

## RAPID RESEARCH IN COVID-19 PROGRAMME

### Using participatory digital platforms to enhance resilience and mental health of Scottish (NHS Highland) health and care staff during COVID-19

#### AIMS

Firstly, to assess NHS Highland Health and Social Care Workers' (HSCW) mental health during COVID-19. Secondly, to examine whether a specifically tailored app (modified specifically for our project and population), named the 'NHS Highland Staff Wellbeing Project' could potentially be useful in supporting the psychological wellbeing of this population during the COVID-19 pandemic.

#### KEY FINDINGS

- A review of the international literature investigating the impact of COVID-19 on HSCWs indicated that female nurses with close contact with COVID-19 patients may have the most to gain from interventions aimed at supporting psychological well-being. However, inconsistencies in the findings within existing literature and a lack of data collected outside hospital settings, suggested that we should not exclude any groups when addressing psychological wellbeing in the HSCW workforce working through the COVID-19 pandemic.
- This review also indicated that *community, social, team and government support, adequate experience in a role, psychological resilience and gratitude* could be **protective factors** against adverse mental health outcomes in HSCWs during the COVID-19 pandemic.
- At baseline we found our sample of NHS Highland staff to display similar substantive levels of anxiety and depression symptoms as HSCWs working in COVID-19 hotspots. We measured these outcomes over two time periods in the pandemic to ensure accuracy. We found *direct contact with COVID-19* and *disruptions caused due to COVID-19* as being **risk factors** to adverse mental health outcomes for this population group over time.

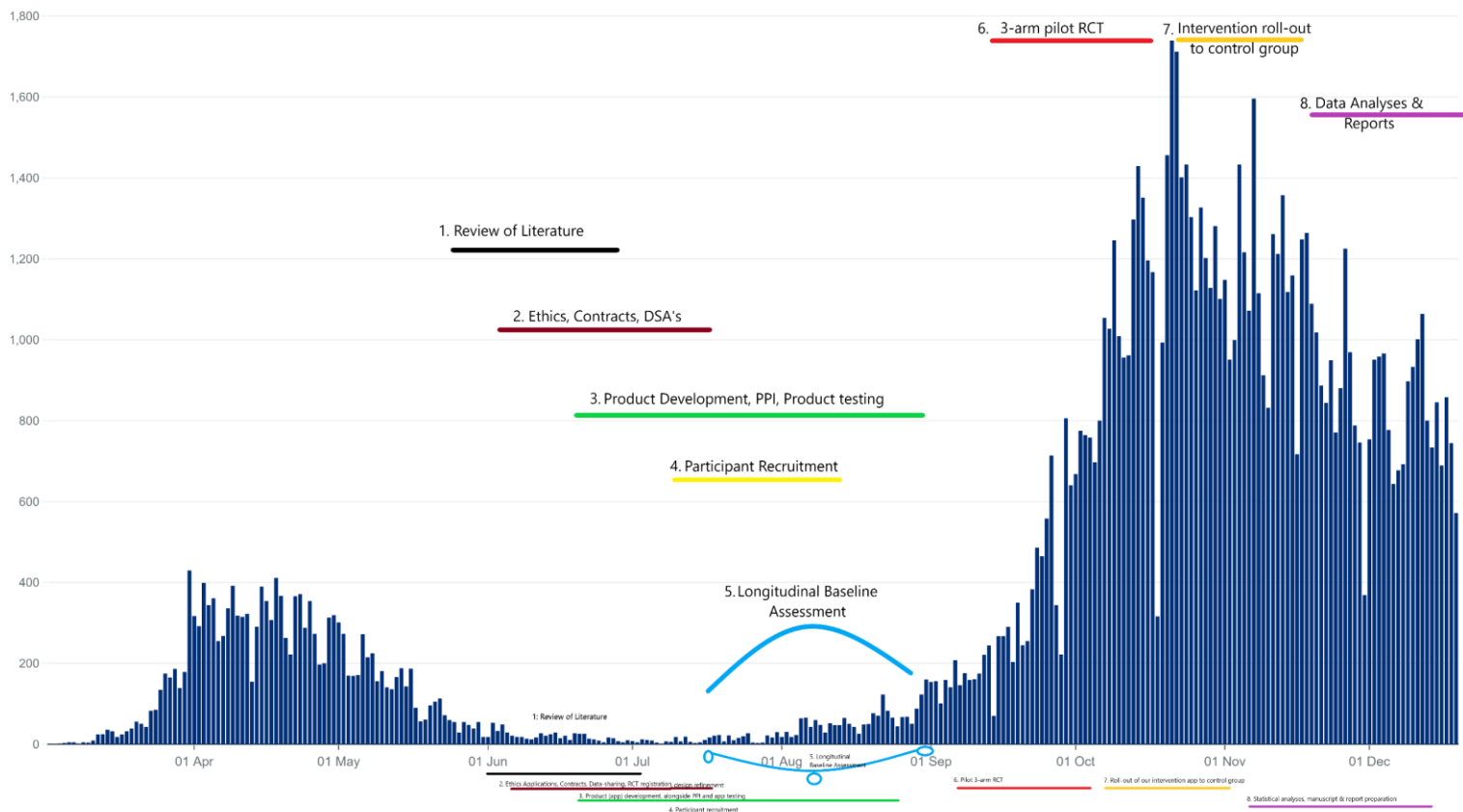
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- It was possible to rapidly modify an existing, NHS approved, wellbeing app to include novel characters, narrative, texts and prompts tailored specifically to the NHS Highland context. It was also possible to select the most suitable modules of the well-being app's interventions to fit with most up to date research on what HSCWs might find useful to support their psychological well-being, and what the PPI (public involvement) consultations suggested to the research team.
- Our specifically tailored app, the 'NHS Highland Staff Wellbeing Project', showed, in a phase 1 pilot clinical trial (RCT), potential usefulness in supporting psychological health in NHS staff working through the COVID-19 pandemic. Future multi-site RCTs, with samples big enough to reliably detect differences, are recommended to determine the efficacy of digital interventions in this context.

