

## ORIGINAL ARTICLE

# COVID-19 anxiety among front-line nurses: Predictive role of organisational support, personal resilience and social support

Leodoro J. Labrague RN, DM, PhD, Lecturer<sup>1</sup>  |

Janet Alexis A. De los Santos RN, MAN, PhD, Assistant Professor<sup>2</sup>

<sup>1</sup>College of Nursing, Sultan Qaboos University, Muscat, Oman

<sup>2</sup>College of Nursing, Visayas State University, Leyte, Philippines

## Correspondence

Leodoro J. Labrague, College of Nursing, Sultan Qaboos University, Muscat, Oman.  
Email: Leo7\_ci@yahoo.com

## Abstract

**Aim:** This study examines the relative influence of personal resilience, social support and organisational support in reducing COVID-19 anxiety in front-line nurses.

**Background:** Anxiety related to the COVID-19 pandemic is prevalent in the nursing workforce, potentially affecting nurses' well-being and work performance. Identifying factors that could help maintain mental health and reduce coronavirus-related anxiety among front-line nurses is imperative. Currently, no studies have been conducted examining the influence of personal resilience, social support and organisational support in reducing COVID-19 anxiety among nurses.

**Methods:** This cross-sectional study involved 325 registered nurses from the Philippines using four standardized scales.

**Results:** Of the 325 nurses in the study, 123 (37.8%) were found to have dysfunctional levels of anxiety. Using multiple linear regression analyses, social support ( $\beta = -0.142, p = .011$ ), personal resilience ( $\beta = -0.151, p = .008$ ) and organisational support ( $\beta = -0.127, p = .023$ ) predicted COVID-19 anxiety. Nurse characteristics were not associated with COVID-19 anxiety.

**Conclusions:** Resilient nurses and those who perceived higher organisational and social support were more likely to report lower anxiety related to COVID-19.

**Implication for Nursing Management:** COVID-19 anxiety may be addressed through organisational interventions, including increasing social support, assuring adequate organisational support, providing psychological and mental support services and providing resilience-promoting and stress management interventions.

## KEYWORDS

anxiety, coronavirus, COVID-19 pandemic, nursing, organisational support, resilience, social support

## 1 | INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic is a substantial health burden that has major implications for public health globally. COVID-19 is a pneumonia-like disease caused by a novel coronavirus that emerged in the Province of Wuhan in China in November 2019.

Worldwide, confirmed cases of the disease had reached 14,348,858 as of 23 July 2020, while in the Western Pacific Region, the confirmed cases had climbed to 263,565. Moreover, at this time, there were 603,691 confirmed deaths due to COVID-19, and confirmed cases had been reported in more than 200 countries. The United States, Brazil, India and Russia remain the countries with the highest

numbers of confirmed cases, accounting for 49% of all confirmed cases globally (World Health Organization, 2020). Of the confirmed cases worldwide, 6%, or 90,000, were in health care workers. In the Philippines, since January 2020, the number of confirmed cases of COVID-19 has climbed to 70,764, with 45,646 active cases and 1,837 confirmed fatalities. The country's health agency identified 2,736 health care workers who contracted the disease, of whom 1,006 were nurses (Department of Health, 2020).

In a short span of time, COVID-19 has proven to be a fatal disease that has caused serious damage to the health and economy of the Philippines. The emergence of COVID-19 exerted unprecedented pressure on the country's health care system and presented various challenges to its nursing workforce, potentially affecting nurses' work performance and mental health and even putting their lives at risk (Lv et al., 2020; Maben & Bridges, 2020; Mo et al., 2020).

## 1.1 | Review of literature

Disease outbreaks such as the COVID-19 pandemic are anxiety-provoking situations. Defined as a 'state of uneasiness or apprehension resulting from the anticipation of a real or perceived threatening event or situation' (Spielberger, 2010), anxiety is common among health care workers who are directly involved in managing affected patients during pandemics. Further, due to their direct contact with COVID-19 patients, health care workers (HCWs) are more exposed to traumatic events such as patients' suffering and deaths (Pappa et al., 2020), which could further amplify their fears and anxiety. Available data suggest that the prevalence of anxiety among HCWs during pandemic ranged from 22.6% to 36.3% (Liu, Gayle, Wilder-Smith, & Rocklöv, 2020), rates that were significantly higher than those observed in the general population. Among HCWs, nurses were reported to experience the highest anxiety levels and the highest prevalence of anxiety, ranging from 15% to 92% (Alwani et al., 2020; Luo, Guo, Yu, & Wang, 2020).

The main source of anxiety in nurses during the COVID-19 pandemic was fear of becoming infected or unknowingly infecting others (Mo et al., 2020). Shanafelt, Ripp, and Trockel (2020) identified other sources of anxiety in nurses, including lack of personal protective equipment (PPE), fear of harbouring the novel coronavirus at work, lack of access to COVID-19 testing, fear of transmitting the virus at work, doubt that their institution would support them if they became infected, lack of access to childcare facilities during lockdown, fear of being deployed in an unfamiliar ward or unit and lack of accurate information on the disease.

While a low level of anxiety is helpful to motivate and generate excitement in an individual, persistent exposure to anxiety may have negative consequences on their physio-psychological health and work performance. A vast number of studies have highlighted the negative effects of a higher level of anxiety, including loss of desire to eat, dizziness, sleep disturbance and vomiting or nausea (Lee, 2020; Lee, Jobe, Mathis, & Gibbons, 2020). Higher anxiety levels were also associated with impairment in some bodily functions,

negative coping mechanisms (such as increased intake of alcohol or drugs), stress and depression and increased suicidal ideation (Lee et al., 2020). Further, unmanaged anxiety may lead to long-term effects on nurses' work performance and job satisfaction, leading to frequent absenteeism and eventual turnover (Labrague & McEnroe-Petitte, 2018; Lee et al., 2020). Implementing measures to reduce anxiety among nurses may prevent its adverse consequences. Such measures are vital to sustaining a well-engaged nursing workforce.

