




Acute stress disorder, coping self-efficacy and subsequent psychological distress among nurses amid COVID-19

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Abstract

Purpose: Health care professionals, particularly nurses, are considered a vulnerable group to experience acute stress disorder (ASD) and subsequent psychological distress amid COVID-19 pandemic. This study aims to establish the prevalence of acute stress disorder and predictors of psychological distress among Jordanian nurses.

Methods: A quantitative, cross-sectional, descriptive and comparative design was used. Data were collected using a Web-based survey. A total of 448 Jordanian nurses (73% females) completed and returned the study questionnaire.

Results: The majority of nurses (64%) are experiencing ASD due to the COVID-19 pandemic and thus are at risk for PTSD predisposition. More than one-third of nurses (41%) are also suffering significant psychological distress. Among our sample, age, ASD and coping self-efficacy significantly predicted psychological distress. More specifically, younger nurses are more prone to experience psychological distress than older ones. While higher scores on ASD showed more resultant psychological distress, coping self-efficacy was a protective factor.

Conclusion: Given that individuals who suffer from ASD are predisposed to PTSD, follow-up with nurses to screen for PTSD and referral to appropriate psychological services is pivotal. Coping self-efficacy is found to ameliorate the effect of psychological distress on nurses' traumatic experience. Such findings warrant intensive efforts from health care institutions to provide psychosocial support services for nurses and ongoing efforts to screen them for traumatic and psychological distress symptoms.

Implications for Nursing Management: Nursing leaders and managers are in the forefront of responding to the unique needs of their workforces during the COVID-19 crisis. They need to implement stress-reduction strategies for nurses through providing consecutive rest days, rotating allocations of complex patients, arranging support services and being accessible to staff. They also need to ensure nurses' personal safety through securing and providing personal safety measures and undertake briefings to ensure their staff's physical and mental well-being, as well as providing referrals to appropriate psychological services.

KEYWORDS

acute stress disorder, coping, COVID-19, nurses, psychological distress

1 | INTRODUCTION

Viral diseases have been a serious issue to global health emerging in public awareness. By the end of 2019, the world had witnessed the unpleasant and anxiety-provoking news regarding the spread of coronavirus disease (COVID-19) on a global scale. The rapidness and aggressiveness of COVID-19 in infecting people made it a serious and threatening global health issue. As of 21 June 2020, more than 8 million people were infected, resulting in thousands of deaths worldwide (European Center for Disease Prevention & Control [ECDC], 2020).

Researchers are warning that the COVID-19 pandemic could inflict emotional trauma on a global scale (e.g. Higgins, 2020; Xiang, 2020). Individuals are fearful of contracting the infection or spreading it to their loved ones and having their basic and financial needs unmet. The nature of the disease and the length of time it will take to find a cure are leaving people feeling crippled with uncertainty regarding the timeline for when this pandemic will be eradicated (United Nations Development Programme [UNDP], 2020). A crash in the global economy after the crisis is over has been predicted (Amaro, 2020), leaving an unprecedented global concern and fears concerning any nations' future following the era of COVID-19 outbreak.

Research on the psychological sequelae of disasters reported that some percentage of individuals become emotionally impacted or traumatized due to the disaster (Benight & Harper, 2002). The Diagnostic and Statistical Manual of Mental Disorders (DSM-V) represents a category of individual's responses to trauma including the development of post-traumatic stress disorder (PTSD) and acute stress disorder (ASD). People who experience PTSD or ASD report symptoms of intrusions, altered mood, arousal and reactivity as well as persistent avoidance of stimuli associated with the traumatic event (American Psychiatric Association [APA], 2013). Although ASD and PTSD share similar symptomology, the onset and duration of the disorders set them apart. While symptoms of PTSD should be present for more than one month to be diagnosed and may develop months or years after the traumatic event takes place, ASD is the initial response of a trauma and lasts for less than one month (APA, 2013). It is defined as the emotional, physical and dissociative reaction during a traumatic event (Benight & Harper, 2002). Several retrospective and prospective studies reported that individuals with ASD can progress to develop PTSD, which involves continual difficulties with intrusive thoughts, avoidance behaviours and emotional numbing that can last well after the traumatic event is over (e.g. Bremner et al., 1992; Weiss, Marmar, Metzler, & Ronfeldt, 1995).

