

Unpacking the Mediating Role of Hope in the Relationship of Coping Flexibility and Stress of Filipino Healthcare Workers

Jascyl T. Lorejo¹, Aufe G. Fallado^{1,2}, Rousell B. Ferrer¹, Esther Faith B. Montilla^{1,3}, Jalen Theus A. Pimentel¹, Maricon P. Soledad¹, Jason O. Manaois Ph.D.¹

¹Xavier University – Ateneo de Cagayan, Philippines, ²Mindanao State University – Marawi City, Philippines, ³Caraga State University, Philippines.

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ABSTRACT

This study aimed to examine the mediation model between stress, hope, and coping flexibility among Filipino healthcare workers. The hypothesis suggested that hope would serve as a significant mediator between stress and coping flexibility. Data were collected from 92 healthcare workers in hospitals and clinics who voluntarily participated in an online survey after providing individual consent. The Perceived Stress Scale (PSS), the Coping Flexibility Scale, and the Trait Hope Scale were utilized to measure the variables. Descriptive analyses were conducted to examine the demographic characteristics of the sample. Pearson correlation analyses were employed to assess the relationships between hope, perceived stress, and coping flexibility. Subsequently, a mediation analysis was performed to test the proposed model. The results revealed that stress was associated with coping flexibility, while hope showed a positive relationship with coping flexibility. However, the specific path from stress to hope was found to be non-significant, thus violating one of the assumptions of a mediation model. This highlights the complexity of the relationship between stress and hope, suggesting the potential involvement of other factors that were not considered in this study. Despite the failure to establish the assumed causal relationship, this study contributes to a nuanced understanding of the dynamics of stress, hope, and coping flexibility among healthcare workers. It underscores the need for future research to explore alternative models and delve into additional factors that may influence this relationship in greater detail. It also has implications for targeted interventions aimed at enhancing the well-being of frontline healthcare workers.

Keywords: healthcare workers, COVID-19, hope, coping flexibility, perceived stress

INTRODUCTION

Even before the onset of the COVID-19 pandemic, the healthcare sector has already been characterized by high levels of occupational stress. Previous research on mental distress in healthcare workers found that, when compared to individuals working in other industries, healthcare workers were at a higher risk of suffering from psychiatric disorders. Moreover, approximately half of all physicians reported symptoms of burnout, and doctors had higher rates of suicide than the general population [1].

The emergence of the novel coronavirus outbreak posed a significant threat, particularly amplifying the already existing work-related stress and psychological distress among specific health workers. During pandemics such as COVID-19, healthcare workers are more vulnerable to mental health issues due to several factors. It is particularly challenging for healthcare workers to adhere to preventive measures against infections (i.e. staying home, social distancing, etc.) as they are front liners responsible for saving human

lives [2]. This places them at a higher risk of infection due to direct contact with patients, which was also observed in other infectious diseases like SARS [3]. These acute consequences may threaten a healthcare worker's basic sense of security.

This study was carried out during the height of the COVID-19 pandemic. While COVID-19 is not being directly measured, it serves as the catalyst for investigating healthcare workers, acknowledging the widely recognized stress associated with the pandemic. It also has to be noted that beyond the acute effects of the pandemic are long-term effects on mental health. Studies examining the mental effects of other pandemics on medical personnel have revealed that distress extends beyond the immediate period of the outbreak, persisting long after their exposure to victims has ceased [4]. Prolonged exposure to elevated stress levels can also have numerous detrimental consequences on the emotional and mental well-being of frontline workers triggering common mental disorders, like anxiety and depressive disorders, and posttraumatic disorders [5]. This was evident for Filipino healthcare workers. Faced with a rapid transformation in their working conditions, a lack of comprehensive strategies, and a scarcity of material resources and manpower, they reported feeling unprepared for the challenges that awaited them.

