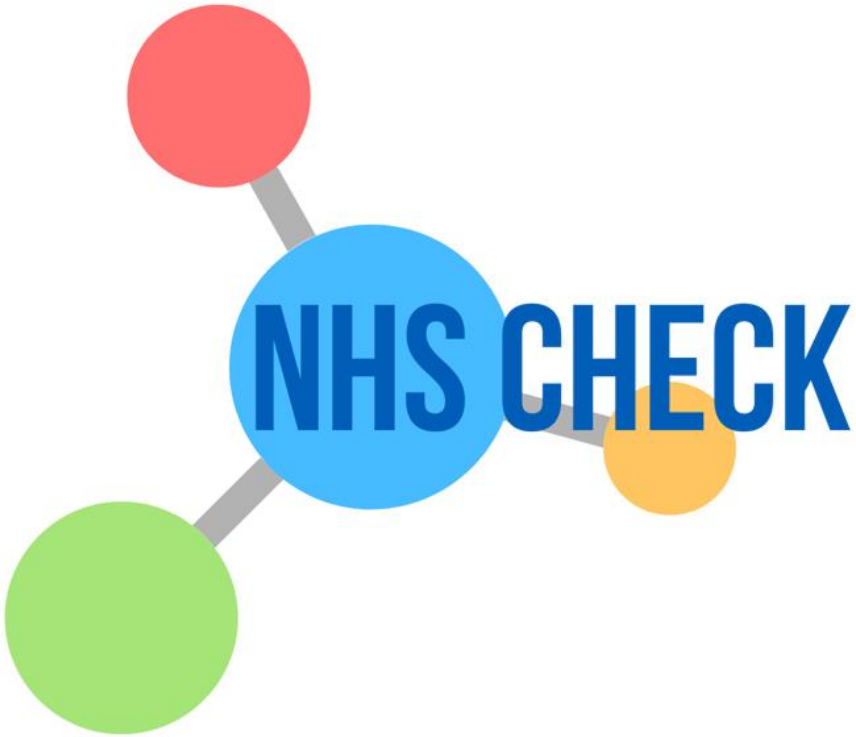

The mental health and wellbeing of NHS workers through the COVID-19 pandemic: a mixed methods programme of work including 23,462 participants, online surveys, qualitative and diagnostic interviews, and an RCT

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Dr Sharon Stevelink, Dr Danielle Lamb,
Dr Sam Gnanapragasam and Ms. Siobhan Hegarty

Conflict of interests

MH, RR, and SW are senior NIHR Investigators.

SW has received speaker fees from Swiss Re for two webinars on the epidemiological impact of COVID 19 pandemic on mental health.

RR reports grants from DHSC/UKRI/ESRC COVID-19 Rapid Response Call, grants from Rosetrees Trust, grants from King's Together rapid response call, grants from UCL (Wellcome Trust) rapid response call, during the conduct of the study; & grants from NIHR outside the submitted work.

MH reports grants from DHSC/UKRI/ESRC COVID-19 Rapid Response Call, grants from Rosetrees Trust, grants from King's Together rapid response call, grants from UCL Partners rapid response call, during the conduct of the study; grants from Innovative Medicines Initiative and EFPIA, RADAR-CNS consortium , grants from MRC, grants from NIHR, outside the submitted work.

SS reports grants from UKRI/ESRC/DHSC, grants from UCL, grants from UKRI/MRC/DHSC, grants from Rosetrees Trust, grants from King's Together Fund, and an NIHR Advanced Fellowship [ref: NIHR 300592] during the conduct of the study.

NG reports a potential COI with NHSEI, during the conduct of the study; and I am the managing director of March on Stress Ltd which has provided training for a number of NHS organisations.

The views expressed are those of the authors and not necessarily those of the NHS, the NIHR, or the Department of Health and Social Care.

Other authors report no competing interests.

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The NHS CHECK consortium includes the following site leads: Siobhan Coleman, Sean Cross, Amy Dewar, Chris Dickens, Frances Farnworth, Adam Gordon, Charles Goss, Jessica Harvey, Nusrat Husain, Peter Jones, Damien Longson, Paul Moran, Jesus Perez, Mark Pietroni, Ian Smith, Tayyeb Tahir, Peter Trigwell, Jeremy Turner, Julian Walker, Scott Weich, Ashley Wilkie.

The NHS CHECK consortium includes the following co-investigators and collaborators: Peter Aitken, Ewan Carr, Anthony David, Mary Jane Doherty, Sarah Dorrington, Rosie Duncan, Sam Gnanapragasam, Cerisse Gunasinghe, Stephani Hatch, Danielle Lamb, Daniel Leightley, Ira Madan, Richard Morriss, Isabel McMullen, Dominic Murphy, Martin Parsons, Catherine Polling, Alexandra Pollitt, Anne-Marie Rafferty, Rebecca Rhead, Danai Serfioti, Chloe Simela, Charlotte Wilson Jones.

NHS CHECK

Programme

The mental health and wellbeing of NHS workers through the COVID-19 pandemic: a mixed methods programme of work including 23,462 participants, online surveys, qualitative and diagnostic interviews, and an RCT

1) An overview of results from a longitudinal cohort study of 23,462 healthcare workers: mental health, suicidal ideation, and moral injury **(Danielle Lamb)**

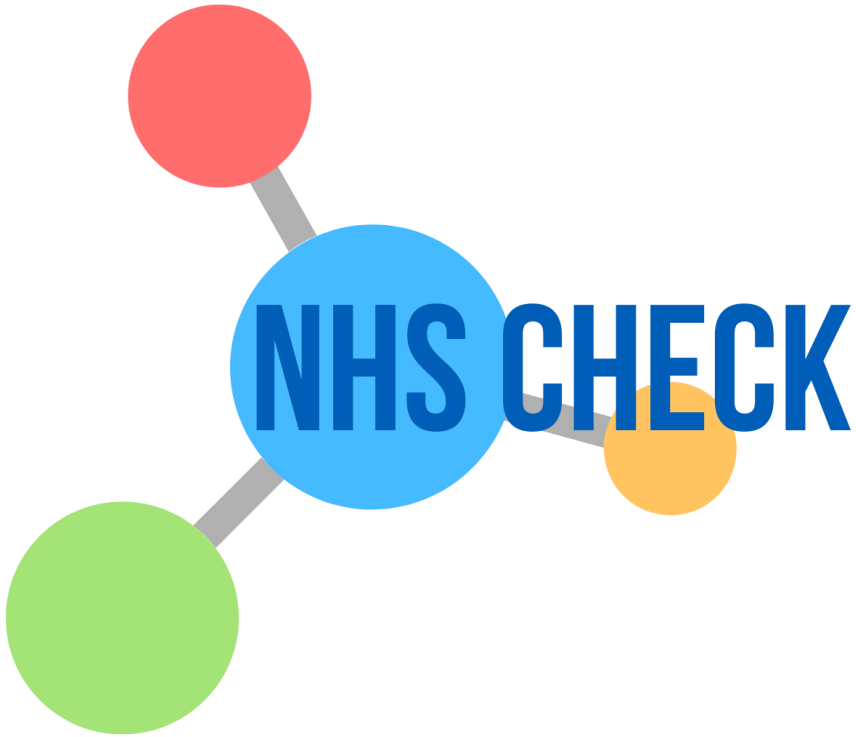
2) A thematic analysis of individual interviews with healthcare workers (HCWs) about their experiences of moral injury **(Siobhan Hegarty)**

3) A more accurate prevalence of PTSD and common mental disorders in healthcare workers in England: a two-phase epidemiological survey **(Sharon Stevelink)**

4) Making use of largescale qualitative data: a structural topic modelling analysis of 7,412 healthcare worker free text survey responses **(Danielle Lamb)**

5) Effectiveness of a smartphone app in improving mental health and wellbeing in NHS workers during COVID-19 in the UK: a randomised controlled trial **(Sam Gnanapragasam)**

NHS CHECK



An overview of results from a longitudinal cohort study of 23,462 healthcare workers: mental health, suicidal ideation, and moral injury

Dr Danielle Lamb on behalf of the NHS CHECK team

The NHS CHECK study: overview

- UK's largest study of the mental health and wellbeing of healthcare workers through COVID-19
- Includes ALL staff (not just clinical)
- Longitudinal - online surveys completed at baseline (started April 2020), 6 months, and 12 months
- 18 NHS Trusts in England
- Total sample size: 23,462 (N=152,113)
- 15% overall response rate (range 4% to 55%)

Table 1. Demographics

	NHS workforce	NHS CHECK sample	NHS CHECK weighted sample
Mean age	43	43	42
Sex	77% female	81% female	75% female
Ethnicity	78% white	86% white	77% white
Doctors	10%	7%	10%
Nurses	26%	26%	30%
Other clinical	46%	31%	32%
Non-clinical	18%	36%	28%

Three analyses

- Mental health outcomes
- Suicide and self-harm
- Moral injury

1) Mental health outcomes

Table 2. Proportions meeting cut-off scores on mental health measures

	Baseline	6 months	12 months
Common mental disorder (GHQ-12)	52.8%	50.7%	46.1%
Anxiety (GAD-7)	22.6%	22.2%	21.1%
Depression (PHQ-9)	27.6%	25.8%	26.5%
Alcohol misuse (AUDIT)	12.1%	19.6%	13.1%
PTSD (PCL-6)	23.6%	34.2%	25.7%
Experienced potentially morally injurious events (MIES)	25.1%	28.4%	33.8%

CAVEAT!

‘Baseline’ data collected: April 2020 – January 2021

“6 months” data collected: November 2020 – August 2021

“12 months” data collected: April 2021 – January 2022

So…how meaningful are these numbers?

Gives a snapshot of prevalence of mental ill-health over three overlapping 10 month time periods

Pressure on the NHS – ‘burden periods’

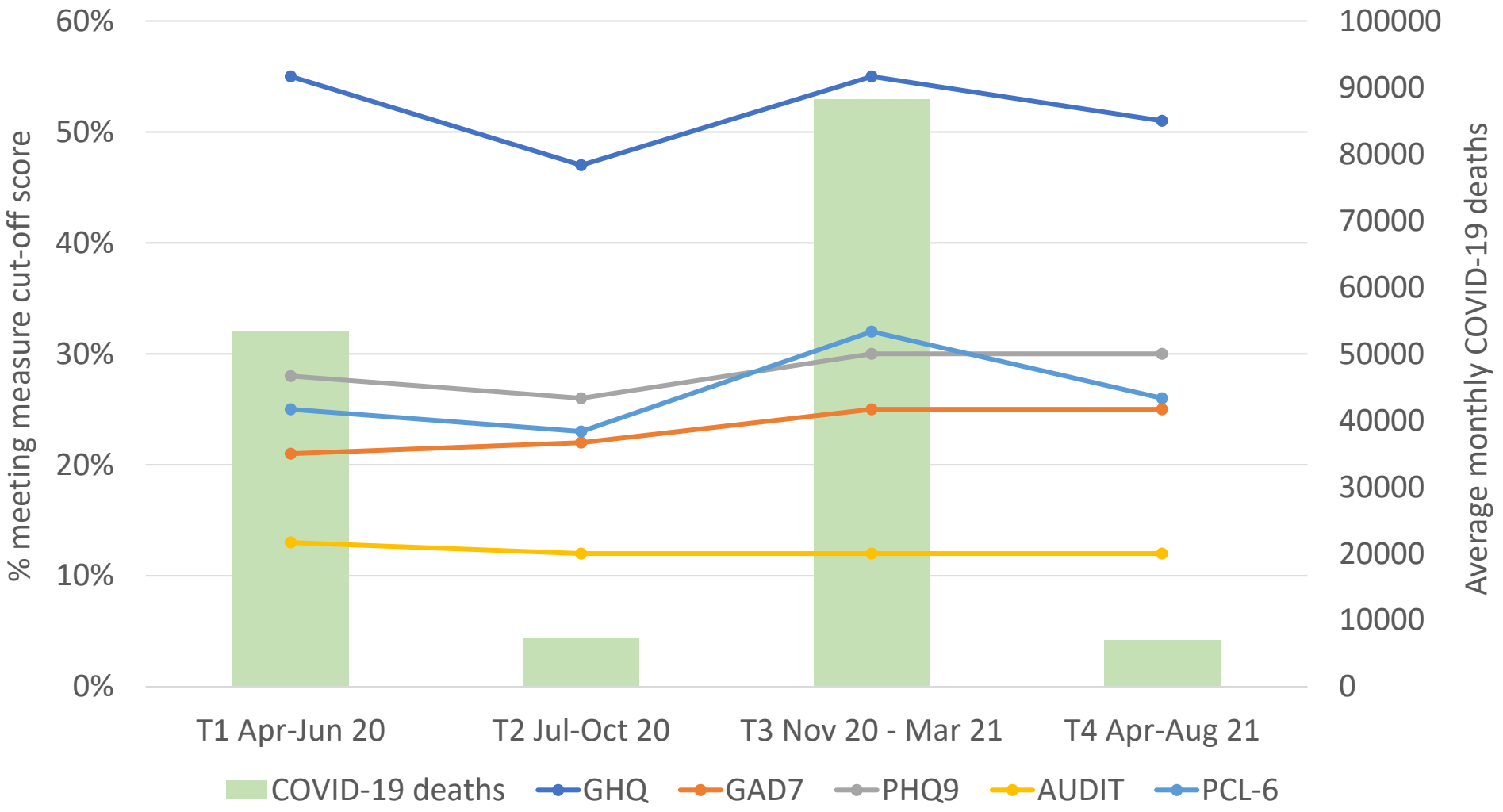


Figure 1. Proportion meeting cut-off scores, by burden period

Regression analyses

Initial descriptive and exploratory cross-sectional analyses carried out.

