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How inclusive leadership paves way for psychological well-being of employees during trauma and crisis: A three-wave longitudinal mediation study

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Abstract

Aims: Nurses are at the forefront of public health emergencies facing psychological pressures ensuing from the loss of patients and potential risk of infection while treating the infected. This study examines whether inclusive leadership has a causal relationship with psychological distress and to assess the mediation effect of psychological safety on this relationship in the long run. The hypotheses are developed and interpreted with the help of theoretical underpinnings from job demands resources theory and the theory of shattered assumptions.

Design: Three-wave longitudinal study.

Methods: Questionnaire was used to carry out three waves of data collection from 405 nurses employed at five hospitals in Wuhan during the COVID-19 outbreak between the months of January–April 2020. Partial least square structural equation modelling (PLS-SEM) was used to analyze data while controlling for age, gender, education, experience, and working hours.

Results: Results supported the hypothesized relationships where inclusive leadership indicated significant inverse causal relationship with psychological distress and a positive causal relationship with psychological safety. Mediation effect of psychological safety was found significant, while the model explained 73.9% variance in psychological distress.

Conclusion: Inclusive leadership, through its positive and supportive characteristics, can pave way for such mechanisms that improve the psychological safety of employees in the long run and curbs psychological distress.

Impact: This is the first longitudinal study to examine the relationship between inclusive leadership and psychological distress in health care and also examines the mediating mechanism of psychology safety. There is scarcity of empirical research on factors that determine and affect behavioural mechanism of healthcare workers during traumatic events and crisis. Clinical leaders and healthcare policy makers must invest in and promote inclusive and supportive environment characterized with open and accessible leaders at workplace to improve psychological safety; it helps reduce levels of psychological distress.

1 | INTRODUCTION

The novel Corona virus disease (COVID-19) outbreak was reported first in December 2019 in Wuhan city, P.R. China. COVID-19 has spread beyond China as a global pandemic across continents. As of September 04, 2020, 26,171,112 confirmed cases were reported with 865,154 deaths globally. The USA reported 6.05 million cases, Brazil had 3.99 million, Russia 1.01 million, Spain 488,513, and the UK 340,415 to name a few (WHO, 2020).

Healthcare workers are engaged both emotionally and physically (Eriksen et al., 2006), especially, in these unprecedented times of pandemic. They have to bear extreme stress while trying to calm their own nerves in the face of disaster and at the same time achieve balance between personal and professional lives. Mental stress and disorders are linked with deterioration in quality of life at the place of work (Kessler, 2012). Healthcare workers face occupational risks and fear of life-threatening infection during COVID-19 outbreak; suffer from loneliness because they must remain isolated from family, friends, and general public to minimize exposure to such a contagious virus (Mo et al., 2020); abstain from regular meals to minimize intake because it would cause taking toilet breaks, which requires change of personal protective gear; and even had their heads shaved to avoid irritation caused by excessive sweat (Smith et al., 2020).

Existing literature indicates that exposure to various stressors is one of the links between epidemiological work and onset of depressive disorders (Stuke & Bermpohl, 2016). A study by Wall et al. (1997) indicates that such stressors may include fear for their own safety while the nurses battle psycho-social and mechanical stress. Their psychological condition is vital in determining quality of care extended to COVID-19 patients. This makes it important to identify work-related predictors of depressive disorders so as to devise a mechanism for its prevention. Especially, the role of leaders is a significant area of study as it can affect levels of stress experienced by employees. A study found fair leadership to be useful in tackling anxiety and stressors that are rooted in the tasks inherent in their jobs (Nielsen et al., 2018). Another study observed that transformational leaders help nurses reduce occurrence of adverse events to improve quality of patient care (Asif et al., 2019).

Nurses face a more demanding workplace with psychological strain because of the nature of their jobs while they battle to control infection through isolation and containment. Support through an inclusive leadership style, as an external resource, boosts the psychological safety which is an internal resource (Janoff-Bulman, 1992). This mechanism helps cater to higher job demands. Subordinates find it liberating when they can have an open conversation with an inclusive leader who is always accessible. When they can talk about their concerns and the things they care about, a positive workplace environment is created characterized with psychological safety. The most important results of inclusive leadership are mutual trust between leaders and subordinates and a feeling of respect that makes them psychologically safe (Hassan & Jiang, 2019).

Research on outcomes of inclusive leadership is fairly in its infancy and there is also a lack of longitudinal studies on this style. Prior research has largely focused on assessing existence or non-existence of psychological distress and compares results across respondents with different age, occupation, experience, and gender. There is no study that explored any mechanism of how psychological distress levels are affected. This study focuses on psychological safety as a mechanism of inclusive leadership that paves the way for reducing psychological distress. Both psychological distress and leadership behaviour were assessed during the epidemic in Wuhan as against most studies that reflect on behaviours after such an event. Moreover, existing literature lacks a longitudinal study on the role of inclusive leadership in ensuring psychological well-being of employees during traumatic events such as a pandemic. Responding to the call for research by Birkeland et al. (2016), this study uses time-lagged design with three waves of data collection to ascertain causal relationships among inclusive leadership, psychological safety, and psychological distress (Figure 1) during the course of the COVID-19 outbreak.

