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Understanding the needs of healthcare workers in Singapore during the COVID-19 outbreak: A qualitative analysis

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ABSTRACT

Background: A successful public health response during the COVID-19 pandemic pivots on the ability of healthcare workers (HCWs) to work through immense workplace-related physical and psychological pressures.

Objective: The aim of current study was to explore support needs of HCWs during the COVID-19 outbreak in Singapore and to identify implications for practice and workplace policies.

Methods: A descriptive qualitative approach was adopted in this study. HCWs from a major public healthcare cluster in Singapore (n=612) responded to an open-ended question in an online survey. Results were analysed using content analysis via an inductive approach.

Results: Five main themes that borrows from Maslow's Hierarchy of Needs emerged from content analysis, with 17 categories under the themes. The five main themes are: *physical needs, safety needs, love and belonging needs, esteem needs* and *self-actualization needs*.

Conclusion: Findings from this study indicate that there were many unmet needs among HCWs during the COVID-19 pandemic. An overview of various need areas identified in this study may guide future research and development of interventions to mitigate the negative impact of disease outbreaks on HCWs.

Keywords

Healthcare workers; COVID-19; wellbeing; qualitative research

INTRODUCTION

The COVID-19 pandemic has posed a monumental challenge for healthcare systems globally, putting their capabilities to the test and exposing weaknesses. A successful public health response during disease outbreaks pivot on the ability of HCWs to work through the

crisis. Studies of past infectious disease outbreaks have consistently found significant negative impacts on the mental health of HCWs (Chong et al., 2004; Chan & Chan, 2004). Such impacts, such as HCW burnout, may decrease healthcare capacity and efficiencies, which in turn limits the ability to mitigate and control the pandemic.

Singapore confirmed its first case of COVID-19 in January 2020 and experienced a peak in daily imported cases in March 2020. Strict measures, such as closure of all non-essential workplaces and mandatory wearing of face masks, were implemented by the nation's multi-ministry taskforce. Despite these efforts, the number of cases within the community had continued to rise substantially. Globally, it overwhelmed many healthcare systems and healthcare manpower was severely strained as a result of the sheer number of infected cases.

The aim of this study was thus to understand of the needs of HCWs during the COVID-19 outbreak in Singapore and to identify implications for practice and workplace policies. Throughout the pandemic, HCWs worked long hours in a high pressure environment that was often characterized by uncertainty. As HCWs are the pillars of our healthcare system, it is crucial to understand how they can be best supported. The present study utilized a "bottom-up" qualitative approach to gain more in-depth understanding of the diverse needs of HCWs and ensure that any interventions recommended will match the support desired by them.

METHODS

Study design

A descriptive qualitative approach was adopted in this study to analyse the responses to an open-ended question that was embedded in a larger survey study (Teo et al, 2021). The question asked participants: "Please share any suggestions on how institutions, departments, or teams such as yours could better assist healthcare workers during a disease outbreak."

Participants

The study sample included doctors, nurses, and allied health professionals (AHPs) with patient-facing roles who provided health-related services to all patients in the inpatient and outpatient settings, as well as in the emergency department. Allied health professionals included physiotherapists, occupational therapists and speech therapists, which form the bulk of AHPs in Singapore. HCWs were recruited from several healthcare institutions under SingHealth, which is the largest public healthcare cluster in Singapore. Participants were asked to complete the online survey in English using an internet-enabled device. HCWs on maternity leave, healthcare students and interns were excluded.

Data collection

Data was collected between 12th March to 31st May 2020 during the peak of the COVID-19 outbreak in Singapore using the online platform Qualtrics. HCWs were invited to participate in the study via email from their respective division/department leads. A free text box was provided for participants to type their response to the open-ended question with no word limitations. Relevant demographic data and characteristics of respondents, such as age, gender, occupation, and perception of exposure to COVID-19, were collected to provide context for data analysis.

