Behavioral design interventions for the promotion of wellbeing among Filipino healthcare workers during the COVID-19 pandemic



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Summary

Frontline healthcare workers (HCWs) in hospitals have been among the most vulnerable members of the population since the COVID-19 pandemic, affecting not only physical but also mental health. Complementary approaches to providing information for HCWs on taking care of their mental health need development and scaling-up. Behaviorally designed interventions take into consideration the context, resistance, and impact in facilitating behavior change in a specific target segment towards an intended aspiration. The behaviorally designed interventions sought to build individual resilience aligned with the Mental Health and Psychosocial Support Services framework. These included strengthening the provision of non-specialized services and community support among the range of interventions that address mental health problems. These benefit the vulnerable sectors of the population who are at most risk of experiencing chronic stress. Scaling-up of low-cost and subtle tools is a worthy investment for government institutions to ensure that HCWs are continuously supported so they can continue to provide adequate and quality care to those afflicted by COVID-19.

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Introduction

HCWs are among those whose psychological wellbeing have been severely impacted by the pandemic. Chronic distress of HCWs lead to their deteriorating mental condition which can affect job outcomes and provision of adequate care.1-3 A survey conducted by the World Health Organization (WHO) three months into the pandemic revealed that Philippine HCWs most needed information on how to take care of their mental health more than other health concerns brought about by the pandemic. In response to these key insights, communication materials both in print and digital were produced. A second round of survey three months later showed that despite the ongoing information efforts, taking care of one's mental health remained significantly unaddressed and unsupported. Less than a third of HCWs consider themselves being informed of their need to take care of their mental health versus being informed of their physical safety needs. Half of survey respondents reported lack of time as a barrier in accessing mental health services in the workplace.

The adoption of the People and Places Framework,⁴ which highlights how advancing the practice of health behaviors in the population and the achievement of better

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health outcomes is attributable to both characteristics of people (individuals, social networks and population) and the settings where people live, work, learn and play. This guiding framework has been incorporated into the Health Promotion Strategic Framework of the Philippines through a settings-based implementation approach as detailed in Fig. 1.5

Complementary approaches to informational and individual-focused interventions were necessary to generate behavior change among HCWs, hence the Philippines' Department of Health (DOH) collaborated with AHA! Behavioral Design Consultancy Corporation (AHA!-BD) to create a program focused on evidence-based and behaviorally informed interventions specifically for hospital-based HCWs which are incorporated into the workplace setting.

Healthcare workers in the Philippines and COVID-19

The Philippines has been reported by the WHO to have one of the highest rates of depression in Southeast Asia even before the pandemic. It was reported that more than 3 million Filipinos were affected.⁶ The experience of chronic stress has been a significant contributor to the development of mental health problems.^{7–10} Human performance improves with physiological stress but only



Fig. 1: The Philippines' health promotion framework strategy 2030.

up to a certain point. When stress becomes distress, this impedes an individual's capacity to function or perform well.¹¹ These risks become quite evident in the experience of medical professionals who have been in the frontlines of a breakout or pandemic.¹² There are several risks associated with the impact of global pandemics to HCWs' mental health. For instance, working directly with infected patients or in high risk hospitals led to increased occurrence of post-traumatic stress disorder (PTSD), anxiety and depression.¹³

While preventive measures were established to mitigate the impact of COVID-19 such as travel restrictions, community quarantines, enhanced risk communication, and testing, ¹⁴ HCWs were still affected by COVID-19 making them one of the most vulnerable populations in the Philippines during the pandemic. ¹⁵ In a study conducted among COVID-19 recovered Filipino HCWs, majority experienced high levels of anxiety in the form of paranoia and fear about the recurrence of infection after returning to their duty. ¹⁶

The surge caused by the different COVID-19 variants in 2021 also led to increased levels of job burnout, making it the most prevalent concern of HCWs in Southeast Asian countries including Indonesia, Malaysia and the Philippines.¹⁷ Among the significant predictors of burnout of HCWs were long working hours, perceived high job risk, and inadequate personal protective equipment.

In order to deal with this current reality of HCWs, literature in mental health during disasters suggest focusing on building resilience. Adult resilience is "the ability to maintain relatively stable, healthy levels of psychological and physical functioning in the midst of exposure to a highly disruptive experience/s". Individual resilience strategies can further be narrowed into five principles and behaviors—calm thinking, connectedness, sense of hope, sense of safety and sense of empowerment. These principles help individuals get through and grow from traumatic events. Individual resilience strategies are systematically undertaken in order to reduce current distress and to support short and long-term adaptive functioning and coping. In

In infectious disease settings, stress is a significant risk factor in which increasing resilience can serve as a coping strategy.³ The manifestation of resilience, however, as specific and observable behaviors still need to be concretized. The challenge is how to design interventions that address chronic distress during critical moments in the daily routine of HCWs and target specific behaviors that alleviate this chronic distress. The interventions should be minimally intrusive to the routines of HCWs to overcome the lack of time as the primary obstacle to accessing mental health support.