Furthermore, Filipino healthcare workers reported physical fatigue as a result of increased workload. Heightened levels of anxiety, fear, and discrimination, were identified to exacerbate the challenges they faced as healthcare providers. Without a clear plan, the spike in COVID-19 cases heightened anxiety for Filipino healthcare professionals on the front lines, while key resource shortages not only jeopardized safety but also hampered effective care, exacerbating feelings of helplessness and stress. The isolation and indifference experienced by these professionals, combined with a demanding workload, difficulties with personal protective equipment, and the need for self-isolation, contributed to emotional distress and mental exhaustion, resulting in a highly stressful and anxiety-inducing environment for Filipino healthcare workers during the pandemic [6].

A healthy and resilient healthcare workforce is essential to combat any health crises. However, it is unfortunate that mental well-being is not one of the top priorities [2]. Given these vulnerabilities and risk factors, there is still an unmet need to tackle the mental health of healthcare workers. Determining the associated protective factors to the mental health of healthcare workers is highly crucial for its implications on future interventions. In this study, we aim to investigate the coping and stress levels of healthcare workers. We further look into the influence of resilience factors like hope on the predictive relationship between stress and coping.

Coping is defined as encompassing “efforts to prevent or diminish threat, harm and losses, or to reduce associated distress” [7]. It is widely recognized as essential to gain a deeper understanding of the impacts of stress on individuals. In this study, coping is investigated as associated with the healthcare worker's perceived stress.

Lazarus and Folkman's transactional theory [8] is a prominent theory of coping. It consists of central elements: stress, appraisal, and coping. While this study does not measure appraisal, the theory remains instrumental in elucidating the relationship between coping and stress. Stress results when individuals perceive demands as surpassing their available resources. Coping involves employing both cognitive and behavioral strategies to manage this stress. A notable aspect of this theory is its consideration of coping as a goal-directed process, which has garnered empirical support from numerous studies. Additionally, coping strategies have been integrated into cognitive-behavioral interventions [9]. Hence, it may be inferred that coping can be developed to help individuals effectively deal with stress.

An interrelated variable that particularly enhances one's resilience is hope. Snyder [10] defined hope, “as the perceived capacity to derive pathways to desired goals, and motivate oneself via agency thinking to use those pathways”. In essence, it is the overall perception that one's goals can be met. Hope has three

necessary ingredients: Goal-oriented thoughts, pathways to the achievement of those goals, and agency thoughts directed toward goal achievement. This indicates that hope is a motivational concept but has a strong cognitive component [11]. Hence, including this part of hope, they defined hope as “a reciprocally derived sense of successful agency (goal-directed determination) and pathways (planning of ways to meet the goals)”. Hope is associated with the use of adaptive coping methods [11], and more positive appraisals of stressful events [12]. The significance of hope is in initiating therapeutic change, willingness to learn, and a sense of well-being [13], [14]. Korner [15] stated that “The greater the stress, the more reliance must be placed on the hope structure”. Korner explained that hope makes life under stress tolerable, serving as a temporary measure of relief and a sustaining power in coping with stress [16].

A significant body of research has been dedicated to investigating the increase in stress levels of healthcare workers during the pandemic. Healthcare workers coped with their distress during the pandemic by employing a wide array of coping techniques, encompassing psychological, social, and religious or spiritual approaches [17]. While a substantial portion of this research is focused on vulnerability factors, there is a growing body of work that explores coping and protective factors, with hope playing a central role [18], [19], [20]. Previous research has demonstrated that hope serves as a protective factor against stress, and this association is reaffirmed in datasets obtained during the pandemic [21], [18]. Across different countries, hope appears to exhibit consistent effects of mitigating negative outcomes and predicting positive outcomes. Higher levels of hope predicted reduced perceived stress related to COVID-19. Results highlighted how hope exerts both direct and buffering effects on stress during the pandemic [18].