1.1 | Background

1.1.1 | Inclusive leadership and psychological distress

First introduced by Nembhard and Edmondson (2006), inclusive leadership (IL) has been defined as "words and deeds by a leader or leaders that indicate an invitation and appreciation for others' contributions". IL denotes leaders who demonstrate their visibility, accessibility, and availability during interaction with subordinates (Carmeli et al., 2010). Hassan and Jiang (2019) opine that inclusive leadership makes sure that subordinates are given credit for their input and contribution notwithstanding where they fall in the organizational hierarchy available scholarship has proven its credence for workplace engagement (Wang et al., 2019); creativity (Mikyoung
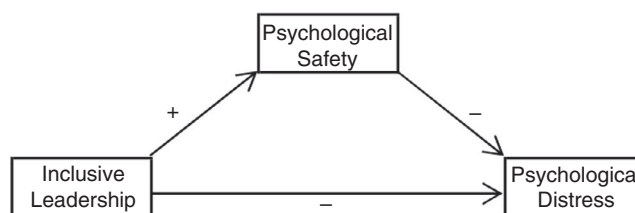

FIGURE 1 Research model

& Moon, 2019); innovative behaviour (Javed et al., 2017); and for a learning environment (Hassan & Jiang, 2019; Hirak et al., 2012).

Psychological distress refers to "general symptoms of depression and anxiety and reflects both a stable trait component and a state component susceptible to changes after external events" (Ormel & Schaufeli, 1991). Stress related to job-tasks activates a dysfunctional "psychological and physiological processes" which may in turn cause an adverse effect on psychological health of employees (Nielsen et al., 2012). If employees are exposed to situations of stress on a recurring basis, it prolongs their psychological activation, causing relatively more frequent episodes of worry, mood swings, temper, and rumination and an eventual culmination into psychological distress (Horwitz, 2007).

The theory of shattered assumptions (Janoff-Bulman, 1992) postulates that when a person is exposed to a traumatic event, it shatters the basic cognitive schemas about this world, others and themselves. Sudden change in core schemas threatens employees and a stable mechanism in the conceptual systems is needed; the absence of such mechanism results in trauma and health problems (Birkeland et al., 2016). How the workplace responds to traumatic events can influence employees' psychological distress (Byron & Peterson, 2002). Leadership's behaviour can either intensify or soothe the psychological condition of employees during stressful events (Hannah et al., 2009). After a terrorist attack in Oslo, Birkeland et al. (2015) assessed that the psychological distress among employees has a strong association with supportive leadership in work settings.

As the job demands resources (JDR) theory primarily posits, with an increase in job demands, the healthcare workers experience higher work-related stress if there is no increase in the available resources to meet those demands. Insufficient resources may lead to an anxious workforce as they try to perform job tasks (Bakker & Demerouti, 2014). Stuke and Bermpohl (2016) and Cheng et al. (2020) observed higher job demands cause job stress and JD-R is related to the mental health of the healthcare workers, respectively. Disruptive behaviour and JD-R are associated with psychological condition (Gleason et al., 2020). Oshio et al. (2018) found a significant relationship between JD-R factors and PD based on a sample of over 18,000 respondents.

During the COVID-19 outbreak in Wuhan, nurses faced a spike in their job demands. They have faced shortage in supplies and protective materials including masks, hazard suits and eye goggles, a necessity during patient care (Yu & Li, 2020). Existing research on service theory has indicated a trend of increasing competencies required in addition to traditional nursing roles, including a more collaborative approach with higher tolerance for risk (Bowen, 2016; Stuke & Bermpohl, 2016).

The psychological toll in terms of job demands has also seen a steep rise during COVID-19 and requires nurses to incur more mental exertion than usual. IL is a key antidote because it provides nurses with a psychological resource where they can channel their thoughts, fears, concerns, and needs. Being an inherent listener, an inclusive leader helps alleviate situations of hypertension by means of interacting with nurses regularly. Such support helps minimize the uncertainty, role stress, and job anxiety. Therefore, this study hypothesizes that:

Hypothesis 1 *Inclusive leadership (IL) has an inverse relationship with Psychological Distress (PD) of healthcare workers.*

1.1.2 | The mediating role of psychological safety

Edmondson (2014) jokes while explaining psychological safety, "It turns out no one wakes up in the morning and jumps out of bed because they can't wait to get to work today to look ignorant, incompetent, intrusive, or negative". Psychological safety is defined as an individual's perception that he/she will not face humiliation for voicing their concerns or be punished for a mistake at work (Edmondson, 1999, 2014). Scholars have noticed that "the degree of psychological safety varies across medicine" (Edmondson & Lei, 2014; Nembhard & Edmondson, 2006; Rosenbaum, 2019), thus, indicating need for more research on its role and influencing factors in healthcare services.

In the field of health care, it is often seen that supervisors tend to manage their reputation and image (Edmondson, 2003). More recently, Wang et al. (2019) found that supervisor nurses pay more attention towards improving work efficiency and less attention to leadership responsibilities and expectations. In a clinical setting, leaders ought to ensure that they add meaningfulness to their subordinates' work; reminding them about the probability of things to go wrong due to their nature of their work (Edmondson, 2017). The open behaviour of Inclusive leaders not only provides intellectual support but it also connects with nurses emotionally (Hirak et al., 2012).