Behavior design as a complementary intervention

Behavioral Design is a systematic process of understanding the factors that influence a person or group's behavior and designing interventions that facilitate behavior change which achieves the intended aspiration.²⁰ It is an interdisciplinary approach, heavily drawing on Applied Behavioral Science, specifically Behavior Economics (BE), Emotion Design, and Design Thinking resulting into environmental modifications and redesign of settings.

Based on the Fogg Behavior model, ²⁰ three elements (motivation, ability, and prompt) must converge at the same moment for a behavior to occur. When a behavior does not occur, the model suggests that at least one of those three elements is missing. Thus, providing contextualized, insight-based information is one of many factors that can help increase whatever element is missing. A contextualized and targeted intervention is crucial for at-risk groups such as HCWs to reduce their risk of decreased well-being under pandemic conditions. ^{21,22} Using the Fogg Behavior Model, data collection activities focused on exploring the ability and motivation factors that affect HCWs wellness behaviors.

With the overall objective of addressing the mental health concerns of HCWs as they serve the frontline of the pandemic in government hospitals, the behavior design process offers a complementary and human-centered solution for a human-centric problem by inserting salient prompts that make the specific behavior of taking care of one's mental health easy to do by influencing attributes of the people and place, consistent with The People and Places Framework.

Behavior design as applied in this research is divided into three major phases: (1) clarification of the aspiration and the target segments, (2) behavior insighting, and (3) creation and testing of behavioral nudges. The results of these phases were based on the data collected between September 2020 until April 2021. A total of 98 healthcare workers from 5 government hospitals in Metro Manila, Philippines participated in a series of surveys, in-depth interviews and focus group discussions to clarify the aspiration of this program and determine the behaviors in the insighting sessions.

Phase 1: Clarification of the aspiration and target segments

A literature review was conducted to determine the target aspiration for this program, which was to alleviate the current chronic stress of HCWs in order to prevent or mitigate further development of mental health conditions. To decrease the chronic stress experienced by HCWs which was worsened by the pandemic, individual resilience strategies needed to be strengthened. These strategies should consider the context, potential impact and resistance to adoption of the behavior. Target segments for building individual resilience were then identified.

Several studies reported that HCWs are among the most vulnerable groups during the COVID-19 pandemic.^{13,15} In alignment with the WHO surveys, the primary target segment were the hospital HCWs involved in the management of COVID-19 cases. This was also validated by qualitative data collection

measures (ie. interviews and focus group discussions) which showed that HCWs who experienced the most chronic stress were those stationed in emergency rooms and in-patient hospital areas across all sample government hospitals.

The presence of social support during global pandemic outbreaks was also found to be a protective factor against mental health degradation experienced by HCWs.¹³ This can be established by the HCWs leaders by providing a supportive workplace culture²³ and being attentive to the mental health needs of HCWs.²⁴ Given the hierarchical organizational structure of hospital staffing and organizational structure in hospitals, supervisors play an important role in creating a positive work environment that has a sense of safety and empowerment to facilitate resilience behaviors among HCWs. Thus, another crucial target segment in this study were their supervisors.

Phase 2: Behavioral insighting

After identifying the significant target segments, the next phase was to understand what Ultimate Target Behaviors (UTB) contribute to the aspiration of alleviating chronic distress among HCWs. A UTB is one that is desired (what participants want), specific (which target outcomes are translated into behavior), impactful (those greatly helpful in realizing strategy), and doable. Different UTBs exist for different contexts. This would necessitate understanding how their day to day routines affect their experience of stress. This was conducted through behavioral insighting, an interview methodology where information about the factors that shape, change, or boost behavior were gathered.

From the literature review, resilience-building UTBs were further identified through behavioral insighting with HCWs. Behavioral insighting was conducted focusing on mapping the target segments behavior sequences based on their daily routine. This facilitated the prompting of high impact behaviors at selected critical moments of the HCW's routine. This also determined driving aspects towards and competing aspects against fulfillment of these target behaviors. An interview questionnaire was created to map the healthcare workers' behavior sequences, as well as the enablers and barriers of the target behaviors. Once data collection was completed and cleaned, a thematic analysis was conducted. Psychologists and psychiatrists were also consulted to validate the UTBs identified by the HCWs.