### WHAT DID THE STUDY INVOLVE?

Our six-month project involved eight phases.

The figure below provides a visual representation of these eight phases and where they fitted into this project's six-month duration (time on the x-axis) at the backdrop of COVID-19 infections in Scotland (on the y-axis)



**Phase 1: Literature review:** We performed a review of the impacts of COVID-19 on the global HSCW workforce. We did this to identify factors associated with adverse mental health outcomes, and also factors that could mitigate adverse mental health outcomes (that is to support mental health) in this population group. This review helped us to identify the sample for our study and also to develop our app's interventions tailored specifically to HSCWs, according to the most up to date research.

**Phase 2: Ethics applications, contracts, and data sharing:** IRAS Ethics & UHI University REC & NHS R&D approval on 6 July 2020. IRAS number 284547 and registered at [SRCTN18107122](#).

**Phase 3: Product development, public involvement and testing:** We used the NHS approved app (MPS) designed to support psychological well-being, as our base-app to design our new app named 'The NHS Highland Staff Wellbeing Project' on. We utilised MPS' design team to help us modify and tailor their validated app to our population. Based on knowledge obtained from Phase 1, clinical expertise and PPI feedback, we also tailored characters, narratives (story) and MPS interventions' content to our app. We introduced an interactive component to our app - a fictional character (a nurse named Iona) was created to lead participants through the intervention in an effort to enhance engagement. We restricted our intervention to 4 weeks with the first two weeks focusing on building resilience and gratitude, whilst the last two weeks focused on dealing effectively with low mood and anxiety.

**Phase 4: Participant recruitment:** Participants were recruited with assistance from NHS Highland Human Resources, NHS Homes, NES Training for Scotland, NHS Highland GP practices and NHS Psychology and Psychiatry Services. A recruitment platform via OnlineSurveys.ac.uk was used. We created a dedicated social media campaign through TeClan.

**Phase 5: Longitudinal Baseline Data Collection:** We collected data on the psychological well-being, depression anxiety and resilience of our population at two time periods between mid-July 2020 and mid-August 2020 and again during the first week of September 2020. This second wave of data collection also served to provide the baseline data of our pilot Randomised Controlled Trail (RCT) that followed in phase 6.

**Phase 6: Three arm pilot RCT (phase 1 trail) (Duration: 4 weeks 7 September to 5 October 2020)**

Given that this was a pilot trial being done in a limited time, the sample size targets were based on pragmatic factors rather than an expectation of having the power to enable detection of the expected effect sizes. At the start of the pilot RCT, we had 169 participants who signed up to use our app and to participate in our pilot RCT. The overall aim was to potentially pave the way for a potential larger scale, multi-site RCT. The three arms of our phase 1 pilot RCT consisted of our intervention "The NHS Highland Staff Wellbeing Project" (NHSWBP), a treatment as usual (TAU) app (MPS – the app on which we based our intervention) and a control condition (wait list) - with the roll-out of intervention to the control group after the RCT. Participants were randomly assigned to one of the three conditions.

