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ORIGINAL ARTICLE

Decision fatigue among clinical nurses during the COVID-19 pandemic

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Abstract

Aims and objectives: The purpose of this study was to report the psychometric properties, including validity and reliability, of the decision fatigue scale (DFS).

Background: Decision fatigue may impair nurses' ability to make sound clinical decisions and negatively impact patient care. Given the negative impact of the COVID-19 pandemic on psychological well-being and the workplace environment, decision fatigue may be even more apparent among clinical nurses. Valid assessment of this condition among clinical nurses may inform supportive interventions to mitigate the negative sequelae associated with states of decision fatigue.

Design: This study was a secondary analysis of a parent study using a cross-sectional descriptive design.

Methods: A convenience sample of 160 staff nurses was recruited online from across the United States. Participants completed a demographic questionnaire and subjective measures of decision fatigue, nursing practice environment scale and traumatic stress. Exploratory factor analysis (EFA), correlation coefficients and internal consistency reliability coefficients were computed to examine the DFS's validity and reliability within this sample.

Results: The EFA yielded a single factor, 9-item version of the DFS. The DFS scores were strongly correlated with traumatic stress and moderately correlated with the nursing practice environment, and the scale displayed appropriate internal consistency.

Conclusions: This is the first known study to provide evidence of the DFS's validity and reliability in a sample of registered nurses working during the COVID-19 pandemic. The results of this study provide evidence of a reliable and valid assessment instrument for decision fatigue that can be used to measure the burden of decision-making among registered nurses.

Relevance to clinical practice: Given the relationship between traumatic stress and the nursing work environment, decision fatigue may be a modifiable target for interventions that can enhance the quality of decision-making among clinical nurses.

KEYWORDS
COVID-19, Decision Fatigue, Nursing

1 | INTRODUCTION

The COVID-19 pandemic has caused fundamental disruptions to vital economic, societal and healthcare infrastructures worldwide (Ozili & Arun, 2020; Walker et al., 2020). Specifically for healthcare delivery, the crux of these disruptions is rooted in the gross imbalance between an intense demand for resources necessary to provide care for acutely ill individuals and the insufficient supply of resources (e.g. hospital beds and mechanical ventilators) to provide such care (Walker et al., 2020). As a result, frontline healthcare workers report inordinate levels of negative psychological symptoms, such as stress and anxiety (Spoorthy et al., 2020). Specifically, stress, anxiety and other negative psychological symptoms can compromise the clinical decision-making ability of nurses via the manifestation of decision fatigue, resulting in negative outcomes for patients and their family members (O Donovan et al., 2013; Pignatiello et al., 2020; Sarafis et al., 2016). Decision fatigue may be indicative of a nurses' ability to provide competent practice and serve as a modifiable target for interventions to enhance the quality of nursing care.

1.1 | Background

Originating from experimental psychology, decision fatigue is a state during which individual decision-making quality is impaired (Pignatiello et al., 2020). Broadly, decision fatigue results from engaging in acts of self-regulation (also known as self-control). For example, decision fatigue may result from making repeated choices in a given time period, regulating emotions or controlling behaviour. These behaviours elicit what Baumeister et al. (2018) refer to as 'ego depletion', a state of reduced willpower that diminishes ability to control one's behaviour. Thus, decision fatigue is a manifestation of the ego-depletion effect. Specifically, individuals experiencing decision fatigue may procrastinate when making choices, avoid making choices, defer to default options or behave impulsively. As a result, those experiencing decision fatigue may be less confident in their ability to make choices, rely on using shortcuts to make choices, feel conflicted when deliberating and make choices that they ultimately regret (Pignatiello et al., 2020).