Nurse managers play a vital role in addressing nurses' anxiety or fears of COVID-19 by supporting their mental, psychological and emotional health through evidence-based measures, supportive organisational policies and provision of a safe and secure work environment (Catton, 2020; Mo et al., 2020). Personal resilience and social and organisational support were identified in the literature as vital factors protecting against adversity and stress in nurses, allowing them to maintain their mental well-being and psychological health (Bloom, Black, & Rappuoli, 2017; Kim & Park, 2017; Labrague, Hammad, et al., 2018; Turner, 2015).

Personal resilience, or a person's capacity to 'bounce back' or recover quickly from a stressful event (Hart, Brannan, & De Chesnay, 2014), may help nurses cope effectively and endure the burden caused by stressors. In the context of the COVID-19 pandemic, personal resilience may help nurses effectively endure the stress caused by the pandemic (Cooper, Brown, Rees, & Leslie, 2020). Available studies identified the protective role of personal resilience in nurses during disaster events (Labrague, Hammad, et al., 2018; Turner, 2015) and disease outbreak (Duncan, 2020), suggesting that strengthening nurses' levels of hardiness and coping abilities can help them manage and deal with stressful situations effectively.

Defined as the assistance and protection given to others, especially individuals (Langford, Bowsher, Maloney, & Lillis, 1997), social support drawn from colleagues, managers, friends and families is considered to be important for nurses to cope and deal effectively with different stressors in the work environment. A wide range of studies identified the positive effects of social support on nurses' job satisfaction, work commitment, health and well-being (Choi, 2018; Hu, Yu, Chang, & Lin, 2018). Adequate social support was also seen as vital to helping health care workers effectively manage stressful events, including emergency situations, disaster events and outbreak of infectious diseases (Kim & Park, 2017; Labrague, McEnroe Petitte, Leocadio, Van Bogaert, & Tsaras, 2018).

Organisational support, or the degree to which an organisation provides resources, reinforcement, encouragement and communication to an individual to perform their functions effectively, is a vital factor that contributes to organisational success (Eisenberger, Huntington, Hutchison, & Sowa, 1987; Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002). Mounting evidence has shown a positive link between higher levels of organisational support and positive outcomes in nurses (e.g. work performance, job satisfaction, innovative behaviours) and patients (e.g. patient satisfaction) (Labrague, McEnroe Petitte, et al., 2018; Pahlevan Sharif, Ahadzadeh, & Sharif Nia, 2018). Evidence has also shown that higher levels of organisational support may reduce the impact

of the different workplace stressors and may serve as a protective factor against stress and anxiety caused by disasters, calamities and other emerging infectious diseases (Bloom et al., 2017; Veenema, Deruggiero, Losinski, & Barnett, 2017).

Despite the abundance of studies examining the importance of personal resilience, social support and organisational support in helping nurses maintain health and well-being during stressful events, no studies have yet been conducted to examine how these elements contribute to the reduction of anxiety related to COVID-19. Hence, this study was conducted to assess the causal relationships between personal resilience, social support, organisational support and COVID-19 anxiety.

## 2 | METHODS

### 2.1 | Research design

A cross-sectional research design was adopted in this study.

### 2.2 | Samples and settings

This study was conducted in the Philippines, a South-East Asian country with a population of 104.9 million, making it the 13th most populous nation in the world (Philippine Statistics Authority, 2018). The country's physical health infrastructure is comprised of 1,224 hospitals (434 government hospitals and 790 private hospitals) distributed throughout the 17 regions in the country (Dayrit, Lp, Of, Mc, & Mc, 2018). This study was conducted in one region in the Philippines, Region 8, which is comprised of 50 government and 25 privately owned hospitals. As of 2018, there are approximately 3,000 nurses working all hospitals within the region, with most nurses employed in government hospitals. As a consequence of increased migration of experienced nurses to other countries, such as the UK, the United States and countries in the Middle East, the current nurse workforce in the region is composed mainly of young nurses with an average age of 27 to 35 years (Bautista et al., 2020; Labrague et al., 2020).

In this study, licensed registered nurses (RNs) assigned to 75 wards or units from 10 government and 10 private hospitals within the region were recruited to take part in the study. These hospitals were randomly selected from a list of all hospitals in the region. Inclusion criteria for the hospitals were as follows: a minimum of 50 beds, an emergency department and an operating department and provision of health services to COVID-19 patients. To achieve an 80% power, with alpha set at 0.05 and small effect size set at 0.05 (Soper, 2020), a sample size of 293 nurses would be required, as determined using the G\*power program, software version 3.1.9.9 (Faul, Erdfelder, Lang, & Buchner, 2007). The sample size was initially calculated using power estimates for seven predictors in multiple regression. A total of 350 nurses were initially invited to partake in the study; however, only 325 nurses responded (93% response rate). A

two-phase sampling approach was followed during the recruitment of the participants: stratified sampling in determining the number of nurses per hospital (Phase 1) and convenience sampling to select the respondents in each hospital (Phase 2). Participants were included if they were (a) a registered nurse, (b) held either a permanent or contracted/casual role, (c) were currently employed in either a private or a public hospital and (d) had more than six months of experience working as a nurse.

### 2.3 | Instrumentation

Four standardized, self-reported scales were used for data collection: the COVID-19 Anxiety Scale, the Brief Resilient Coping Scale (BRCS), the Perceived Social Support Questionnaire (PSSQ) and the Perceived Organizational Support (POS) questionnaire. The original English versions of the scales were used in this study, as nurses in the country are proficient in the English language.

