

# Pandemic fatigue and clinical nurses' mental health, sleep quality and job contentment during the covid-19 pandemic: The mediating role of resilience

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## Abstract

**Aim:** This study examined the influence of pandemic fatigue on clinical nurses' mental health, sleep quality and job contentment, with resilience as a mediator.

**Background:** Pandemic fatigue is an emerging health concern among frontline clinical nurses as a consequence of the ongoing coronavirus pandemic and the various measures implemented to slow the spread of infection. As yet, no studies have investigated the link between pandemic fatigue and resilience, mental health, sleep quality and job contentment in frontline clinical nurses.

**Methods:** This was a descriptive, cross-sectional study involving 255 frontline clinical nurses in the Philippines. The Pandemic Fatigue Questionnaire, Brief Resilience Scale, Job Contentment Scale and the Sleep Quality Scale were used to collect data through an online survey.

**Results:** The mean pandemic fatigue score was 3.086 (out of 5). Being vaccinated ( $\beta = 0.231, p < .001$ ) and increased staffing levels ( $\beta = -0.488, p < .01$ ) were associated with decreased pandemic fatigue in clinical nurses. Resilience partially mediated the relationships between (a) pandemic fatigue and mental health ( $\beta = -0.488, p < .001$ ), (b) pandemic fatigue and sleep quality ( $\beta = -0.326, p < .001$ ) and (c) pandemic fatigue and job contentment ( $\beta = -0.395, p < .001$ ).

**Conclusion:** Clinical nurses who received a COVID-19 vaccine and those who perceived sufficient staffing in their units reported lower levels of pandemic fatigue. Resilience reduces the effects of pandemic fatigue on clinical nurses' mental health, sleep quality and job contentment.

**Implications for Nursing Management:** By providing frontline nurses with access to COVID-19 vaccines and ensuring sufficient staffing levels, nurse managers could effectively reduce or prevent pandemic fatigue and improve their mental health. Implementing resilience-promoting measures are essential to support nurses' mental health, promote their sleep quality and foster job satisfaction.

## KEYWORDS

COVID-19, job contentment, mental health, nursing, pandemic fatigue, resilience

## 1 | INTRODUCTION

Pandemic fatigue (PF) is an emerging health concern among individuals during the COVID-19 pandemic. PF, which is defined as physical and mental tiredness, may occur during a pandemic as a consequence of the interruptions in the usual routines and activities of an individual due to various measures implemented to decrease virus transmission (e.g. lockdown, quarantine, social distancing) (World Health Organization, 2020). Evidence has shown a growing number of people experience pandemic fatigue a few months after the initial implementation of a national lockdown or curfew order in Canada (Nitschke et al., 2021). This trend has also been observed in Western countries in which significant increases in loneliness, fatigue, boredom, worry and extreme sadness were seen among the general public from the first few weeks to the fourth month of the implementation of mobility restrictions (Brodeur et al., 2021). Research from the Philippines, India and Saudi Arabia has also revealed similar patterns (Labrague & Ballad, 2021; Majumdar et al., 2020; Meo et al., 2020) in which individuals increasingly became fatigued as the lockdown continued, underscoring the importance of implementing measures to effectively support individuals during the pandemic and to prevent negative impacts of the prolonged lockdown or stay-at-home orders.

Manifestations of pandemic fatigue include physical and mental tiredness, reduced motivation, distractibility, periodic outbursts of emotion and increased fear (Australian Psychological Society, 2020; World Health Organization, 2020). Other symptoms associated with pandemic fatigue include body weakness, sleep problems, hopelessness, sadness, loneliness, overthinking, increased worry, irritability and a lack of concentration (Labrague & Ballad, 2021; Majumbar et al., 2020). A higher degree of pandemic fatigue is attributed to poorer physical, mental, behavioural and cognitive health and may adversely affect nurses' overall work performance, leading to poorer patient care provision (Cho & Steege, 2021). Therefore, it is essential that organisational strategies are in place to effectively manage this growing issue.