Longitudinal analyses ongoing (4th data collection happening in the next few months).

Multilevel multivariable weighted logistic regression models run on primary outcome variable (GHQ) and secondary outcome variables (GAD-7, PHQ-9, AUDIT, PCL-6).

Models explored associations between outcomes and a number of **demographic** (age, sex, ethnicity) and **occupational** (role, job setting, pay grade, PPE access, colleague/manager support, redeployment, moral injury) variables.

'Burden period' (period during which participants joined the study at baseline) was included to account for the differing levels of pressure experienced through the recruitment period.

Headline findings

Across outcomes and time periods, those **most likely** to report symptoms of **mental ill-health** were:

- **Female** (e.g. AOR 0.75, 95%CI 0.60, 0.94, p=0.02)
- **Younger** (e.g. AOR 0.72, 95%CI 0.57 , 0.93, p=0.02)
- **Experienced moral injury** (e.g. AOR 2.0, 95%CI 1.62, 2.46, p<0.001)

Associations found for some outcomes at some time periods for those who were:

- Not in a relationship
- Lower paid
- Felt unsupported by colleagues/managers
- Worked in ICU
- Nurses/other clinical staff

Exception! AUDIT, measuring **alcohol misuse**. Across time periods, those more likely to report alcohol misuse were:

- **Male**
- **White**

Conclusions

- Results align with previous work, e.g. that females are more likely to experience negative outcomes (Debski et al., 2021; Gilleen et al., 2021; Pappa et al., 2020; Patel et al., 2021; Uphoff et al., 2021; Wanigasooriya et al., 2021).
- However, it may be that GHQ-12 does not capture the ways in which distress manifests in men (Pierce, Hope, et al., 2020), which may be captured by measures of alcohol use.
- Novel finding – all types of staff (clinical and non-clinical) report symptoms, no difference in risk for e.g. GHQ between staff groups.
- Some evidence that those working in specific settings (e.g. ICU) may be worse affected, but not uniform across outcomes or times.
- Future research – longitudinal analysis of mental health trajectories across time periods.

2) Suicide & self-harm

Analysis of **baseline** and **6 month** data on suicidal and self-harm thoughts and behaviours (using CIS-R suicidality questions).

“Have you ever thought of taking your life, even though you would not actually do it?” (**suicidal ideation**)

“Have you ever made an attempt to take your life, by taking an overdose of tablets or in some other way?” (**suicide attempts**)

“Have you ever deliberately harmed yourself in any way but not with the intention of killing yourself?” (**non-suicidal self-injury**)

Answer options:

- Yes, in the past 2 months
- Yes, but not in the past 2 months
- No

Design

Used data from **baseline (n=12,514)** and **6 month follow up (n=7,160).**

Described **proportions** reporting suicidal ideation, attempts, and non-suicidal self-injury at each time period, and **incidence** at 6 months.

Multilevel multivariable logistic regression models, stratified by role (clinical or non-clinical).

Investigated associations between outcomes (suicidal ideation, attempts, and non-suicidal self-injury) and **demographic** factors (age, sex, ethnicity) and **occupational** factors (re-deployment status; exposure to potentially morally injurious events; lack of access to personal protective equipment (PPE); lack of confidence about raising safety concerns; lack of confidence that safety concerns would be addressed; feeling unsupported by supervisors or managers, and providing a reduced standard of care.

Results – prevalence & incidence

		Prevalence						Incidence					
Time	Response	Suicidal ideation		Suicidal attempts		Non-suicidal self-injury		Suicidal ideation		Suicidal attempts		Non-suicidal self-injury	
		n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)	n	% (95% CI)
Baseline	No	8,137	65.7 (64.6, 66.7)	10,927	87.2 (86.4, 88.0)	10,262	82.3 (81.4, 83.1)	-	-	-	-	-	-
	Yes, but not in previous 2 months	2,596	19.5 (18.7, 20.4)	880	6.7 (6.1, 7.3)	1,397	10.3 (9.7, 11.0)	-	-	-	-	-	-
	Yes, within the previous 2 months	1,336	10.8 (10.1, 11.6)	262	2.1 (1.8, 2.5)	407	3.4 (3.0. 3.8)	-	-	-	-	-	-
6 months	No	4,308	61.4 (60.0, 62.8)	5,897	82.7 (81.5, 83.8)	5,532	78.2 (77.0, 79.4)	3,707	80.2 (79.0, 81.5)	5,546	87.7 (86.9, 88.5)	5,098	86.7 (84.8, 86.6)
	Yes, but not in the previous month	1,591	21.0 (19.8, 22.2)	475	6.3 (5.6, 7.0)	776	9.9 (9.1, 10.8)	343	7.4 (6.7, 8.2)	119	1.9 (1.6, 2.2)	226	3.8 (3.3, 4.3)
	Yes, within the previous month	638	9.0 (8.1, 9.9)	164	2.4 (2.0, 2.9)	226	3.2 (2.7, 3.7)	181	3.9 (3.4, 4.5)	125	2.0 (1.6, 2.4)	134	2.3 (1.9, 2.7)

Regression analyses - demographic

Demographic factors associate with higher likelihood of reporting suicidal ideation or self-injury, at **baseline**:

- Younger age
- Being male
- Mixed ethnicity

At **6 months**:

- Younger age

No statistically significant associations with suicidal attempts.

Regression analyses – occupational factors at baseline

Occupational factors associate with higher likelihood of reporting **suicidal ideation**, at **baseline**:

- Lack of confidence in raising safety concerns (clinical & non-clinical)
- Lack of confidence safety concerns will be addressed (clinical & non-clinical)
- Lack of access to adequate PPE (non-clinical)
- Lack of support from managers (clinical & non-clinical)
- Having to provide a worse standard of care than usual (clinical)
- Experiencing potentially morally injurious events (clinical & non-clinical)

Regression analyses – occupational factors at 6 months

Once we adjusted for all relevant factors (inc. baseline level of relevant outcome), only ONE factor predicted outcomes at **6 months**.

Lack of confidence in safety concerns being addressed (at baseline) predicted suicidal ideation in clinical staff at 6 months (AOR 1.45, 95%CI 1.12, 1.89).

Conclusions

- Our findings that ~30% of HCWs had ever experienced suicidal ideation fits with other work on this, where 31% reported suicidal ideation (Rathod et al., 2020). Higher than population levels (~20%, McManus et al., 2016)
- Strengths – follow up data allowed exploration of predictive factors.
- Limitations – Still a lot of understand and unpick about what can reliably predict suicidal thoughts and behaviours – e.g. we don't have pre-pandemic data from this cohort.
- Ongoing analysis of 12 month data.

3) Moral Injury

Moral injury: the psychological distress experienced following an event which violate one's moral beliefs or expectations (Potentially Morally Injurious Events, PMIEs).

Three elements:

- Commission – witnessing or acting in ways that violate your own moral code
- Omission – failing to do something you felt you should have done
- Betrayal – feeling betrayed by colleagues, managers, or those outside the NHS

Measured by the 9 item Moral Injury Events Scale (MIES), e.g. "I saw things that were morally wrong" using a 5 point Likert scale.

Dichotomised for the purposes of this study to provide a cut-off (in line with previous research) – endorsing one or more item taken as having experienced a PMIE (i.e. moderately or strongly agree).

Who experiences PMIEs?

Analysed baseline survey data from 12,965 participants.

Overall, 28% reported experiencing PMIE(s), with acts of betrayal most commonly reported.

Those statistically significantly more likely to report PMIEs (at $p<0.001$):

- **Men** (33%) vs women (26%).
- **Doctors and nurses** (32%) vs other clinical or non-clinical staff (26%)
- **Redeployed** (33%) vs not redeployed (27%)
- **Lacked adequate access to PPE** (49%) vs those with adequate access (27%)
- **Felt unsupported** by managers/colleagues/family (45-56%) vs felt supported (21-27%)
- **Colleague died** from Covid-19 (40%) vs no colleagues died from Covid-19 (26%)

Regression analyses

Used multilevel multivariable logistic regression models, with each mental health measure as outcome, PMIEs as exposure.

PMIEs were statistically significantly associated with symptoms of:

- Common mental disorders (AOR 1.9, 95%CU 1.6, 2.3, p<0.001)
- Anxiety (AOR 2.2, 95%CI 2.0, 2.5, p<0.001)
- Depression (AOR 2.1, 95%CI 1.8, 2.3, p<0.001)
- Burnout (AOR 2.3, 95%CI 2.0, 2.7, p<0.001)
- PTSD (AOR 3.0, 95%CI 2.4, 3.6, p<0.001)

Exception: AUDIT (alcohol misuse) where there was no significant association with total MIES cut-off, just with omission and commission subscales.

Different staff groups reported different patterns of PMIEs (nurses most affected), with all reporting acts of betrayal most frequently.

Conclusions

- A large proportion of staff report exposure to PMIEs during the pandemic.
- Strong association between experiencing PMIEs and adverse mental health outcomes, after adjusting for other relevant factors.
- This includes clinical and non-clinical staff, with nurses most affected.
- Acts of betrayal most commonly reported.
- Prospective research needed to identify direction of causation between moral injury and mental disorders.