The prevalence of ASD has been reported for several traumatic events including violent crimes, combat and natural disasters such as flash floods and earthquakes. ASD was reported at 19% among victims of violent crime (Brewin, Andrews, Rose, & Kirk, 1999), 79.4%

of flash flood victims (Mordeno & Cue, 2015) and 40.5% of disaster workers of the 11 September 2001 attack (Fullerton, Ursano, & Wang, 2004). ASD prevalence data on health care workers are limited. One study investigated ASD symptoms among emergency medical technicians (EMTs) and paramedics during combat and found that paramedics had higher ASD symptoms than EMTs, with a prevalence of 8.5% and 5.3%, respectively (Lubin et al., 2007).

Acute stress disorder has been found to result in subsequent psychological distress exemplified in depression, anxiety and somatization among individuals who are exposed to a traumatic event (e.g. Benight & Harper, 2002). It has been manifested in various trauma-exposed individuals including orthopaedic patients (Vincent et al., 2015), immigrants (Li & Anderson, 2016) and war survivors (Qouta, Punamäki, & El Sarraj, 2005). It has been estimated that approximately one-third of individuals with major trauma suffer persisting significant psychological impact (Shih, Schell, Hambarsoomian, Belzberg, & Marshall, 2010).

Another factor that was found to play a significant role in psychological distress is the individual's coping self-efficacy (CSE; Benight & Harper, 2002). CSE refers to the individual's capability or confidence to cope effectively with stressful or traumatic event (Chesney et al., 2006). According to Bandura's (1997) theory of self-efficacy, self-efficacy is considered a prerequisite for effective coping. It is a self-evaluative process in which individuals appraise their own capability to manage a threatening situation (Bandura, 1997). CSE was found to play an important role in psychological recovery after trauma (Bosmans, van der Knaap, & van der Velden, 2016). In a meta-analysis conducted on cross-sectional and longitudinal studies, higher levels of CSE were associated with lower levels of distress and PTSD symptoms (Luszczynska, Benight, & Cieslak, 2009). It was also found that CSE reduces immediate and long-term distress levels in various types of trauma including disasters (e.g. Benight, Cieslak, Molton, & Johnson, 2008; Bosmans, Benight, van der Knaap, Winkel, & van der Velden, 2013). Coping self-efficacy reduces the individual's stress reaction through positive appraisal of one's capability in coping with the traumatic event and its aftermath (Bosmans, van der Knaap, & van der Velden, 2016).

Psychological distress is also affected by the individual's sociodemographic and clinical background: gender, age, income and the existence of a mental disorder. Extensive research in trauma and non-trauma-related psychological distress has shown that women report higher psychological distress than men (e.g. Hansen & Ghafoori, 2017; Jayawardene, Agha, LaJoie, & Torabi, 2013; Matud, Bethencourt, & Ibanez, 2015). Both types of research explain that women tend to use ineffective coping strategies and have less social support than men, leading to their experiencing higher psychological distress (Matud et al., 2015; Watson & Sinha, 2008). Furthermore, higher stress in women has been linked to women's tendency to carry out more household responsibilities (e.g.

Harryson, Strandh, & Hammarstrom, 2012). However, in a study of childhood victimization among college men and women, Elliott et al. (2019) did not find statistical gender differences in psychological distress as evaluated by the symptom checklist-90-revised (SCL-90-R).

Research supports that, compared to younger populations, older individuals employ more adaptive and directive approaches to managing distress, thus contributing to younger people experiencing higher stress (Hansen & Ghafoori, 2017; Krause, Shaw, & Cairney, 2004). While existing mental disorders intensify psychological distress among trauma-exposed individuals (e.g. Lewis et al., 2014), income has been shown to be a potential variant. Although the majority of studies found that high income has a protective effect against psychological distress (e.g. Fullerton et al., 2000; Lewis et al., 2014); Sun, Hilgeman, Durkin, Allen, & Burgio (2009) reported that perceived income inadequacy, rather than actual income level, significantly predicted psychological distress.