Frontline health care workers, including clinical nurses who work directly with COVID-19 patients, are particularly vulnerable to developing mental and psychological issues. Substantial evidence has reported higher prevalence rates of anxiety, emotional exhaustion, depression, mental distress, fatigue and post-traumatic stress disorder among nurses during the height of the pandemic (Labrague, 2021; Usher et al., 2020). As frontline health care workers, clinical nurses face a tremendous amount of stress due to several factors, including increased patient workloads, lack of reliable PPEs, long work shifts in PPE, constant changes in COVID-19 protocols and a lack of relevant experience caring for highly infectious patients (Goh et al., 2021; Leng et al., 2021). Moreover, the high transmissibility rate of the virus further increases nurses' fear of becoming infected and infecting others, thereby increasing their risk of mental fatigue (Labrague & Los Santos, 2021). Collectively, these elements potentially increase nurses' risk of developing pandemic fatigue, adversely affecting their overall health and

clinical performance and eventually leading to poor nursing care provision and poorer patient outcomes (del Carmen Giménez-Espert et al., 2020; Labrague & Los Santos, 2021). Studies have demonstrated that a greater proportion of nurses, particularly those directly taking care of COVID-19 patients, experienced a significant amount of fatigue during the peak of the pandemic (Jang et al., 2021). The incidence of moderate-to-high fatigue levels during the pandemic ranged from 35.06% to 72.2%, with more nurses experiencing physical fatigue than mental fatigue (Zhan et al., 2020; Zou et al., 2021). However, despite this evidence, it is unclear whether pandemic fatigue affects nurses' mental health, sleep patterns and job contentment.

With the ongoing nursing staff shortage along with the increasing number of nurses being infected by the virus, the need to sustain an adequate nursing workforce is a critical issue. It is necessary that organisational measures be implemented to address the negative impact of the pandemic, including pandemic fatigue, on nurses' job contentment and their health and well-being. However, reducing the negative impact of pandemic fatigue on clinical nurses requires bolstering their effective coping skills and resilience.

Resilience is defined as 'a complex and dynamic process which when present and sustained enables nurses to positively adapt to workplace stressors, avoid psychological harm and continue to provide safe, high-quality patient care' (Cooper et al., 2020; pp. 567). Positive consequences attributed to a higher level of resilience in nurses was shown to include the following: increased job satisfaction, reduced turnover, increased psychological well-being and higher patient satisfaction (Cooper et al., 2020; Hart et al., 2014). There is also compelling evidence showing the value of fostering resilience in nurses when facing traumatic events, emergencies and disasters, and infectious disease outbreaks (Pollock et al., 2020; Son et al., 2019). Reports during the height of the pandemic confirm previous findings regarding the benefits of boosting the resilience of frontline health care workers. Resilient nurses during the pandemic tended to experience less stress and emotional exhaustion, had reduced levels of anxiety and post-traumatic stress and had a lower incidence of depression compared to non-resilient nurses (Roberts et al., 2021; Yoruk & Guler, 2021). Moreover, bolstering resilience may potentially reduce the effects of the various pandemic-related stressors on hospital nurses' psychological, mental and emotional health (Labrague & Los Santos, 2021; Lorente et al., 2021), in turn, sustaining their job performance and reducing turnover intention (Labrague & Los Santos, 2021). However, while it is known that resilience acts as a protective factor against the negative effects of the pandemic (Cooper et al., 2020), the mechanism by which resilience reduces the negative effects of pandemic fatigue on nurses' mental health, sleep quality and job contentment remains unclear. This information is vital to assess the extent to which resilience influences nursing outcomes during a pandemic and will help to formulate interventions that better support the mental health and overall well-being of clinical nurses.

## 2 | METHODS

### 2.1 | Research design

This was a quantitative, cross-sectional study using an online survey.

### 2.2 | Sample and setting

This study involved frontline clinical nurses in the Central Region of the Philippines. This region is comprised of 50 government and 25 privately owned hospitals, with approximately 3,000 employed nurses. In this study, registered nurses (RNs) assigned to 50 units from 14 hospitals (7 government and 7 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 consisting of 5 small capacity hospital (< 100 beds), 4 medium capacity hospital (101 – 250 beds) and 5 large capacity hospital (> 250 beds). For inclusion in the study, nurses were required to be (1) currently working as a clinical nurse, (2) a licensed registered nurse and (3) with at least 6 months of work experience at their current organisation. G Power software was used to identify the required sample size. For a statistical power of 80%, a small effect size (0.05) and an alpha at 0.05, the required sample size was 242. Invitations to participate in the study were sent by email to 300 clinical nurses of which 255 responded.