Data analysis

Data was analysed using content analysis via an inductive approach. Content analysis is commonly used to analyse open-ended survey questions as it allows for both qualitative coding of the data and quantitative counts of the codes (Bengtsson, 2016; Vaismoradi et al., 2013). Keywords from the data set are systematically condensed into meaningful codes and categories (Hsieh & Shannon, 2005). Three researchers (LP, IT, SCS) read through the responses to obtain a comprehensive overview and independently generated initial codes in a subset of the responses by dividing the text responses into condensed meaning units. Discrepancies from the initial coding were resolved through team consensus to develop a codebook (Appendix I). This process was repeated in new subsets of responses until no new codes emerged. The codebook served as a guide for the primary researcher (LP) to code the remaining data, while the other researchers checked coded responses for consistency and agreement. Similar codes were then organized into categories and themes. Finally, codes were quantified using frequency counts. Code counts within each category were summed and all categories were ranked to identify the top support needs of HCWs. NVivo software was used to facilitate data management.

Ethical review

Ethics approval for the study was obtained from National University of Singapore-Institutional Review Board (Ref no.: S-20-081). Participants provided electronic consent to participate in the study after reviewing an online Participant Information Sheet and Informed Consent Form. All participation was voluntary, non-compensated and anonymous.

RESULTS

A total of 2,314 responses were collected from the larger online survey, of which 806 completed the open-ended question. Responses that did not contribute meaningfully (e.g. "nil", "no comments", etc) were excluded, resulting in a final 612 responses that were analysed. The mean age of participants was 38.75 years old. Most participants were female (80%), likely due to the predominance of females in the nursing workforce which makes up majority of the healthcare manpower in Singapore. 60% of participants were nurses, 22% were AHPs, 16% were doctors and 2% were pharmacists. The proportion of nurses and doctors was similar to the distribution of healthcare manpower in Singapore, while the other groups were slightly over/under-represented (Ministry of Health Singapore, 2019). About half the participants reported having vulnerable persons (young children, elderly, or immunocompromised individuals) living at home. When asked to rate their perceived exposure to COVID-19 at work, 30% reported no exposure at all while 21% rated it as daily.

Table 1 Characteristics of participants (n=612)

Characteristics		**N (%) or Mean ± SD**
Occupation	Doctor	97 (16%)
	Nurse	365 (60%)
	Allied health professional	136 (22%)
	Pharmacist	14 (2%)
Gender	Male	124 (20%)
	Female	488 (80%)

Age		38.75 ± 11.61
Race	Chinese	383 (63%)
	Malay	92 (15%)
	Indian	64 (10%)
	Others	73 (12%)
Marital status	Single	239 (39%)
	Married	348 (57%)
	Divorced/Separated/Widowed	25 (4%)
Vulnerable persons at home	Yes	307 (50%)
	No	305 (50%)
Perception of exposure to COVID-19	Not at all	186 (30%)
	Occasionally	296 (48%)
	Daily	130 (21%)

Given the open-ended nature of the survey and its intended purpose of seeking out areas for improvement, all responses including both positive and negative feedbacks, were analysed. Five main themes emerged from the data, namely: *Physical needs*, *Safety needs*, *Love and belonging needs*, *Esteem needs* and *Self-actualization needs*, which corresponded to Maslow's Hierarchy of Needs. Frequency and ranking of categories are presented in Table 2 to reflect the order of importance of support needs desired by participants. Quotations shown

in each theme were purposefully selected to reflect the most significant sentiments of participants.

Table 2 Code counts and ranking of categories

Rank	Category	Frequency	Theme
1	Emotional security	116 (14.9%)	Safety needs
2	Manpower and workload distribution	102 (13.1%)	Physical needs
3	Rest and respite	79 (10.2%)	Physical needs
4	Workplace safety	68 (8.8%)	Safety needs
5	Confidence and trust in leadership	65 (8.4%)	Safety needs
6	Social support and network	63 (8.1%)	Love and belonging needs
7	Workplace camaraderie	48 (6.2%)	Love and belonging needs
8	Working arrangements and hours	38 (4.9%)	Physical needs
9	Food and drinks	36 (4.6%)	Physical needs
10	Employee engagement	34 (4.4%)	Love and belonging needs
11	Mental motivations	30 (3.9%)	Esteem needs
12	Advocacy for larger systems changes	22 (2.8%)	Self-actualization needs
13	Physical health and well-being	20 (2.6%)	Safety needs
14	Financial motivations	18 (2.3%)	Esteem needs
15	Psychological well-being	16 (2.1%)	Safety needs

16	Basic wages and allowances	12 (1.5%)	Physical needs
17	Personal coping	9 (1.2%)	Self-actualization needs

Note: Each response may be coded under one or more categories. Hence, frequencies do not tally with number of participants' responses.