Health care professionals, particularly nurses, are considered a vulnerable group to experience (ASD) amid the COVID-19 pandemic. They are on the front line of dealing with this aggressive and rapid-spreading virus, detecting and treating infected patients and thereby making themselves vulnerable to contracting the infection at any time, and possibly making them unable to care for future cases. Concerns have been raised regarding the possible insufficiency of hospital beds and medical equipment to care for future patients given the exponential increase in COVID-19 infections (World Health Organization [WHO], 2020), which also serves to add more pressure on health care professionals. Recent studies on the psychological impact and trauma-related responses of COVID-19 among health care workers are scarce and focused on symptoms of PTSD rather than ASD. In a multinational, multicenter study on the association between psychological outcomes and physical symptoms among health care workers in which nurses constituted 39.2% of the sample, 7.4% of the study cohort screened positive for PTSD and 3.8% reported moderate to severe levels of psychological distress (Chewa et al., 2020). In another study investigating mental health status among medical staff of which 69.9% were nurses, 27.39% of the study sample reported COVID-19-related symptoms of PTSD (Xing, Sun, Xu, Geng, & Li, 2020). The importance of ASD diagnosis is based on its capacity to predict individuals who will develop PTSD. Bryant and Harvey (1998) found that 82% of patients who had been diagnosed with ASD developed PTSD symptoms six months later. Edmondson, Mills, and Park (2010) reported that ASD has a 91% predictive validity for PTSD. Research indicates that early treatment of acute stress disorder can effectively prevent the development of PTSD (Bryant, Harvey, Dang, Sackville, & Basten, 1998), particularly given that PTSD may develop months or years after the traumatic event takes place (Bryant & Harvey, 1998). Therefore, this study represents the first to focus on ASD prevalence and predictors of trauma-related psychological distress among nurses. More specifically, this study aims to establish the prevalence of ASD and predictors of psychological distress among Jordanian nurses.

2 | METHODOLOGY

2.1 | Design

A quantitative, cross-sectional, descriptive and comparative design was used in this study to (a) explore the prevalence of ASD and (b) investigate the predictors of psychological distress among Jordanian nurses amid COVID-19.

2.2 | Sample and sample size

A convenient sample of Jordanian nurses working in Jordanian hospitals was recruited electronically. We used Qualtrics, which is an electronic survey, or more specifically a Web-based survey to distribute the study questionnaire. According to Stanton (1998), a Web-based survey is a survey instrument that physically resides on a network server and that can be accessed only through a web browser.

We used Daniel's (1999) formula to calculate the sample size needed for the prevalence estimate using the following parameters: (a) a precision rate of 3% (appropriate if the prevalence is going to be between 10% and 90%), (b) an average prevalence of 8% based on Lubin et al. (2007) study of ASD among health care workers and (c) a 95% confidence interval (CI). The yielded sample size was 315 participants.

A total of 482 Jordanian nurses returned the online survey. Of them, 34 responses were incomplete with more than 50% of the data missing. Therefore, these responses were not included in the analysis. The final sample included 448 nurses. Among this sample, the frequencies of missing values across all items were less than 5%. A multivariate diagnostic test (Little, 1988) was used to explore the degree of randomness in the identified missing data. The analysis revealed that the missing pattern was completely at random ($p > .05$). The mean/median of the non-missing items was imputed for the missing scores, and all analyses were run with and without imputed data yielding no significant differences.

2.3 | Data collection procedure

The survey link was distributed to nurses through hospitals' websites along with an online invitation letter explaining all aspects of the study including: its purpose, voluntary participation, confidentiality, length of survey and potential benefits and risks. Furthermore, an online consent form was developed and participants were instructed to read the informed consent carefully, and click on the agreement button at the end of the consent form if they were willing to take part in the study. The anonymity option of the participants was guaranteed by not including the participants' identifying information in the study questionnaire. Nor were they identified by the e-survey software once the survey was completed. Since the study instruments may include some items that have the potential of eliciting negative feelings, participants were informed that they could refrain

from answering any particular questions that may elicit distress. Completed questionnaires were automatically saved on Qualtrics software, which is password protected and can only be accessed by the study authors. The study was approved by the Institutional Review Board (IRB) of Jordan University of Science and Technology.