To assess or identify individuals who may have abnormal levels of anxiety related to the COVID-19 pandemic, the COVID-19 Anxiety Scale, which was designed and developed by Lee et al. (2020), was used. This scale contains five items that reflect the common symptoms of anxiety experienced by an individual and was originally designed to examine anxiety over COVID-19 in 775 adults in the United States. Possible scores for this scale ranged from 5 to 25. The scale discriminates between those with dysfunctional anxiety and non-anxiety using an optimized cut-off score of 9 (Lee et al., 2020). Dysfunctional anxiety refers to a disproportionate state of anxiety, defined as persistent or uncontrollable fear that interferes with daily life and causes disruptions to behaviour and psychological well-being (Lee et al., 2020). Nurses participating in the study indicated the frequency of symptoms experienced in a 5-point Likert-type scale (0 [not at all] to 4 [nearly every day]). The scale had an outstanding predictive validity, as evidenced by a positive association with disability and psychological distress (Lee et al., 2020), and excellent reliability, with an internal consistency of 0.93 in a previous study (Lee et al., 2020) and a Cronbach's alpha of 0.87 in the present study.

To examine nurses' ability to rebound from stressful events, the BRCS, which was developed by Smith et al. (2008), was utilized. To complete the BRCS, nurses indicated their responses on each of the four items using a 5-point Likert-type scale (0 [does not describe me at all] to 5 [describes me very well]). The mean scale scores were categorized into three groups: low resilience (1.00–2.99), moderate resilience (3.00–4.30), and high resilience (4.31–5.00; Smith et al., 2008). The scale demonstrated an outstanding predictive validity, as evidenced by its positive association with work performance, health and well-being (Foster, Roche, Giandinoto, & Furness, 2020), and an excellent reliability, with an internal consistency of 0.91 in previous research (Smith et al., 2008) and a Cronbach's alpha of 0.84 in the current study.

To assess nurses' perceptions of the extent of support they receive from others when facing stressful situations, the PSSQ developed by Lin, Hirschfeld, and Margraf (2019) was used. The PSSQ is

a six-item scale that the nurses answered by indicating the extent of their agreement with each item using a 5-point Likert-type scale (1 [strongly disagree] to 5 [strongly agree]). The mean scale scores were divided into three categories: low social support (1.00–2.99), moderate social support (3.00–4.30) and high social support (4.31–5.00; Lin et al., 2019). The scale had excellent criterion validity, demonstrated by its negative correlation with emotional exhaustion and turnover intention (Duan et al., 2019), and excellent reliability, with an internal consistency of 0.89 in a previous study (Lin et al., 2019) and a Cronbach's alpha of 0.86 in the present study.

To assess nurses' opinions on the extent to which their workplace recognizes and values their well-being, the POS scale, which was developed and designed by Eisenberger et al. (1987), was utilized. The POS is an eight-item scale on which nurses indicated the extent of their agreement with each item using a 5-point Likert-type scale (1 [strongly disagree] to 5 [strongly agree]). The mean scale scores were categorized as follows: low organisational support (1.00–2.99), moderate organisational support (3.00–4.30) and high organisational support (4.31–5.00; Labrague, Hammad, et al., 2018). The scale had an excellent criterion validity, as evidenced by its positive association with job satisfaction, quality of life and psychological well-being (Labrague, Hammad, et al., 2018), and excellent reliability, with an internal consistency of 0.93 in a previous study (Eisenberger et al., 1987) and a Cronbach's alpha of 0.87 in the present study.

## 2.4 | Ethical considerations and data collection

Data collection using a questionnaire was conducted after ethical clearance was granted by the Institutional Research Ethics Committee of Samar State University. Letters asking for permission to collect data were sought from the nurse executives of the selected hospitals a few days prior to the conduct of the study. After the potential participants were identified by the researchers and/or trained researcher assistants based on the inclusion criteria, a short orientation was given, written consent was sought and the questionnaires were handed to the participants in a sealed envelope by a researcher or research assistant. Participants were asked to complete the questionnaire during their break time so as not to disrupt their work. Data were collected from 25 April to 25 May 2020.

## 2.5 | Data analysis

Means, frequencies and standard deviations (SDs) were used to quantify the data. Nurse variables and key study variables were correlated to COVID-19 anxiety using Student's *t* test, Pearson's correlation coefficient and analysis of variance. Variables that correlated significantly with the dependent variable were entered into the regression model (enter method) to identify potential predictors of COVID-19 anxiety. Data were considered statistically significant if the *p*-value for a particular statistical test was  $<.05$ . Data were analysed using version 23 of SPSS Statistics software for Windows 22.

## 3 | RESULTS

A total of 325 nurses responded to the questionnaires. Their mean age was 30.94 years ( $SD = 6.67$ ), while the average years in the current organisation and in the nursing profession were 4.65 years and 8.92 years, respectively. The majority of the respondents were female (74.8%), unmarried (66.8%) and held a baccalaureate nursing degree (82.2%). The detailed characteristics of the nurses are presented in Table 1. Regarding preparedness to care for COVID-19 patients, 28 (8.6%) reported that they were 'prepared', 104 (32%) were 'somewhat prepared', and nearly half (45.2%) were 'unsure'. When asked whether they were willing to care for COVID-19 patients, 26.8% answered 'probably yes', 20.3% answered 'absolutely yes', and a greater proportion were 'unsure' (35.7%) or 'not willing' (17.2%).

Bivariate analysis showed no significant relationship between nurses' variables and the composite score of the COVID-19 Anxiety Scale. Pearson's correlation analysis revealed weak but significant negative relationships between COVID-19 anxiety and personal resilience ( $r = -.217, p > .001$ ), social support ( $r = -.208, p > .001$ ) and organisational support ( $r = -.187, p > .001$ ; Table 1).