### 2.3 | Instrumentation

The Pandemic Fatigue Questionnaire was used to assess clinical nurses' mental and physical fatigue associated with the COVID-19 pandemic (Labrague & Ballad, 2021). This scale is a unidimensional measure of pandemic fatigue and consists of 10 items, which are answered using a Likert scale (0 for 'never' to 5 for 'always'). The scale was originally designed to assess pandemic fatigue in the young adult population in the Philippines (Labrague & Ballad, 2021). Higher scores on the scale represent higher levels of pandemic fatigue. The scale has excellent construct, concurrent and criterion validity, and the internal consistency of the scale was shown to be acceptable (Labrague & Ballad, 2021).

The Brief Resilience Scale was used to examine nurses' capacity to rebound from stressful or undesirable situations caused by the COVID-19 pandemic and from other measures to control its transmission (Smith et al., 2008). The scale consists of five items which are answered using a Likert scale (0 for 'does not describe me at all' to 5 for 'describes me very well'). Higher scores represent greater resilience. The criterion validity and reliability of the scale are within an acceptable range (0.90) (Labrague & de los Santos, 2021; Smith et al., 2008).

The Job Contentment Scale was used to measure job contentment in nurses during the coronavirus pandemic (Taunton et al., 2004). The scale consists of seven items that are rated on

Likert scale (1 for 'strongly disagree' to 5 for 'strongly agree'). Higher mean scores represent higher levels of job contentment. The concurrent and criterion validity of this scale was found to be excellent, while its reliability was acceptable (0.91) (Taunton et al., 2004).

Nurses' sleep quality was assessed using a single-item measure (Snyder et al., 2018). Nurses rated the quality of their sleep in the past 7 days using a Likert scale that ranged from 0 ('poor') to 10 ('excellent'). The scale was originally designed to measure sleep quality among patients with sleep disturbance and was found to be useful to measure sleep quality among the general population as well (de los Santos & Labrague, 2021). The criterion and concurrent validity and the reliability of the scale are acceptable (Snyder et al., 2018; de los Santos & Labrague, 2021).

The internal consistencies of the scales used in our research were as follows: Pandemic Fatigue Questionnaire,  $\alpha = .91$ ; Brief Resilience Scale,  $\alpha = .88$ ; Job Contentment Scale,  $\alpha = .89$ ; and Sleep Quality Scale,  $\alpha = .90$ .

### 2.4 | Ethical considerations and data collection

Ethics approval for the study was obtained from the Samar State University Institutional Research Ethics Review Committee (IRERC) (IRERC EA-001-E). Due to several restrictions concerning data collection, the questionnaire was created using an online survey using Google Forms. The survey link was then sent to the valid email addresses and/or social media accounts of the participants. The introductory page of the online survey provided basic details of the study, as well as a consent letter. Nurses who opted to participate in the study signed the consent form by clicking the button 'Yes I confirm my participation in the study.', while those who did not want to participate clicked 'No, I don't want to participate'. No personal information was collected in the online survey to ensure participant anonymity. To encourage a high response rate, we sent weekly reminders to nurses' email addresses asking them to complete the survey. The online survey data collection was conducted from January to February 2021, during which a second wave of the coronavirus pandemic in the Philippines was declared by the health agency.

### 2.5 | Data analysis

Means, frequencies and standard deviations were used to present the descriptive data. Further, correlations between key study variables were analysed by ANOVA, Pearson's correlation coefficient ( $r$ ) and independent t-test. Multiple regression analyses were conducted to determine the predictors of pandemic fatigue and the effects of pandemic fatigue on mental health, sleep quality and job contentment. The mediating effect of resilience on the relationships between pandemic fatigue and the outcome variables was examined using hierarchical regression analysis. The level of statistical significance was set at  $p < .05$ .