2.4 | Measures

1. Sociodemographic Data Sheet. Participants were asked to complete a sociodemographic data sheet containing participants' age, gender, income, years of work experience, hospital ward where they are working, and past or current diagnosis of mental disorder.
2. Stanford Acute Stress Reaction Questionnaire (SASRQ; Cardena et al., 2000). This instrument consists of 30-item relevant to the diagnosis of ASD. It presents items representing three subscales including: dissociation (10 items in total), reexperiencing of trauma (6 items), avoidance (6 items), anxiety and hyperarousal (6 items). It also has two additional items regarding impairment in functioning. SASRQ is scored on a 5-point Likert scale ranging from 0 (not experienced) to 5 (very often experienced). The scale has been shown to present adequate psychometric properties (e.g. Benight & Harper, 2002; Cardena et al., 2000).
3. Trauma Coping Self-Efficacy Scale. This measure is an adaptation of the Hurricane Coping Self-Efficacy Scale (Benight, Ironson, & Durham, 1999), which assesses an individual's confidence in his/her ability to cope effectively with a trauma. The words 'caused by the hurricane' at the end of each item of the original measure were changed to 'caused by COVID-19'. The measure consists of 7 items scored on a 7-point Likert scale ranging from 'not at all capable' to 7 'totally capable'. The items measure the individual's capability to maintain personal, financial, housing and food security, in addition to their capability to deal with the emotions and personal losses they have experienced from the trauma. Examples of scale items were as follows: 'maintaining personal security—protecting yourself and your property' and 'maintaining housing and food—negotiating and dealing with contractors, landlords, obtaining and keeping food fresh' (Benight et al., 1999). The psychometric properties of the scale were found adequate (e.g. Benight et al., 2015).
4. The Brief Symptom Inventory-18 (BSI-18) was used in this study to measure participants' psychological distress. This measure consists of 18 items representing three subscales: somatization, depression and anxiety. The BSI-18 is the latest and shortened version of the symptom checklist 90-R (Derogatis & Melisaratos, 1983). Items are rated on a 4-point scale ranging from 0 'not at all' to 3 'nearly every day'. The scores range from 0 to 72, with higher scores indicating higher psychological distress. A global stress index (GSI) is calculated by summing all scale's items, and a cut-off point of GSI t -score ≥ 50 indicates significant psychological distress (Derogatis & Melisaratos, 1983). The scale has been shown to present adequate psychometric properties (Frank et al., 2017).

We followed the procedures of Brisling (1970) and Chapman and Carter (1979) for the translation of the aforementioned measures to ensure the reliability, validity and cultural sensitivity of the translation. At the beginning, a bilingual professional language editor translated the measures from English to Arabic. Another bilingual professional language editor translated the Arabic translation back to English. The translators were made aware that the goal of the translations is to obtain linguistic and conceptual equivalence of the original measures, to ensure the language is simple and clear, and includes no jargon. Furthermore, a three-member expert panel in the area of instrument development and validation, whom are familiar with the area the measures are covering, reviewed the translations and reached a consensus on the final most accurate translations of the measures. After that, the survey was pilot tested among 15 nurses who verified the final version. In the current study, reliabilities of the total scales of SARSQ, Trauma Coping Self-efficacy and BSI-18 as represented by Cronbach's α were 0.95, 0.81 and 0.91, respectively.

2.5 | Analysis plan

The Statistical Package for Social Sciences, version 24, was used for data entry and analyses. Descriptive statistics of frequencies, means, range and standard deviations were calculated to describe participants' demographics and the prevalence of ASD and psychological distress. Simultaneous multiple regression was used to estimate predictors of nurses' psychological distress. The psychological distress total score was entered as an outcome variable, whereas nurses' gender, age, income, history of mental disorders, ASD total score and CSE total score were entered as potential predictors.

3 | RESULTS

3.1 | Sample characteristics

A total of 448 Jordanian nurses (73% females) completed and returned the online survey. The mean age was 32.0 years ($SD = 8$) across a field ranging from 20 to 58. The majority were married (65%, $n = 291$) and full-time workers (79%, $n = 352$), and had a BSN degree (69%, $n = 307$). The mean monthly income was JD 561 (USD 790). On average, participants had 10 years ($SD = 7$) of work experience as nurses, with the total ranging from 1 to 33 years. Thirteen nurses (3%) reported they either previously had or currently have a mental disorder (primarily, anxiety and depression; See Table 1).