Thank you

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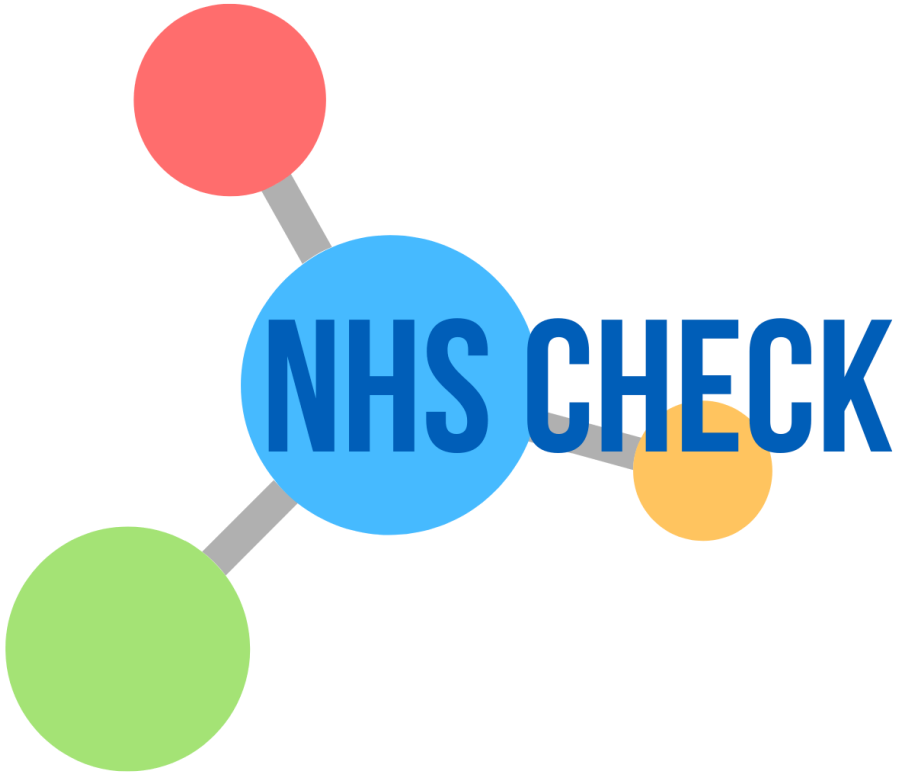

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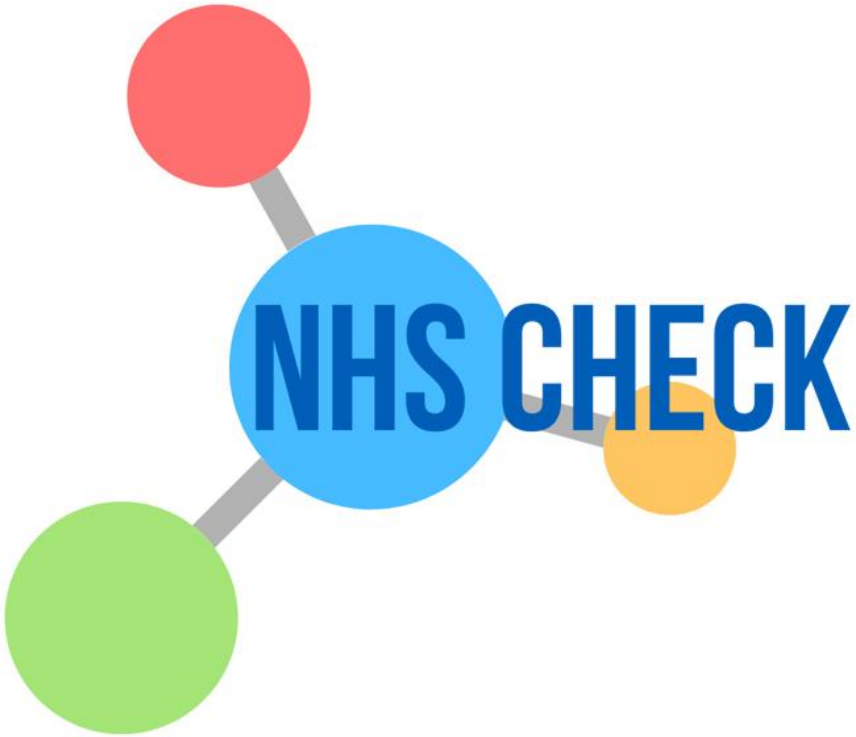


“It hurts your heart” frontline healthcare worker experiences of moral injury during the COVID-19 pandemic

Siobhan Hegarty on behalf of the NHS CHECK team

What is moral injury?

- Moral injury is the psychological distress experienced following an event which violates one's moral beliefs or expectations
- Three sub-types
  - Omission
  - Commission
  - Betrayal
- Evidence has linked moral injury to mental health disorders, including Post Traumatic Stress Disorder (PTSD), depression, and suicidality

Quantitative study (n= 12,965)

- Nearly a third of HCWs reported experience of PMIEs, with acts of betrayal most frequently reported.
- PMIE exposure was significantly associated with adverse mental health symptoms
- Reports of PMIEs were sig. associated with redeployment, a lack of support, and a lack of PPE
- Those reporting symptoms of mental disorders significantly more likely to experience PMIEs

(Lamb et al., 2021)

Qualitative Study

Primary Aim

- To better understand the experience and impact of PMIEs in a sample of frontline HCWs responding to the COVID-19 pandemic in England

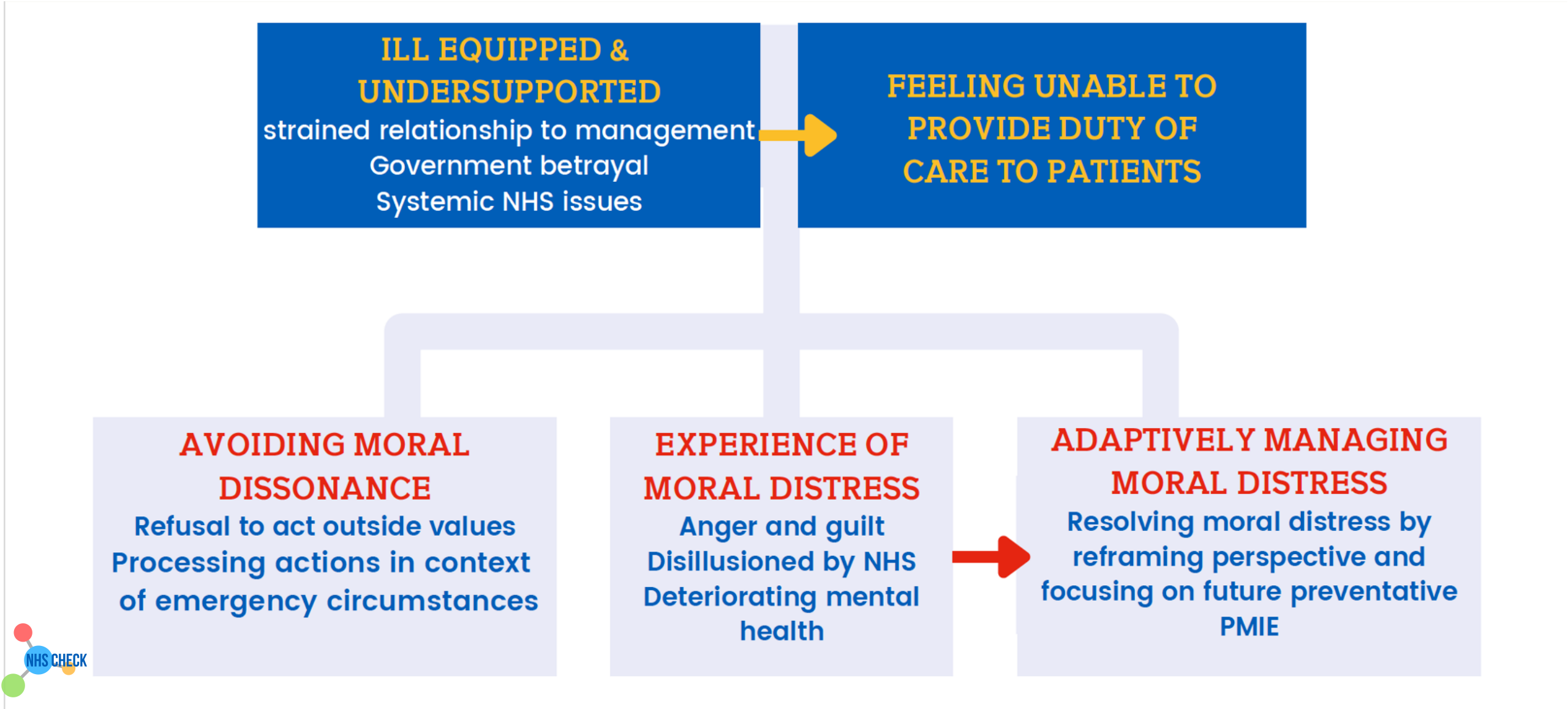
Secondary Aims

- To explore how staff manage experiences of moral distress
- To make recommendations to prevent/mitigate routine PMIE exposure among NHS staff

Methods

- Recruited diverse sample from 12 NHS Trusts across England
- 30 interviews carried out in total
- Transcribed verbatim
- Analysed using reflexive thematic analysis

Findings


ILL EQUIPPED & UNDERSUPPORTED
strained relationship to management
Government betrayal
Systemic NHS issues
FEELING UNABLE TO PROVIDE DUTY OF CARE TO PATIENTS
AVOIDING MORAL DISSONANCE
Refusal to act outside values
Processing actions in context of emergency circumstances
EXPERIENCE OF MORAL DISTRESS
Anger and guilt
Disillusioned by NHS
Deteriorating mental health
ADAPTIVELY MANAGING MORAL DISTRESS
Resolving moral distress by reframing perspective and focusing on future preventative PMIE

Systemic NHS Issues

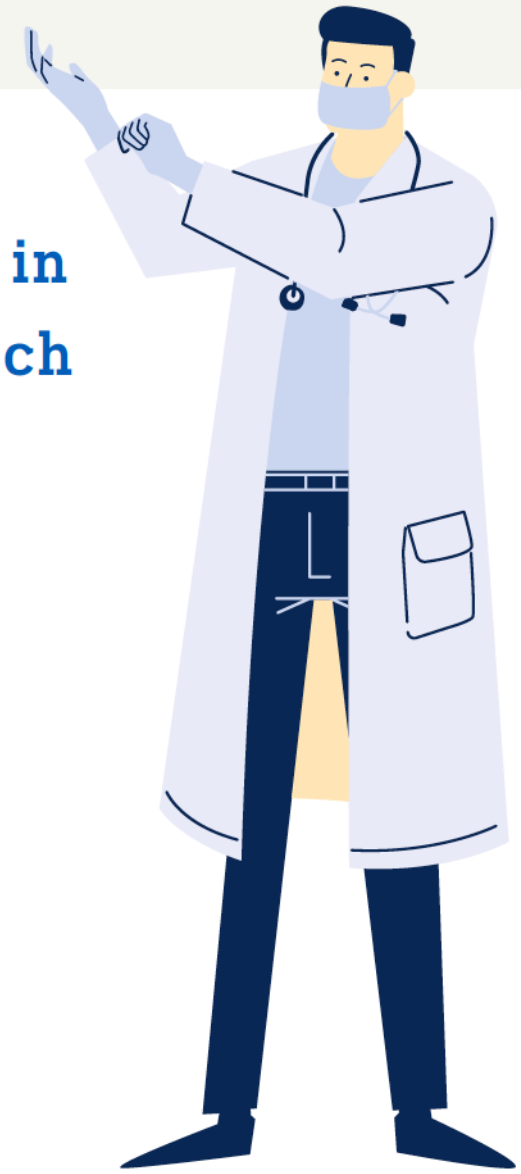
"What is the measure of a hospital being overwhelmed? Is it that there are no beds for the patients, is it that there are no staff to look after the patients because we've been in all of those situations. Is it when you have to decide whether a patient should go to ITU [Intensive Care Unit] or whether you think there's a chance they'll die so you say actually no we can't afford them to go to ITU because we've been in that situation

Feeling unable to provide duty of care to patients

"Yes. I had families crying down the phone to me saying I need some help and I did feel like we were letting them down especially the families with children who were presenting as quite severely autistic who were still waiting for a diagnosis. There was nothing really we could do."

