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Learning Objective

Learners will be able to describe the impact of COVID-19 pandemic care to nurse burnout in a tertiary care center in the southwest United States.

Introduction

The COVID-19 pandemic impacted healthcare due to surges in infected patient and respiratory failure.

(Bateman et al., 2020; González-Gil et al., 2020; Lasater et al., 2020; Morgantini et al., 2020; Xinghuang Liu et al., 2020)

Nursing burnout syndrome (NBS) results from occupational factors leading to mental health problems.

(Giusti et al., 2020; Hu et al., 2020; Kok et al., 2019; Meltzer et al, 2004; Mihandoust et al., 2021; Morgantini et al., 2020; Moss et al., 2016; Murat et al., 2020; Poncet et al., 2007; Salazar et al., 2020; Sanghera et al., 2020; Sayilan et al., 2020; Xinghuang Liu et al., 2020)

Background

Intensive care units (ICUs) dedicated to caring for COVID-19 infected individuals may be more susceptible to NBS due to:

- increased burdens of futile care
- high mortality rates
- overstretched healthcare systems

(Giusti et al., 2020; Hu et al., 2020; Kok et al., 2019; Meltzer et al, 2004; Mihandoust et al., 2021; Morgantini et al., 2020; Moss et al., 2016; Murat et al., 2020; Poncet et al., 2007; Salazar et al., 2020; Sanghera et al., 2020; Sayilan et al., 2020; Xinghuang Liu et al., 2020)

Purpose

The purpose of this study was to compare burnout levels in ICU nurses providing direct care to COVID infected patients with nurses caring for non-COVID infected patients.

Significance

Identifying socio-demographic, work-related, and psychological predictors of NBS may help organizations mitigate, or at least minimize, the negative psychological impact on ICU nurses working during future pandemics.

Methods

A comparative descriptive study was conducted:

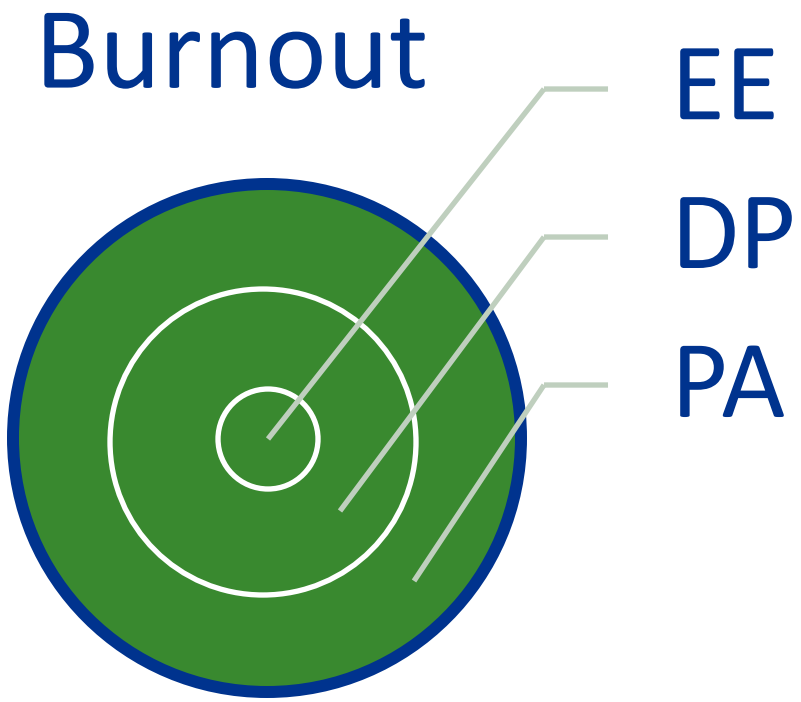
1. Neonatal and pediatric ICU to cardiac and medical ICU survey scores measuring predictors of NBS
2. NBS scores for nurses working in six critical care units captured in 2019 prior to the COVID-19 pandemic to scores captured in a ICU after conversion to dedicated COVID-19 ICUs in 2020

Methods

Maslach Burnout Inventory (MBI) used

Subscales:

- Emotional Exhaustion (EE)
- Depersonalization (DP)
- Personal Accomplishment (PA)



Maslach Burnout Inventory Scales

Emotional Exhaustion (EE)

- 9-item scale measures feelings of being emotionally over-extended and exhausted by one's work.

Depersonalization (DP)

- 5-item scale measures an unfeeling and impersonal response toward recipients of one's service, care, treatment, or instruction.

Personal Accomplishment (PA)

- 8-item scale measures feelings of competence and successful achievement in one's work.

Methods

A convenience sample of direct care registered nurses working in four ICUs in a large tertiary care hospital participated in the study.

Female nurses working day shifts were surveyed in February and March 2019 in six critical care units.

In November 2020, four ICUs were used for sampling of both male and female nurses working either day or night 12-hour shifts based on designation as COVID-19 ICUs.

Maslach Burnout Inventory Scales

Emotional Exhaustion (EE)	• Higher scores correspond to greater experienced burnout.
Depersonalization (DP)	• Higher scores indicate higher degrees of experienced burnout.
Personal Accomplishment (PA)	• Lower scores correspond to greater experienced burnout.