The theory of shattered assumptions by Janoff-Bulman (1992) postulates that situations such as epidemics bring trauma and shatter the employee perceptions of the world being a safe place. IL helps rebuild this safety notion through its inherent characteristics. IL is characterized with a culture of openness, accessibility, and availability of the leaders who are always ready to help employees (Nembhard & Edmondson, 2006). This inclusive approach through open and welcoming behaviour also enables thriving at workplace (Choi et al., 2015). On the contrary, a lack of openness or habit of hiding information among leaders leads to harmful outcomes because it deteriorates psychological safety (Jiang et al., 2019). Mikyoung and Moon (2019) observed a positive impact of IL on PS, which mediates the relationship between IL and extra-role behaviours of employees. Guchait et al. (2019) also indicate that psychological safety plays a mediating role between forgiveness climate of an organization and service recovery of its employees.

Along the same lines, this study postulates that psychological safety plays a mediating role as an enabler of inclusive leadership to reduce psychological distress. This study makes a contribution in the context of traumatic events and crisis such as COVID-19 pandemic. It explains part of the mechanism of how IL reduces PD by fostering psychological safety of employees. Therefore, we assume that PS is a connecting mechanism in the relationship between IL and positive outcomes such as a positive mindset with lower levels of psychological distress. Thus, it is hypothesized:

Hypothesis 2 *Psychological Safety (PS) mediates the relationship between inclusive leadership (IL) and Psychological Distress (PD) of healthcare workers.*

2 | THE STUDY

2.1 | Aims

This study aims to (a) examine the influence of IL style on PD of nurses; and (b) study the mediating role of nurses' PS between IL and PD during patient care.

2.2 | Design

This study used longitudinal study design, which primarily concerns with the question whether there has been any change over a period of time (Saunders, 2011). The answer lies in assessing mediation through time lags in data collection even when actual manipulation of variables is impractical (Cole & Maxwell, 2003). This study assessed a mediation model which involves causal relationship of a predictor with a criterion variable through a mediating variable (i.e., IL → PS → PD). In such a model, "a fundamental requirement for one variable to cause another is that the cause must precede the outcome in time" (Cole & Maxwell, 2003, p. 559). Data were collected in three waves to adequately assess the mediation in the longitudinal studies by following the recommendations of Cole and Maxwell (2003). This procedure was used more recently by Haider et al. (2020) in their study involving role of job anxiety.

2.3 | Ethical considerations

After obtaining permission from Chief of Nursing staff, the researchers created a group chat on Wechat (a popular application in China) and printed its QR code on an A4-sized paper. A disclosure statement was also printed with explanation of purpose of creating this group, academic nature of the survey, voluntary participation, and assurance of confidentiality. This was displayed by head nurses at prominent locations at the target hospitals near reporting desks and duty stations. Using mixed and snowball sampling technique, 497 nurses were recruited to the group chat with informed consent (first 100 by QR code and subsequently through invitation by members to other co-worker nurses).

2.4 | Participants and sample size

There are five levels of career progression for Chinese Nurses, i.e. nurse, senior nurse, supervisor nurse, co-chief superintendent nurse and chief superintendent nurse (Wang et al., 2019). The data were

TABLE 1 Sample profile

	N	%age
Gender		
Male	81	20.00%
Female	324	80.00%
Age (years)		
≤25	70	17.28%
25 ≤ 35	119	29.38%
35 ≤ 45	157	38.77%
45 and older	59	14.57%
Experience (years)		
01 ≤ 03	168	41.48%
03 ≤ 05	151	37.28%
05 ≤ 07	49	12.10%
07 or more	37	9.14%
Education		
High school/diploma	117	28.89%
Bachelor degree	249	61.48%
Master degree	39	9.63%
Designations/cadres		
Nurse	213	52.59%
Senior nurse	106	26.17%
Supervisor nurse	86	21.23%
Working hours per week		
≤40	89	21.98%
40 ≤ 48	124	30.62%
48 ≤ 60	157	38.77%
60 or more	35	8.64%

collected from nurses, senior nurses, and supervisor nurses. The sample profile is displayed in Table 1. Based on recommendations of Hair et al. (2013), power analysis was used to determine minimum sample size. Authors considered the variable with the largest number of predictors pointing towards a variable. To achieve a minimum R-square value of 0.25 with 80% statistical power at a significance level of 5%, the minimum recommended sample size for two predictors in 52. Moreover, the '10 times rule' by Gefen and Straub (2004) used in PLS-SEM analysis suggests 20 responses. This study's sample size of 405 is well above the satisfactory level.

2.5 | Measures

2.5.1 | Inclusive leadership

IL was measured through a 9-item scale adopted from Carmeli et al. (2010). IL scale assesses whether the respondents believe that their leader displays openness, is available during times of need, and is easily accessible when sought after for consultation or support.

2.5.2 | Psychological safety

PS was measured with a 7-item scale developed by Edmondson (1999). The scale measures the extent to which subordinates feel safe taking risks while being on a team; are able to bring up problems and tough issues related to their job; and do not fear being humiliated for their lack of knowledge or awareness. Both IL and PS were measured on a 5-point Likert-type scale (1 = strongly disagree -5 = strongly agree).

2.5.3 | Psychological distress

PD was measured through the 6-item (K6) scale developed by Kessler and Mroczek (1994) for non-specific psychological distress over a period of 30 preceding days (0 = none -4 = all the time), with the score ranging from 0–24. The Chinese version validated by Jang et al. (2018) was used. It has been regularly used by National Health Services in UK for annual surveys between 1997 and 2015 (Patel et al., 2018) and multiple studies have shown acceptable psychometric properties (Jong Won & Sun Hae, 2015).