3.2 | Acute stress, coping self-efficacy and psychological distress levels

The mean ASD score among the nurses was 69 ($SD = 30$), with scores ranging from 0 to 144. According to Cardena et al. (2000),

TABLE 1 Sample characteristics ($N = 448$)

Characteristic	Subgroups	<i>n</i>	%
Gender	Female	328	73%
	Male	120	27%
Marital status	Married	291	65%
	Single	137	31%
	Divorced	13	3%
	Widowed	4	1%
Work status	Full timer	352	80%
	Part-timer	89	20%
Education	Diploma	83	19%
	BSN	307	69%
	Master's or higher	53	12%
Presence of a mental disorder	Yes	13	3%
	No	435	97%
	Mean	SD	Range
Age	32	8	20–58
Monthly income ^a	561	314	200–3,000
Years of experience	10	7	1–33
Years of experience in current workplace	8	7	1–29

^aMeasured by Jordanian Dinner (1 JD = USD 1.41).

TABLE 2 Descriptive statistics and reliability of study scale ($N = 448$)

	No. of items	<i>M</i> (<i>SD</i>)	Median	Range	Cronbach's α
SASRQ total	30	69 (30)	70	0–144	0.955
Reexperiencing	6	13 (8)	14	0–30	0.86
Avoidance	6	13 (7)	14	0–30	0.81
Arousal	6	17 (6)	18	0–30	0.81
Amnesia	2	3 (3)	2	0–10	0.80
Depersonalization	2	4 (3)	5	0–10	0.84
Derealization	2	6 (2)	6	0–10	0.40
Decreased awareness	2	4 (3)	5	0–10	0.61
Numbing	2	4 (3)	4	0–10	0.71
Coping self-efficacy	7	35 (8)	36	12–94	0.81
BSI	18	23 (15)	21	0–68	0.91
Somatization	6	6 (5)	6	0–23	0.77
Depression	6	7 (6)	6	0–24	0.81
Anxiety	6	9 (6)	8	0–24	0.84

Abbreviations: BSI, The Brief Symptom Inventory-18; SASRQ, Stanford Acute Stress Reaction Questionnaire.

a cut-off score of 56 or greater signifies clinical ASD and predicts PTSD predisposition. In this study, 64% of nurses had scores at or above the cut-off point of 56 on the SASRQ. Results for SASRQ eight subscales are described in Table 2. On the Trauma Coping Self-Efficacy Scale, the mean score was 35 ($SD = 8$), with scores ranging from 12 to 94. On the Brief Symptom Inventory, the mean

psychological distress scale was 23 ($SD = 15$), with scores ranging from 0 to 68. Approximately 41% of nurses had a GSI *t*-score of 50 and greater, indicating significant psychological distress. Results related to psychological distress subscales of somatization, depression and anxiety are described in Table 2.

3.3 | Predictors of psychological distress

The results revealed that overall, the model was able to predict a significant proportion of nurses' psychological distress ($F(6,153) = 38.3, p < .001, \Delta R^2 = 0.65$). Almost 65% of the variability in nurses' psychological distress was accounted for by their gender, age, income, history of mental disorders, acute stress and coping self-efficacy. However, it should be noted that only age, ASD and coping self-efficacy were significant predictors of psychological distress. More specifically, younger nurses ($\beta = -0.139, t(153) = -2.254, p = .026$), and those with higher ASD ($\beta = 0.332, t(153) = 11.296, p < .001$), and lower coping self-efficacy ($\beta = -0.127, t(153) = -2.161, p = .032$) reported higher psychological distress than their counterparts. Table 3 shows the model fit.

4 | DISCUSSION

Our findings show that the majority of nurses are experiencing ASD due to the COVID-19 pandemic, and thus are at risk for PTSD predisposition. More than one-third of nurses are also suffering significant psychological distress. Among our sample, age, ASD and coping self-efficacy significantly predicted psychological distress. More specifically, younger nurses are more prone to experience psychological distress than older ones. While higher scores on ASD resulted in more psychological distress, coping self-efficacy was a protective factor.

Although available literature shows that ASD predicts PTSD among trauma-exposed individuals (e.g. Bremner et al., 1992; Weiss, Marmar, Metzler, & Ronfeldt, 1995), the majority of available studies focused on the latter one. The very few studies that investigated ASD among health care workers reported lower rates compared to our sample of nurses. The prevalence of ASD among disaster workers including health care professionals ranged between 14.6% (Biggs et al., 2010) and 40.5% (Fullerton et al., 2004). In the study of Lubin et al. (2007), rates of ASD among physicians and paramedics