THEME 1: PHYSICAL NEEDS

Participants experienced high levels of workload with inadequate manpower, and highlighted some aspects of physical needs that were not adequately met. The categories and codes in this theme are presented in Table 3.

Table 3 Categories, codes, and select quotations of *Theme 1: Physical Needs*

Categories	**Codes**	**Quotations**
Food and drinks	Provide food and drinks	*Provide meals for us as the food option at staff canteen is limited and we have no time to venture out to food stalls outside. (AHP)* *Provide treats/snacks fortnightly to staff from different team. An army fight on it stomach. (Nurse)*
Rest and respite	More rest breaks More rest days Better leave management	*The freezing of leave has made working hours intensive, and I think a short break is definitely necessary. To make up for manpower issues, the annual leave can be made available once in two months for each employee. (AHP)*

		Nurses need more off days, especially after night duty. Two night duties followed by one off day is really not enough, will cause burnout faster. (Nurse)
Basic wages and allowances	Basic wages and allowances	*Human resource should not refuse to pay us night duty and weekend allowances. (Doctor)*
Manpower and workload distribution	Manpower shortage Manpower assignments Heavy workload Non-essential workload Fairness in workload distribution	*Having more ground staff can help with the workload and management to distribute the workload fairly. (Nurse)* *...not fair for consultants to have a few days off in a week and getting to go home early once work ends, but junior doctors have to cover two OTs or get deployed to another location even when we end early. (Doctor)* *Please minimize audits during this period. It is very stressful to care for patients and worry about whether audits are completed. (Nurse)* *...if we are in the same ward with the same group of colleagues, we will have support and are comfortable working together. Deploying us to different disciplines adds on stress, uncertainty and more worry for us.*

		(Nurse) *It is good to have deployed nurses in the Emergency Department (ED), but most are not ED-trained. Not only do ED staff have to perform their duties, they have to also ensure deployed staff does things correctly, which can be taxing and stressful. (Nurse)*
Working arrangements and hours	Rostering of shift work Keep to working hours Flexible work arrangement	*Please fix the roster. Doing 12-hours shifts since the start of this pandemic is not helping healthcare workers to take care of themselves. (AHP)* *Not to work continuous more than 4-5 days straight. (Nurse)* *Allocate more support for workers with young children, elderly, family with medical or psychological needs under their care. E.g. flexible work hours. (AHP)*

Food and drink

Many participants asked for meals, snacks, and beverages to be provided, with reasons ranging from lack of time, not being allowed to go out for meals, to a form of morale booster.

Rest and respite

HCWs shared about having insufficient time to rest and recharge, particularly for those who performed overnight duties. Many felt that organizations should exercise greater flexibility with leave management and schedule compulsory leave breaks for respite. Some wanted assurance that their frozen leave can be carried forward and utilized once the outbreak is over.

Basic wages and allowances

Many HCWs commented that they were not remunerated fairly for working overtime during the outbreak and asked for fair compensation or extra allowances to cover the extra hours they were putting in.

Manpower and workload distribution

The perennial shortage of manpower was exacerbated by heavier workload during the outbreak. Some felt that distribution of workload and manpower was unequal between senior and junior staff, and across healthcare institutions. Others expressed frustration when staff were deployed out to COVID-designated wards, worsening their original department's manpower crunch. Several participants suggested deploying non-ward staff instead of transferring staff from wards where workload was already heavy. Deployed staff also reported specific deployment-related challenges including being given very short notices, emotional distress, and lack of social support. Furthermore, staff were not given full work access to their deployed areas, which created additional stress to both the deployed staff and department staff who had to supervise them.

Working arrangements and hours

HCWs wanted to avoid being rostered to work for prolonged consecutive days. There was also a call for more flexible working arrangements, especially for staff with home

commitments or health problems. In particular, staff with children called for greater support and flexibility given their dual-roles as parents when working from home during the pandemic.