2.6 | Control variables

Based on past studies on PD (Eriksen et al., 2006; Stuke & Bermpohl, 2016), this study controlled for working hours, gender, age, and experience.

2.7 | Data collection

For the first wave, the data collection was carried out between 18 January 2020 -20 February 2020 with temporal separation (data for IL and PS were collected on 20 January 2020 while data for PD were collected on 20 February 2020). Two more waves of data collection were carried out 1 month apart, on 20 March 2020 and 20 April 2020. The 1 month gap between each wave of data collection is in line with prevailing practice in longitudinal research during COVID-19 outbreak (Wang et al., 2020). Another study on depressive symptoms by Steca et al. (2014) collected four waves of data in 6 months. The questionnaire was placed online with a third-party Chinese service provider and its link was shared in the Wechat group chat for each round of data collection. Wechat IDs served as unique identifiers to match responses across the three waves. Respondents were requested to fill the questionnaire within 48 hr of distribution at their convenience. During the first wave of data collection, questionnaire was distributed to 497 registered nurses, out of these 451 nurses filled the questionnaire complete in all respects. Of these, 421 usable responses were received during the second wave on March 20, 2020. Finally, of 421, 405 (81.49%) respondents provided usable responses complete in all respects during the third wave.

2.8 | Data analysis

The data were analyzed using SmartPLS 3.2.9 (Ringle et al., 2015). Partial least square structural equation modelling (PLS-SEM) was the preferred as it performs better for predictive models (Hair et al., 2013). Moreover, it is preferred for complex models simultaneously estimating relationships between multiple independent and dependant variables (of the structural models) and the latent, multiple observed or unobserved constructs of measurement model (Sarstedt et al., 2017). Analysis is carried out in two steps. First, measurement model is assessed for reliability and validity and secondly structural model is assessed to test the significance and relevance of hypotheses. Two-tailed test was run with benchmark t value of 1.96 to accept or reject hypotheses (Hair et al., 2017). Procedure devised by Henseler et al. (2016) was used to assess measurement invariance of composites (MICOM) for appropriateness of longitudinal study design.

2.9 | Validity and reliability

Following the prevailing practices in management and marketing research (Hair et al., 2017, 2020) to test composite models based on several instruments, the internal reliability was established through composite reliability (CR). CR values for all variables exceeded 0.8, indicating sufficient reliability. Outer loadings assessed against benchmark value of 0.5. The item loadings (Table 2) ranged between 0.487 and 0.894. Most values exceeded 0.70 but lower values were also retained for their collective contribution to the construct. This helped established convergent validity as suggested by Fornell and Larcker (1981) criterion that AVE values must exceed 0.50.

Discriminant validity shows that the constructs are not highly correlated and are distinct from each other. As recommended by Henseler et al. (2014) and Sarstedt et al. (2017), the discriminant validity (Table 3) was assessed through heterotrait-monotrait (HTMT) criteria. All the constructs at all waves of data collection had HTMT values below the conservative value of 0.85.

2.10 | Rigour, model quality, and strength

Longitudinal data can only be considered valid for the purpose of achieving unbiased results over time after testing for measurement invariance. Horn and McArdle (1992) recommend that measurement invariance ascertains "whether or not, under different conditions of observing and studying phenomena, measurement models yield measures of the same attribute" (p. 117). The same has been tested for this model through the latest PLS-based method called measurement invariance of composite models (MICOM) introduced by Henseler et al. (2016) who suggest that "all variance-based SEM techniques model latent variables as composites" (p. 408). MICOM is an appropriate method to test measurement

TABLE 2 Item loadings, construct reliability, and convergent validity

Constructs	Indicators	λ	CR	AVE
Time 1 psychological distress (T1-PD)	T1-PD1	0.770	0.864	0.538
	T1-PD2	0.647		
	T1-PD3	0.715		
	T1-PD4	0.778		
	T1-PD5	0.670		
	T1-PD6	0.673		
Time 2 psychological distress (T2-PD)	T2-PD1	0.847	0.808	0.522
	T2-PD2	0.880		
	T2-PD3	0.810		
	T2-PD4	0.867		
	T2-PD5	0.854		
	T2-PD6	0.801		
Time 3 Psychological Distress (T3-PD)	T3-PD1	0.513	0.897	0.624
	T3-PD2	0.838		
	T3-PD3	0.623		
	T3-PD4	0.781		
	T3-PD5	0.858		
	T3-PD6	0.894		
Time 1 psychological safety (T1-PS)	T1-PS1	0.804	0.884	0.541
	T1-PS2	0.487		
	T1-PS3	0.726		
	T1-PS4	0.636		
	T1-PS5	0.601		
	T1-PS6	0.790		
	T1-PS7	0.793		
Time 2 psychological safety (T2-PS)	T2-PS1	0.767	0.863	0.614
	T2-PS2	0.513		
	T2-PS3	0.744		
	T2-PS4	0.882		
	T2-PS5	0.632		
	T2-PS6	0.777		
	T2-PS7	0.749		
Time 3 Psychological Safety (T3-PS)	T3-PS1	0.673	0.874	0.598
	T3-PS2	0.799		
	T3-PS3	0.742		
	T3-PS4	0.851		
	T3-PS5	0.709		
	T3-PS6	0.727		
	T3-PS7	0.779		