This study delves into the role of positive psychology in understanding how the pandemic affects the well-being of healthcare workers amid ongoing pandemic challenges. The increasing distress among medical professionals emphasizes the importance of research and interventions to improve their mental resilience. As the prospect of a mental health crisis emerges post-COVID-19, our study aligns with societal concerns outlined in various articles, emphasizing the urgency of proactive measures to support healthcare workers. In alignment with these concerns, our study is centered on the following research questions: Is there a relationship between coping flexibility and stress among Filipino healthcare workers? and Does hope mediate the association of coping flexibility and stress among Filipino healthcare workers? Our central hypothesis holds that in the experiences of the pandemic, hope mediates the relationship between coping flexibility and stress in healthcare workers. Addressing this hypothesis contributes to the literature of positive psychology and suggests interventions, aligning with the call to address healthcare worker distress and anticipating relevance in the face of ongoing global health challenges.

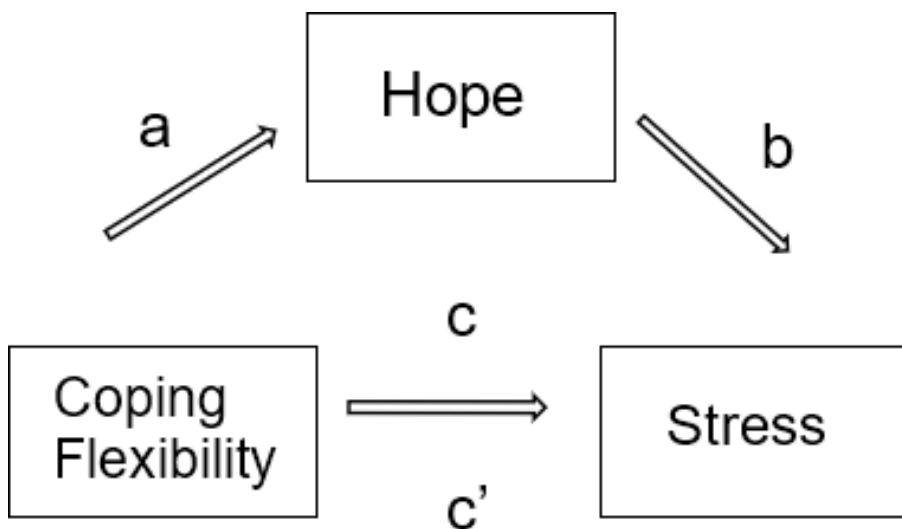


Fig. 1: Mediation Model of Coping Flexibility and Stress

METHODS

Participants

The participants of this study consist of 92 healthcare workers, which consists of 56 nurses (60.9 %), 16 midwives (17.4%), 8 physicians (8.7%), 4 medical technologists (4.3%) and 2 pharmacists (2.2%) as well as phlebotomists, dentists and laboratory technicians which was selected through purposive sampling on the basis that they are actively rendering service in any hospital or clinical setting. Additionally, 46 healthcare workers worked in a hospital, and 46 health workers worked in a clinic.

Measures

- **Perceived Stress Scale (PSS):** This measures the degree to which situations in one's life are appraised as stressful. The scale has a good internal consistency ($\alpha = .83$) [22]. It consists of 10 items that ask respondents about their feelings and thoughts during the last month using a 5-point Likert-type scale that ranges from 0-Never to 4-Very Often. Scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positively stated items (items 4, 5, 7, & 8) and then summing across all scale items.
- **Coping Flexibility Scale:** This is a 10-item questionnaire that measures one's ability to effectively modify coping behavior according to the nature of each stressful situation using a 4-point Likert-type scale that ranges from 1-Not Applicable to 4-Very Applicable. It has an acceptable test-retest reliability ($\alpha = .73$) [23]. It has reverse-coded items denoted with (R) and has two subscales: (1) Evaluation coping consisting of items 2, 6, 7, 8, and 9; and (2) Adaptive Coping which consists of items 1, 3, 4, 5, and 10.
- **The Trait Hope Scale:** The Trait Hope Scale or "The Future Scale" is a 12-item questionnaire that measures the respondent's level of hope using an 8-point Likert-type scale ranging from 1-Definitely False to 8-Definitely True. It has two subscales based on the cognitive model of hope [10]: (1) Agency consisting of items 2, 9, 10, and 12; and (2) Pathways Thinking consisting of items 1, 4, 6, and 8. The other four items in the scale are fillers. The Trait Hope Scale has an acceptable internal consistency with a Cronbach's alpha ranging from .74 to .88 [24]. Scores in both subscales can be obtained by adding the respective items. Scores per subscale range from 4 to 32 with higher scores meaning higher agency and pathways thinking respectively. Furthermore, the total hope score is determined by adding both subscales. Scores of 40-48 are interpreted as hopeful, 48-56 as moderately hopeful, and 56 above as high hope.