during combat were 5.3% and 8.5%, respectively. Prevalence of ASD during infectious diseases pandemic was reported in the study of Bai et al. (2004). This study found that only 5% of health care professionals met criteria for ASD during the SARS outbreak (Bai et al., 2004). Some researchers argued that the prevalence of PTSD is not stable and that it depends on the population that has been investigated (Sadock & Sadock, 2003). A higher prevalence is found among women and those who are at high risk (e.g. Sadock & Sadock, 2003). The majority of our sample was female nurses (73%) who are at high risk for contracting COVID-19 infection due to their being on the front line for screening and treating patients at risk. The aggressiveness and rapid spread of COVID-19 may also explain the high rate of ASD observed within our sample. Another reason can be related to the rising number of COVID-19 cases, both suspected and infected, in Jordan at the time of the study, and the inadequate preparedness of hospitals to provide the necessary care. The first case of COVID-19 in Jordan was identified on March 2nd (Alarabiya, 2020), and two weeks after, the country was in a strict lockdown as the number of infected was rising rapidly. As of April 7th, the starting date of our study, officials announced that the number of infected cases had reached 353 (World Meter, 2020).

Significant psychological distress among trauma-exposed individuals is widely reported in the literature. Clinically significant psychological symptoms were reported among urban trauma-exposed adults (Hansen & Ghafoori, 2017), college students with childhood victimization (Elliott et al., 2019) and physically injured adults (Munter et al., 2020) among others. Nurses in the present study, however, had a higher rate of psychological distress (41%) than those reported in the literature. For example, rates of psychological distress exemplified in depression and anxiety among patients with traumatic facial injury ranged from 11.5% to 20% (Islam, Ahmed, Walton, Dinan, & Hoffman, 2012) and from 10% to 12% among physically injured adults (Munter et al., 2020). A recent study of the impact of COVID-19 outbreak on health care professionals' psychological health reported that among 470 health care workers in Singapore, 15% suffered from anxiety and 9% from depression. A study by Suleiman

TABLE 3 Predictors of nurses' psychological distress amid COVID-19 pandemic (N = 448)

Predictor	DF	SE	t value	B	β	p value
Gender	6	1.973	0.948	1.870	0.050	.345
Age	6	0.124	-2.254	-0.280	-0.139	.026*
Income	6	0.004	0.874	0.004	0.056	.383
Mental disorder	6	1.871	1.336	2.500	0.072	.184
Acute stress	6	0.029	11.296	0.332	0.665	.000**
Coping self-efficacy	6	0.132	-2.161	-0.285	-0.127	.032*
R ²	0.61					
ΔR^2	0.65					
F	38.3**					

Abbreviations: B, regression coefficient; DF, level of freedom; SE, standard error; β , standardized beta.

* $p < .05$.

** $p < .01$.

et al. (2020) that was conducted between March 23 and March 27, which was around the time of our data collection, reported that only 18.5% of front-line physicians in Jordan had all protective measures (PPEs) available at hand and the most shortage was for facemasks (66.2%). Doctors without full PPEs reported significantly higher fear and anxiety than those with full PPEs. We would expect that nurses were also experiencing similar shortages in PPEs equipment for personal safety, which may explain the high rate of reported psychological distress. This warrants nurse managers in other countries where PPEs' resources are inadequate to proactively test their health care workers for psychological distress. Munter et al (2020) found that rates of psychological distress due to anxiety and depression were higher one week after trauma and decreased thereafter. Therefore, this necessitates the provision of early psychological interventions for nurses with continued screening and referral for such services. O'Donnell et al (2012) explains that early interventions in trauma high-risk individuals are associated with better outcomes.

Our findings on the inverse relationship between age and psychological distress are consistent with available literature. In a study of a community sample during SARS outbreak, younger individuals were found to suffer greater psychological comorbidity (Sim, Chan, Chong, Chua, & Soon, 2010). Younger people were more likely to utilize ineffective coping strategies during the outbreak (Sim et al., 2010). Other studies reported that psychological distress, especially depression and anxiety, decline with increasing age (e.g. Christensen et al., 1999; Jorm et al., 2005). One possibility is that the ageing of the brain affects emotional responsiveness. Older adults are found to be less likely to attend to and remember negative emotional experiences than positive ones (Mather et al., 2004). Future research needs to investigate the role of ageing on psychological distress and the specific risk factors interplay between both variables.