THEME 2: SAFETY AND SECURITY NEEDS

HCWs highlighted the need to ensure the physical health and workplace safety of HCWs, and also to make them feel safe psychologically and emotionally. Categories and codes in this theme are presented in Table 4.

Table 4 Categories, codes, and select quotations of *Theme 2: Safety and Security Needs*

Categories	**Codes**	**Quotations**
Physical health and well-being	Medical coverage and benefits Special care to vulnerable staff	*Please allow staff to take hospitalization leave when sick. Due to the number of compulsory sick leave [days] that's given [for respiratory symptoms] during this period, staff are afraid to see the doctor as they worry that it will affect their job appraisal. (Nurse)* *We need assurance of support for healthcare workers, in terms of financial and hospitalisation coverage, should the staff contract the disease during the course of work. (AHP)* *Please give care and consideration for vulnerable staff, like pregnant staff and senior staff aged above 60 years, by*

		assigning them to roles with less exposure infectious cases or COVID-19. (Pharmacist)
Workplace safety	Clear work directives Streamlined communication Sufficient protective equipment Infection control protocols Ensure personal hygiene	*Communication could have been clearer and more consistent so that staff feel reassured and supportive of the various measures that the institution and government want to implement. (AHP)* *There are very frequent, often minor changes to the COVID-19 guidelines/protocols, and it can be frustrating to be inundated with messages and email. Duplication of updates could be avoided. (Doctor)* *Ensure that all departments are aligned with orders… despite rules stipulating segregation, some departments were still gathering in large groups for lunch every day. (AHP)*
Emotional security	Motivation and encouragement Reassurances Emotional support Frequent and clear	*Encouragement from the higher-ups boosts morale on the ground a lot. (Nurse)* *It is important to reassure those working on the ground that their well-being is being taken care of. (AHP)* *Information should be provided clearly and*

	updates Tone of communication	*fully during outbreaks like these. I understand that the situation is fluid and volatile and much information is still unknown. However, most of our anxiety comes from not knowing what is going to happen next. (Nurse)* *Senior management should be more tactful with the way they speak… our senior management should learn to treat us like adults and not speak to us like we are kids. They often use very authoritative tones with us. (Nurse)*
Psychological well-being	Monitor staff mental health Psychological resources and services	*Clinical leaders need to support frontline staff, not only in their physical needs but also in terms of psychological and emotional support. (Nurse)* *Provide resources such as email circulars or telephone helplines to provide psychological support (AHP)*
Confidence and trust in leadership	Empathy and understanding	*Higher management need to give positive vibes, support us, be on the floor with us, rather than just give orders and expect things*

	Support and guidance Avoid blame and punishment Understanding home needs	*to be done as soon as possible. (Nurse)* *We would like our supervisors to be more empathic… to listen and know staff well as to better understand their difficulties and challenging work environment. (Nurse)* *If we have to work from home and we have young children below age 7, please do not expect us to "not engage in child-minding activities". It is not a practical expectation. In fact, it creates more emotional and mental stress. (AHP)* *Getting blamed for things that's out of our control is very demoralising, especially when we are trying to help as much as we can during this period. (Nurse)*

Physical health and well-being

During the peak of the COVID-19 outbreak, HCWs with any respiratory tract symptoms were given mandatory medical leave for a minimum of five days. Participants were worried that their existing medical leave entitlement would easily be exhausted. HCWs were also concerned about financial and healthcare coverage should they or their loved ones get infected by COVID-19, given the high-risk nature of their jobs. Some also felt that vulnerable staff, such as those who are pregnant, elderly or have health concerns, should be given special considerations and excused from working in high-risk areas.

Workplace safety

Two main aspects of workplace safety were highlighted: effective communication and stringent infection control. HCWs felt that work directives could be communicated in a clearer, more specific, and timely manner as conflicting messages confused them and excessive information overwhelmed them. Participants also wanted their organizations to ensure sufficient protective equipment, proper risk evaluation, and enforcement of infection control protocols. Measures to reduce risk of cross-infection to family members, such as provision of hospital-worn scrubs to all HCWs and more shower facilities to decontaminate themselves before going home, were also desired.