(Continues)

TABLE 2 (Continued)

Constructs	Indicators	λ	CR	AVE
Time 1 inclusive leadership (T1-IL)	T1-IL1	0.789	0.907	0.558
	T1-IL2	0.749		
	T1-IL3	0.778		
	T1-IL4	0.759		
	T1-IL5	0.579		
	T1-IL6	0.627		
	T1-IL7	0.709		
	T1-IL8	0.678		
	T1-IL9	0.601		
Time 2 inclusive leadership (T2-IL)	T2-IL1	0.872	0.901	0.671
	T2-IL2	0.818		
	T2-IL3	0.844		
	T2-IL4	0.843		
	T2-IL5	0.718		
	T2-IL6	0.705		
	T2-IL7	0.779		
	T2-IL8	0.676		
	T2-IL9	0.831		
Time 3 inclusive leadership (T3-IL)	T3-IL1	0.772	0.859	0.593
	T3-IL2	0.718		
	T3-IL3	0.744		
	T3-IL4	0.743		
	T3-IL5	0.808		
	T3-IL6	0.850		
	T3-IL7	0.879		
	T3-IL8	0.676		
	T3-IL9	0.731		

Abbreviations: AVE, average variance extracted; CR, composite reliability; λ, factor loadings.

invariance of this study's model. Using the procedure devised by Henseler et al. (2016) and Matthews (2017), a three-step approach was used to conduct the MICOM process in this study.

First, the authors followed the configural invariance by ensuring that all the indicators, the procedures, treatment of data, and algorithms were identical for all the waves of data collection as well as measurement. Second step is to test the compositional invariance which must indicate that original correlation was greater than or equal to 5% quantile. Permutation function provided in SmartPLS 3 software was used to perform this step with 5,000 permutations. Table 4 shows satisfactory results.

Third and final step was to establish composite equality which is indicated when the values of "mean original difference" and

TABLE 3 Discriminant validity – heterotrait-monotrait ratio (HTMT)

	T1-IL	T2-IL	T3-IL	T1-PD	T2-PD	T3-PD	T1-PS	T2-PS
T1-IL								
T2-IL	0.822							
T3-IL	0.819	0.815						
T1-PD	0.236	0.236	0.236					
T2-PD	0.295	0.295	0.295	0.841				
T3-PD	0.382	0.382	0.382	0.848	0.847			
T1-PS	0.504	0.504	0.504	0.234	0.343	0.321		
T2-PS	0.801	0.801	0.801	0.207	0.192	0.36	0.809	
T3-PS	0.691	0.301	0.386	0.344	0.209	0.431	0.801	0.849

TABLE 4 MICOM step 2 results

	Original correlation	Correlation permutation mean	5% quantile	Permutation *p*-values
TIME 1 to TIME 2				
Psychological safety	0.994	0.986	0.985	.237
Psychological distress	0.999	0.999	0.989	.069
TIME 2 to TIME 3				
Psychological safety	0.991	0.998	0.985	.306
Psychological distress	0.997	0.996	0.992	.229
TIME 1 to TIME 3				
Psychological distress	0.991	0.995	0.989	.263

TABLE 5 MICOM step 3 results

	MOD (VOD)	MPMD (VPMD)	Confidence interval (2.5–97.5%)	Permutation *p* values
TIME 1 to TIME 2				
Psychological distress	−0.064	−0.002	(−0.202, 0.199)	.546
	(0.098)	(0.002)	(−0.328, 0.295)	(.512)
TIME 2 to TIME 3				
Psychological distress	−0.032	−0.002	(−0.198, 0.206)	.742
	(−0.001)	(−0.003)	(−0.353, 0.293)	(.993)
TIME 1 to TIME 3				
Psychological distress	−0.07	−0.004	(−0.204, 0.202)	.505
	(0.088)	(0.004)	(−0.368, 0.342)	(.629)
TIME 1 to TIME 2				
Psychological safety	0.157	0.001	(−0.209, 0.197)	.114
	(0.197)	(0.011)	(−0.288, 0.291)	(.176)
TIME 2 to TIME 3				
Psychological safety	0.201	0.001	(−0.205, 0.204)	.403
	(−0.016)	(−0.002)	(−0.277, 0.263)	(.896)

Abbreviations: MOD, mean – original difference; MPMD, mean – permutation mean difference; VOD, variance – original difference; VPMD, variance – permutation mean difference.

"variance original difference" (in parenthesis) both are within the 2.5%–97.5% range (Table 5). In such a case, a full invariance is established. However, in case one of these variances does not fall within the 2.5%–97.5% range, then partial invariance is established. In this study, full invariance of our longitudinal data has been established.

3 | RESULTS

3.1 | Structural model assessment

The guideline and insights provided by Cole and Maxwell (2003) and Maxwell et al. (2011) were followed to assess a three-wave

mediation model by observing the effect of predictor variable from first wave of data collection on outcome variable from third wave of data collection with the mediator variable from second wave (while we control for the mediator from first wave and outcome variable from first two waves). This provides the best measures and avoids the possible problem of half-longitudinal design. Thus, the model assessed effect of time 1 inclusive leadership (T1-IL) on time 3 psychological distress (T3-PD) through time 2 psychological safety (T2-PS), while controlling for previous waves' level of psychological safety (T1-PS) and psychological distress (T1-PD & T2-PD).