The COVID-19 pandemic may increase nursing susceptibility to decision fatigue. First, the nursing workplace environment has rapidly transformed in response to COVID-19: staffing levels are dangerously inadequate, nurses are providing care to patients for a disease the world is largely unfamiliar with, and supplies of personal protective equipment are limited and diminish empathic communication abilities (Roush, 2020; Stevens et al., 2020). These environmental alterations further predispose nurses to psychological trauma, as their job has rapidly become much more difficult to perform (Fernandez et al., 2020; Wei et al., 2018). The extant literature describes the deleterious effects of unhealthy work environments and psychological stressors on nurses' clinical decision-making and patient outcomes that are consistent with the manifestation of decision fatigue (Keykaleh et al., 2018; Nibbelink & Brewer, 2018; Pignatiello et al., 2020; Sarafis et al., 2016; Wei et al., 2018). Therefore, decision fatigue may represent a modifiable factor that affects the psychological well-being of nurses and their ability to provide safe patient care.

What does this paper contribute to the wider global community?

- This is the first known psychometric validation of the decision fatigue scale among a sample of clinical nurses.
- Decision fatigue is associated with higher symptoms of traumatic stress and unhealthy nursing work environments.
- Decision fatigue may be a modifiable determinant of psychological outcomes among clinical nurses and clinical outcomes among patients and their family members.

Decision fatigue has been scantly examined within healthcare disciplines, and even less so among nurses (Pignatiello et al., 2020). It has been studied among primary care physician prescribing behaviours (Hsiang et al., 2019; Linder et al., 2014), orthopaedic surgeon operation decisions (Persson et al., 2019) and in nurses working at a call centre (Allan et al., 2019). All of the aforementioned studies provide evidence that decision fatigue can contribute to deviations in clinical decision-making that are incongruent with best practice and evidence-based recommendations. Notably, in these studies, decision fatigue was indirectly measured or inferred from other clinical indicators. There is an existing scale, the decision fatigue scale, which was designed to measure decision fatigue (Hickman et al., 2018); however, to our knowledge, it has only been validated in family caregiving samples (Chen et al., 2018).

While COVID-19 vaccination programmes are being rolled out in 2021, experts largely agree that the global impact of the virus will persist throughout the upcoming years, and unfortunately, the extent of this impact remains unclear (Dong et al., 2020; Scudellari, 2020). Therefore, the global healthcare workforce must be equipped to support and protect its frontline workers as we head into the decade. Decision fatigue may help identify deteriorations in clinical judgement among clinicians, be a symptom of unhealthy work environments and indicate the need for tailored support to prevent the development of psychological trauma (Masiero et al., 2020). Therefore, the purpose of this study was to examine the psychometric properties of the decision fatigue scale in a sample of clinical nurses working during the COVID-19 pandemic.

2 | METHODS

2.1 | Design, sample and setting

This study was a secondary analysis of a cross-sectional, descriptive study exploring the psychological impact of working as a nurse during the COVID-19 pandemic. Our design and reporting procedures

were guided by the 'Strengthening the Reporting of Observational Studies in Epidemiology' checklist (Data S1) (Vandenbroucke et al., 2007). Recruitment for this study began on 21 July 2020 and is presently ongoing. It comprises a national convenience sample of adult (≥18 years), English-speaking staff nurses working at least 20 hr per week. All research activities were remotely performed on the internet.

2.2 | Instruments

Participants completed a sociodemographic form and other study instruments for the purposes of the primary study. Specifically, the following instruments administered in the primary study were included for the purposes of this secondary analysis.

2.2.1 | Demographic characteristics

We administered an investigator-developed demographic form. This form captured sociodemographic information such as age, gender, race and education level, as well as information related to their clinical practice, such as geographic location, practice setting and years of experience.

2.2.2 | Decision fatigue scale

The decision fatigue scale (DFS) is a 9-item, unidimensional, self-report instrument that measures the amount of respondent decision fatigue over the prior 24 hr. Items are scored on a 4-point Likert scale ranging from 0 (strongly disagree) to 3 (strongly agree). Items are summed to form a total score ranging from 0 to 27, with higher scores representing a greater amount of decision fatigue. The scale's original development and psychometric validation was performed in family caregiving populations (Hickman et al., 2018; Pignatiello et al., 2019). To our knowledge, it has not been used or validated in clinician populations.