Impact of PMIE

- While a few HCWs were able to resist moral dissonance in certain situations, it typically caused moral distress which people linked to…
- Feelings of anger, guilt and disillusionment with the organisation
- Considering leaving the NHS
- Mental health Consequences
- Heightened anxiety
- Low mood
- Sleep disturbance



Psychological Toll of Moral distress

Disillusionment with NHS

> "Nobody comes into nursing or mental health work or anything like that into that line of work to just be constantly frustrated. You know that there are shortages. It's that helplessness, you can't do anything about it"

Deterioration of Mental Health

> "Well, I do feel injured by it. I do genuinely feel injured [...] the cumulative effect of that whole first wave of COVID and the redeployment and everything and not being listened to and feeling so deskilled just really hit me latently and that was very much PTSD like symptoms. So that affected me in terms of, well I mean I've been in recovery from alcohol problems since 2012 and I had my first relapse"

Management of Moral Distress

Strategies used

- Distracting from or switching off from thoughts of the event causing distress

- Disclosing PMIE experiences to trusted others
  - Colleagues/team
  - Psychological therapist
  - Reflective practice groups
  - Manager/supervisor

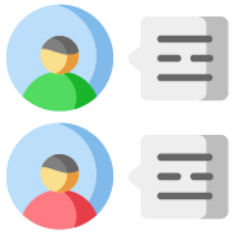
Findings in Context

- Consistent with findings that Betrayal PMIE-sub-type is of particular concern among NHS staff (French et al., 2021; Serach & Levi-Belz, 2021)
- Consistent with findings in combat veterans, disclosure was cathartic but insufficient to resolve moral distress

Strengths and Limitations

Strengths	Limitations
Addressed knowledge gap	Self-selected sample
Sample is occupationally and demographically diverse	Study does not reflect views of those who were not exposed to PMIEs during the pandemic
Transferability	Limited disclosure of moral injury by commission

Recommendations for Organisational Change



RESPONSIVNESS

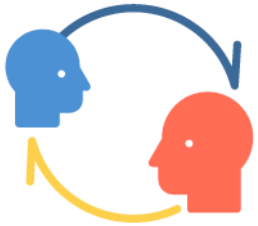
Improve responsiveness of incident reporting channels

REFLECTIVE PRACTISE

Initiate reflective practice groups to promote resolution of moral distress

EDUCATE

Education and coping skills training for PMIE exposure in routine practice



COMMUNICATION

Clear, transparent communication with staff of realistic expectations and targets and acknowledgement of value discrepancy between person centred care and crisis response

DISTRIBUTION

Distribute responsibility for clinical decision making

Next Steps

- Develop an intervention aimed at mitigating the negative outcomes of feeling betrayed.
- Long term aim of providing a template that can be used beyond the COVID-19 pandemic in healthcare organisations.
- Conduct 3, 2hr facilitated staff-manager moral injury reflective practice groups for 12 teams at 6 NHS participating Trusts who have expressed an interest in participating and compare with 12 teams who have not participated in these groups.
- Findings will be used to provide recommendations on mitigating the impact of potentially morally injurious events to local NHS Trusts and national bodies.
- Publish academic papers and feedback findings to NHS England/Improvement and other stakeholders

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Thank you

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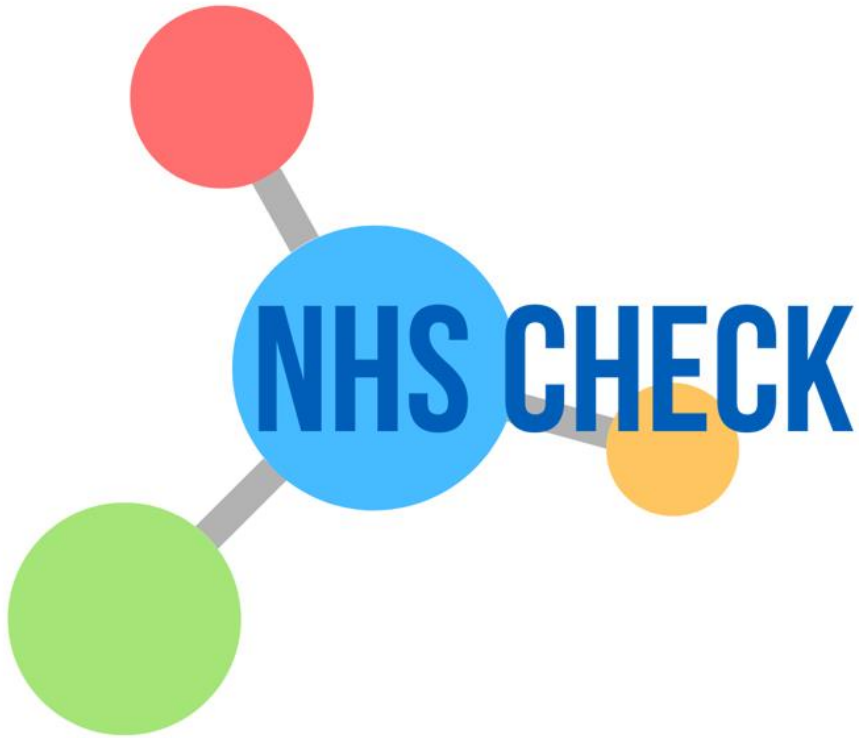


Most accurate prevalence of PTSD and common mental disorders in healthcare workers in England: a two-phase epidemiological survey

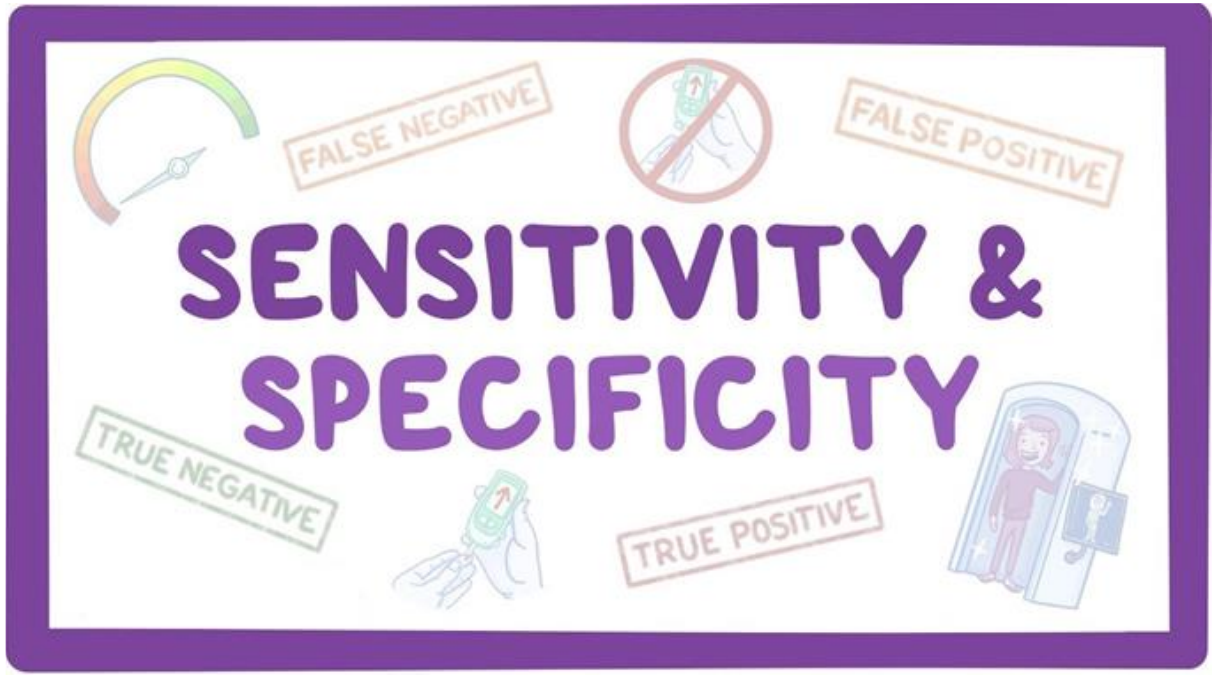
Dr Sharon Stevelink on behalf of the NHS CHECK team

Adverse mental health prevalences vary widely across studies

- 9-90% anxiety
- 5-65% depression
- 7-37% PTSD

- Mostly cross-sectional, online, frontline staff

Screening measures tend to overestimate prevalence estimates



A two-phase epidemiological design for a more accurate estimate of CMD and PTSD in healthcare workers

Screening tool

- General Health Questionnaire
- PTSD Checklist

Diagnostic interview

- Clinical Interview Schedule-Revised (CIS-R)
- Clinician Administered PTSD Scale (CAPS)

251 healthcare workers assessed for CMD and 96 for PTSD using diagnostic interviews

- Half of the sample was selected based on meeting the GHQ or PCL-6 caseness criteria at baseline
- Diagnostic interview samples comparable to the screening sample
- Diagnostic interview samples had slight overrepresentation of people from white ethnic background compared to NHS staff composition across 18 Trusts

Estimated population prevalences were calculated for CMD and PTSD

- Use of weighing and the diagnostic interview estimates to ensure generalizability to healthcare workers in England

Prevalences were about 2-3 times lower when using diagnostic interviews instead of screening tools

	Screening tool (GHQ-12/PCL-6) % (95% CI)	Diagnostic interview (CIS-R/CAPS) % (95% CI)
Common mental disorders	52.8 (51.7-53.8)	21.5 (16.9-26.8)
Generalised Anxiety Disorder	NA	14.3 (10.4-19.2)
Depression	NA	13.7 (10.1-18.3)
PTSD	25.4 (24.3-26.5)	7.9 (4.0-15.1)

Only study we know off that used diagnostic interviews in UK

- Use of administrative data to create weights (ethnicity, age, sex and clinical role)
- Clinical and non-clinical staff
- Comparable characteristics to NHS workforce

- Convenience sample of 18 NHS Trusts, low response rate to diagnostic interviews (13%)
- Framing effect – occupational studies

One in five of HCWs are likely to meet criteria for a diagnosable mental disorder

- Overestimation of mental disorder prevalence estimates when using screening measures
- Further calibration needed when using screening tools
- Implications for workplace functioning, treatment and service planning

Thank you

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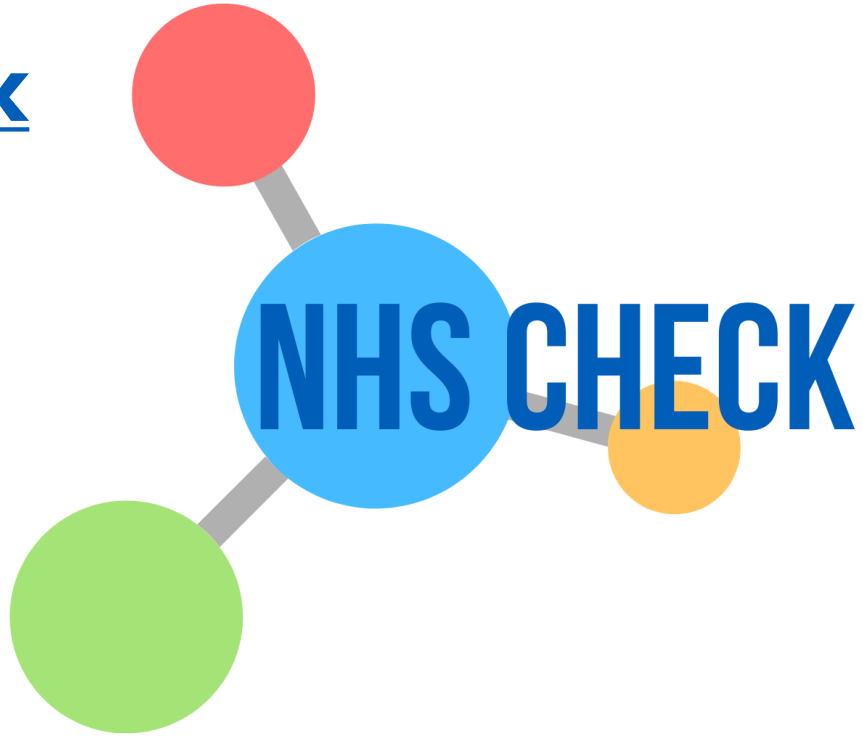
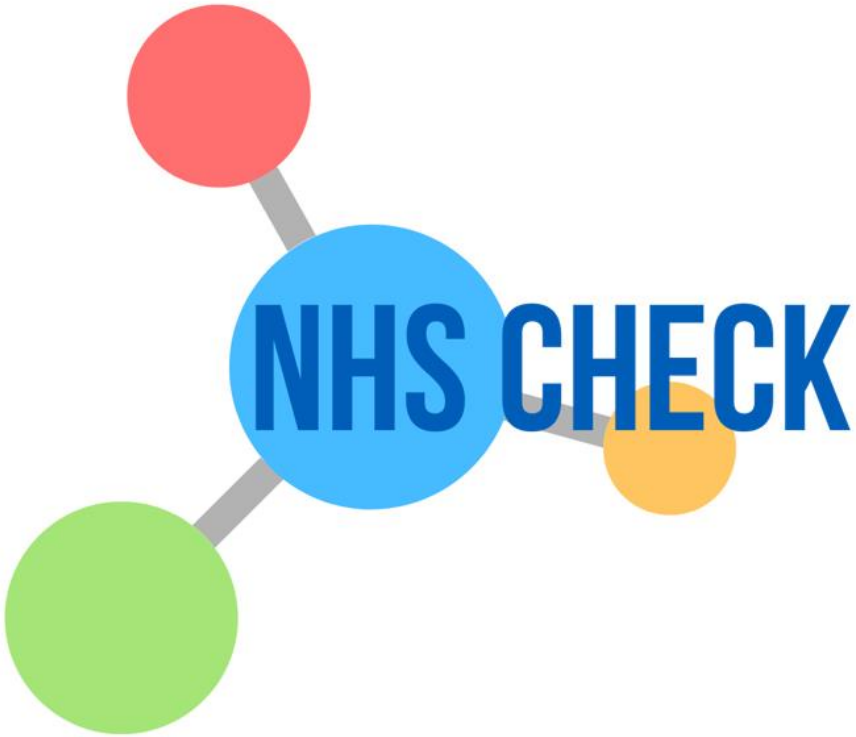




Making use of largescale qualitative data: a structural topic modelling analysis of 7,412 healthcare worker free text survey responses

Dr Danielle Lamb on behalf of the NHS CHECK team

A crash course in STM

Structural Topic Modelling (STM):

A text-mining technique that uses correlations between word frequencies within documents to define topics.