The mediation analysis for our autoregressive model was performed by using the latest mediation procedures explained in Hair et al. (2019) and suggested by Hair et al. (2017), in two steps. First, the indirect effect of predictor was tested on outcome variable through the mediating variable. The indirect effect was significant, and it provided support for mediation. Secondly, the authors tested direct effect of predictor on outcome for significance. According to

Hair et al. (2017), this means that "mediator fully complies with the hypothesized theoretical framework" (p. 234).

For step 1, product of coefficients was used along with bootstrap procedure (Little et al., 2007; Preacher & Hayes, 2004) which is consistent with procedures suggested by Cole and Maxwell (2003) who recommend that mediation exists when the indirect effect (product of path T1-IL→T2-PS and path T2-PS→T3-PD) is non-zero. In our model, the indirect effect was 0.112 [(0.498)*(−0.226)] with a t value = 2.34 and p-value < 0.001, indicating a significant indirect effect.

For step 2, the significance of direct effect of T1-IL to T3-PD was tested. To test the structural model, a 5000-sampled bootstrap (with bias-corrected settings) at 0.05 level of significance was run. Based on a two-tailed estimation, a t value of 1.96 was set as benchmark (Hair et al., 2017; Sarstedt et al., 2016) to test if the hypotheses are supported or not. Table 6 displays the results of the structural model assessment. Figure 2 shows that baseline IL, together with T2-PS

TABLE 6 Results of structural model and specific indirect effect

	Mean	SD	T values	p values	CI (2.5%, 97.5%)	Hypotheses remarks
T1-IL → T3-PD	−0.138	0.035	3.94	<.001	(−0.413, −0.269)	H1 = Supported
T1-IL → T2-PS → T3-PD	−0.112	0.041	2.73	<.001	(−0.271, −0.102)	H2 = Supported
T1-IL → T2-PS	0.498	0.037	13.61	<.001	(0.431, 0.570)	-
T1-PS → T2-PD	−0.156	0.079	1.97	.026	(−0.290, −0.135)	-
T2-PS → T3-PD	−0.131	0.056	2.34	.047	(−0.284, −0.106)	-
T1-PS → T2-PS	0.452	0.043	10.44	<.001	(0.359, 0.520)	-
T1-PD → T2-PD	0.842	0.016	53.59	<.001	(0.807, 0.869)	-

Abbreviations: CI, confidence intervals; *SD*, standard deviation.
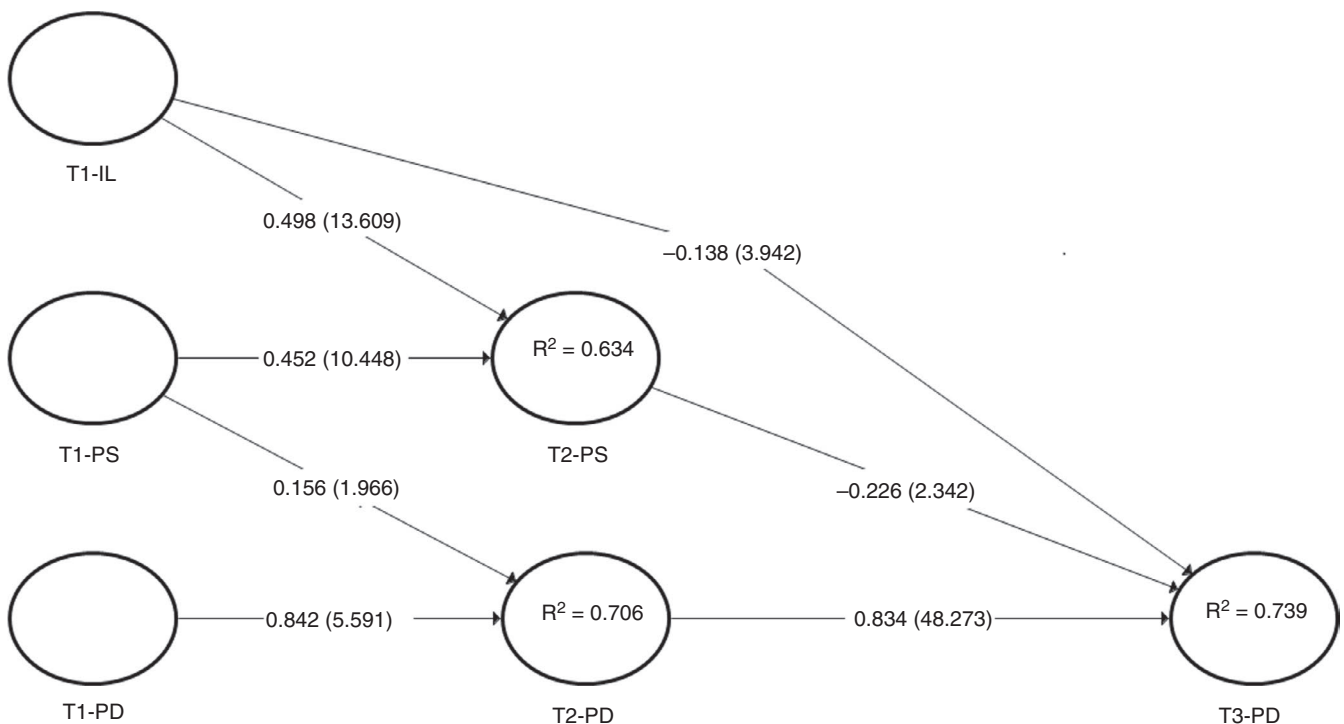
FIGURE 2 Results of the structural model

and T2-PD explained 73.9% variance in T3-PD. T1-IL ($\beta = 0.498$) and T1-PS ($\beta = 0.452$) explained 63.4% variance in T2-PS. T1-PS ($\beta = 0.156$) and T1-PD ($\beta = 0.842$) explained 70.6% variance in T2-PD. Table 7 gives a bird's eye view on the changes in levels of PD, IL and PS during all three waves of data collection. As the IL and PS increase, the PD scores dropped by half compared with baseline.