Emotional security

Words of motivation and encouragement, emotional support, as well as reassurances from management contributed towards HCWs' emotional security. Participants also requested for frequent and clear updates about the evolving COVID-19 situation to address uncertainty and allay anxieties. They also appreciated when messages were communicated in a positive, encouraging tone.

Psychological well-being

HCWs reported that they would like more support and attention towards their psychological well-being from leaders. Greater availability and access to psychological resources and services, such as counselling, telephone helplines and self-help resources was desired.

Confidence and trust in leadership

Employees shared that they would feel safe when they had trust and confidence in their leaders. They wanted leaders who can provide practical guidance, support and are "on

the ground" with them. Participants also wanted leaders to show more empathy and understanding during such times, and to avoid blaming and punishing staff when mistakes were made as many things were either changing very quickly or were beyond their control.

THEME 3: LOVE AND BELONGING NEEDS

Participants highlighted the need for greater peer support and collegiality amongst co-workers. Categories and codes in this theme are presented in Table 5.

Table 5 Categories, codes, and select quotations of *Theme 3: Love and Belonging Needs*

Categories	**Codes**	**Quotations**
Social support and network	Peer support Caring for co-workers	*Break times are the only times we get to talk our hearts out with our colleagues, but now we don't' even have that. We also feel lost and really isolated. I would appreciate if we could still sit and interact as how we used to be. (Nurse)* *I feel the isolation from social distancing most acutely. Perhaps we can have support groups via e-chat or video chat on weekly basis to talk, share, learn and cope together. (AHP)* *Staff can be divided into groups of buddies – within each group there is a person identified to boost morale, check-in on each other. (AHP)*
Workplace camaraderie	Foster teamwork Support junior staff	*I look forward to seeing a more united team. The conflicts or prejudice we (the isolation team)*

		faced within our department from the non-isolation team are unnecessary stress on top of this pandemic crisis that we are already dealing with daily. (Nurse) *Seniors should show the way and step up on the frontline, rather than sacrificing juniors whenever help is needed at the frontline. (Doctor)*
Employee engagement	Regular engagement Listen to staff feedback	*Proactive engagement by senior leadership to check-in on staff well-being or get feedback from staff. (Doctor)* *Management needs to be more sensitive and listen to staff on the ground working to better understand the actual situation staff are facing during day to day work, especially when new directives/workflows are given. (AHP)*

Social support and network

Some participants shared their sense of isolation amidst the pandemic due to the need for social distancing and safety regulations. Many participants highlighted the importance of showing support, care and understanding towards each other during such challenging times. Some suggested strategies such as buddy systems or online support groups to share experiences.

Workplace camaraderie

Participants highlighted that HCWs must work together cohesively to help each other regardless of work assignments or departments. Participants also implied that senior staff should step-up and guide junior staff who may be unfamiliar with handling such outbreak situations.

Employee engagement

Participants expressed a need for more regular engagement by the upper management to allow bidirectional communication. They wanted management to check-in on their coping and listen constructively to their feedback to effect relevant changes on the ground.

THEME 4: ESTEEM NEEDS

Respondents noted that clear acknowledgement of the sacrifices and extraordinary efforts made by HCWs, either through shows of appreciation or tangible rewards, would be appreciated. Categories and codes in this theme are presented in Table 6.

Table 6 Categories, codes, and select quotations of *Theme 4: Esteem Needs*

Categories	Codes	Quotations
Appreciation and recognition	Show appreciation Give recognition	*Boost morale of everyone working in the frontline by making them feel appreciated. A little goes a long way! (Nurse)* *We have to acknowledge that every single staff makes sacrifices one way or another. (Nurse)*
Incentives and rewards	Incentives and rewards	*Incentives of 1-2 months bonus for the absolute hard work we have put in. (Nurse)*

Appreciation and recognition

Participants felt that all frontline HCWs should be appreciated and recognised for their efforts during the pandemic, regardless of their disciplines, ranks and professions.

Incentives and rewards

Participants wanted to be rewarded for their efforts. Suggested rewards ranged from simple gift tokens to monetary incentives such as pay raises or bonuses. Some participants preferred non-tangible rewards, such as additional vacation days, enhanced staff benefits, day care, etc.