**Phase 7: Intervention Roll-out to the Control group (5 October – 2 November 2020)**

The NHSWBP app was rolled out to the control group after completion of RCT. The TAU group had the choice to either receive the NHS Highland Staff Wellbeing Project app or the normal TAU after completion of the project. All groups had the option to receive the TAU app (MPS), free for a year after completion of the study. No measurements were taken during this phase and all measurements stopped after the pilot RCT.

**Phase 8: Statistical Analyses, report writing and data dissemination (November to December 2020)**

## WHAT WERE THE RESULTS AND WHAT DO THEY MEAN?

Our results are logically grouped into **three sections**: The review of the literature, the impact of COVID-19 on NHS Highland HSCWs psychological health and investigating the potential usefulness of a digital app, tailored specifically to NHS Highland HSCWs, in supporting the psychological wellbeing of its population during the COVID-19 pandemic.

1. **[The review of the literature: The impact of COVID-19 on the mental health of healthcare workers: implications for supporting psychological well-being \(Link to the academic paper\)](#)**

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### Summary:

The review of the literature showed that, at the time of review most existing COVID-19 studies had sampled urban hospital staff. Results suggested that nurses may be at higher risk of adverse mental health outcomes in comparison to other types of healthcare professional, but no studies had compared this group with the primary care workforce. We found that healthcare workers were at risk of suffering from anxiety and mood related disorders during the COVID-19 pandemic. We found no studies that had considered the psychological impact of the pandemic on social care staff. Other *risk factors for adverse mental health outcomes identified were underlying organic illness, gender (female), concern about family, fear of infection, lack of personal protective equipment (PPE) and close contact with COVID-19. Systematic support, adequate knowledge about the virus and professional experience, resilience and gratitude were identified as potential factors protecting against adverse mental health outcomes. Thus, we concluded that our intervention should include all frontline healthcare staff. We also concluded our intervention should focus on increasing psychological resilience and decreasing symptoms associated with anxiety and depression.*

### 2. NHS Highland HSCWs psychological health during COVID-19 (Link to the [academic paper](#))

#### Summary:

Evidence from previous epidemics indicates a high and persistent burden of adverse mental health outcomes among healthcare workers. A two wave longitudinal design conducted from July to September 2020 provided follow-up evidence on the mental health (MH) (changes in the prevalence of disease over time) of NHS staff working in a remote health board in Scotland during the COVID-19 pandemic.

**Results:** The analytic sample of 169 participants, working in community (43%) and hospital (44%) settings reported substantial levels of probable clinical depression, anxiety and low mental well-being (MWB) at baseline (depression: 30.8%, anxiety: 20.1%, low-MWB: 31.9%). Whilst the MH of participants remained mostly constant over time, the proportion of participants meeting the threshold for clinical anxiety increased to 27.2% at follow-up. Statistical modelling indicated that working with, and disruption due to COVID-19 were associated with adverse MH changes over time.

**How might this impact on policy or clinical practice in the foreseeable future?** Supporting HSCWs' psychological well-being should remain paramount not only in areas with high rates of COVID-19 infections, but also in areas outside of these hotspots. Strategies to support HSCW mental health must consider both targeted interventions and systemic initiatives to support well-being.