Data Gathering Procedures

Permission to gather data from the healthcare workers was obtained from the institution. After this, the healthcare workers were invited by the human resource office through a memorandum to take part in the study by accessing the Google form link which contained the informed consent form, the details of the study, and the survey questionnaires. Online consent was obtained individually from the participants before they answered the survey.

Data Analysis

Jamovi was primarily utilized to analyze the data [25]. Descriptive analyses were conducted to examine the demographic characteristics of the sample, including mean and standard deviation levels. Pearson correlation analyses were employed to assess the relationships between hope, perceived stress, and coping flexibility. After this, mediation analysis was performed using the MEDMOD package in Jamovi to examine the total effects along with the direct and indirect effects. Additionally, bootstrapping was employed with

1,000 replications to compute for 95% confidence intervals of the mediated effect

FINDINGS AND DISCUSSION

The present study hypothesized that hope is a mediator of the relationship between coping flexibility and the stress of Filipino healthcare workers. This presents the results yielded by the data analyses for this study and will discuss the characteristics of the sample, mediation analysis, and the discussion, conclusion, and implication of the present study.

Problem 1: Is there a relationship between coping flexibility and stress among Filipino healthcare workers?

One of the purposes of this study was to examine the relationship between coping flexibility, hope, and stress among Filipino healthcare workers. There were 92 healthcare workers both from hospitals and clinics who responded to the survey. It showed that Filipino healthcare workers were moderately stressed ($M=19.2$) and below-average coping flexibility ($M=19.8$). This implies that as healthcare workers experience stress, their ability to modify their coping strategies decreases.

TABLE I. MEANS, STANDARD DEVIATIONS AND CORRELATIONS OF THE VARIABLES

	M	SD	1	2	3
1. Stress	19.2	5.07	–		
2. Hope	70.7	6.83	0.025	–	
3. Coping Flexibility	19.8	4.03	-0.300***	0.399***	–

Note: Correlations are significant at the *** $p<001$, $N=92$; M=Mean; SD= Standard Deviation

Also, Filipino healthcare workers were highly hopeful ($M=70.7$) despite having stressful experiences during the COVID-19 pandemic. This indicates that maintaining hope during times of stress may cause healthcare workers to perceive such stressful events as challenges to be addressed or goals to be attained. As can be seen in Table 1, there is a significant moderate positive relationship between hope and coping flexibility ($R = .399$, $p<.001$) which implies that healthcare workers who displayed high levels of hope used a greater number of coping strategies in dealing with stressors, especially during the COVID-19 pandemic. A negative relationship between stress and coping flexibility ($R=-.300$, $p < .01$) is observed as well which implies that healthcare workers who experience stress may tend to employ avoidant coping strategies.

Problem 2: Does hope mediate the association of stress and coping flexibility among Filipino healthcare workers?

TABLE II. RESULTS OF THE MEDIATION ANALYSIS OF HOPE FOR STRESS AND COPING FLEXIBILITY AMONG FILIPINO HEALTHCARE WORKERS

95% Confidence Interval					
Effect	Label	Estimate	SE	p	% Mediation
Indirect	a x b	0.0868	0.0600	0.148	15.7
Direct	c	-0.4646	0.1055	< .001	84.3

Total	c + a x b	-0.3779	0.0895	<.001	100.00
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Note: All coefficients are unstandardized; N=92; a – stress; b – coping flexibility; c – hope; SE – Standard Error; Confidence interval computed with bootstrap method