THEME 5: SELF-ACTUALIZATION NEEDS

The first four themes of physical, safety, social and esteem needs are considered "deficiency needs", which arise as a result of deprivation and must be satisfied to avoid unpleasant consequences (Kaur, 2013). On the contrary, self-actualization needs are considered "growth needs", as they stem from a desire for growth and problem-solving outside of oneself. In the context of this study, self-actualization was defined as responses indicating that the participant accepted the need to cope with a positive mindset, and/or demonstrated problem-solving skills to manage the effects of the pandemic. Categories and codes in this theme are presented in Table 7.

Table 7 Categories, codes, and select quotations of *Theme 5: Self-actualization Needs*

Categories	**Codes**	**Quotations**
Personal coping	Positive mindset	*Experience the joy of life from within and not be affected by external factors or situations. (AHP)*
Advocacy for	Improve work	*We should find alternative ways of dispensing*

larger system changes	processes Advanced outbreak planning	*medications, like using robots for delivery etc, to minimise contact. (Pharmacist)* *Hospitals were never built for social distancing. Maybe we should consider all the lessons learnt when we are building new hospitals. (Doctor)*

Personal coping

A few participants mentioned that a positive mindset is needed to tide through this crisis. They believed they should "take things as they come" and focus on efforts within their control.

Advocacy for larger system changes

A handful of participants identified needs from a broader system point-of-view, such as the need for better advanced outbreak planning during peacetime by drawing from experiences of this pandemic, or the need to review workflows and processes within organizations.

DISCUSSION

Maslow's Hierarchy of Needs provided a framework to present our findings in this study. Maslow's model, which was developed to understand and motivate human behaviour, has been adapted in organizational and human resource management to motivate employees, reduce turnover, and enhance employee productivity (Nyameh, 2013). Our findings can help illustrate a potential path forward in developing strategies to better support HCWs. Some of the key findings and strategies are highlighted in this discussion.

The top five ranked categories of needs fall under the themes of either "physical needs" or "safety needs". In particular, the categories "manpower and workload distribution" and "rest and respite" under the theme of physical needs ranked high (second and third respectively) in the frequency count of responses. As HCWs desire respite *during* the acute outbreak when they were experiencing the most burnout, measures should be focused on creating work schedules that balance maintaining operational capacity and allowing staff adequate rest. Non-essential work, such as administrative tasks and non-urgent appointments and procedures, can be temporarily suspended to alleviate manpower crunch. As far as possible, leaders should avoid rostering HCWs to work for prolonged consecutive days and implement mandatory rest days. Senior staff may have to step down to take on junior roles to ease burden. Implementation of drastic measures in order to boost manpower, such as freezing of staff leave, may send a message that staff are merely "work machines" and result in discouragement and unhappiness. While it may be difficult to fully address manpower issues due to constraints on resources, understanding HCWs' viewpoints presents a steppingstone to be as sensitive and responsive to these needs as practically possible. Further research on human resource policies may also be necessary to deeply evaluate for solutions to overcome these manpower challenges.

When deploying staff as a short-term solution to the manpower crunch, deployment of staff with mismatched skills or limited access authorization may result in lower productivity and heightened stress (Lam & Hung, 2013). Hence, it is important that HCWs are given ample notice and proper training (e.g. COVID-19 knowledge, relevant skills training, stress management) before deployment, and be closely monitored for signs of psychological distress (Du et al., 2020). Other considerations in managing manpower also include providing support for HCWs who have to work longer hours or face quarantine isolation and have difficulties in balancing work and home obligations. Studies have shown that HCWs are more likely to respond to the call of duty if adequate support is provided (O'Sullivan et al., 2009). Strategies that organizations may consider include providing allowances for HCWs to engage child or elder care services, and implementing more flexible work arrangements.