3.2 | Multi-group analysis (MGA) results

A 5000-subsampled percentile bootstrap was run for multi-group analysis with PLS-MGA function in smartPLS 3 software. The literature proposes that difference between groups of data are indicated by the p-value differential column in results which displays the p-values below 0.05 or above 0.95 (Ringle et al., 2015). (Table 8).

TABLE 7 Changes in levels of IL, PS, and PD during the outbreak

Construct	Time	Mean	Standard deviation	% change in baseline
Psychological distress	T1-PD	18.25	4.654	Baseline
	T2-PD	12.63	3.844	−30.8%
	T3-PD	8.81	3.040	−51.7%
Psychological safety	T1-PS	3.53	0.781	Baseline
	T2-PS	4.29	0.305	21.5%
	T3-PS	4.76	0.207	34.8%
Inclusive leadership	T1-IL	3.64	0.310	Baseline
	T2-IL	4.28	0.341	17.6%
	T3-IL	4.86	0.401	33.5%

TABLE 8 Results of the MGA

	Mean	Standard deviation	T values	p value
Hypotheses 1 = T1-IL → T3-PD				
Working hours ≥48 versus <48	−0.031	0.049	0.63	.204
Experience ≥5 versus <5	−0.022	0.032	0.69	.216
Age ≥35 versus <35	0.008	0.031	0.26	.508
Edu bachelor versus HS/dip	−0.052	0.101	0.51	.302
Male versus female	−0.018	0.114	0.16	.705
Hypothesis 2 = T1-IL → T2-PS → T3-PD				
Working hours ≥48 versus <48	−0.056	0.04	1.40	.378
Experience ≥5 versus <5	−0.011	0.09	0.12	.291
Age ≥35 versus <35	0.018	0.037	0.49	.824
Edu bachelor versus HS/dip	−0.086	0.084	1.02	.726
Male versus female	−0.081	0.17	0.48	.308

4 | DISCUSSION

This study aimed to study the effects of IL on PD and to evaluate mediation by PS between these variables in the long run, which is this study's main contribution. While the findings have confirmed results of some past studies that affirm relationship of IL with PS (Javed et al., 2017; Mikyoung & Moon, 2019), these findings also extend on those results. Through empirical evidence, this longitudinal study indicates a cause and effect relationship between IL and PD during the COVID-19 pandemic. Exposure to an infectious disease produces emotional stress as the nurses fear threat of infection. They suffer from anxiety while battling their own concerns for safety. Inclusive behaviour by nursing leaders can create an environment with improved PS and help reduce PD during such daunting situations as a pandemic.

As a positive leadership style, the findings of this study on IL affirm results of past studies indicating impact of positive leadership styles during traumatic events (Birkeland et al., 2015). On the other hand, this study contradicts some previous studies where no relation was found between work factors and PD (Eriksen et al., 2006); the head nurses were found to exhibit very low level of IL (Wang et al., 2019) and positive leadership style was not found significantly related to PD (Nielsen et al., 2018). However, it can be argued that such studies in past were conducted under normal conditions and not in public health emergency situations. Still, a longitudinal study by Birkeland et al. (2016) also found that there was no relation between positive leadership styles and PD in the long run. However, it did not study IL style directly.

Although this study's empirical context does not measure JD-R at the workplace, it was used as a theoretical lens to support hypotheses development and interpret the subsequent results. The results provide indirect support for JD-R theory in that the mismatch between required resources and job demands predicts role stress because healthcare workers perform their tasks using insufficient resources during epidemics. When exposed to increased job demands and diminishing resources, healthcare workers not only have to experience stress episodes, but are prone to PD as well. This study's theoretical expectations coincide with the findings of empirical analysis. The shift in the balance between job demands and resources among healthcare workers coincides with increased PD during an epidemic. The strong empirical support suggests that application of JD-R theory can further advance the research in health services sector (Gabler et al., 2017).

The resources under JD-R theory primarily constitute internal resources of psychological capital, work autonomy, and value along with external resources of leadership styles, fringe benefit, and social support (Bakker & Demerouti, 2014; Bakker Arnold & Demerouti, 2007). PS serves as an internal resource and IL serves as external resource which motivates development of positive mood through open and accessible environment. Using these tenets of the JD-R theory, critical remedial practices can be introduced at hospitals to ensure inclusive environment which may help prevent an imbalance between psychological resources and demands. If such an

imbalance can be avoided, it is likely to reduce occurrence of sudden negative workplace outcomes in general and specifically under increased risks in epidemiological work.