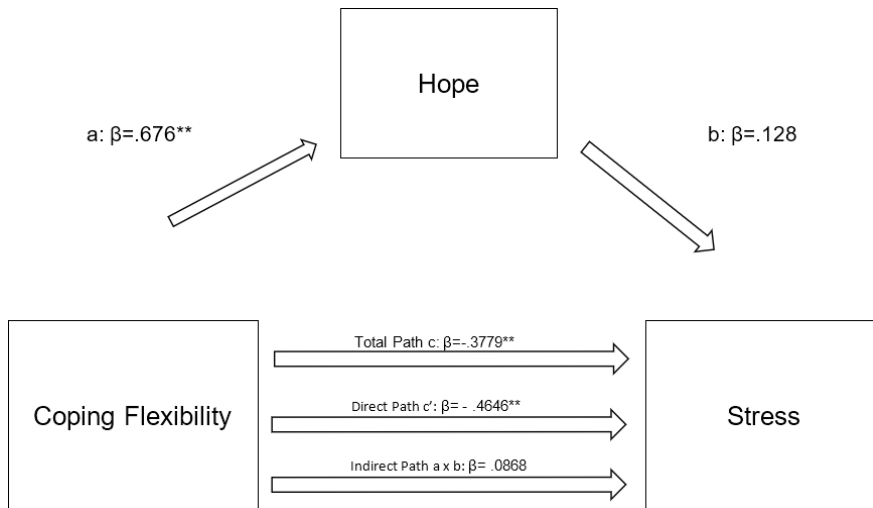


Fig. 2: A mediation model with hope as proposed mediator of coping flexibility and stress (N=92). Note: Values presented are beta coefficients *** $p < .001$

Mediation analysis was performed to assess the mediating role of hope on the relationship between coping flexibility and stress among Filipino healthcare workers. Additionally, the bootstrapping method was implemented in analyses to obtain 95% confidence intervals for statistical inferences about specific and total indirect effects [26]. The result of the mediation analysis can be found in Table 2.

Results indicated that coping flexibility significantly predicts hope ($\beta = .676$, $SE = .1274$, $p < .001$) of healthcare workers. Moreover, the direct effect of coping flexibility on stress is also significant ($\beta = -.4646$, $SE = .1055$, $p < .001$). The results also indicate that coping flexibility has a negative relationship with stress which indicates that an increase in stress would mean a decrease in coping flexibility and vice versa.

The specific path of hope to stress is not significant ($\beta = .128$, $SE = .0739$, $p > .001$). Since mediation analysis is about a causal network, the conclusions from a mediation analysis are valid only if the causal assumptions are valid [27]. With this, the tests of assumptions for mediation analysis are not met showing that hope is not a significant predictor of stress, hence, hope does not cause any mediation in the relationship between coping flexibility and stress.

Despite the absence of a linear and causal relationship between stress and hope, the overall investigation still revealed several findings. The positive relationship between hope and coping flexibility could indicate that these variables may play a crucial role in how healthcare workers respond to stress. It corresponds to the results of a study that found that individuals who displayed high levels of hope used a greater number of coping strategies in dealing with daily stressors [28]. Another study conducted found that dispositional hope had significant direct effects on problem-focused coping, cognitive flexibility, and subjective well-being [29]. These studies indicate that promoting hope and coping flexibility among Filipino healthcare workers could possibly contribute to better mental health outcomes.

In understanding the relationship between coping flexibility and stress, according to the transactional theory [8], stress operates as an interactive process encompassing stressors and psychological responses, including