**TABLE 1** Nurse characteristics and its correlation with pandemic fatigue ( $n = 255$ )

Variables	Category	<i>n</i>	%	Mean	SD	Test statistic	<i>p</i> value
Age				31.956	7.402	0.016	.818
Years of experience in nursing				8.799	6.753	-0.023	.744
Years of experience in the organisation				5.434	5.352	0.038	.587
Gender	Male	68	26.67	3.075	0.975	-0.090	.928
	Female	187	73.33	3.090	0.939		
Marital status	Married	87	34.12	3.021	0.965	-0.748	.456
	Unmarried	165	64.71	3.124	0.934		
Education	BSN	209	81.96	3.055	0.949	-1.203	.230
	MSN	46	18.04	3.286	0.908		
Job status	Fulltime	219	85.88	3.089	0.936	0.128	.898
	Part time	36	14.12	3.054	1.107		
Job role	Staff nurse	183	71.76	3.055	0.929	-0.750	.454
	Nurse manager	72	28.24	3.164	0.984		
Facility size	Small	77	30.20	3.224	1.007	1.400	.249
	Medium	88	34.51	2.953	0.884		
	Large	90	35.29	3.103	0.943		
Attendance in COVID-19-related trainings	Yes	103	40.39	3.105	1.018	0.229	.819
	No	152	59.61	3.074	0.896		
Vaccination Status	Vaccinated	210	82.35	2.982	0.903	-3.677	.001
	Not vaccinated	45	17.65	3.615	0.987		
Personal Protective Adequacy				2.466	0.824	0.122	.080
	Very insufficient	21	8.24				
	Insufficient	57	22.35				
	Sufficient	112	43.92				
Staff Adequacy				2.937	0.850	-0.225	.001
	Very insufficient	31	12.16				
	Insufficient	103	40.39				
	Sufficient	84	32.94				
	Very sufficient	37	14.51				
Mental Health				3.893	0.957		
Job Contentment				3.432	0.907		
Sleep Quality				6.427	2.279		
Pandemic Fatigue				3.086	0.944		

### 3 | RESULTS

#### 3.1 | Nurse characteristics and univariate analyses

A total of 255 clinical nurses responded to the online survey. The average age and years of nursing experience of the respondents were 31.956 and 8.799 years, respectively. The majority were female ( $n = 187$ , 73.33%), unmarried ( $n = 165$ , 64.71%) and held a BSN degree ( $n = 209$ , 81.96%). Most of the respondents were staff nurses ( $n = 183$ , 71.76%), had fulltime job status ( $n = 219$ , 85.88%)

and currently worked in medium to large hospital facilities ( $n = 177$ , 69.68%). The vast majority had received a COVID-19 vaccine ( $n = 210$ , 82.35%), and less than 50% ( $n = 103$ ) had attended a COVID-19-related training. Approximately 70% of the nurses perceived that PPE in their units was 'sufficient' to 'very sufficient'; however, with regard to staffing adequacy, less than 50% reported 'sufficient' to 'very sufficient' staffing levels. Pearson correlation analysis found a significant negative correlation between staffing adequacy and pandemic fatigue ( $r = -0.225$ ,  $p = .001$ ). Moreover, independent *t* tests showed higher mean scores of the pandemic fatigue scale among

**TABLE 2** Predictors of pandemic fatigue

Variables	B	SE	Beta	t	p	95.0% Confidence Interval	
						Lower Bound	Upper Bound
(Constant)	5.313	0.483				4.361	6.265
Vaccination status (R: Vaccinated)							
Not vaccinated	0.587	0.165	0.231	3.564	.001	0.262	0.912
Staffing adequacy	-0.212	0.074	-0.185	-2.844	.005	-0.358	-0.065

Note:  $R^2 = 15.4$ ;  $F = 13.394$ ;  $p = .001$

**TABLE 3** Correlations between key study variables

Variables	1	2	3	4	5
Mental Health	1				
Job Contentment	0.486 <sup>a</sup>	1			
Sleep Quality	0.513 <sup>a</sup>	0.430 <sup>a</sup>	-0.091	1	
Pandemic Fatigue	-0.559 <sup>a</sup>	-0.420 <sup>a</sup>	-0.166 <sup>b</sup>	-0.381 <sup>a</sup>	1

<sup>a</sup> $p = .001$ .

<sup>b</sup> $p = .01$ .

nurses who received a COVID-19 vaccine compared to those who did not ( $t = -3.677$ ,  $p = .001$ ) (Table 1).

### 3.2 | Descriptive statistics of the key study variables

The mean pandemic fatigue score was 3.086 ( $SD: 0.944$ ). The mean scores for the job contentment and mental health measures were above the midpoint, with mean scores of 3.432 ( $SD: 0.9077$ ) and 3.893 ( $SD: 0.957$ ), respectively. Out of a maximum score of 10, the mean sleep quality score was 6.427 ( $SD: 2.279$ ).