2.2.3 | Practice environment scale of the nursing work index

The Practice Environment Scale of Nursing Work Index (PES-NWI) is a widely used measure of the quality of the nurse practice environment (Warshawsky & Havens, 2011). Derived from the 48-item Nursing Work Index (NWI) by Kramer and Hafner (1989), the PES-NWI has 31 items divided into five subscales: (1) nurse participation in hospital affairs; (2) nursing foundations for quality of care; (3) nurse manager ability, leadership and support of nurses; (4) staffing and resource adequacy; and (5) collegial nurse-physician relations. Item responses are scored on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). Item subscale scores are derived by taking the mean score of subscale items, and total scores are computed by calculating the average of the subscale scores. (Lake, 2002). Higher scores indicate a more desirable work environment. The PES-NWI has shown adequate validity and reliability across a diverse cross-cultural sample of nurses (Ogata et al., 2018; Parker et al., 2010; Swiger et al., 2017).

2.2.4 | *Impact of event scale-revised*

The Impact of Event Scale-Revised (IES-R) measures self-reported distress related to the experience of a traumatic event. While not actually serving as a diagnostic tool, the IES-R is used in conjunction with other diagnostic tools to measure symptoms of post-traumatic stress disorder ('Impact of Event Scale-Revised [IES-R] for DSM-IV', 2018; Weiss & Marmar, 1997). The IES-R possesses three subscales that measure intrusion, avoidance and hyperarousal. Items are scored on a 5-point Likert scale that prompts respondents to rate how distressing the experience of each item has been over the prior week, ranging from 0 (not at all) to 4 (extremely). A total score is derived by summing the individual items and subscale scores as computed through calculating means of the subscale items. The reliability and validity of the IES-R is well-documented across a range of samples in numerous languages (Kragh et al., 2019). For the purposes of this study, respondents were asked to reflect on their experiences working as a nurse during the COVID-19 pandemic.

2.3 | Procedures

Institutional review board approval was obtained prior to beginning recruitment. Participants were recruited through advertisements on the American Association of Critical Care Nurses website, targeted Facebook advertising and independent word-of-mouth social media posts by study investigators and their colleagues. Interested participants clicked on the study website link and were automatically redirected to the researchers' institutional Research Electronic Data Capture (REDCap) study website, where they completed a captcha-related task to ensure that the provided data were human-generated. From there, participants self-endorsed the study's four inclusion criteria (adult, English-reading, possess nursing degree and working clinically 20 hr per week) and were provided a digital version of the study's informed consent document. Below the document, participants then endorsed a consent statement and provided an electronic signature. After providing informed consent, participants completed the study instruments, including the sociodemographic questionnaire, DFS, PES-NWI and IES-R. The data for the present study included only participants who completed the aforementioned instruments. Participants were not compensated for their time or effort.

2.4 | Analysis

The data set was analysed using IBM SPSS ver. 27. Our analytic strategy and reporting practices are consistent with best practice recommendations and consistent with prior published work (Costello & Osborne, 2005; Johnson & Morgan, 2016; Pett et al., 2003; Pignatiello et al., 2019).

2.4.1 | Descriptive statistics for participants and DFS items

Descriptive statistics (e.g. frequencies, means, standard deviations) were used to appraise the samples' characteristics. Additional univariate statistics (e.g. skewness and kurtosis) were also used to evaluate the 9 DFS items for conduct of further psychometric analyses.

2.4.2 | Validity

We provided evidence of the DFS's validity by examining its internal structure (structural validity) and its relationship to other constructs (concurrent and discriminant validity).

Internal structure

Consistent with best practice recommendations, we evaluated the DFS's structural validity through exploratory factor analysis (EFA) via principle axis factoring using direct oblimin rotation (Costello & Osborne, 2005; Pett et al., 2003). We evaluated the DFS items' appropriateness for EFA by examining the inter-item correlation matrix for collinearity ($r > .80$) and poorly related ($r < .30$) items, as well as the Bartlett's test of sphericity for nonsignificance ($p > .05$) (Johnson & Morgan, 2016; Pett et al., 2003). To ensure our sample size was sufficient for the intended analysis, we inspected the Kaiser–Meyer–Olkin coefficient and the measures of sampling adequacy (MSA) for respective values less than 0.60 and 0.70. Extracted factors were retained for interpretation if their Eigenvalues were greater than one. This decision was supported by examining the scree plot per traditional recommendations (Cattell, 1966). Given the unidimensionality of the DFS, we interpreted the factor matrix to evaluate item loadings to support the retention of individual items. Only items with a primary loading greater than 0.40 were retained (Costello & Osborne, 2005).