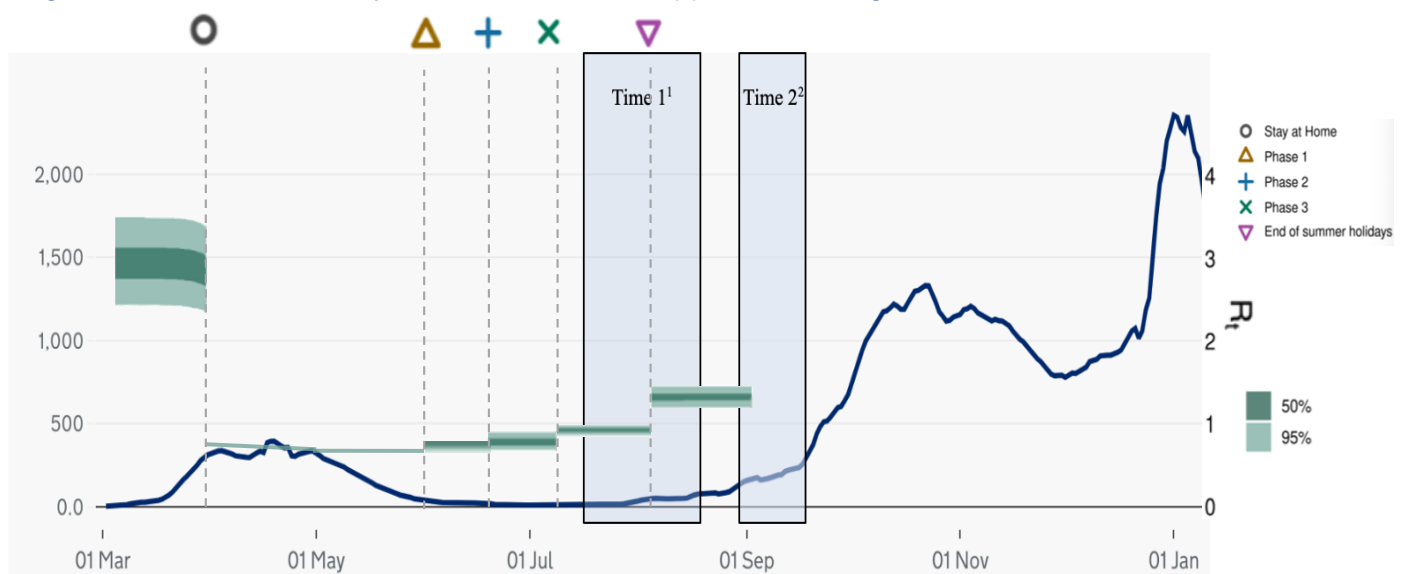


Figure: The two measurement periods on the backdrop of infection rates in Scotland. The PHQ-9 (Depression), GAD-7 (Anxiety), and WEMWBS (Mental Well-being) was administered at T1 and T2. Note. <sup>1</sup>N = 225, R = .6-.9, COVID-19 infection growth rate increasing from -.5 to 0; <sup>2</sup>N = 169, R = 0.9-1.5, COVID-19 infection growth rate increasing from -2 to 7



### 3. [Investigating the potential usefulness of a digital app, tailored specifically HSCWs, in supporting their psychological wellbeing during the COVID-19 pandemic \(link to \[academic paper\]\(#\)\).](#)

**Summary:** Health and social care staff are at high risk of experiencing adverse mental health outcomes during the COVID-19 pandemic. Hence, there is a need to prioritize and identify ways to effectively support their psychological wellbeing. Compared to traditional psychological interventions, digital psychological interventions are cost effective treatment options that allow for large-scale dissemination and transcend social distancing, overcome rurality, and minimize clinician time.

**Objective:** To report the outcomes of a CONSORT-compliant parallel-arm pilot randomised controlled trial (RCT) examining the potential usefulness of an existing and a novel digital psychological intervention aimed at supporting psychological health among NHS staff working through the COVID-19 pandemic.

**Methods:** NHS Highland (NHS) frontline staff volunteers (N = 169) were randomly assigned to the newly developed NHS Staff Wellbeing Project

(NHSWBP), an established digital intervention (My Possible Self; MPS), or to a waitlist (WL) condition for four weeks. We measured five self-reported psychological outcomes over three time points: before (baseline), middle (after 2 weeks) and after treatment (4 weeks). The primary outcomes were anxiety (GAD-7), depression (PHQ-9) and mental well-being (Warwick-Edinburgh Mental Well-being Scale). The secondary outcomes included resilience (Mental Toughness Index) and gratitude (the GQ-6).

**Results:** Retention rates at middle and post-intervention were 77% (n = 130) and 63.3% (n = 107), respectively. The NHSWBP group generally had larger within group effects than the other groups and displayed a greater rate of change compared to the other conditions on all outcomes.

#### Conclusions:

Our pilot provided encouraging results for the use of brief digital psychological interventions in improving psychological well-being among health and social care workers. Future multi-site RCTs, with power to reliably detect differences, are needed to determine the efficacy such interventions in this context.