Regarding the descriptive statistics of other key study variables, the mean scale score on the Brief Resilient Coping Scale was 4.190 ( $SD = 0.687$ ), which was interpreted as 'normal resilience'. The mean scale scores for the Perceived Social Support Questionnaire and Perceived Organizational Support Scale were 3.955 and 3.803, which were interpreted as 'moderate social support' and 'moderate organisational support', respectively (Table 1). Based on the cut-off score of  $\geq 9.0$  in the COVID-19 Anxiety Scale (Lee et al., 2020), 123 respondents (37.8%) were found to have dysfunctional levels of anxiety. The mean scale score was 8.440 ( $SD = 4.32$ ), with 'tonic immobility' (1.779) as the highest-rated item, followed by 'sleep disturbance' (1.726) and 'dizziness' (1.655; Table 2).

Based on multiple linear regression analyses, social support ( $\beta = -.142, p = .011$ ), personal resilience ( $\beta = -.151, p = .008$ ) and organisational support ( $\beta = -.127, p = .023$ ) predicted COVID-19 anxiety. In other words, increased scores in the social support, organisational support and personal resilience measures were associated with decreased scores in the COVID-19 Anxiety Scale scores (Table 3).

## 4 | DISCUSSION

Front-line nurses in the Philippines reported moderate levels of personal resilience and perceived moderate levels of social and organisational support during the COVID-19 pandemic. Moreover, increased levels of personal resilience, organisational support and social support in nurses were associated with decreased levels of anxiety related to COVID-19.

The resilience of front-line nurses in the current study was moderate. This finding is in accordance with international studies that identified nurses working in hospitals as having moderate levels of

**TABLE 1** Nurses' demographic and professional information and its relationship with COVID-19 anxiety mean score

Characteristics	Categories	Mean	SD	COVID-19 Anxiety			
				Mean	SD	Test statistic	<i>p</i> value
Gender <sup>b</sup>	Male	82	25.2	7.902	4.051	-1.302	.194
	Female	243	74.8	8.621	4.409		
Marital status <sup>b</sup>	Married	108	33.2	8.870	4.911	1.266	.206
	Unmarried	217	66.8	8.226	4.000		
Education <sup>b</sup>	Bachelor of science in nursing	267	82.2	8.251	4.309	-1.695	.091
	Master of science in nursing	58	17.8	9.310	4.342		
Job role <sup>b</sup>	Staff nurses	257	79.1	8.432	4.349	-0.065	.948
	Nurse managers	68	20.9	8.471	4.276		
Job status <sup>b</sup>	Fulltime	305	93.8	8.315	4.279	-1.880	.074
	Part-time	20	6.2	10.350	4.716		
Hospital facility size <sup>c</sup>	<100 beds	94	28.9	8.096	4.164	1.818	.164
	101-250 beds	142	43.7	8.204	4.310		
	>250 beds	89	27.4	9.180	4.481		
Age <sup>a</sup>		30.94	6.76			0.101	.068
Year in nursing profession <sup>a</sup>		8.92	7.48			0.045	.416
Year in present organisation <sup>a</sup>		4.65	4.96			0.041	.463
Preparedness to care for COVID-19 patient(s) <sup>a</sup>		3.31	0.91			-0.084	.130
Willingness to care for COVID-19 patient(s) <sup>a</sup>		3.41	1.17			-0.096	.112
Resilience <sup>a</sup>		4.190	0.687			-0.217	.001
Social support <sup>a</sup>		3.955	0.761			-0.208	.001
Organisational support <sup>a</sup>		3.803	0.877			-0.187	.001

<sup>a</sup>Pearson *r* correlation.

<sup>b</sup>t test for independent group.

<sup>c</sup>Analysis of variance.

\**p* < .05.

\*\**p* < .01.

\*\*\**p* < .001.

personal resilience (Guo et al., 2017; Kutluturkan, Sozeri, Uysal, & Bay, 2016). As personal resilience impacts work performance, health and overall well-being in nurses, it is vital to enhance this personal resource through proactive organisational measures. Further, front-line nurses in our study perceived moderate levels of social support and organisational support, which is consistent with earlier studies. Since higher levels of social and organisational support were significantly associated with positive work outcomes (e.g. work performance, job satisfaction, job engagement) and physical and mental health in nurses (Hu et al., 2018; Labrague, McEnroe Petite, et al., 2018), it is critical that measures aimed towards improving these elements are implemented in the workplace.

More than 90% of front-line nurses reported that they were not fully prepared to manage COVID-19 patients, and only 20.3%

reported being absolutely willing to care for COVID-19 patients. The proportion of nurses who expressed their willingness to manage patients affected by the COVID-19 outbreak was lower than in previous studies focused on other infectious diseases in which more than 75% of nurses expressed their willingness to care for patients affected by diseases such as H1N1 and Ebola (Baduge, Morphet, & Moss, 2018; McMullan, Brown, & O'Sullivan, 2016). In addition, this study corroborates earlier studies in which many nurses reported not being sufficiently prepared to handle patients affected by infectious disease (e.g. Ebola, H1N1; Baduge et al., 2018; McMullan et al., 2016) or respond to emergency and disaster situations (Labrague, Hammad, et al., 2018; Labrague, Yboa, McEnroe-Petite, Loblino, & Brennan, 2016; Tzeng et al., 2016). The results of this study highlight the need for nurses to be fully equipped with the required competencies in

order to better handle and manage patients affected by disease outbreaks and in emergency situations.

Using a cut-off score of  $\geq 9.0$  on the COVID-19 Anxiety Scale, 37.8% of the respondents were identified to have dysfunctional levels of anxiety. Due to the apparent lack of studies using similar tools in which nurses were the participants, comparison with highly similar studies was not possible. However, the proportion of participants in this study who experienced dysfunctional levels of COVID-19 anxiety was lower than in the general population (54.8%; Lee *et al.*, 2020). This may be due to the fact that nurses have wider knowledge of the nature of COVID-19, its transmission and symptoms and measures to prevent the disease than the general population. Since nurses are directly involved in the care of COVID-19 patients and the delivery of health care services, it is essential to implement measures to reduce anxiety levels among nurses, as dysfunctional anxiety levels have been identified as strong precursors of psychological distress, depression and other psychological disorders (Mo *et al.*, 2020; Teles *et al.*, 2014).