Relationships to other constructs

We also provided evidence of the DFS's convergent and discriminant validity by evaluating its association with other constructs (Perron & Gillespie, 2015). To provide evidence of the DFS's convergent validity, we hypothesised it would possess at least a moderate relationship ($r = .30$) with the total levels of distress measured by the IES-R and the total score of the PES-NWI. To provide evidence of the DFS's discriminant validity, we hypothesised it would possess a very weak ($r < .10$) relationship with two demographic questions: the first question concerned their practice environment (urban/non-urban), and the second question asked whether they or someone they know has been infected with the COVID-19 virus. Interpretation of coefficient magnitude was obtained from Cohen (1988) as cited in Shultz et al., (2013).

2.5 | Reliability

We computed a Cronbach's α coefficient to determine the DFS's internal consistency reliability. Following standard conventions, a minimum Cronbach α value of .70 was desired to provide support of the DFS's reliability.

3 | RESULTS

3.1 | Participant characteristics

The final sample included 160 staff nurses (Table 1). On average, participants were 36 years old ($SD = 11.8$, $n = 158$)—noticeably younger than national estimates—and the majority were female (91.9%) and White (85.6%), which are more congruent with national estimates (Smiley et al., 2018). More than half of the participants practised in the Mid-Atlantic or Midwestern United States (25.0% and 53.1%, respectively), and the majority practised in an urban setting (60.3%) at an academic medical centre or community teaching hospital (52.6% and 36.2%, respectively). The majority of the participants were baccalaureate-prepared nurses (80.2%), worked at least 36 hr per week, identified primarily as a staff nurse (75.9%), and more than half (54.2%) worked in a critical care practice setting. On average, the participants had worked for 7.4 years ($SD = 8.6$, $n = 158$) and had held their current position for 4.9 years ($SD = 6.7$, $n = 152$). More than half had cared for a COVID-19 patient within the past week (61.0%, $n = 159$), and more than half had been infected with COVID-19 or had a friend or family member who was infected (67.3%, $n = 159$).

3.2 | Univariate and multivariate item statistics

The 9 DFS items were normally distributed and displayed little skewness or kurtosis (Table 2). All inter-item correlations were above 0.30, and only a few were above 0.80 (DFS 1 × 2 = 0.809, DFS 1 × 3 = 0.807, DFS 2 × 3 = 0.805, DFS 3 × 5 = 0.857, & DFS 4 × 5 = 0.808). Proceeding with exploratory factor analysis was supported by the Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy, the measures of sampling adequacy (MSA) from the reproduced correlations and Bartlett's test of sphericity. The KMO coefficient was above the recommended value of 0.60 (KMO = 0.91), suggesting an adequate ratio of participants to number of scale items, and Bartlett's test of sphericity was significant ($X^2 = 982.89$, $p < .001$).

TABLE 1 Sample characteristics (N = 160)