### 3.3 | Predictors of pandemic fatigue

Among the variables, only vaccination status ( $\beta = 0.231$ ,  $p < .001$ ) and staffing adequacy ( $\beta = -0.488$ ,  $p < .01$ ) were significant predictors. Nurses who received a COVID-19 vaccine reported a lower score on the pandemic fatigue scale than those who were not yet vaccinated. Further, nurses who perceived adequate staffing within their unit experienced lower levels of pandemic fatigue. The model explained 13.39% of the variance of pandemic fatigue ( $F = 13.394$ ;  $p < .001$ ) (Table 2).

### 3.4 | Correlation between pandemic fatigue, mental health, job contentment and sleep quality

Multiple correlations using the Pearson  $r$  correlation coefficient were conducted between key study variables. Pandemic fatigue was correlated with the three outcome variables in an expected direction—significant negative correlations were identified between pandemic

fatigue and mental health ( $r = -0.559$ ,  $p < .01$ ), job contentment ( $r = -0.420$ ,  $p < .01$ ) and sleep quality ( $r = -0.381$ ,  $p < .01$ ) (Table 3).

### 3.5 | Mediating effect of resilience on the association between pandemic fatigue and mental health, job contentment and sleep quality

Mediation analysis was conducted to test the hypothesized correlations between pandemic fatigue and nurses' mental health, sleep quality and job contentment (Table 4; Figure 1). The results indicated that pandemic fatigue has a direct effect on clinical nurses' mental health ( $\beta = -0.559$ ,  $p < .001$ ), sleep quality ( $\beta = -0.381$ ,  $p < .001$ ) and job contentment ( $\beta = -0.420$ ,  $p < .001$ ). Further, the results also identified that pandemic fatigue had a significant direct effect on nurses' resilience ( $\beta = -0.257$ ,  $p < .001$ ). The statistical analyses showed that resilience partially mediated the association between pandemic fatigue and clinical nurses' mental health ( $\beta = -0.488$ ,  $p < .001$ ), sleep quality ( $\beta = -0.326$ ,  $p < .001$ ) and job contentment ( $\beta = -0.395$ ,  $p < .001$ ). In other words, clinical nurses who had low scores on the pandemic fatigue scale might have high levels of resilience, which in turn would lead to better mental health, higher sleep quality and increased job contentment. The results of the Sobel test confirmed the significant mediating effect of resilience on the relationship between pandemic fatigue and mental health ( $z = -3.256$ ,  $p = .001$ ), sleep quality ( $z = -2.883$ ,  $p = .003$ ) and job contentment ( $z = -2.291$ ,  $p = .02$ ).

## 4 | DISCUSSION

Overall, the study findings provide support to the proposed hypothesized model. The results showed that nurses in the Philippines

**TABLE 4** Mediating effects of resilience on the relationship between pandemic fatigue and nurse outcomes

Model	B	SE	$\beta$	t	p	95.0% Confidence Interval	
						Lower Bound	Upper Bound
Direct effects							
Pandemic fatigue → mental health	-0.566	0.059	-0.559	-9.624	.001	-0.682	-0.450
Pandemic fatigue → job contentment	-0.403	0.061	-0.420	-6.606	.001	-0.523	-0.283
Pandemic fatigue → sleep quality	-0.918	0.156	-0.381	-5.879	.001	-1.226	-0.610
Resilience → mental health	0.653	0.104	0.402	6.262	.001	0.447	0.858
Resilience → job contentment	0.304	0.106	0.197	2.870	.005	0.095	0.512
Resilience → sleep quality	1.143	0.259	0.295	4.412	.001	0.632	1.654
Pandemic fatigue → resilience	-0.160	0.042	-0.257	-3.803	.001	-0.243	-0.077
Indirect effects							
Pandemic fatigue → resilience → mental health	-0.494	0.058	-0.488	-8.552	.001	-0.608	-0.380
Pandemic fatigue → resilience → job contentment	-0.380	0.063	-0.395	-6.027	.001	-0.504	-0.255
Pandemic fatigue → resilience → sleep quality	-0.787	0.158	-0.326	-4.981	.001	-1.099	-0.476

experienced moderate fatigue related to the coronavirus pandemic. Although we found no studies involving nurses that used a similar scale to measure pandemic fatigue, a previous study of the general population showed similar findings (Labrague & Ballad, 2021). The results of the current study are in line with international studies (Zhan et al., 2020; Zou et al., 2021) that showed nurses who work directly with COVID-19 patients experience moderate-to-high levels of fatigue. Given the adverse consequences of fatigue, it is essential that institutional measures be in place to address this issue in nurses and promote their overall health and well-being.