In this study, among the different symptoms of coronavirus anxiety, 'tonic immobility' and 'sleep disturbance' were reported to be the most pronounced symptoms. This result is similar to those of a study involving the general population in Poland in which these items obtained the highest means (Skalski, Uram, Dobrakowski, & Kwiatkowska, 2020). In addition, in a study by Shevlin *et al.* (2020), high levels of anxiety were linked to somatic symptoms such as fatigue and gastrointestinal manifestations. Accordingly, 'tonic immobility' and 'sleep disturbance' were identified in the literature as the most common responses to threatening events or situations. Sleep disturbance is a symptom common among individuals who have post-traumatic stress disorder and anxiety disorder (APA, 2013),

while tonic immobility occurs involuntarily as a result of heightened fear and typically occurs in individuals who experience highly traumatic situations (Möller, Söndergaard, & Helström, 2017).

The most important findings of this study were the significant effects of personal resilience, social support and organisational support on COVID-19 anxiety levels in nurses, above and beyond the influence of nurse characteristics. The reduced COVID-19 anxiety levels in nurses who had higher scores on the resilience scale demonstrate the protective role of personal resilience, which enables an individual to positively adapt in stressful and anxiety-provoking situations and bounce back successfully despite adverse circumstances (Foster *et al.*, 2020). This result highlights the importance of developing measures or interventions to promote or optimize personal resilience in front-line nurses in order to reduce their anxiety related to COVID-19. This result is in line with previous studies linking higher resilience in nurses to reduced burnout, compassion fatigue, anxiety, depression and psychological distress (Cooper *et al.*, 2020; Mealer, Jones, & Meek, 2017). Higher resilience was also associated with enhanced outcomes in an individual, such as increased psychological health and mental well-being (Foster *et al.*, 2020; Gao *et al.*, 2017). In a literature review by De Brier, Stroobants, Vandekerckhove, and De Buck (2020), maximizing resilience in HCWs during the COVID-19 crisis was seen as vital to helping them safeguard their mental and psychological health and well-being. This pattern of influence was similar to that found in a general population, in which personal resilience and social support contributed significantly to reducing the severity of anxiety associated with the novel coronavirus (Skalski *et al.*, 2020).

Available literature has identified social support that originates from colleagues, friends and families as effective support systems in nurses. Such support systems are essential when facing anxiety-provoking events. In this study, increased scores on the Perceived Social Support Questionnaire were associated with significantly lower COVID-19 Anxiety Scale scores. This result corroborates previous studies underlining the vital role of adequate social support in helping nurses achieve positive emotional states during stressful events such as disease outbreaks (Liu & Aunguroch, 2019). In a study involving doctors and nurses, higher scores on the social support scale were negatively associated with anxiety, depression and sleep disorders, suggesting that psychological symptoms of health care staff could be eased by enhancing social support during the COVID-19 pandemic (Hou *et al.*, 2020).

**TABLE 2** Descriptive statistics of the COVID-19 Anxiety Scale

Scale/Subscale	<i>n</i>	Min	Max	Mean	SD
COVID-19 Anxiety <sup>*,a</sup>	325	5.00	25.00	8.440	4.326
Dizziness <sup>**b</sup>	325	1.00	5.00	1.655	0.919
Sleep Disturbance <sup>**b</sup>	325	1.00	5.00	1.726	1.028
Tonic Immobility <sup>**b</sup>	325	1.00	5.00	1.779	1.027
Appetite loss <sup>**b</sup>	325	1.00	5.00	1.643	0.989
Abdominal Distress <sup>**b</sup>	325	1.00	5.00	1.637	0.974

<sup>a</sup>Mean scale score.

<sup>b</sup>Mean item score.

**TABLE 3** Influence of social support, resilience and organisational support on COVID-19 anxiety

Predictors	<i>B</i>	<i>SE</i>	$\beta$	<i>t</i>	<i>p</i> value	CI
Constant	16.577	1.598		10.375	.001	13.433 to 19.720
Social support	-0.523	0.203	-0.142	-2.572	.011	-0.923 to -0.123
Resilience	-0.947	0.356	-0.151	-2.662	.008	-1.647 to -0.247
Organisational support	-0.628	0.274	-0.127	-2.291	.023	-1.116 to -0.089

Note: Controlling for nurse/unit/hospital characteristics (age, year in the present unit, year in the organisation, marital status, education, job role, facility size, hospital type)

Abbreviations: CI, confidence interval; SE, standard error;  $\beta$ , standardized regression coefficient.



Further, positive coping strategies and increased social support were associated with decreased psychological distress, increased self-efficacy, improved sleep quality and decreased levels of anxiety and stress among nurses (Xiao, Zhang, Kong, Li, & Yang, 2020; Yu et al., 2020).

Finally, increased scores on the organisational support measure were associated with decreased scores on the COVID-19 Anxiety Scale. This result was expected, as adequate organisational support, or the degree to which the organisation recognizes employees and values their well-being, has been associated with increased job performance and commitment in nurses, both of which are vital when dealing with a disease outbreak (Jung, Jung, Lee, & Kim, 2020; Shiao, Koh, Lo, Lim, & Guo, 2007). Further, when nurses perceived greater support from the organisation, they were more motivated, were highly satisfied and experienced less stress when carrying out their duties (Higazee, Rayan, & Khalil, 2016; Labrague, McEnroe Petite, et al., 2018). This result suggests that during disease outbreaks such as the COVID-19 pandemic, when stress and anxiety are high, providing adequate organisational support (e.g. structural support, efficient communication, provision of a safe work environment, trainings related to COVID-19, monitoring of HCWs' health and well-being) is vital to assist nurses facing the challenges brought about by the coronavirus crisis.