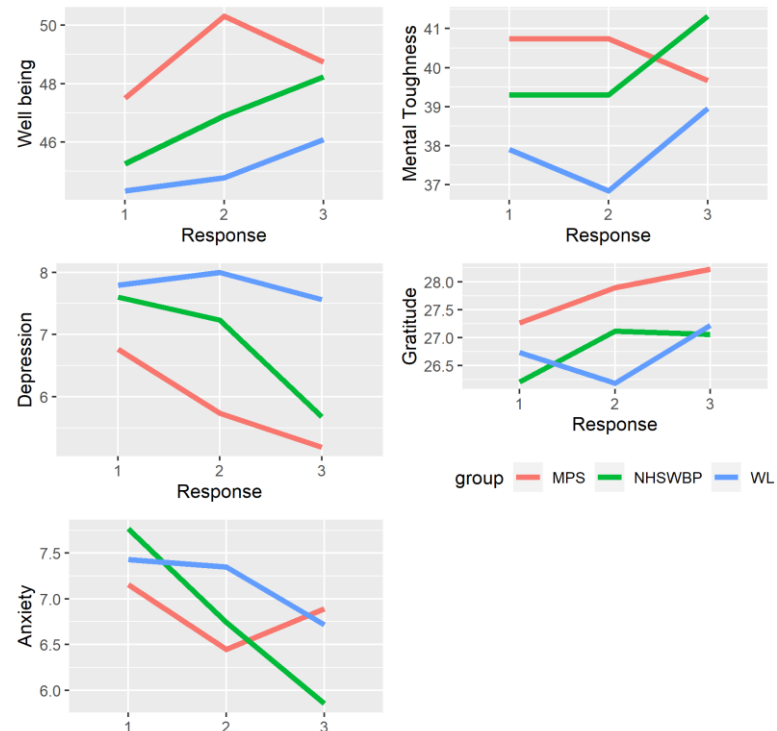


Figure: Effect size plot for the three conditions on the primary and secondary outcome measures at baseline, mid-intervention and post-intervention

## WHAT IMPACT COULD THE FINDINGS HAVE?

- **Patients:** Supporting the psychological wellbeing of our healthcare workforce is likely to have an impact on the national response to the pandemic. It has been shown that high levels of stress and anxiety amongst HCWs can decrease staff morale, increase absenteeism and result in lower quality of care.
- **Policy:** Our research has been used to inform policy surrounding efforts to support staff well-being by the [Westminster parliament](#), the [World Health Organisation's \(WHO\) technical advisory committee](#) and the WHO's ministerial taskforce on the [impacts of COVID-19 on staff well-being](#).
- **Practice:** This research indicates that our sample of NHS staff were experiencing substantive levels of anxiety and depression. Supporting NHS workers' psychological health should remain a priority.

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- This research indicated that digital psychological interventions aimed at enhancing psychological well being in the individual could be of benefit, but also that it is evident that to build a resilient workforce, occupational and environmental factors must also be addressed.
- **Further research/support for other health boards:** Our pilot RCT produced encouraging results over a short period of time (4 week intervention) and we have been able to assess the methodology to be effective with regards to participant recruitment eligibility, randomization processes, capacity and resources available to us to conduct trial processes, access to equipment as well as personnel time making a full-scale RCT feasible.

### HOW WILL THE OUTCOMES BE DISSEMINATED?

- The academic articles will be published open access and also specifically shared with NHS
1. [BMC Public Health \(Accepted - published\)](#)
  2. [BJPsych Open](#)
  3. [JMIR \(Submitted\)](#)
- A further two academic papers will come from this research, as well as further abstracts to international conferences. We have already been invited by the [Westminster parliament](#), as well as the [WHO](#) to present our findings through their [digital](#), [streaming](#) and live conference platforms.

### CONCLUSION

- Our sample of NHS staff, working in a rural health board, were experiencing substantive levels of anxiety and depression, similar to those working in COVID-19 hotspots. Supporting NHS workers' psychological health should remain a priority, as lower levels of psychological health negatively impacts quality of care.
- One way to support NHS staff's psychological well-being that transcends social distancing, overcomes rurality, minimizes clinician time, is cost-effective and allows for large-scale dissemination is to use digital psychological interventions. We found that a validated digital intervention can rapidly be modified and tailored to a specific context or groups and our pilot RCT showed promising results to utilise this approach in a future full-scale RCT. Such a study will be able to use our protocols, will require nominal time and funding to prepare, and could assist in supporting the psychological health of HSCWs working through this pandemic and its aftermath.

### RESEARCH TEAM & CONTACT

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### ADDITIONAL INFORMATION

This project ran from 1<sup>st</sup> June 2020 until 30<sup>th</sup> November 2020. Funding of £44,581 was received from the Chief Scientist's' Office