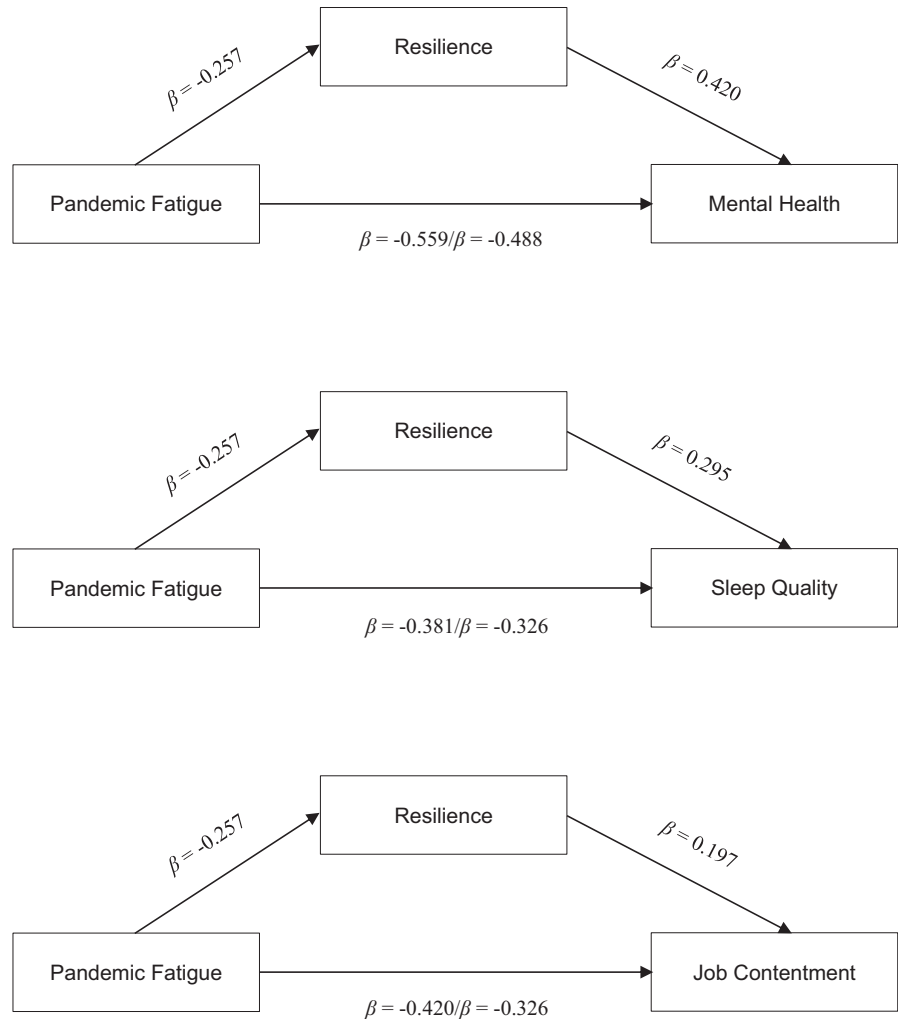
One important finding of the study was that nurses' vaccination status strongly predicted pandemic fatigue, with nurses who received a COVID-19 vaccine reporting lower levels of pandemic fatigue. However, this result should be interpreted with caution because of the large disparity in the percentage of nurses who did or did not receive a vaccine. Nevertheless, it appears that being vaccinated not only ensures that nurses are provided certain immunologic protection against the virus, but it may also reduce their fear and worry of becoming infected or infecting others, resulting in lower levels of pandemic fatigue. This is vital information because previous studies conducted in the early months of the pandemic found a significant proportion of nurses in many countries who expressed unwillingness, doubts and fear of caring for patients infected with the virus due to the lack of an effective vaccine (Khattak et al., 2020; Labrague & de los Santos, 2021). However, despite this evidence, it is worth noting that a significant proportion of nurses in the current study had not yet received a COVID-19 vaccine. By providing frontline nurses with access to COVID-19 vaccines, the continuity of care for infected patients can be assured, and nurses' health and well-being can be sustained.