Benefit over other topic modelling approaches – can include covariates in the model, to understand how topics/themes are discussed by different groups (e.g. by age, sex, ethnicity, job role).

Useful for analysing large text-based data sets, e.g. large quantities of qualitative data from free text survey questions.

Methods

Free text question: “Is there anything else you think we should know about your experiences of the COVID-19 pandemic?”

7,412 participants (35% of total sample) provided a valid free-text response.

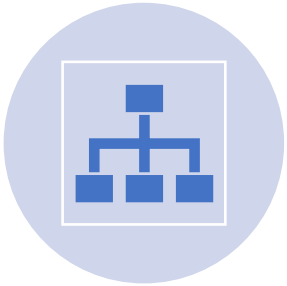
We cleaned responses prior to analysis – excluded responses of fewer than 5 words, and removed words that appeared in fewer than 5 responses.

Ran the STM, then used reflexive thematic analysis on resulting topics and text excerpts.

Procedure

Ran STM models of 2 to 50 topics – selected final model on visual inspection of the residuals and lower bound statistics of the model solutions.

Selected a model with 35 topics, and refined by merging two similar topics and dropping one topic due to incoherence of the exemplar texts.



Final 33 topics were given short descriptive names, and grouped into a thematic structure.

Reflexive thematic analysis carried out - iterative process of reading and re-reading exemplar texts, interpreting meaning, and capturing the essence of each theme in selected quotes.

A note on reflexive thematic analysis (RTA)

Usually in RTA themes are generated by the researcher(s) after familiarisation with the full qualitative data set.

With over 7,000 responses and >290,000 words this was not possible.

STM automated the process, enabling us to use all the data available without reading every word.

Once topics had been identified, the subsequent stages of meaning-making and discussion of our own positionality was in keeping with recent guidance regarding reflexive thematic analysis (Braun & Clarke, 2022).

The research team was diverse (men, women; researchers, clinicians; diversity of nationality and ethnicity). Clinicians of the team worked on the frontline during the pandemic, and all in the team have colleagues, friends, and family members who worked in healthcare roles through the pandemic.

We undertook extensive discussion throughout the analysis process about how our interpretations of the data may have been affected by our own experiences and perspectives.

Findings

Personal		Professional	
Social impact	**Restrictions and rules**	**Home working**	**Workplace culture**
Social isolation	Adherence/risk	Home working/shielding	Teamwork/support
Contribution	Rules	Home schooling/ childcare	Leadership/ managerial support
Bereavement	Trust in Government	Physical impacts	Media/politicians
Caring responsibilities			Support/help
Mental health	**Physical health**	**Workplace challenges**	**New roles**
Anxiety/adaptation	Vaccination	Workload/burnout	Changes to working
Mental health impact	Testing	Personal Protective Equipment (PPE)	Starting/ending roles
Impact on life	COVID-19 symptoms	Challenges to clinical practice	Job roles/students
Anger/personal challenges	Fear of infection	Satisfaction with employment	
Personal mental health	Shielding	Stress	
	Risk/comorbidity		

Personal

Caring responsibilities

"Hard to balance work and childcare especially as a single parent" (Doctor)

Anxiety

"I have been woken most nights with nightmares and/or vivid dreams which does not normally happen." (Nurse)

Contribution

"Working at home can be isolating sometimes and normal work can seem less relevant making you feel less useful than clinical colleagues." (Non-clinical staff)

Social isolation

"Being a single person has led to increased loneliness and self-doubt about all aspects of my life" (Non-clinical staff)

Unexpected positives

"We as a family have actually been happier during this period once we'd got over the infection. The pace of life has slowed down and given us more quality time together. For us this has been the silver lining to this sad situation." (Non-clinical staff)

Trust in Government

"Poor and conflicting information from Government" (Non-clinical staff)

Heroes or humans

"The whole 'heroes' thing was awful, and the clapping mawkish and largely insincere. Hero statues means we don't need normal basic human needs. It will also be forgotten immediately and we will be bullied into doing more to catch up without recognition, reward, and with threats and bullying. (Doctor)

Fear of infection

"Fear of getting the virus and giving it to my husband or other member of my family. Fear of dying of it myself and leaving my husband." (Nurse)

Impact on relationships

"This has contributed to the end of my marriage." (Allied Health Professional)

Professional

Workload & burnout

"We have been massively understaffed throughout COVID due to staff sickness - mostly down to stress rather than having to isolate. This has impacted on the stress levels of the remaining staff who are firefighting trying to stay afloat." (Non-clinical staff).

Unpredictability

"The main stressor for me is the unpredictability at work. You never know if you are going to be moved or if the ward you're on is going to swing from green to red, or back. Resulting in massive patient movement and extra work." (Nurse).

Home working

"Working from home has been extremely difficult. Not the correct equipment. I've had to self-refer to physiotherapy for back, shoulder and neck problems." (AHP).

"I find working from home has helped A LOT with my mood, life and with work. I feel more in control and when I have bad mental health days being at home is the best thing for me and I don't need to take a day off. I can still work and get my tasks done which has a positive effect on my mood." (Non-clinical staff).

Teamwork

"It has shown that teamwork, support and compassion are needed, when that is in place people function better." (Non-clinical staff).

PPE

"The lack of PPE equipment has been terrifying. The visors appropriate to operate on are being kept hidden because there aren't enough and the PPE visors (not on a surgical mask) don't protect from upward blood splashes. It is becoming dangerous to do our job, even more so than usual due to failings of ordering and providing correct equipment." (Doctor).

Satisfaction

"Been really happy that I have been able to continue offering a service to our patients" (AHP)

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Professional

"I did not feel supported by senior managers. My direct manager was great but was not supported herself. The trust did a terrible job of communicating and appeared panicked and out of control." (Nurse).

Leadership and support

"The Trust has been very supportive to staff - allowing free parking has been monumental in my wellbeing during this time." (AHP).

"I found being sent to adult ITU extremely difficult, it made me anxious and terrified to come to work […] I am a PICU [Pediatric Intensive Care Unit] nurse not an adult nurse and was left alone to take full responsibility for extremely ill COVID adult. I felt out of my depth, scared and it has made me and my colleagues to worried about a second peak and being sent again." (Nurse).

Redeployment

"I felt the time before redeployment was more stressful than actually being redeployed. My time at the Nightingale was very positive because everyone was very supportive." (Nurse).

Media and politicians

"The single biggest factor in my mental health around coronavirus has been the shambolic handling of the situation by the Government. I have no faith or trust in their leadership, and that is a toxic situation in a pandemic such as this." (Doctor).

"The fear mongering media and politicians have not come out of this looking good. Stats have been manipulated and lies told. Will it all ever come out and accountability made...I doubt it." (Non-clinical staff).

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Regression analyses

Some differences in themes raised by **age**:

- **Older participants** more likely to discuss challenges related to **physical health** and to **home working**
- **Younger participants** more likely to discuss **new roles**

Differences according to the **date** free-text responses were recorded:

- Discussion of **home working decreased** across the pandemic
- Discussion of **workplace challenges increased**
- Discussion of **mental health** was **lowest between September-November** 2020 (between the first and second waves of COVID-19 in the UK)

Differences according to **sex**:

- **Women** more likely to discuss **home working, new roles** and **social impact**
- **Men** more likely to discuss **restrictions and rules**

Differences by **NHS trust**:

- Differing positive and negative experiences of **home working** and **physical health**

Conclusions

- Personal challenges most commonly reported by HCWs overlapped considerably with those faced by the general population (e.g. bereavement, social isolation, caring responsibilities).
- Specific workplace challenges for HCWs that are less relevant for many other types of workers (e.g. PPE, facing significant risk of infection, redeployment), and these in turn impacted home life.
- Findings about change in salient topics over time are novel.
- Sample was not homogenous, and variations between participants' experiences within the workplace suggest guidance around infection control, vulnerable staff, and redeployment, and support and leadership style differed between Trusts and teams.
- Demonstrates important differences in personal preferences for ways of working, and underlines challenges for Trusts in offering support that is appropriate for all members of staff.
- Workload, PPE, inconsistency/uncertainty, lack of trust in Government – all topics highlighted in previous research.
- Staff need clear, consistent communication, supportive managers, adequate resources.
- Unique data set and analysis method enabled more nuanced, but generalisable, results than typically possible with traditional quant or qual research.

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Thank you

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@dannijl

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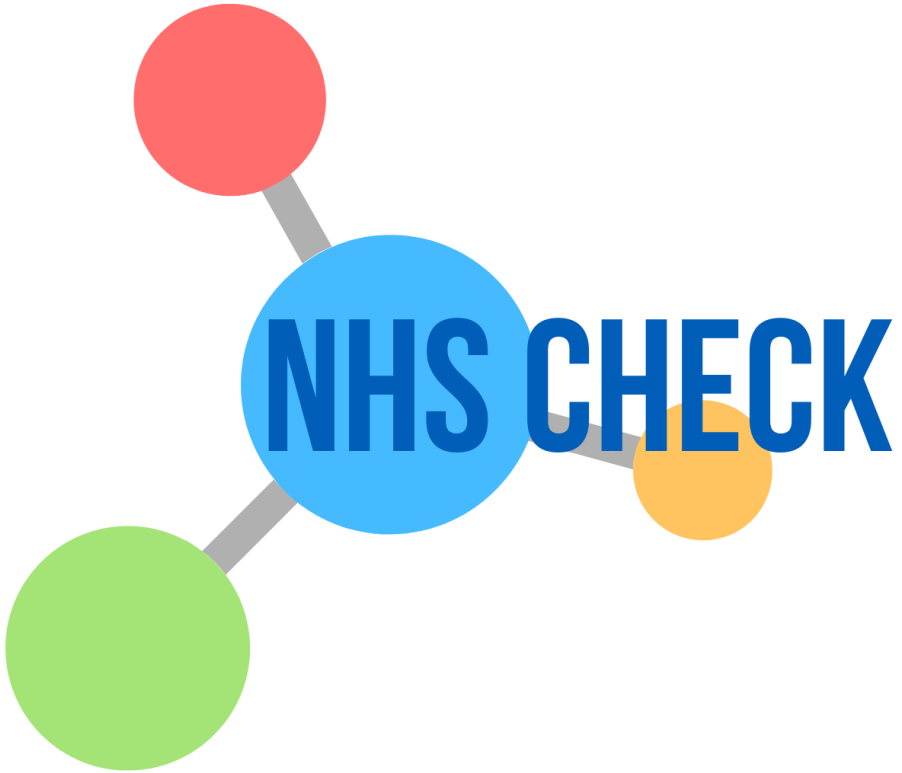
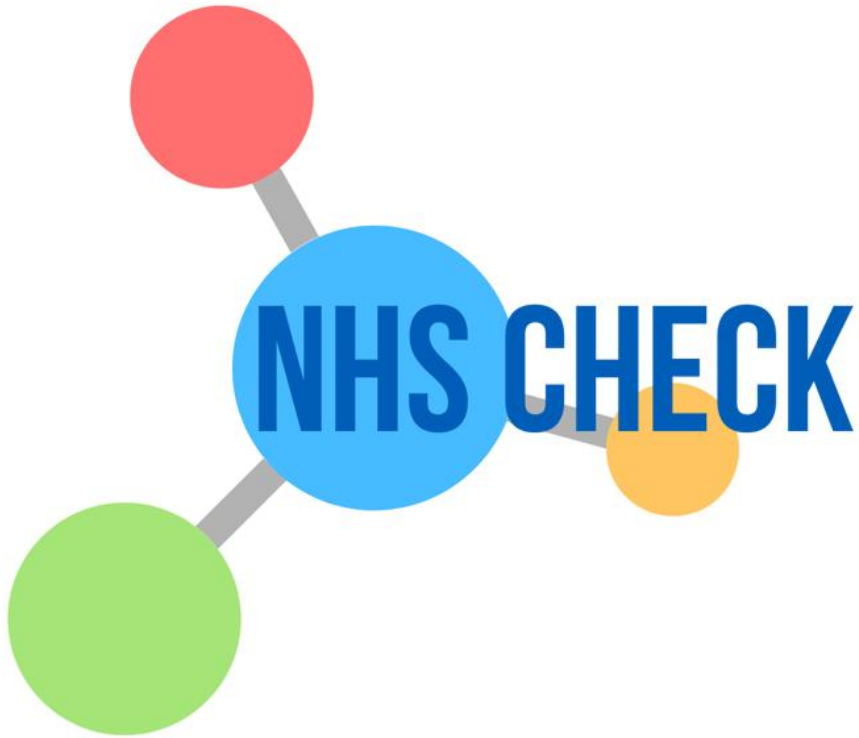