Variable	*n* (%)
Gender	Female: 147 (91.9)
	Male: 12 (7.5)
	Non-binary/Gender non-conforming =1 (0.6)
Race/ethnicity	Asian/Pacific Islander: 8 (5.0)
	Black/African-American: 4 (2.5)
	White/Non-Hispanic: 137 (85.6)
	Hispanic/Latino: 9 (5.6)
	Other/mixed: 2 (1.3)
Education	Baccalaureate: 129 (80.6)
	Masters: 12 (7.5)
	Doctorate: 1 (0.6)
	Associates: 18 (11.3)
Have you or someone you are close to been infected with the COVID−19 virus?*	No: 52 (32.7)
	Yes: 107 (67.3)
Region of practice	Mid-Atlantic: 40 (25.0)
	South: 18 (11.3)
	Midwest: 85 (53.1)
	Southwest: 8 (5.0)
	West: 9 (5.6)
Practice Location	Urban: 86 (53.8)
	Suburban: 45 (28.1)
	Rural: 29 (18.1)
Type of Facility	Academic Medical Center: 62 (38.8)
	Community Hospital (Teaching): 68 (42.5)
	Community Hospital (Non-teaching): 24 (15.0)
	Military: 1 (0.6)
	Other: 5 (3.1)
Acuity Level**	Critical Care: 78 (49.4)
	Step-down: 22 (13.9)
	Floor (Medical/surgical & Psychiatric): 26 (16.5)
	Emergency: 22 (13.8)
	Rehabilitation: 1 (0.6)
	Ambulatory: 9 (5.6)
Type of Position	>36 hr per week: 134 (83.8)
	<36 hr per week: 19 (11.9)
	Contract/Traveling/Agency Employee: 7 (4.4)
Cared for a COVID−19 patient within the last week?*	No: 62 (39.0)
	Yes: 97 61.0)
Do you intend to leave your current position within the next 6 months?**	No: 125 (79.1)
	Yes: 33 (20.9)

*n = 159.; **n = 158.

3.3 | Internal structure

The EFA of the 9-item DFS yielded a univariate solution, as determined by the K1 method and interpretation of the scree plot. The single factor had an eigenvalue of 6.4 and explained 70.9% of the variance. All 9 items had factor loadings >.40, so all items were retained in the final solution (Table 3). The univariate solution contained an acceptable level of nonredundant residuals among the reproduced correlations (36%).

3.4 | Reliability

The internal consistency reliability of the univariate DFS was very good, and the Cronbach alpha coefficient was =.95, with no significant improvements to be made by removing any of the 9 scale items.

3.5 | Relationship to other constructs

The DFS was significantly correlated with the PES-NWI and the IES-R ($\rho = -.32$, $p < .01$, and $\rho = .55$, $p < .01$, respectively). The DFS was not significantly correlated with practice location or being/knowing someone who was COVID positive ($\rho = .11$, $p = .16$, and $\rho = .09$, $p = .24$, respectively). These correlations support the validity of the 9-item DFS in this population.

4 | DISCUSSION

We found that the 9-item DFS demonstrated acceptable psychometric properties among a convenience sample of staff nurses working at least 20 hr per week during the COVID-19 pandemic. Exploratory factor analysis yielded a unidimensional structure consistent with the DFS's original development and validation (Hickman et al., 2018). We also provided evidence supporting the DFS's convergent and discriminant validity via its associations with measures of the nursing workplace environment, traumatic distress and select sociodemographic variables. Finally, the DFS possesses acceptable internal consistency. These findings can inform future scientific work focussing on improving the support of staff nurses and possess implications for clinical practice.

To begin, the strong loadings of all nine DFS items suggest that the scale is theoretically valid in its ability to measure the underlying unidimensional construct of decision fatigue (Costello & Osborne, 2005; Froman, 2001). While the identification of marker items is less of a concern for unidimensional instruments, the highest loading item in this analysis, 'It takes too much effort to make decisions', is representative of the underlying theoretical gist implied by use of decision fatigue within the extant literature and is consistent with the original validation of the scale in a family caregiver sample (Froman,

TABLE 2 Item statistics for the decision fatigue scale (N = 160)

Scale Items	*M*	*SD*	Skewness	Kurtosis
1. I can't make decisions because I'm too tired or stressed.	1.2	0.86	.19	−.76
2. Making decisions is difficult because I can't concentrate.	1.2	0.85	.16	−.71
3. It has been hard for me to take in new information and use it to make decisions.	1.2	0.85	.26	−.60
4. I don't have enough confidence in my ability to make good decisions.	0.9	0.77	.44	−.34
5. It takes too much effort to make decisions.	1.1	0.80	.10	−.94
6. Someone should make decisions for me.	0.8	0.71	.35	−.96
7. I can't make up my mind about which option is best.	1.1	0.84	.15	−.91
8. I have made decisions without thinking carefully about them.	1.0	0.80	.25	−.85
9. My mood has made it difficult for me to make decisions.	1.2	0.90	.15	−.91

Note: A composite score is computed by summing the individual item responses, with higher scores indicating greater subjective experience of decision fatigue.