The findings on the association between psychological distress and sociodemographic and clinical variables of gender, income and existing mental disorders are inconsistent with the majority of literature. A plethora of trauma-related articles on psychological distress have reported women having higher psychological distress than men (e.g. Hansen & Ghafoori, 2017; Jayawardene et al., 2013). However, our finding of the non-existent relationship between gender and psychological distress is consistent with the study of Elliott et al. (2019), in which no significant gender differences were found. Some researchers (e.g. Emslie et al., 2002) explain that context and socio-cultural factors should be taken into account in explaining psychological distress. Our sample of nurses is mainly female (73%), and the higher female representation in the current study may relate to nursing being a female-dominant profession (Liminana-Gras, Sanchez-Lopez, Roman, & Corbalan-Berna, 2013). Data show that 71% of graduates from nursing faculties in Jordan are females, with only 29% of graduates being male (Human Resources for Health in 2030 [HRH2030], 2016).

Regarding the non-existent relationship between income and psychological distress in our data, one possibility is offered by Sun et al. (2009) who reported that it is the perception of income inadequacy, rather than actual income, which affects psychological

distress. A more reasonable explanation is that all of the nurses in our study are employed, and thus, their income is secured, rendering income as a non-significant predictor of psychological distress compared to fear for one's own safety or dealing with the emotions associated with the traumatic event of COVID-19. Nevertheless, more research is needed to further explore the nature of the relationship between income and psychological distress. Since only 13% of the sample reported existing mental illness, mainly depression and anxiety, this may also explain the insignificant predictability of this variable on psychological distress.

Coping self-efficacy as a protective factor against psychological distress is congruent with studies on natural disasters. For example, in the study of Benight et al. (1997) on HIV-positive men following Hurricane Andrew, CSE accounted for 28% for PTSD symptoms (Benight et al., 1997). CSE was also a significant predictor of psychological distress among flood and fire survivors (Benight & Harper, 2002). CSE had a direct negative pathway to acute psychological distress among survivors of Hurricane Andrew (Benight et al., 1999). Similarly, Pritchard and Gow (2012) found that greater coping self-efficacy was associated with lower trauma-related psychological distress among survivors of the Queensland flood in Australia.

4.1 | Limitations

Although this study is considered the first to investigate the prevalence of ASD among nurses during COVID-19, and to explore predictors of psychological distress, it has some limitations. This study is cross-sectional in nature and relied on measuring ASD, coping self-efficacy and psychological distress using an online self-administered survey. Longitudinal research is needed to explore the magnitude of the study variables over time. Another limitation is the descriptive nature of the study, which limits having detailed and rich understanding of nurses' psychological well-being during COVID-19 outbreak. Further research is needed to examine this phenomenon employing different research methodologies (i.e. qualitative or mixed-methods design).

4.2 | Implications for practice

Our findings show that nurses experience significant ASD and psychological distress amid the COVID-19 pandemic. Coping self-efficacy is found to ameliorate the effect of psychological distress on nurses' traumatic experience. Such findings warrant intensive efforts from health care institutions to provide psychosocial support services for nurses. Nurse managers can take a leading role in implementing stress-reduction strategies for nurses through providing consecutive rest days, rotating allocations of complex patients, arranging support services and being accessible to staff. Of importance, nurse managers need to take an active role in ensuring the personal safety of their staff through working closely with their hospital's management in securing and providing

personal safety measures. They also may undertake briefings to ensure their staff's physical and mental well-being. Steps to improve nurses' coping self-efficacy are considered another avenue where nurse managers can intervene. Self-efficacy is found to correlate positively with adaptive coping and thus reduces individual's psychological distress (Park, Folkman, & Bostrom, 2001). Nurse managers can improve nurses' self-efficacy through verbal persuasion (i.e. providing positive feedback on the tasks that are accomplished appropriately and safely) and act as role models in handling the crisis of COVID-19 in an empowering way. Given that individuals suffer from ASD are predisposed to PTSD, following up with nurses and providing referrals to appropriate psychological services is considered crucial.

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CONFLICT OF INTEREST

The author has declared that she has no competing or potential conflicts of interest.

AUTHOR CONTRIBUTIONS

All authors met the ICMJE criteria for authorship, which includes substantial contributions to the conception or design of the work; the acquisition, analysis and interpretation of data for the work; drafting the work and revising it critically for important intellectual content; final approval of the version to be published; and agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

ETHICAL APPROVAL

Ethical approval was not required for this paper.

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