With respect to implications based on the premise of the theory of shattered assumptions by Janoff-Bulman (1992), situations such as epidemics bring trauma and shatter the employee perceptions of the world being a safe place. Inclusive leadership can serve as such a mechanism to rebuild these perceptions. With a leader who is open and available, employees appreciate the supervisor's recognition of their emotions of fear and threat. This way the emotional toll and demands faced by subordinates are subdued leading to reduced levels of PD (Tucker et al., 2020). Fear and safety concerns during an epidemic are primary areas to focus on, to establish a psychologically safe environment for the healthcare workers. This study shows that IL in health care is vital in ensuring psychological well-being. The positive leadership styles such as IL bring healthcare workers together through sharing and caring behaviour. It helps subordinates stay mentally strong to continue fighting diseases that cause public health emergencies.

Managing nurses has emerged as a key issue in recent research in health care (Wang et al., 2019). Previous researchers have emphasized the management of nurses under normal circumstances (Choi et al., 2017; Masood & Afsar, 2017) rather than in situations of public health emergencies such as a pandemic. Therefore, this study compensates for this gap in literature. The results suggest inclusive leaders create more open and psychologically safe environment for healthcare workers. This in turn helps maintain and improve employees' vitality, contribution, and focus on work by reducing PD.

4.1 | Implications for nursing management

In China, head nurses are primary administrators responsible for managing the clinical nursing as well as matters related to patient care and hospital operations while coordinating among doctors, patients, and nurses. These nursing leaders may occasionally tend to be more focused on improving their work efficiency, instead of inclusive leadership behaviour (Sortedahl et al., 2017). This can be remedied through introduction of training and rewards programs which can help draw the focus back to inclusive practices.

The results of the study indicate that the comprehensive guidelines issued by National Health Commission of China (Zhang, 2020) were successfully implemented at the hospitals in Wuhan. These guidelines were issued during the last week of January 2020 specifying intervention mechanisms to tackle psychological crisis faced by healthcare workers after the COVID-19 outbreak. The underlying instructions emphasized providing mental health support to nurses with the help of psychologists, psychiatrists, and multi-disciplinary teams. While focusing on establishing supportive and inclusive behaviour among nursing leaders and supervisors, the real-time delivery of support initiatives was made possible in workgroups at the hospitals in Wuhan.

From a global perspective, the same implications extend beyond China to other countries battling COVID-19 pandemic. For instance, a task-force initiative launched at the Mount Sinai Healthcare System (MSHC) in the USA reported in its findings (Ripp et al., 2020) that, during the COVID-19 pandemic, there were three major areas that needed prioritizing for the purpose of ensuring emotional and psychological health among of the healthcare workers in New York City. These areas included: (a) meeting basic daily needs of the workforce; (b) enhancing the level of communication to ensure delivering latest and reliable messages in a reassuring way; and (c) the need to develop a set of robust measures to extend mental health and psycho-social support. These three measures are in line with the spirit of guidelines issued by Chinese authorities for the healthcare workers in Wuhan. These practical implications depict an unprecedented importance of psychological well-being among the healthcare workers during the outbreak because their mental state essentially determines the quality of care extended to patients of this infectious disease.

Training programs on IL for employees in supervisory roles in healthcare can help develop openness, availability, and accessibility as part of the organizational culture. The leaders in clinical settings whose jobs may not fall under formal leadership may also be provided guidelines and training for inculcating inclusiveness and openness.

4.2 | Limitations and future research

This study indicates a causal relationship between IL and PD in work settings specific to healthcare workers. The findings may be generalized with caution to other industry or type of firms. Although causal relationships shown through longitudinal studies are generalizable, this mechanism of IL, PS, and PD needs to be studied further in other geographic settings currently suffering from COVID-19 outbreak. Another limitation was single-source data and future studies may use multi-source data with outcome variables reported by supervisors, for example, reporting adverse events at hospitals. Further studies on IL may be carried out with outcome variables that address extra-role behaviour among nurses and healthcare workers. Another direction for future research could involve comparing the IL style across cultures and how political and cultural factors shape the response among leaders to develop an approach of ensuring psychological safety among their subordinates. A study with samples from multiple countries battling COVID-19 pandemic could make this possible.

5 | CONCLUSIONS

This study affirms theoretical underpinnings of inclusive leadership style which is characterized by supportive behaviour towards employees. The inclusive environment with open behaviour, where leaders are accessible, promotes psychological safety among

peers and subordinate nurses. This in turn makes the employees more forthcoming, sharing, and helpful. The mere belief, that there is someone whom they can turn to for help and advice in times of need, helps reduce stress. It is important not just for workers, but for the patients as well. The psychological well-being of nurses brings about benefits for the patient care because psychologically safe nurses are less likely to make mistakes and reduces adverse events.

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CONFLICT OF INTEREST

No conflict of interest has been declared by the authors.

AUTHOR CONTRIBUTIONS

F.A., F.Z. and N.A.F. contributed to conceptualization and design of the study. F.A., F.Z. and N.A.F. were involved in acquisition of data. F.A and Y.J.Q. were involved in analysis and interpretation of data. F.A, F.Z. and N.A.F. were involved in preparing original draft. F.A, N.A.F. and Y.J.Q. were involved in critical revision of manuscript. F.A., N.A.F. and Y.J.Q were involved in statistical expertise. F.A. acquired financial support. All authors have agreed on the final version and meet at least one of the following criteria (recommended by the ICMJE*): 1) substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content.

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