#### 4.1 | Study limitations

While this study provides evidence important for nursing administrators to assist nurses during pandemics, a few limitations were identified. Since this study involved nurses from only one province of the Philippines, results cannot be generalized to nurses throughout the country or the world. Next, the nature of the study design poses some limitations; for example, establishing causal links between variables may not be possible. The use of self-reported measures may have limited the responses of the participants; therefore, future studies may utilize both qualitative and quantitative designs to elicit essential information from the participants that could not have been captured by the scales used. Further, future studies utilizing rigorous methods (e.g. experimental research design) may be conducted to examine and test the effectiveness of a resilience programme and other initiatives to increase social and organisational support in reducing coronavirus anxiety in nurses. Finally, future research should explore how personal (e.g. self-efficacy, coping skills, hardiness) and organisational (adequacy of health care staffing, adequacy of hospital resources, number of patients admitted, hospital size) variables affect coronavirus anxiety in nurses.

#### 4.2 | Implications for nursing management

Since dysfunctional levels of COVID-19 anxiety may have negative effects on nurses' mental health and well-being, provision of adequate mental and psychological support should be prioritized by

nurse managers, who should institute evidence-based measures to promote the mental health of nurses during the COVID-19 pandemic. Nurse managers should ensure that nurses are given access to psychological treatment or psychotherapy, as well as materials and resources to support mental health. Nurse managers should prioritize and promote self-care among nurses by offering flexible or shorter duty hours, adequate breaks and time scheduling, for example, which may help reduce the negative impact of the crisis and reduce nurses' anxiety.

Nurse managers should also prioritize building personal resilience among front-line nurses, as higher personal resilience was associated with lower COVID-19 anxiety. By reinforcing positive coping strategies and supporting nurses' self-efficacy, nurse managers can better promote resilience among nursing staff, which is essential when dealing with workplace adversity and stressful work situations such as disease outbreaks or pandemics. Social support, including support originating from colleagues, friends and families, may help provide a sense of security in nurses and help alleviate their fears during a pandemic. Through sharing of work experiences, listening to nurses' concerns and offering empathetic support, nurses' mental health and psychological well-being will be supported and their morale will improve. Nurse managers should provide adequate organisational support through the implementation of a safe work environment, provision of complete and quality PPE and supplies to prevent infection, provision of accurate and timely information regarding the disease and implementation of trainings relevant to COVID-19. These organisational practices are critically important to support nurses in their nursing practices and protect both their physical and mental health.

## 5 | CONCLUSION

The COVID-19 pandemic may cause dysfunctional levels of anxiety in front-line nurses. Increased levels of personal resilience, social support and organisational support were associated with decreased levels of anxiety related to the COVID-19 pandemic. Thus, organisational strategies to enhance personal resilience and increase social and organisational support in nurses may reduce their anxiety related to the COVID-19 pandemic, the management of which is critically important when caring for patients affected by COVID-19.

#### ACKNOWLEDGEMENT

The authors would like to acknowledge and thank all nurses who participated in the study.

#### CONFLICT OF INTEREST

All authors declare no conflict of interest.

#### ETHICAL APPROVAL

Prior to data collection, the research protocol was submitted to the Institutional Research Ethics Committee of Samar State University (IRERC EA-0012-I), for ethical clearance.