Data Analysis

- Data entered into *SPSS* version 27
- Descriptive, frequencies, & Q-Q plots conducted
  Assumptions of normality met in EE and DP subscales
  - PA subscale data was skewed in both comparison groups
- Independent sample t-tests compared differences in mean scores on EE and DP subscales between COVID-19 and Non-COVID-19 units
- Mann-Whitney U test compared differences in mean PA scores between independent groups

Demographics

Sample

- N = 90
- 52 COVID-19 units (CICU & MICU)
- 38 Non-COVID-19 units (NICU & PICU)

Gender

- 86%(79) were female
- 12%(11) were male

Mean age was 35 years, SD 12.11

Race

- 60%(55) White; 7%(6) Black; 10%(9) Asian; 22%(20) Hispanic [ethnicity]

Demographics

Total years in nursing

< 2 years = 22% (20)

2-5 years = 29% (27)

6-10 years = 15% (14)

11-15 years = 8% (7)

16-20 years = 4% (4)

21-25 years = 8% (7)

26-30 years = 2% (2)

>30 years = 10% (9)

Highest level of education

28%(26) Diploma

10%(9) ADN

57%(52) BSN

3%(3) MSN

Extra Shifts Worked

COVID UNITS – AVERAGE 1.17 (SD = 1.09) EXTRA SHIFTS WORKED

NON-COVID UNITS – AVERAGE 0.28 (SD = 0.65) EXTRA SHIFTS WORKED

Results

We hypothesized burnout scores among nurses working in non-COVID ICUs would be less than burnout scores for nurses working in designated COVID ICUs.

	COVID-designated units (n=52)	Non-COVID units (n=38)	p-value
EE	18.2 (moderate)	8.6 (low)	0.0001
DP	12.8 (high)	5.0 (low)	0.0001
PA	32.6 (high)	36.8 (moderate)	0.08

Independent Sample Test – COVID and Non-COVID ICU's

	Levene's Test for Equality of Variance		t-test for Equality of Means					95% Confidence Interval of Diff	
Sub-scale	**F**	**Sig.**	**t**	**Df**	**Sig. (2-tailed)**	**Mean Diff**	**Std. Error Mean**	**Lower**	**Upper**
EE (Equal variance assumed)	8.55	.004	5.06	88	.0001	9.63	1.90	5.85	13.44
EE (Equal variance not assumed)			5.31	87.99	.0001	9.63	1.81	6.03	13.24
DP (Equal variance assumed)	31.52	.0001	4.82	88	.0001	8.03	1.66	4.72	11.35
DP (Equal variance not assumed)			5.31	78.51	.0001	8.03	1.51	5.02	11.05

Results

Independent Sample t-test results support a statistically significant difference in EE and DP scores between COVID and Non-COVID designated units.

Independent Samples COVID & Non-COVID Effect Size

Large effect size for both EE and DP scores supports important differences in the magnitude and strength of scores between groups.

Cohen's d	Standardizer	Point Estimate	95% Confidence Interval	
			Lower	Upper
EE	8.91	1.08	.630	1.52
DP	7.80	1.03	.582	1.47

- Nurses working on COVID-designated units experienced more EE and DP than nurses working on non-COVID units.

Independent Samples Mann Whitney U Test

The Mann Whitney U test was used to examine the difference between the non-normally distributed mean PA scores in the COVID and non-COVID units.

COVID compared to Non-COVID scores	Mann-Whitney U Test Statistic	Standard Error	Standardized Test Statistic	Asymptotic Sig. (2 sided)
PA	1198.00	122.29	1.71	0.08

- A non-statistically significant difference between mean PA scores in the COVID compared to Non-COVID designated units was noted.

Results

We hypothesized nurse burnout scores in six critical care (CC) units measured in 2019 (Pre-COVID) would be less than burnout scores in 2020 in the primary COVID-19 ICU.

	Pre-COVID critical care RN's (N=51)	COVID critical care RN's (N=23)	p-value
EE	15.41 (low)	18.2 (moderate)	.59
DP	10.29 (high)	12.8 (high)	.74

- Statistical significance was not noted pre and post COVID-19 pandemic using independent sample t-test
- Clinical significance was noted by an increase (indicating more burnout)
- EE sub-scale (increased from low pre to moderate)

Independent Sample Test – Pre-COVID CC Units & COVID ICU

	Levene's Test for Equality of Variance		t-test for Equality of Means					95% Confidence Interval of Diff	
Sub-scale	**F**	**Sig.**	**t**	**Df**	**Sig. (2-tailed)**	**Mean Diff**	**Std. Error Mean**	**Lower**	**Upper**
EE (Equal variance assumed)	.392	.533	.537	72	.593	1.28	2.38	-3.47	6.04
EE (Equal variance not assumed)			5.23	39.84	.604	1.28	2.45	-3.68	6.24
DP (Equal variance assumed)	1.08	.301	.331	72	.742	.61	1.87	-3.11	4.35
DP (Equal variance not assumed)			.305	35.53	.762	.61	2.02	-3.49	4.73

Independent Samples Pre-COVID CC Units & COVID ICU Effect Size

Effect size for both EE and DP scores did not support differences in the magnitude and strength of scores between Pre-COVID and COVID designated units.

Cohen's d	Standardizer	Point Estimate	95% Confidence Interval	
			Lower	Upper
EE	9.51	.135	-.358	.627
DP	7.45	.083	-.410	.575

Discussion

Important differences in EE and DP scores between COVID and non-COVID units were supported. Further research is required to establish relationships between socio-demographic and work-related psychological predictors of NBS.

Understanding relationships between variables may guide development of strategies to build nurse resilience and decrease NBS in ICU settings impacted during future pandemics.

Conclusion

NBS has been identified as a global problem facing ICU clinicians.

Pinpointing associations between COVID-19 infection and nurse burnout may lead to strategies to mitigate burnout in those caring for individuals during future pandemics.

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