TABLE 3 Factor structure of the Decision Fatigue Scale

Items	Factor Loadings
5. It takes too much effort to make decisions.	.91
3. It has been hard for me to take in new information and use it to make decisions.	.90
1. I can't make decisions because I'm too tired or stressed.	.87
9. My mood has made it difficult for me to make decisions.	.85
2. Making decisions is difficult because I can't concentrate .	.84
7. I can't make up my mind about which option is best.	.80
4. I don't have enough confidence in my ability to make good decisions.	.78
6. Someone should make decisions for me.	.72
8. I have made decisions without thinking carefully about them.	.70

2001; Hickman et al., 2018; Pignatiello et al., 2020). Similarly, the lowest loading item in this sample, 'I have made decisions without thinking about them', was the lowest loading item in the original scale validation (Hickman et al., 2018). However, the factor loadings in this sample (range: 0.70–0.91) are noticeably higher when compared to the original validation loadings (range: 0.42–0.84). We hypothesise this discrepancy is a result of modification of the question stem. Per recommendations from the scale developers, rather than having respondents reflect on their experiences over the past week, we chose to have respondents reflect over the prior 24 hr (Hickman et al., 2018).

In addition, the mean respondent scores (M = 9.6) were higher than the mean scores previously reported (M = 5.2 [baseline], 6.8 [8 weeks later]). Again, this could relate to the modification of the item stems' reflection timing. However, it may also reflect idiosyncratic differences between the samples. The original sample consisted of family caregivers for critically ill patients, whereas this sample contained staff nurses working during a global pandemic. Nonetheless, interpreting the scores in isolation does not provide further evidence of the scale's validity and serves little utility for translation to clinical significance. Therefore, examining the DFS's associations with other constructs was necessary (Johnson & Morgan, 2016).

Notably, scores on the DFS were strongly related to participant total scores on the IES-R, a measure of traumatic stress. This finding is consistent with prior use of the scale among family caregivers, which reported moderate correlations with other affective-related constructs: anxiety, emotion regulation and decisional conflict (Hickman et al., 2018). Again, the variations in the correlation magnitude may be a result of differences between the sample, item stems or comparative construct. However, the maintenance of the relationship between the DFS and affect-related constructs across samples provide further support for the scale's validity. Our finding is further rooted in prior empirical work. Regehr and LeBlanc (2017) found

that individuals with higher scores on the IES-R were associated with altered risk perceptions of child protective workers exposed to a simulated scenario designed to elicit acute stress. Furthermore, exposure to traumatic stress is inversely related to the performance of cognitive functions needed for sound decision-making (Brewin et al., 2007; Diamond, 2013; Horner et al., 2013).

These findings may be disputed, as acute stress has been shown to enhance decision-making (Shields et al., 2016). However, context is paramount. Allostatic and dual-process theories from behavioural neuroscience and psychology posit that human behaviour and functioning is dependent on a delicate balance of internal self-regulatory processes; cumulative stressors may disrupt this balance, compromising self-regulatory processes necessary for decision-making while also predisposing the individual to psychological distress (Ganzel et al., 2010; Gronchi & Giovannelli, 2018). Given the strong correlation between DFS and IES-R scores and the extant theoretical and empirical evidence, decision fatigue may partially represent allostatic imbalance. Therefore, decision fatigue may be a useful indicator for when clinicians are overworked, need to take a break or may not be a suitable candidate for a patient assignment or procedure.