Based on the insighting, it was determined that HCWs clustered their daily routines according to three work-related contexts: pre-duty, during duty and post-duty. For each work-related context, high and low stress points, barriers and facilitators were identified to determine critical moments for intervention which were most impactful and least resistant to achieving the aspiration.

Viewpoint

In the pre-duty context, high stress points occurred when checking their phones for work-related messages upon waking up. Another stress point occurred during transit to work compounded by traffic and the difficult commute. From the identified low points and coping strategies among sample HCWs, it was determined that the target key behavior for the pre-duty context was the observance of self-regulation pauses prior to entering the hospital. These contribute favorably to the HCWs feeling of readiness and of lessening of pre-duty anxiety. Based on the Fogg model, the key barrier in this context was the lack of a salient prompt to help them remember to practice self-regulation pauses. Thus, auditory and visual elements, as well as incorporating precommitment strategies in the nudges were considered in the design phase.

In the duty context, the insighting process revealed that HCWs' routines were not linear and varied depending on patient load, workstation and current replication rate of COVID-19 in the community. High stress points occurred at various times with triggers including accumulation of work deliverables, patient deterioration, and anxiety over work-related errors that may result in reprimand from supervisors. From the low stress point mapping and the common coping strategies it was determined that the target behavior for the duty context was the observance of quick decompression during breaks to manage the effect of high stress moments as well as implementation of supervisory check-ins at the start and end of the duty cycle. In this context, the lack of time and energy were considered as ability barriers during quick decompression and check-in behaviors. In response to this, touch and smell elements were considered for the decompression nudges. On the other hand, creation of message defaults in the check-in behavior were considered in the design of the intervention.

Finally, in the end of duty context, high stress points occurred during the HCWs' travel back home, during which feelings of physical exhaustion would prevail and rumination on negative emotions would occur. These were compounded by the traffic and difficult commute. Based on the daily routine of the post-duty context, feelings of relief and accomplishment at the end of the duty cycle should prevail and be replicated. The identified target behavior was to recognize and affirm personal successes on the way home to lessen negative rumination. In this context, the focus of the designed behavioral prompt was to negate their current mental model by introducing gratitude in their post-duty context.

Phase 3: Design and testing of behavioral nudges

In addressing the high stress moments per work-related context of the HCWs' daily routine, both physical and digital tools were developed and implemented to nudge pre-identified target behaviors. These tools and prompts were hypothesized to be most impactful and influential to the achievement of the aspiration.

The nudges were developed based on four design principles.^{25,26} First was the use of human-centered methodologies. This allowed the program to identify key opportunities for interventions and to align key stakeholders in intervention development and implementation. In operationalizing this design principle, barriers and enablers were addressed by targeting cognitive biases at play, focused on key areas of attention, belief formation, choice and determination. A co-creative process of designing the interventions with the target segment and mental health experts was implemented. The process aimed to facilitate the buy-in and acceptance of the interventions among the target segments.

The second design principle was to ensure that the nudges' impact was measured through evidence-based approaches. It was crucial to compare effectiveness and evaluate measurable outcomes of behaviorally designed interventions through iterative testing and appropriate experimental designs. This was crucial to understand the current state and potential impact of the intervention. The developed interventions utilized a results-based approach that targeted specific variables and behaviors that made them observable and measurable.

The third design principle was to see to it that the behavioral nudges had the capacity to be pragmatically implemented. The nudges were designed around the HCWs' workflow, ensuring that the utilization of the nudges would not be disruptive to the HCWs' routines. Potential unintended consequences and the feasibility of scale-up and impact were also accounted for to assure pragmatism.

And lastly, the nudges were designed and implemented with ethical considerations. This study was reviewed and approved by an ethics committee. The implementation included ease of use without coercion and violation of rights and protecting privacy and confidentiality in accordance with the data privacy laws.

Prototypes were implemented for three months in 26 government hospitals that involved 1593 HCWs. Following the implementation, a pre-test post-test multifactorial study was conducted that 1) measured changes in behavior frequencies of grounding, breathing, gratitude, and checking-in, and 2) implemented multiple psychological scales focused on well-being, stress and work-related support among the two target segments of the HCW population with the utilization of behaviorally designed prompts and tools.

Results as presented in Fig. 2 showed that utilization of the group chat tools significantly influenced supervisor's behavior of checking in and showing gratitude to their team. Results as presented in Fig. 3 also showed



Fig. 2: Results framework for supervisor target segment.

that the use of the tools and the target behavior of showing gratitude significantly influenced the self-care and overall wellbeing of team members.