Effectiveness of the ‘Foundations’ smartphone application in improving mental health and well-being in a healthcare worker population: a randomised controlled trial

Dr. Sam Gnanapragasam, on behalf of the NHS CHECK team

10.09.2022

Context

Methods

Results

Strengths & Limitations

Implications

Future work

BJPsych | The British Journal of Psychiatry (2022)
Page 1 of 9. doi: 10.1192/bjp.2022.103

Multicentre, England-wide randomised controlled trial of the 'Foundations' smartphone application in improving mental health and well-being in a healthcare worker population

Sam N. Gnanapragasam, Rose Tinch-Taylor, Hannah R. Scott, Siobhan Hegarty, Emilia Souliou, Rupa Bhundia, Danielle Lamb, Danny Weston, Neil Greenberg, Ira Madan, Sharon Stevelink, Rosalind Raine, Ben Carter* and Simon Wessely*

Background

Healthcare workers (HCWs) have faced considerable pressures during the COVID-19 pandemic. For some, this has resulted in mental health distress and disorder. Although interventions have sought to support HCWs, few have been evaluated.

Aims

44·3 years (interquartile range (IQR) 34–53). Participants randomised to the app had a reduction in psychiatric morbidity symptoms (aMD = −1.39, 95% CI −2.05 to −0.74), improvement in well-being (aMD = 0·54, 95% CI 0·20 to 0·89) and reduction in insomnia (adjusted odds ratio (aOR) = 0·36, 95% CI 0·21 to 0·60). No other significant findings were found, or adverse events reported.

SCAN ME!

Gnanapragasam, S.N., Tinch-taylor, R., Scott, H.R., Hegarty, S., Souliou, E., Bhundia, R., Lamb, D., Weston, D., Greenberg, N., Madan, I. And Stevelink, S., 2022. Multicentre, England-wide randomised controlled trial of the 'Foundations' smartphone application in improving mental health and well-being in a healthcare worker population. The British Journal of Psychiatry: the Journal of Mental Science, pp.1-9.

Introduction

Healthcare workers have faced extraordinary pressures during the pandemic

Range of support staff initiatives during the pandemic, limited evaluation

NHS CHECK cohort population

‘Foundations’ App

Commercially developed – Koa Health

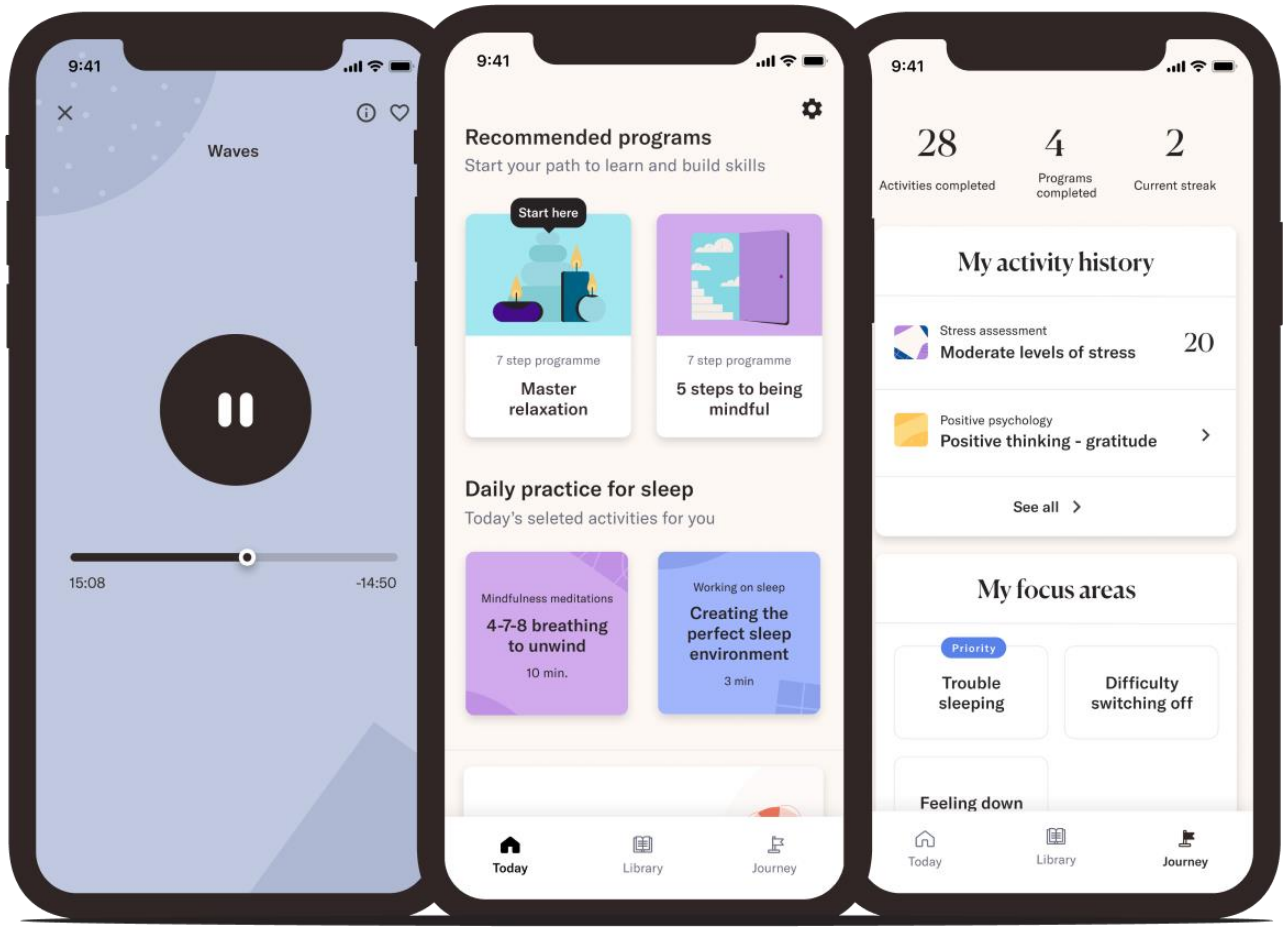
Aims to build resilience, manage stress, improve sleep

CBT, mindfulness-based CBT, relaxation techniques and positive psychology

Activities (193) & Programmes (19)

Reading, journaling, audio, video, quiz and games

Active use, week 1 & 2 encouraged



KOA Health RCT

‘Pragmatic’ trial

Parallel-group randomised (1:1) controlled trial

Eight weeks: 0, 4, 8

Incentive provided

KOA Health RCT

N=1002 (502 app, 500 waitlist control)

16 NHS Trusts in England

22nd March and 3rd June 2021

KOA Health RCT

Primary outcome:

12-item General Health Questionnaire (GHQ-12)

Secondary outcomes:

Brief Resilience Scale (BRS)
Short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS)
Stanford Presenteeism Scale (SPS-6)
Generalized Anxiety Disorder (GAD-7)
Patient Health Questionnaire (PHQ-9)
Work and Social Adjustment Scale (WSAS)

Modified intention-to-treat analysis and per-protocol analysis

Demographics

	NHS	Cohort Study	RCT
Mean age	43	43	44
Sex	77% female	81% female	84% female
Ethnicity	78% white	86% white	91% white
Clinical	78%	64%	61%
Non-clinical	18%	36%	39%

Demographics

	App Group	Control Group	All
Sex (female)	83.7%	84.9%	84.3%
Ethnicity (white)	91.5%	91.3%	91.4%
Clinical	59.1%	62.5%	60.9%
Mental health medication (yes)	27.5%	23.5%	25.4%
Use of mental health or wellbeing app (yes)	12.5%	12.2%	12.3%
Receiving therapy (yes)	5.9%	7.7%	6.8%

894 mITT, 108 loss (77 in app, 31 in control) did not complete post baseline assessment data

Adherence Data (Descriptive)

	App (n=502)
Download	
Yes	379 (75.50%)
No	123 (24.50%)
Completed one programme (week 1 and week 2)	
Yes	69 (13.75%)
No	433 (86.25%)
Completed two activities (week 1 and week 2)	
Yes	165 (32.87%)
No	337 (67.13%)
Completed four activities (week 1 and week 2)	
Yes	125 (24.90%)
No	377 (75.10%)
Completed one programme (week 1 and week 2)	
Yes	69 (13.75%)
No	433 (86.25%)
Completed twenty-nine activities overall	
Yes	264 (52.59%)
No	238 (47.41%)

Adherence Data (Descriptive)

	Mean (SD)	Median (LQ-UQ)	Range
Overall	100.37 (149.29)	46.82 (16.62-129.81)	0.67-1011.70
Week 1	32.39 (41.14)	17.98 (6.25-40.12)	0.52-304.25
Week 2	17.02 (29.34)	4.50 (0.00-22.57)	0.00-190.98
Week 3	13.66 (27.61)	1.10 (0.00-16.62)	0.00-230.00
Week 4	11.92 (22.92)	1.05 (0.00-14.08)	0.00-139.95
Week 5	9.65 (22.28)	0.02 (0.00-10.25)	0.00-168.97
Week 6	6.93 (16.69)	0.00 (0.00-4.58)	0.00-132.63
Week 7	4.69 (12.83)	0.00 (0.00-1.08)	0.00-106.47
Week 8	4.10 (12.85)	0.00 (0.00-1.12)	0.00-107.80

Primary and secondary outcomes, aMD and aOR (mITT)