## ORCID

Leodoro J. Labrague  <https://orcid.org/0000-0003-0315-4438>

## REFERENCES

- Alwani, S. S., Majeed, M. M., Hirwani, M. Z., Rauf, S., Saad, S. M., Shah, S. H., & Hamirani, F. M. (2020). Evaluation of knowledge, practices, attitude and anxiety of Pakistans nurses towards COVID-19 during the current outbreak in Pakistan. *medRxiv*, 1-26. <https://doi.org/10.1101/2020.06.05.20123703>
- American Psychiatric Association (APA). (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.).
- Baduge, M. S. P., Morphet, J., & Moss, C. (2018). Emergency nurses' and department preparedness for an ebola outbreak: A (narrative) literature review. *International Emergency Nursing*, 38, 41-49.
- Bautista, J. R., Lauria, P. A. S., Contreras, M. C. S., Marañon, M. M. G., Villanueva, H. H., Sumaguingsing, R. C., & Abeleda, R. D. (2020). Specific stressors relate to nurses' job satisfaction, perceived quality of care, and turnover intention. *International Journal of Nursing Practice*, 26(1), e12774.
- Bloom, D. E., Black, S., & Rappuoli, R. (2017). Emerging infectious diseases: A proactive approach. *Proceedings of the National Academy of Sciences*, 114(16), 4055-4059.
- Catton, H. (2020). Global challenges in health and health care for nurses and midwives everywhere. *International Nursing Review*, 67(1), 4-6.
- Choi, B. S. (2018). Influence of social support and resilience on the nurse job performance. *Indian Journal of Public Health Research & Development*, 9(3), 788-792.
- Cooper, A. L., Brown, J. A., Rees, C. S., & Leslie, G. D. (2020). Nurse resilience: A concept analysis. *International Journal of Mental Health Nursing*, 29(4):553-575.
- Dayrit, M. M., Lp, L., Of, P., Mc, P., & Mc, V. (2018). *The Philippines health system review [Internet]*. World Health Organization. In: Regional Office for South-East Asia; 2018. [cited 2018 Sep 27]. Retrieved from <http://apps.who.int/iris/handle/10665/274579>
- De Brier, N., Stroobants, S., Vandekerckhove, P., & De Buck, E. (2020). Factors affecting mental health of health care workers during coronavirus disease outbreaks: A rapid systematic review. *Psyarxiv*. <https://doi.org/10.31234/osf.io/w9uxs>
- Department of Health. (2020). *Updates on novel coronavirus disease (COVID-19)*. Retrieved from <https://www.doh.gov.ph/2019-nCoV>
- Duan, X., Ni, X., Shi, L., Zhang, L., Ye, Y., Mu, H., ... & Wang, Y. (2019). The impact of workplace violence on job satisfaction, job burnout, and turnover intention: the mediating role of social support. *Health and quality of life outcomes*, 17(1), 93.
- Duncan, D. L. (2020). What the COVID-19 pandemic tells us about the need to develop resilience in the nursing workforce. *Nursing Management*, 27(3), 22-27. <https://doi.org/10.7748/nm.2020.e1933>
- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1987). Perceived organizational support. *Journal of Applied Psychology*, 71, 500-507.
- Eisenberger, R., Stinglhamber, F., Vandenberghe, C., Sucharski, I. L., & Rhoades, L. (2002). Perceived supervisor support: contributions to perceived organizational support and employee retention. *Journal of applied psychology*, 87(3), 565.
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G\* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175-191.
- Foster, K., Roche, M., Giandinoto, J., & Furness, T. (2020). Workplace stressors, psychological well-being, resilience, and caring behaviours of mental health nurses: A descriptive correlational study. *International Journal of Mental Health Nursing*, 29(1), 56-68.
- Gao, T., Ding, X., Chai, J., Zhang, Z., Zhang, H., Kong, Y., & Mei, S. (2017). The influence of resilience on mental health: The role of general well-being. *International Journal of Nursing Practice*, 23(3), e12535.
- Guo, Y. F., Cross, W., Plummer, V., Lam, L., Luo, Y. H., & Zhang, J. P. (2017). Exploring resilience in Chinese nurses: A cross-sectional study. *Journal of Nursing Management*, 25(3), 223-230.
- Hart, P. L., Brannan, J. D., & De Chesnay, M. (2014). Resilience in nurses: An integrative review. *Journal of Nursing Management*, 22(6), 720-734.
- Higazee, M. Z. A., Rayan, A., & Khalil, M. (2016). Relationship between job stressors and organizational support among Jordanian nurses. *American Journal of Nursing Research*, 4(3), 51-55.
- Hou, T., Zhang, T., Cai, W., Song, X., Chen, A., Deng, G., & Ni, C. (2020). Social support and mental health among health care workers during Coronavirus Disease 2019 outbreak: A moderated mediation model. *Plos one*, 15(5), 1-14.
- Hu, S. H., Yu, Y. M., Chang, W. Y., & Lin, Y. K. (2018). Social support and factors associated with self-efficacy among acute-care nurse practitioners. *Journal of Clinical Nursing*, 27(3-4), 876-882.
- Jung, H., Jung, S. Y., Lee, M. H., & Kim, M. S. (2020). Assessing the presence of post-traumatic stress and turnover intention among nurses post-middle east respiratory syndrome outbreak: The importance of supervisor support. *Workplace Health & Safety*, 68(7):337-345. <https://doi.org/10.1177/2165079919897693>
- Kim, H. J., & Park, H. R. (2017). Factors affecting post-traumatic stress of general hospital nurses after the epidemic of Middle East respiratory syndrome infection. *Journal of Korean Clinical Nursing Research*, 23(2), 179-188.
- Kutluturkan, S., Sozeri, E., Uysal, N., & Bay, F. (2016). Resilience and burnout status among nurses working in oncology. *Annals of General Psychiatry*, 15(1), 33.
- Labrague, L. J., & De los Santos, J. A. A., Falguera, C. C., Nwafor, C. E., Galabay, J. R., Rosales, R. A., & Firmo, C. N. (2020). Predictors of nurses' turnover intention at one and five years' time. *International Nursing Review*, 67(2), 191-198.
- Labrague, L. J., Hammad, K., Gloe, D. S., McEnroe-Petitte, D. M., Fronda, D. C., Obeidat, A. A., ... Mirafuentes, E. C. (2018). Disaster preparedness among nurses: A systematic review of literature. *International Nursing Review*, 65(1), 41-53.
- Labrague, L. J., McEnroe Petitte, D. M., Leocadio, M. C., Van Bogaert, P., & Tsaras, K. (2018). Perceptions of organizational support and its impact on nurses' job outcomes. *Nursing Forum*, 53(3), 339-347.
- Labrague, L. J., & McEnroe-Petitte, D. M. (2018). Job stress in new nurses during the transition period: An integrative review. *International Nursing Review*, 65(4), 491-504.
- Labrague, L. J., Yboa, B. C., McEnroe-Petitte, D. M., Lobrino, L. R., & Brennan, M. G. B. (2016). Disaster preparedness in Philippine nurses. *Journal of Nursing Scholarship*, 48(1), 98-105.
- Langford, C. P. H., Bowsheer, J., Maloney, J. P., & Lillis, P. P. (1997). Social support: A conceptual analysis. *Journal of Advanced Nursing*, 25(1), 95-100.
- Lee, S. A. (2020). Coronavirus Anxiety Scale: A brief mental health screener for COVID-19 related anxiety. *Death Studies*, 44(7), 393-401.
- Lee, S. A., Jobe, M. C., Mathis, A. A., & Gibbons, J. A. (2020). Incremental validity of coronaphobia: Coronavirus anxiety explains depression, generalized anxiety, and death anxiety. *Journal of anxiety disorders*, 74, 102268.
- Lin, M., Hirschfeld, G., & Margraf, J. (2019). Brief form of the Perceived Social Support Questionnaire (F-SozU K-6): Validation, norms, and cross-cultural measurement invariance in the USA, Germany, Russia, and China. *Psychological Assessment*, 31(5), 609-621.
- Liu, Y., & Aunguroch, Y. (2019). Work stress, perceived social support, self-efficacy and burnout among Chinese registered nurses. *Journal of Nursing Management*, 27(7), 1445-1453.