coping strategies. As discussed in a study, refusal, avoidance, and escape serve as instances of maladaptive emotion-focused coping, potentially leading to passive or avoidant coping strategies [30]. Maladaptive emotion-focused coping, as per the findings, was observed to positively forecast perceived stress, subsequently contributing to the prediction of psychological distress. When people perceive a lack of control in a situation, they tend to employ avoidance coping strategies. This is consistent with the notion that these maladaptive coping strategies are associated with increased psychological distress and depressive symptoms [30]. Adaptive emotion-focused coping, exemplified by accepting reality and finding positive aspects in life challenges, on the other hand, was associated with lower perceived stress. This positive emotion-focused coping, involving practices like reevaluating and attributing positive meanings to circumstances, may act as a protective factor against depression. The ability of adaptive emotion-focused coping to reduce perceived stress and, as a result, promote coping flexibility may explain the negative relationship between coping flexibility and stress [30]. Furthermore, research emphasizes the importance of problem-focused coping in influencing psychological distress. Although problem-solving approaches are generally associated with lower distress, they did not always result in a reduction in stress during unprecedented events such as the COVID-19 pandemic. People who actively work through COVID-19 problems may worry and ruminate more, which raises their perceived stress levels and reported psychological distress. Therefore, in the context of unpredictable and unprecedented events like the COVID-19 pandemic, varied coping may contribute to increased stress and decreased coping flexibility. This is consistent with the differential impacts of coping styles and the observed negative relationship between stress and coping flexibility [30].

Numerous studies support that hope is essential when confronting stressful circumstances. High-hope individuals appear to interpret potentially stressful situations differently than low-hope individuals and find benefits in effectively handling and overcoming ongoing stressors [10]. Korner [15] added that hope makes life under stress tolerable, serving as a temporary measure of relief and a sustaining power in coping with stress. Hope serves as a respite from stress [16]. Another study by Simmons and Nelson [31], also stated that nurses with high hope were found to interpret potentially stressful encounters as challenging and therefore experienced less stress.

However, the data gathered from the current sample of healthcare workers suggests a nonlinear relationship between hope and stress, which violates one of the assumptions of a mediation model. Although this may be influenced by various factors, this could also imply that the relationship between hope and perceived stress is not straightforward. For instance, one study conducted during the COVID-19 pandemic found a weak negative linear correlation between hope, resiliency, and stress among individuals [32]. Another study discovered that empathy amplified the impact of hope on perceived stress and post-stress growth, while also mitigating the influence of perceived stress on post-stress growth [33]. In addition, a study on stress, self-esteem, hope, optimism, and well-being in Urban, Ethnic Minority Adolescents reported a very small correlation between perceived stress and hope in a sample of 137 urban ethnic minorities [34]. Therefore, the non-linear relationship between hope and stress among healthcare workers could indicate the involvement of other factors. Factors such as resiliency, empathy, and self-esteem may play a role in shaping the relationship between these variables.

A similar study conducted among medical staff in China during the COVID-19 pandemic discovered that, despite having higher levels of hope, medical staff still exhibited a positive relationship between stress and anxiety or depression [35]. This suggests that stress can still contribute to the development of anxiety and depression, even among individuals with high levels of hope. While hope may weaken the impact of stress on these mental health outcomes, it does not entirely eliminate it. Overall, these studies further indicate that other factors, beyond perceived stress alone, may be influencing or contributing to variations in hope among healthcare workers.

Although some studies support the idea that hope is essential for coping with stress, the specific analysis of

this study and published research demonstrate how the relationship between perceived stress and hope may be more complex and context-dependent. This disparity in published literature and results suggests that the relationship between stress and hope may not be straightforward or universally applicable [34]. Similar opinions about the significance of taking contextual factors into account in understanding the dynamics of the challenges of healthcare workers were also expressed in a study reviewing the impact of COVID-19 on the mental health of Filipino healthcare workers [36].

Keeping with this, research indicates that the COVID-19 pandemic has certain characteristics that can have a big influence on medical professionals. Among other things, the pandemic's global reach and case count have made people feel vulnerable, and the media has focused heavily on the impact on healthcare workers—specifically, the number of deaths among them. The pandemic has also disrupted normal healthcare practices, contributing to the redeployment of staff to higher-risk frontline roles. This change in work environment and responsibilities can contribute to increased stress and anxiety among healthcare workers. Notably, the emphasis on protective equipment has added another layer of stress for healthcare workers. Uncertainty regarding the availability and quality of equipment, frequent modifications to guidelines regarding appropriate equipment use, and uncertainty regarding the true risk of transmission have all contributed to the worsening of COVID-19's impact on the mental health of healthcare workers [36].