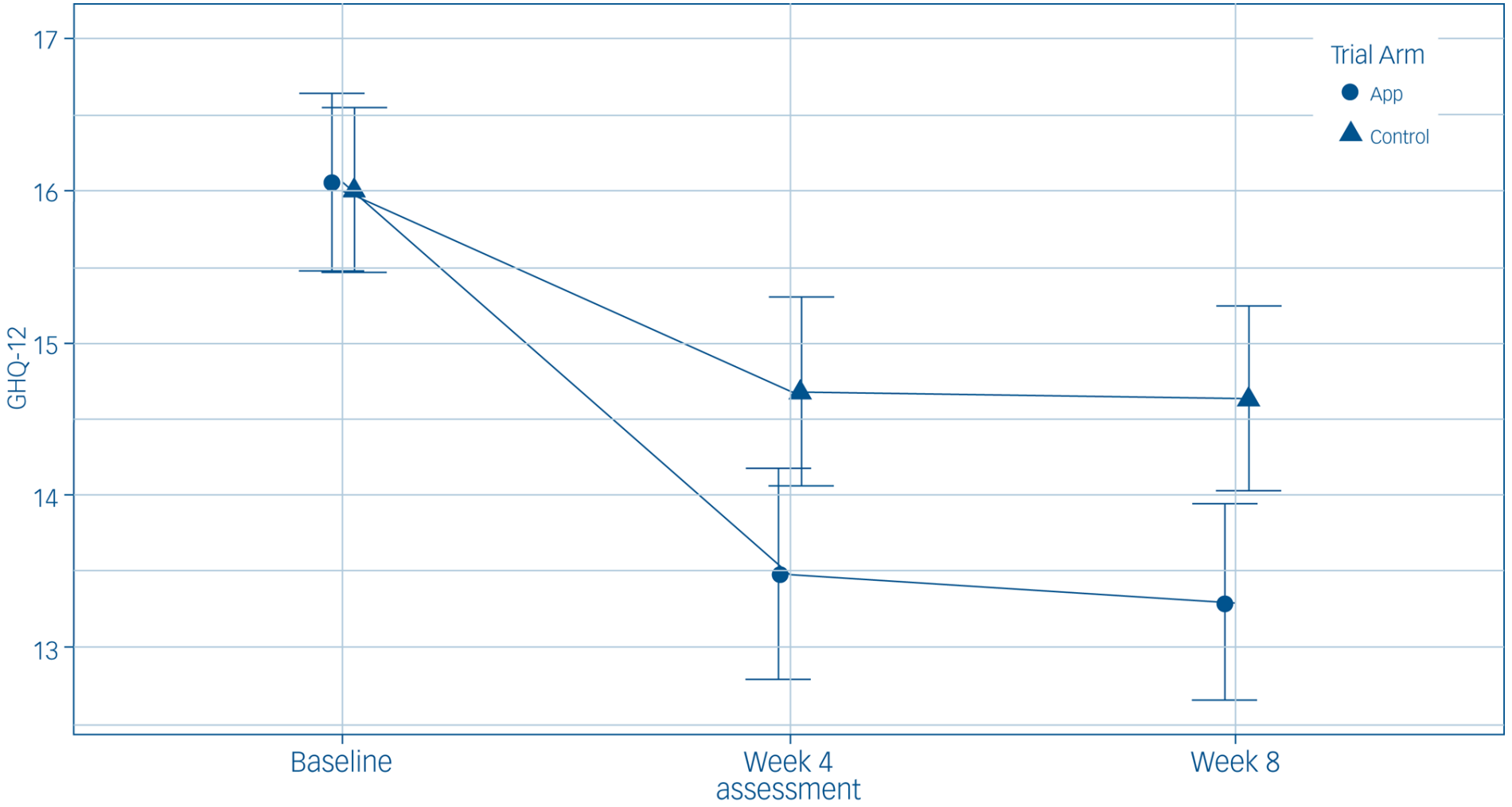
Adjusted Mean Difference (aMD)*					
Outcome	**N[&]**	**Mean difference**	**Lower CI**	**Upper CI**	**P value**
GHQ-12	**893**	**-1.39**	**-2.05**	**-0.74**	**<0.0001**
BRS	871	0.03	-0.03	0.09	0.26
SWEMWBS	**870**	**0.54**	**0.20**	**0.88**	**0.002**
SPS-6	865	0.38	-0.11	0.87	0.13
Adjusted Odds Ratio (aOR)*					
Outcome	**N[&]**	**Odds Ratio**	**Lower CI**	**Upper CI**	**P value**
GAD-7	870	0.69	0.39	1.23	0.21
PHQ-9	867	0.61	0.36	1.04	0.07
WSAS	866	0.61	0.33	1.11	0.10
MISS	**865**	**0.36**	**0.21**	**0.60**	**0.0001**

*Adjusted for: baseline outcome, age, sex, ethnicity, occupational role (clinical or non-clinical), use of other mental health application (yes or no), use of mental health/wellbeing medication (yes or no), use of psychological or talking therapy (yes or no), and 4-week and 8-week assessments.

[&]One participant not included in the analysis due to missing ethnicity.

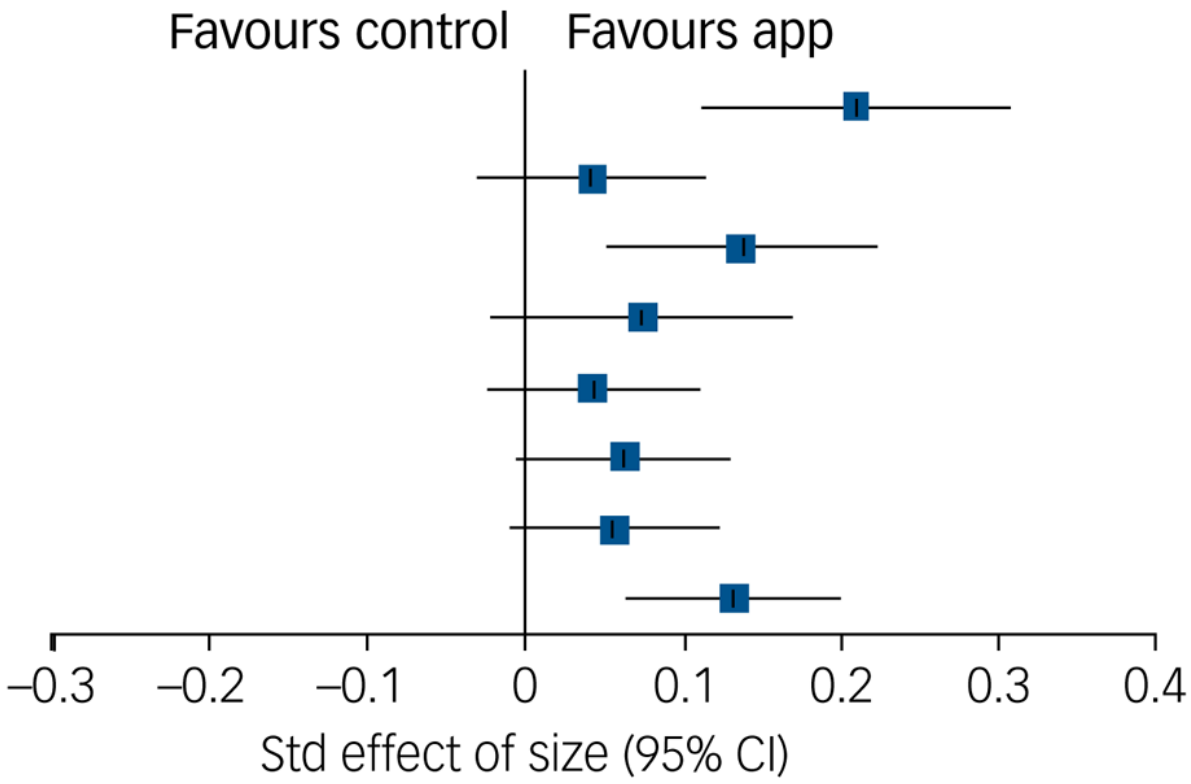
BRS missing (n=22); SWEMWBS missing (n=23); SPS-6 missing (n=28); GAD-7 missing (n=13); PHQ-9 missing (n=26); WSAS missing (n=27); MISS missing (n=28).

Primary Outcome GHQ-12 – Temporal Changes, mITT, 95% CI



Standardized effect sizes for primary and secondary outcomes (mITT)

Measure	Std effect size (95% CI)
GHQ-12	0.21 [0.11; 0.31]
BRS	0.04 [-0.03; 0.11]
SWEMEBS	0.14 [0.05; 0.22]
SPS-12	0.07 [-0.02; 0.17]
GAD-7	0.04 [-0.02; 0.11]
PHQ-9	0.06 [0.00; 0.13]
WSAS	0.06 [-0.01; 0.11]
MISS	0.13 [0.06; 0.20]

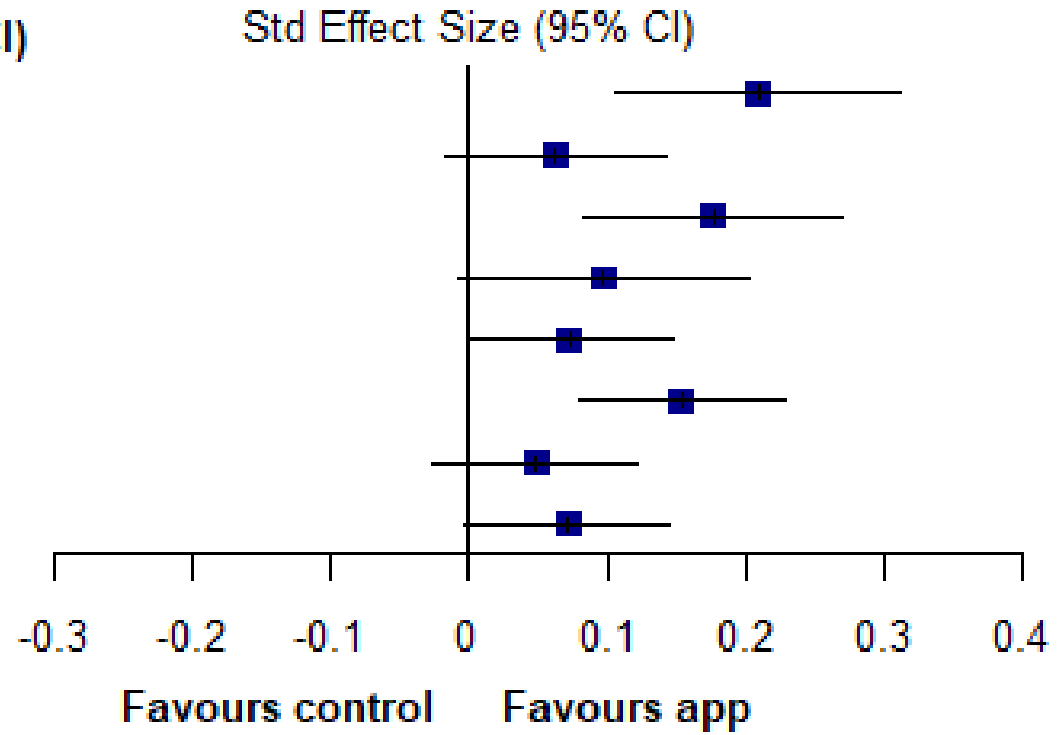


Primary outcome, standardized effect size (PPP)

Outcome	PPP	N	Standardized Effect Size	Lower CI	Upper CI
GHQ-12	Download	700	0.21	0.11	0.31
	Two activities	610	0.18	0.07	0.30
	Four activities	574	0.16	0.04	0.29
	Programme	521	0.17	0.03	0.31
	Twenty-nine activities overall	591	0.23	0.10	0.35

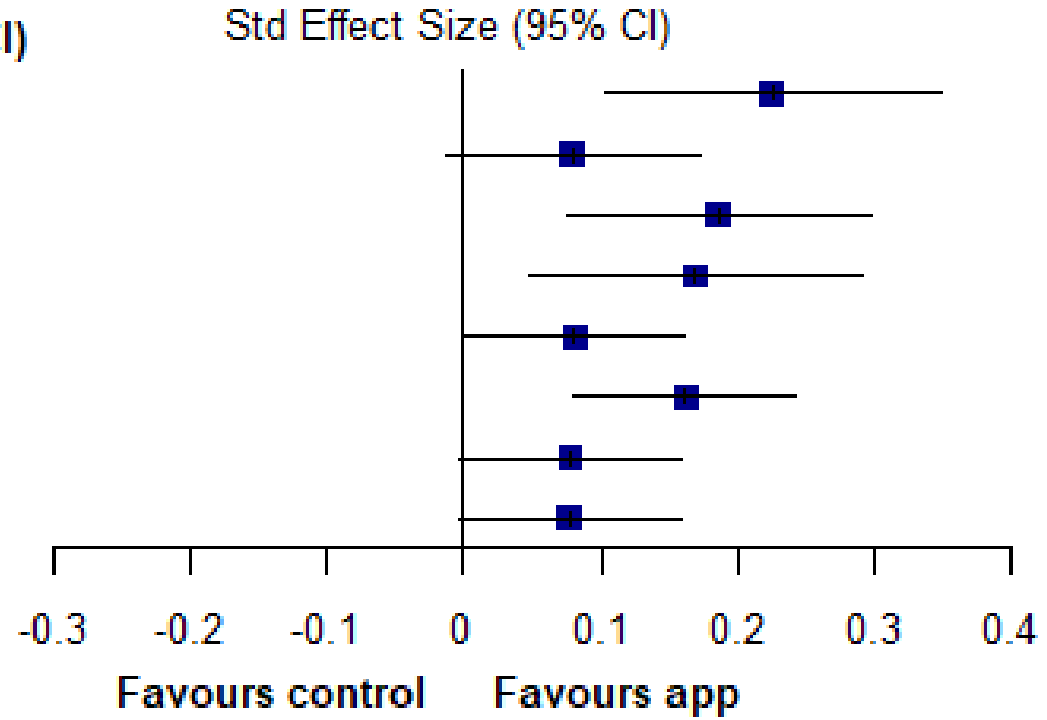
Standardized effect sizes for primary and secondary outcomes (PPP - Download)