Adequate staffing has been consistently cited in the literature as an important determinant of patient satisfaction, missed nursing care, adverse events and care quality (Blume et al., 2021). Moreover, a nursing work environment characterized by higher staffing levels was strongly associated with increased work satisfaction, job engagement, motivation, commitment and reduced turnover in nurses (Wang et al., 2021). In our study, higher levels of nurse staffing were associated with decreased pandemic fatigue. In other words, when there is enough staff, nurses' are able to manage their workloads, thereby reducing stress, burnout and physical and mental exhaustion.

Research during the first few months of the pandemic correlated poor staffing ratios with increased patient workloads, leading to a higher incidence of anxiety, depression, anxiety and post-traumatic stress disorder among nurses in Canada (Havaei et al., 2021). However, despite the relative importance of adequate staffing in reducing pandemic fatigue in nurses, fewer than 50% of nurses reported that the staffing levels in their units were 'sufficient' or 'very sufficient'. With an increasing surge of patients, ensuring adequate staffing remains an important challenge among nurse administrators given the number of staff nurses who are infected or under quarantine. In the Philippines, the estimated number of nurses who were infected and/or placed under quarantine since the start of the pandemic has doubled, causing excess strain on the staffing levels in many hospitals (de los Santos & Labrague, 2021). This finding underscores the importance of human resource planning to ensure adequate staffing during the pandemic while maintaining the health and well-being of nurses.

The regression analyses demonstrated that an increased pandemic fatigue score was associated with decreased scores for the

FIGURE 1 Hypothesized Models



mental health, sleep quality and job contentment measures. Since the emergence of the pandemic in late 2019, numerous studies have been conducted to examine how the pandemic impacts the mental health and psychological well-being of health care workers, including nurses. Additionally, studies have shown how the various restrictions to control the disease, such as social distancing, quarantines, and stay-at-home orders, further worsened fatigue levels of nurses (Roberts et al., 2021), potentially affecting their work effectiveness and productivity. Consistent with earlier studies (Sagherian et al., 2020), our study found poorer mental health and reduced sleep quality in frontline nurses who experienced higher pandemic fatigue levels. Research involving health care workers including doctors, pharmacists and nursing assistants has also shown that fatigue associated with the pandemic may significantly affect sleep patterns and sleep quality (Teng et al., 2020; Zou et al., 2021).

The current study also demonstrated that increased levels of pandemic fatigue may adversely affect nurses' job contentment. Our results support earlier research which showed that many nurses experienced work dissatisfaction and increased intention to leave their work due to the threat posed by the pandemic (Zhang et al., 2021; Pourteimour et al., 2021; Labrague & de los Santos, 2020). Evidence

from the pre-pandemic period showed that persistent exposure to fatigue might negatively affect job outcomes of nurses, such as reducing their work satisfaction and job engagement, increasing the frequency of absenteeism and increasing the intent to leave the organisation and the profession (Sagherian et al., 2017). If the issue of fatigue in nurses is not addressed, this may eventually drive nurses away from the profession, further worsening staffing problems and negatively affecting the delivery and quality of nursing care, leading to low patient satisfaction and, possibly, more instances of missed care and adverse events (Cho & Steege, 2021).

Mediation analysis showed that the effects of pandemic fatigue on nurses' mental health, sleep quality and job contentment were partially mediated by resilience. Resilience seems to decrease the negative effects of pandemic fatigue on nurses' sleep quality, mental health and job contentment. This result provides additional knowledge concerning the mediating effect of resilience on the relationship between pandemic fatigue and nurse well-being. It was rather expected, as resilient individuals have been shown to more effectively handle stress, anxiety and other mental health issues during the pandemic compared to non-resilient individuals (Labrague & de los Santos, 2020; Roberts et al., 2021; Yoruk & Guler, 2021). This leads to better sleep quality and, possibly, increased job contentment.