As we previously stated, the context of this research study is highly relevant to interpretation of its findings. High levels of stress among clinicians working during the COVID-19 pandemic are well-documented, especially among nurses (Benfante et al., 2020; Lai et al., 2020). Therefore, to mitigate the severity of decision fatigue, healthcare leaders may need to focus on other sources of stressors that are within their control. This suggestion is supported by the DFS's moderate inverse relationship with the PES-NWI, an indicator of a healthy workplace environment for nurses: participants reporting a less desirable work environment also reported higher levels of decision fatigue. To our knowledge, this is the first report of this finding within the literature; however, it is not surprising when considering prior evidence. A recent meta-analysis by Lake et al., (2019) found that PES-NWI scores were associated with poor patient safety and outcomes. Furthermore, healthy nursing work environments are also related to higher psychological wellness (Hegney et al., 2015). When taking these findings into consideration, the relationship we report between scores on the DFS and the PES-NWI provides further evidence of the DFS's convergent validity. Consistent with our prior argument, it appears that unhealthy working environments may predispose nurses to additional stressors, which can subsequently impair their decision-making ability.

Our findings are constrained by notable limitations that will require future study. First, it is possible our findings are exaggerated due to the sheer negative psychological impact the COVID-19 pandemic has had on the global healthcare system (Cabarkapa et al., 2020). In addition to this impact, we must also acknowledge that typically routine decisions have been complicated by the constraints of the COVID-19 pandemic; therefore, the decision fatigue we measured in nurses may not be completely attributable to their work environment (Hauck, 2020). Furthermore, the cross-sectional study design limits the conclusions we can draw from this work, due to the temporal ambiguity of the studied concepts; however, we attempted to address this by choosing instruments that called for reflection over a longer time period, rather than 24 hr, like the DFS. While our study provides suitable preliminary evidence for convergent and discriminant validity in this sample, future work could improve upon our effort by examining the DFS's relationships with other cognitive and emotional constructs related to decision-making, as well as other sociodemographic nursing characteristics (e.g. experience, practice setting, patient population) over a longitudinal period.

Existing data and our findings suggest that the DFS is a reliable scale, but we were only able to examine the scale's internal consistency. Given the stability of the DFS in other samples, we would hope that the DFS performs equally as well in nursing samples (Hickman et al., 2018). However, given that the question stem was changed in this administration to a more acute time period (i.e. 24 hr vs. 7 days), it is possible that the DFS scoring is contingent on other contextual factors shown to influence decision-making, such as time of day, physiological/psychological states and motivation (Pignatiello et al., 2020). Given that nurses make decisions on a minute-by-minute basis, future research may benefit from examining the performance of the scale over several 2–4 hr periods within a single day (Nibbelink & Brewer, 2018). Such information may inform the tailoring of organisational interventions (e.g. resource allocation) and individual clinician-level interventions (e.g. break times, patient assignments, care algorithms) that can enhance the quality of nursing decision-making and promote positive outcomes for patients and their family members, and support the psychological health of nursing staff members as well.

5 | CONCLUSION

To conclude, this study was the first known psychometric examination of the DFS (Decision Fatigue Scale) among a sample of staff nurses. In this sample, the DFS possessed a unidimensional factor structure, with all items demonstrating strong factor loadings. We also provided evidence of the DFS's convergent and discriminant validity. Scores on the DFS were strongly correlated with symptoms of traumatic stress and moderately correlated with the nursing work environment. As expected, the DFS did not demonstrate a meaningful correlation with their practice environment nor their personal experience having or knowing someone diagnosed with COVID-19. Overall, this study provides evidence supporting the validity and reliability of the DFS in this sample.

6 | RELEVANCE TO CLINICAL PRACTICE

The decision fatigue scale is psychometrically sound among clinical nurses for measuring symptoms of decision fatigue. Therefore, it may be a cheap and efficient way to examine a nurse's ability to make sound clinical judgements and tailor clinical decision-support

interventions. Given its relationship to other measures of psychological distress, it may also serve as another evaluation instrument in maintaining the psychological well-being of staff nurses and support decisions regarding a healthcare organisation's allocation of resources.

CONFLICTS OF INTEREST

The authors have no conflicts of interest to report.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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