For individual HCWs, the utilization of individual wellness tools significantly predicted an increase in their frequency of performing the following behaviors and exercises: meditative breathing, muscle tension release, pausing for aromatherapy, and gratitude. In addition, collective use of tools significantly predicted an increase in overall well-being.

Lessons from applying behavioral interventions for Filipino health care workers

Several lessons should be highlighted about the Philippines' strategy in addressing the mental health concerns of HCWs during the pandemic. The use of Behavior Design proved to be a novel yet effective approach in bypassing the barrier of inadequate time to access mental health services. The interventions mainstream self-care, wellness and individual resilience strategies among HCWs through environmental

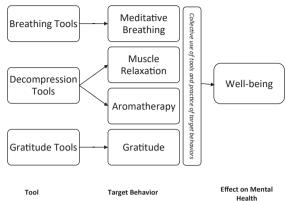


Fig. 3: Results framework for HCW target segment.

modification. These may potentially decrease the demand for specialized mental health services. The behavioral design interventions are consistent with the pyramidal configuration of mental health and psychosocial support service provision enshrined in the Department of Health's Framework for Mental Health and Psychosocial Support (Fig. 4)²⁷ and the People and Places approach of the Health Promotion Framework Strategy 2030.⁵

Moreover, effectively nudging HCWs through the use of the behaviorally designed nudges and subsequent collective practice of targeted individual resilience building behaviors have the potential to decrease the prevalence and sequelae of mental health conditions due to its positive effect on HCW well-being.^{28,29} The experience shows the importance of targeting well-being as a primary factor for preventive care as it is highly

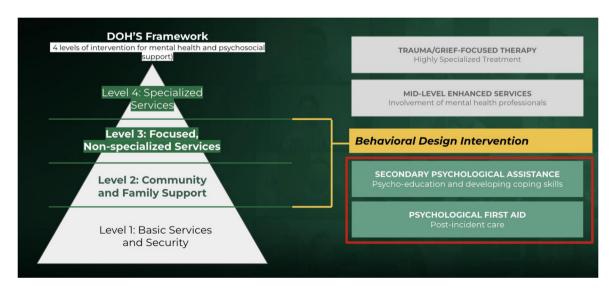


Fig. 4: Mental health and psychosocial support (MHPSS) services framework.

Viewpoint

correlated with other latent mental health variables such as self-efficacy, self-care, and the feelings of depression, anxiety, stress and work-related support from supervisors.

The developed nudges also incorporate the practice of mental health promoting behaviors into the daily activities of health care workers through subtle, low-cost and effective prompts. The characteristics of the program have made it attractive for government investment in scaling up in the roster of population-wide health services using a settings-based approach in the context of the Universal Health Care in the country.

Proper framing of the program's impact must also be established in order to increase the buy-in of participating government hospitals. In this study, emphasizing its mental health benefits for HCWs helped the program implementers to successfully motivate HCWs to adopt the wellness behaviors. The community building initiatives also became crucial in ensuring the success of the scaled implementation of the program. Moreover, establishing a sense of safety during community sessions helped increase the HCWs engagement in the program as they practiced their wellness behaviors.

Adoption of the program by the government greatly contributes to the scaling up of health promotion and the achievement of the country's Health Promotion Strategic Framework. The program not only makes healthy behaviors the easier choice, but by focusing on the more vulnerable segments of the population, it equitably addresses disparities in health outcomes. The pandemic has increased the value of HCWs and their heroic work in treating people afflicted with COVID-19. It is of tantamount importance to secure not only their health and safety, but also the well-being of those who care for the rest of the population.

Data availability statement

Study design, results, and participant data will be made available upon request, as approved by the Department of Health's Single Joint Research Ethics Board (SJREB). All requests should be forwarded to msmantaring@doh.gov.ph. Requests will be reviewed by the author and a Non-Disclosure Agreement form will be signed by the requestor once approval has been given.

Contributors

MASM and MSAPB conceptualised and wrote, reviewed, and edited the original draft. All authors contributed equally to writing, review, and editing to the final manuscript. The corresponding author takes full responsibility for the decision to submit for publication.

Declaration of interests

Authors MSAPB and TJMA are stock holders in AHA! Behavioral Design Consultancy Corporation. TJMA is also on the AHA! Learning

Center Board of Trustee. The Department of Health – Health Promotion Bureau, represented by author MASM, played a role in study design, data collection and writing of the paper. The other authors declare no competing interests.

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