Resilience, or an individual's ability to rebound from traumatic or highly distressful events (Cooper et al., 2020), has been recognized as an important protective factor against various mental and psychological stressors, such as disease outbreaks (Pollock et al., 2020). During the COVID-19 pandemic, fostering resilience in nurses led to them having less fear of the disease and less psychological distress, emotional exhaustion and depression, as well as improving their quality of life (Labrague, 2021; Roberts et al., 2021; Yoruk & Guler, 2021). Other studies have associated resilience with sustained clinical performance and job engagement (Lyu et al., 2020). Further, resilience partially moderated the effects of the various pandemic-related stressors on nurses' experience of psychological distress (Lorente et al., 2021). This finding underscores the relevance of early interventions directed towards enhancing resilience in nurses to reduce the negative effects of pandemic fatigue on nurses' mental health, sleep quality and job contentment.

#### 4.1 | Limitations of the study

This study has some limitations. First, the clinical nurses included in this study were located in one geographical area of the Philippines. Therefore, future studies that involve nurses from other areas of the country may provide more generalizable results. The use of self-report scales may potentially cause response bias. Further, establishing a causal link between the investigated variables is not possible because of the cross-sectional nature of the research design. We recommend that future studies should utilize a more rigorous research design (e.g. randomized controlled trials) to test the efficacy of resilience interventions in reducing pandemic fatigue and other mental health issues in nurses during the current COVID-19 pandemic. The partially mediating effect of resilience on the relationship between pandemic fatigue and clinical nurses' mental health, sleep quality and job contentment indicates that other factors may not have been accounted for in this study. Hence, future studies should explore other personal factors (e.g. emotional intelligence, sense of coherence, coping, self-efficacy) and organisational factors (e.g. adequacy of hospital resources, staffing levels, accreditation levels and the number of admitted patients) that might affect nurses' well-being.

#### 4.2 | Implications to nursing management

Given the adverse effects of pandemic-associated fatigue on nurses' mental health, sleep quality and job contentment, it is essential that measures to address pandemic fatigue be prioritized and implemented by hospital and nurse administrators. Ensuring adequate organisational support, access to mental health services and providing a safe nursing work environment will better support clinical nurses and promote their health and well-being.

Because the vaccination status of clinical nurses strongly predicted pandemic fatigue, hospital administrators should ensure that

nurses are provided access to COVID-19 vaccines. This will ensure that nurses are immunologically protected from the virus, resulting in reduced pandemic fatigue, sustained work performance and better provision of patient care. Adequate staffing as an important predictor of pandemic fatigue highlights the importance of ensuring a sufficient workforce, particularly in COVID-19-designated units. Allocating more nurses to COVID-19 units, providing adequate rest breaks and shorter duty hours and providing flexible scheduling may be helpful to reduce mental and physical pandemic-associated fatigue in clinical nurses (Rieckert et al., 2021).

The mediating role of resilience underscores the importance of introducing interventions that focus on boosting resilience in nurses through empirically driven strategies, including educational interventions, mindfulness-based resilience programmes and mindfulness self-care (Badu et al., 2020). With the current restrictions regarding in-person contact, resilience interventions delivered virtually, including cognitive behavioural therapy, online resilience webinars and workshop, and an interprofessional web-based debriefing intervention (Azizoddin et al., 2020; Weiner et al., 2020) were shown to harness nurses' resilience and sustain their mental health. Resilience in frontline nurses can be best supported by adequate organisational support and supportive leadership, including the implementation of a resilient work environment, adequate patient–nurse ratio, flexible work schedule, adequate supplies and equipment (e.g. PPEs), up-to-date information regarding the virus and mental health resources.

## 5 | CONCLUSION

This study provides additional knowledge regarding the state of pandemic fatigue among clinical nurses who are on the frontline of the coronavirus pandemic. Overall, clinical nurses reported moderate levels of fatigue, with nurses who received a COVID-19 vaccine and those who perceived adequate staffing reporting significantly lower levels of pandemic-related fatigue. Further, resilience was seen to reduce the negative effects of pandemic fatigue on clinical nurses' mental health, sleep quality and job contentment. Resilience-promoting interventions may be vital to effectively support frontline clinical nurses' mental health, improve their sleep quality and foster job satisfaction during the pandemic.

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#### CONFLICT OF INTEREST

All authors declare no conflict of interest.

#### ETHICAL APPROVAL

This study received ethical approval from Samar State University Institutional Research Ethics Review Committee (IRERC) (IRERC EA-001-E).



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