Aligning with previous discussions, Filipino health workers reported feeling unprepared for the challenges that awaited them due to a rapid transformation in their working conditions, a lack of comprehensive strategies, and a scarcity of material resources and manpower. Furthermore, they reported physical fatigue as a result of increased workload, as well as increased levels of anxiety, fear, and discrimination, which exacerbated the challenges they faced as healthcare providers [6]. This highlights the intricacies at play, suggesting why there isn't a straightforward explanation of how hope mediates the relationship between coping and stress, especially when considering the context of healthcare workers during the pandemic.

Hope and psychological stress share several key characteristics. Both are appraisal-based, exhibit fluctuations, are context-dependent, and possess complexity. Hope is cognitively rooted, encompasses information and goals, and generates motivational energy, often referred to as "will". It embraces both negative and positive emotional tones due to the uncertainty of desired outcomes. Furthermore, psychological stress peaks in situations where personal control options are limited, implying that the very circumstances where hope is crucial are also those where hope is likely to be diminished or absent [8]. The resurgence of hope in highly stressful situations relies, to some extent, on cognitive coping processes. Concurrently, an individual's ability to sustain coping with intensely stressful situations is influenced, at least in part, by maintaining hope regarding the desired outcome.

CONCLUSION AND RECOMMENDATION

Based on the results of the study, it is evident that as healthcare workers experience stress, especially during the pandemic, their ability to modify their coping strategies to meet the demands of different stressful situations decreases and vice versa. Specifically, it is plausible that the more healthcare workers engage in problem-solving related to any stressful situations, in particular, COVID-19, the more they ruminate and worry about the situation, leading to higher levels of perceived stress and higher levels of reported psychological distress [30]. In summary, in the context of unpredictable and unprecedented events like the COVID-19 pandemic, varied coping may contribute to increased stress and decreased coping flexibility.

Although numerous studies support that hope is essential when we need to confront stressful circumstances, the present study does not show any influence of hope in their ability to produce adaptive outcomes to manage stress and stress experienced by healthcare workers. There could be other factors that can better influence this relationship. Although hope does not affect the relationship between coping flexibility and

stress, it does have a significant positive relationship with coping flexibility and these variables may play a crucial role in how healthcare workers respond to stress. Literature shows that individuals who displayed high levels of hope used a greater number of coping strategies in dealing with daily stressors [28]. This can also be another possible direction for future studies.

This study comes with inherent limitations that warrant careful consideration and opportunities for refinement for future studies to address and overcome. This study only considered the general situation of healthcare workers during the pandemic and was not particularly unique to the current situation of Filipino healthcare workers. Hence, for future studies, it is suggested to conduct needs assessments particular to Filipino healthcare workers like doctors who worked in public primary hospitals to gauge their situation and unique needs as healthcare workers in the Philippines and what particular factors may arise after conducting these assessments to be included in future studies. Additionally, it is suggested to expand the current study to various factors particularly having in-depth studies on specific healthcare professionals (e.g. doctors, nurses, midwives) with a greater sample size. Furthermore, it is also suggested to explore alternative models and delve into additional factors that may contribute to the enhancement of the ability of healthcare workers to cope.

This study has implications for targeted interventions aimed at enhancing the well-being of frontline healthcare workers. Rather than solely addressing the adverse psychological consequences of the pandemic, the findings suggest a shift towards proactive measures that foster psychological growth. To do this, collaborative efforts between medical administration and healthcare professionals are essential to cultivate a mental-health-friendly workplace. Interventions could prioritize psychological well-being by fostering a sense of hope through readily available psychosocial support, ensuring access to adequate personal protective equipment, and incorporating essential health breaks. Empowering healthcare workers and promoting a sense of control and hope in the workplace could enhance their coping flexibility. Furthermore, implementing sustainable psychoeducation programs can broaden the reservoir of coping strategies utilized by healthcare workers, equipping them to better navigate the daily stressors inherent in their roles.

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