The three other categories in the top five ranked categories of needs: "emotional security", "workplace safety" and "confidence and trust in leadership" are all under the theme of safety needs. The key to meeting these needs is underpinned by effective communication. In our study, participants expressed the need for clearer work directives and more frequent updates that are disseminated in a transparent, consistent, and streamlined manner. In a study on Ebola outbreak preparedness planning, Broom et al. (2017) similarly found that the inconsistency and sheer volume of information led to greater uncertainty, lack of trust, and dismissal of the information by HCWs. Strategies for more effective information dissemination across different levels of management can be developed to promote emotional security. Similarly, in ensuring workplace safety, greater sense of security can be promoted just by timely communications of the measures in place to reassure HCWs that care is taken to ensure their safety. Emotional security can also be further enhanced by expressing encouragement and gratitude to HCWs. Such a simple but powerful act honours the commitment and sacrifice of HCWs, sends a message that they are not overlooked and helps

reinforce their commitment to continue providing care under extraordinarily difficult circumstances (Shanafelt et al., 2020).

Communication also ties in with leadership, as leaders must be able to connect with their teams to learn about their concerns. Holding regular engagement sessions to check-in on staff, and to collect and act appropriately on feedback signals that leadership value HCWs' contributions and are invested in their well-being. It also opens a channel to align perceptions and to allow for clarifications, which would in turn boost work morale. On the contrary, being unreceptive to feedback may brew discontentment and demotivation, and lead to burnout.

It is clear that multiple factors contribute towards the mental well-being of HCWs, and these factors often interweave with each other. To protect the psychological well-being of HCWs, these underlying factors contributing to their stress and mental burden must first be addressed. Nonetheless, it remains important to identify at-risk individuals and intervene early to avoid long-term maladaptive coping responses and psychological distress (Maunder et al., 2006). Online mental health resources and services (e.g. telepsychiatry, mobile applications) should be developed if not yet available, and awareness of such resources and services should be promoted to encourage utilization. Furthermore, a unique difference between pandemic management and other disaster crisis management is the need to consider the adverse effects of isolation on HCWs' psychological well-being (Bai et al., 2004). The impact of social isolation may be mitigated by implementing "buddying systems" and web-based support groups to enhance social support (Maunder, 2004). These measures may provide an opportunity for cathartic ventilation and gaining a better perspective on the situation (Tam et al., 2004).

Finally, there are several other practical needs raised by participants in the study that organization may also consider addressing. Remunerations, such as appropriate overtime pay or allowances and monetary incentives, are tangible ways of recognising HCWs' efforts and may be valued as a source of motivation by some HCWs. A review of medical coverage and benefits to include facilitation of testing and treatment for affected HCWs and extension of medical leave entitlement may help alleviate worries about medical coverage during the outbreak. Technology advancements are needed to overcome constraints imposed by infectious disease outbreaks, particularly in areas of telemedicine, remote working, and automation to replace human contact (Clipper, 2020).

Strengths and limitations

This study has several strengths. The use of an open-ended survey question facilitated the collection of a spectrum of responses and participants were able to focus on matters most pertinent to them. Conducting the study during the COVID-19 outbreak allowed for real-time feedback, which reduced any recall bias. Generalizability of findings was enhanced as this study was conducted across multiple healthcare institutions from the largest healthcare cluster in Singapore.

However, some potential limitations were noted. As this study was intended to analyse the responses to an open-ended question embedded in a survey conducted for a larger study, it may not obtain the same degree of richness as an interview or focus group study. Furthermore, as response to the open-ended question in the survey was optional, not all participants provided free text responses to this item; approximately a quarter of the sample did. There is a possibility that individuals with strong sentiments were more likely to have responded to the open-ended survey question, while the views of HCWs who did not feel as strongly would not be captured. However, as the underlying intention of this study was to

identify areas for improvement, as long as there was recurring feedback of a similar nature, it would suggest that the themes identified in this study reflect areas of need that can be further explored.

CONCLUSION

Despite significant advances in the field of medicine, the dangers posed by emerging infectious diseases are amplified in today's increasingly interconnected world. In the face of a pandemic, HCWs are asked to face increased risks and demands with fewer resources. Healthcare organizations and governmental bodies must recognize and support the needs of HCWs to protect their well-being, as well as motivate them to work through such crises. Findings from this study unveiled a wide range of unmet needs faced by HCWs during the pandemic, and provide an overview of the various areas of need which may help guide future research and development of interventions to mitigate the negative psychological impact of prolonged disease outbreaks.

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