- Liu, Y., Gayle, A. A., Wilder-Smith, A., & Rocklöv, J. (2020). The reproductive number of COVID-19 is higher compared to SARS coronavirus. *Journal of Travel Medicine*, 27(2), 1–4.
- Luo, M., Guo, L., Yu, M., & Wang, H. (2020). The Psychological and Mental Impact of Coronavirus Disease 2019 (COVID-19) on medical staff and general public—A systematic review and meta-analysis. *Psychiatry Research*, 291, 113190.
- Lv, Y., Yao, H., Xi, Y., Zhang, Z., Zhang, Y., Chen, J., ... Luo, G. Q. (2020). Social support protects chinese medical staff from suffering psychological symptoms in COVID-19 Defense. SSRN, 1-23. <https://doi.org/10.2139/ssrn.3559617>
- Maben, J., & Bridges, J. (2020). Covid-19: Supporting nurses' psychological and mental health. *Journal of Clinical Nursing*, 29(15-16):2742-2750. <https://doi.org/10.1111/jocn.15307>
- McMullan, C., Brown, G. D., & O'Sullivan, D. (2016). Preparing to respond: Irish nurses' perceptions of preparedness for an influenza pandemic. *International Emergency Nursing*, 26, 3–7.
- Mealer, M., Jones, J., & Meek, P. (2017). Factors affecting resilience and development of posttraumatic stress disorder in critical care nurses. *American Journal of Critical Care*, 26(3), 184–192.
- Mo, Y., Deng, L., Zhang, L., Lang, Q., Liao, C., Wang, N., ... Huang, H. (2020). Work stress among Chinese nurses to support Wuhan in fighting against COVID-19 epidemic. *Journal of Nursing Management*, 28(5), 1002-1009. <https://doi.org/10.1111/jonm.13014>
- Möller, A., Söndergaard, H. P., & Helström, L. (2017). Tonic immobility during sexual assault—A common reaction predicting post-traumatic stress disorder and severe depression. *Acta Obstetrica Et Gynecologica Scandinavica*, 96(8), 932–938.
- Pahlevan Sharif, S., Ahadzadeh, A. S., & Sharif Nia, H. (2018). Mediating role of psychological well-being in the relationship between organizational support and nurses' outcomes: A cross-sectional study. *Journal of Advanced Nursing*, 74(4), 887–899.
- Pappa, S., Ntella, V., Giannakas, T., Giannakoulis, V. G., Papoutsis, E., & Katsaounou, P. (2020). Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. *Brain, Behavior, and Immunity*, 88, 901-907. <https://doi.org/10.1016/j.bbi.2020.05.026>
- Philippine Statistics Authority. (2018). *Philippines in figures*. Retrieved from <https://psa.gov.ph/sites/default/files/PIF%202018.pdf>
- Shanafelt, T., Ripp, J., & Trockel, M. (2020). Understanding and addressing sources of anxiety among health care professionals during the COVID-19 pandemic. *JAMA*, 323(21), 2133–2134.
- Shevlin, M., Nolan, E., Owczarek, M., McBride, O., Murphy, J., Gibson Miller, J., ... McKay, R. (2020). COVID-19-related anxiety predicts somatic symptoms in the UK population. *British Journal of Health Psychology*, <https://doi.org/10.1111/bjhp.12430>
- Shiao, J. S. C., Koh, D., Lo, L. H., Lim, M. K., & Guo, Y. L. (2007). Factors predicting nurses' consideration of leaving their job during the SARS outbreak. *Nursing Ethics*, 14(1), 5–17.
- Skalski, S., Uram, P., Dobrakowski, P., & Kwiatkowska, A. (2020). *The link between ego-resiliency, social support, SARS-CoV-2 anxiety and trauma effects*. Polish Adaptation of the Coronavirus Anxiety Scale.
- Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine*, 15(3), 194–200.
- Soper, D. S. (2020). *A-priori sample size calculator for multiple regression*. Retrieved from <http://www.danielsoper.com/statcalc/calculator.aspx?id=1>
- Spielberger, C. D. (2010). *State-Trait anxiety inventory*. *The Corsini Encyclopedia of Psychology*. Hoboken, NJ: John Wiley & Sons, Inc.
- Teles, M. A. B., Barbosa, M. R., Vargas, A. M. D., Gomes, V. E., de Ferreira, E. F., de Barros Lima, A. M. E., & Ferreira, R. C. (2014). Psychosocial work conditions and quality of life among primary health care employees: A cross sectional study. *Health and Quality of Life Outcomes*, 12(1), 72.
- Turner, S. B. (2015). Resilience of nurses in the face of disaster. *Disaster Medicine and Public Health Preparedness*, 9(6), 601–604.
- Tzeng, W. C., Feng, H. P., Cheng, W. T., Lin, C. H., Chiang, L. C., Pai, L., & Lee, C. L. (2016). Readiness of hospital nurses for disaster responses in Taiwan: a cross-sectional study. *Nurse education today*, 47, 37–42.
- Veenema, T. G., Deruggiero, K., Losinski, S., & Barnett, D. (2017). Hospital administration and nursing leadership in disasters. *Nursing Administration Quarterly*, 41(2), 151–163.
- World Health Organization. (2020). *Coronavirus disease 2019 (COVID-19) situation report-60[EB/OL]*. Retrieved from <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>
- Xiao, H., Zhang, Y., Kong, D., Li, S., & Yang, N. (2020). The effects of social support on sleep quality of medical staff treating patients with coronavirus disease 2019 (COVID-19) in January and February 2020 in China. *Medical Science Monitor: International Medical Journal of Experimental and Clinical Research*, 26, e923549–e923551.
- Yu, H., Li, M., Li, Z., Xiang, W., Yuan, Y., Liu, Y., Xiong, Z. (2020). Coping style, social support and psychological distress in the general Chinese population in the early stages of the COVID-2019 epidemic. Social Support and Psychological Distress in the General Chinese Population in the Early Stages of the COVID-2019 Epidemic. SSRN, 1-34. <https://doi.org/10.2139/ssrn.3556633>

**How to cite this article:** Labrague LJ, de los Santos JA.

COVID-19 anxiety among front-line nurses: Predictive role of organisational support, personal resilience and social support. *J Nurs Manag*. 2020;28:1653–1661. <https://doi.org/10.1111/jonm.13121>