Measure	Std. effect size (95% CI)
GHQ-12 download	0.21 [0.11; 0.31]
BRS download	0.06 [-0.02; 0.14]
SWEMWBS download	0.18 [0.08; 0.27]
SPS-6 download	0.10 [-0.01; 0.20]
PHQ-9 download	0.07 [0.00; 0.15]
MISS download	0.15 [0.08; 0.23]
GAD-7 download	0.05 [-0.03; 0.12]
WSAS download	0.07 [0.00; 0.15]



Standardized effect sizes for primary and secondary outcomes (PPP – 29 Activities)

Measure	Std. effect size (95% CI)
GHQ-12 29 act overall	0.23 [0.10; 0.35]
BRS 29 act overall	0.08 [-0.01; 0.17]
SWEMWBS 29 act overall	0.19 [0.08; 0.30]
SPS-6 29 act overall	0.17 [0.05; 0.29]
PHQ-9 29 act overall	0.08 [0.00; 0.16]
MISS 29 act overall	0.16 [0.08; 0.24]
GAD-7 29 act overall	0.08 [0.00; 0.16]
WSAS 29 act overall	0.08 [0.00; 0.16]



Primary outcome: subgroup analysis (mITT)

		Adjusted Mean Difference (aMD*)				
Subgroup		**N**	**Mean difference**	**Lower CI**	**Upper CI**	**P value**
Sex	**Female**	**753**	**-1.66**	**-2.38**	**-0.95**	**<0.0001**
	Male	135	0.52	-1.07	2.12	0.52
Occupational role	**Clinical**	**543**	**-2.23**	**-3.04**	**-1.43**	**<0.0001**
	Non-clinical	350	-0.10	-1.19	0.98	0.85
Age	**18-29**	120	**-2.62**	**-4.57**	**-0.68**	**0.008**
	30-39	189	**-2.17**	**-3.53**	**-0.82**	**0.002**
	40-49	260	-1.05	-2.19	0.09	0.07
	50-59	236	-0.51	-1.76	0.74	0.42
	60+	88	-0.28	-2.46	1.91	0.81
GP consultation for mental stress difficulties	**Yes**	**132**	**-3.59**	**-5.9**	**-1.28**	**0.002**
	No	**761**	**-1.30**	**-1.96**	**-0.64**	**<0.001**
Mental health diagnosis	**Yes**	**249**	**-1.85**	**-3.28**	**-0.41**	**0.01**
	No	**644**	**-1.28**	**-2.00**	**-0.57**	**<0.001**

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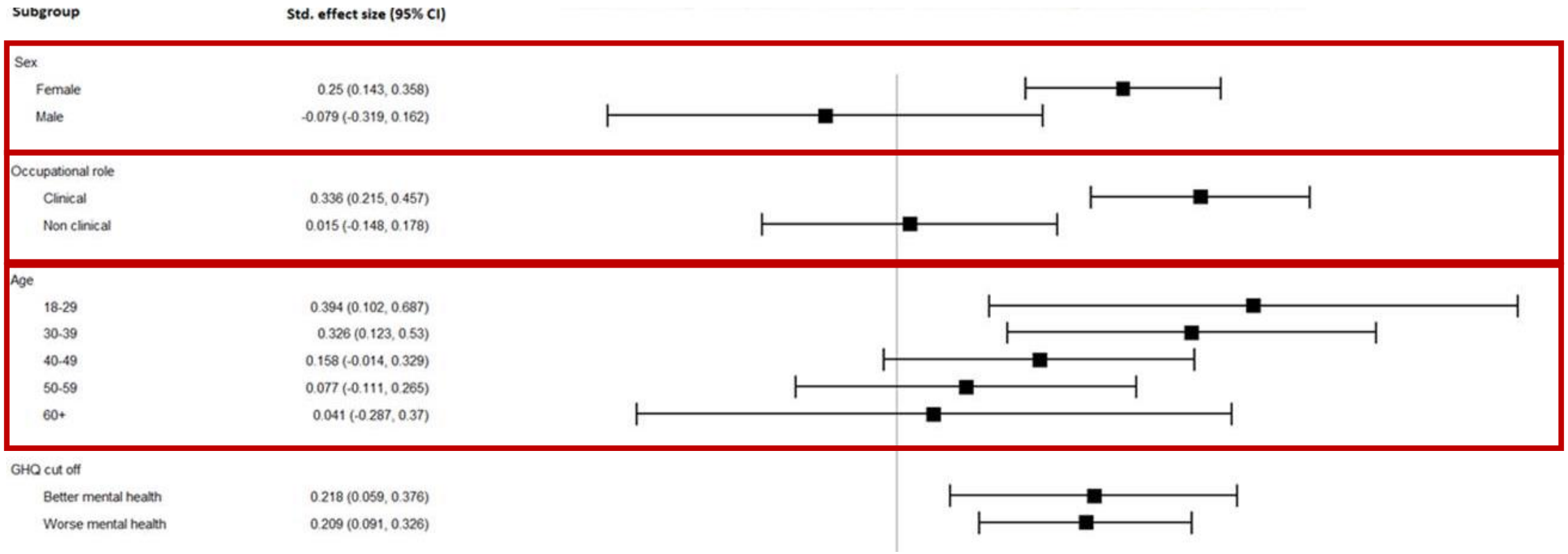
Primary outcome: subgroup analysis (mITT)



Primary outcome: subgroup analysis (mITT)

- Female
- Younger
- Clinical member of staff
- Having experienced potentially morally injurious events
- Application use alongside ongoing treatment (vs standalone app)
- Sought mental health support from GP, or use of any other treatment

- No adverse events

Findings in context

Zaçe, D., Hoxhaj, I., Orfino, A., Viteritti, A. M., Janiri, L., & Di Pietro, M. L. (2021). Interventions to address mental health issues in healthcare workers during infectious disease outbreaks: a systematic review. Journal of psychiatric research

24 studies, only one digital

Systematic review search updated to 20/08/2021, 2 RCTs identified

- Single online session of Emotional Freedom Techniques (n = 72), significant reductions in stress, anxiety and burnout
- Mobile application containing psychoeducational material based on mindfulness and cognitive-behavioural therapy (n = 482), 2 week f/u and no difference in primary outcomes

Strengths and limitations

Strengths

- Largest wellbeing and mental health trial in this population
- Low attrition rate, well powered analysis
- Sample frame largely England representative
- Pragmatic: with and without mental distress, and already on treatment
- Monitor use of the intervention, allowed dose related analysis

Limitations

- 84% female, and 91% white vs NHS of 77% female, and 78% white
- Self-selected sample from cohort
- Financial incentivisation
- Self-reported online instruments rather than gold standard diagnostic interviews
- Waitlist controlled trial
- Follow-up period

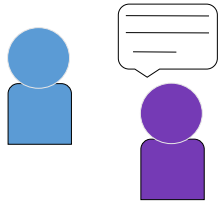
Implications

- Very few apps rigorously evaluated – if at all – and this helps
- Modest benefit with no adverse effects for a sample of HCWs in England
- Offer to staff members without screening for severity
- Potential reach across a whole population of HCWs is considerable
- Appears to help those who are most vulnerable

  e.g. younger staff, women, clinical healthcare workers such as nurses, and those who experience potentially morally injurious events have higher rates of probable common mental disorders (Paul et al., 2021, Lamb et al., 2021).
- Should be part of organization's tiered staff support offer rather than standalone

Small effect size (0.209 in GHQ-12, primary outcome) & varied uptake/effectiveness across age, gender, ethnicity and occupational roles

Next steps



Mapping of activities and programs

- Determine which activities and programs within Foundations offer the greatest benefit
- Relationships and explanations of ‘mechanisms’ and ‘why’

Examining change over time

- Follow up across 6 and 12 months
- Examine longevity of positive impacts that mobile interventions may have with or without continued application use

Qualitative interviews

- Different demographic groups to understand barriers and facilitators to application uptake and use, as well as user experience and reasons for discontinuation

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Multicentre, England-wide randomised controlled trial of the 'Foundations' smartphone application in improving mental health and well-being in a healthcare worker population

Sam N. Gnanapragasam, Rose Tinch-Taylor, Hannah R. Scott, Siobhan Hegarty, Emilia Souliou, Rupa Bhundia, Danielle Lamb, Danny Weston, Neil Greenberg, Ira Madan, Sharon Stevelink, Rosalind Raine, Ben Carter* and Simon Wessely*

Background

Healthcare workers (HCWs) have faced considerable pressures during the COVID-19 pandemic. For some, this has resulted in mental health distress and disorder. Although interventions have sought to support HCWs, few have been evaluated.

Aims

44·3 years (interquartile range (IQR) 34–53). Participants randomised to the app had a reduction in psychiatric morbidity symptoms (aMD = −1.39, 95% CI −2.05 to −0.74), improvement in well-being (aMD = 0·54, 95% CI 0·20 to 0·89) and reduction in insomnia (adjusted odds ratio (aOR) = 0·36, 95% CI 0·21 to 0·60). No other significant findings were found, or adverse events reported.

SCAN ME!

Gnanapragasam, S.N., Tinch-taylor, R., Scott, H.R., Hegarty, S., Souliou, E., Bhundia, R., Lamb, D., Weston, D., Greenberg, N., Madan, I. And Stevelink, S., 2022. Multicentre, England-wide randomised controlled trial of the 'Foundations' smartphone application in improving mental health and well-being in a healthcare worker population. The British Journal of Psychiatry: the Journal of Mental Science, pp.1-9.

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Thank you --

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1. Lamb, D., Stevelink, S., Greenberg, N., Wessely, S. (2020) A challenge met, or a tsunami to come? Mixed signals about the mental health of the NHS workforce, The Lancet Psychiatry, 7 (12), 1009-1011. https://doi.org10.1016/S2215-0366(20)30379-5

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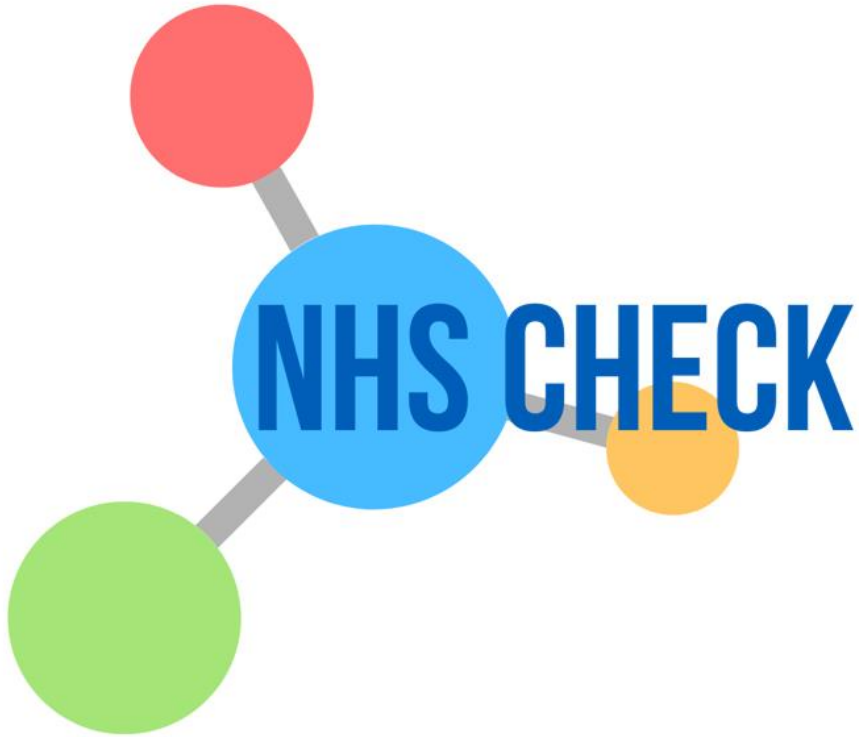

The mental health and wellbeing of NHS workers through the COVID-19 pandemic: a mixed methods programme of work including 23,462 participants, online surveys, qualitative and diagnostic interviews, and an RCT

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