Resiliency and Health in Nursing: Intra-Covid-19 Replication Study

MIKEL W HAND, EDD, RN, OCN, NE-BC, NEA-BC
RACHEL STANGLAND, MSN, RN, CNOR
TRACY MCKINNEY, BSN, RN, CHPN

Schneck Medical Center

Introduction to the Facility

Schneck Medical Center is a Not-for-profit, Acute Care Hospital located in Seymour, Indiana.

4-time Magnet® Designated (2006, 2011, 2016, 2021)

Malcom Baldridge National Quality Award 2011

2020 and 2021 Top 20 Rural Hospitals in America

5-Star CMS Quality Rating

Introduction to the Facility

Facility - Main campus with several outlying physician practices serving - Jackson, Jennings, Washington, and Scott Counties

Number of Licensed Beds - 166

Number of Staffed Beds - 93

Number of Surgical Cases Each Year - 9,500

Average Daily Inpatient Census - 28

Number of employees - 1,000+

STUDY PURPOSE AND AIMS

Purpose

To examine the post Covid-19 state of resiliency, mental health, and physical health of nurses at a rural community, Magnet Designated Organization

Assess for changes in baseline levels of health and resiliency in the population from data obtained during a pre-Covid-19 assessment.

Aims

Examine resiliency and perceived physical and mental health status of registered nurses working in a rural Magnet Designated Hospital pre and post Covid-19 using descriptive analysis.

Compare results from a pre-Covid 19 assessment of Resiliency and perceived physical and mental health with current findings.

BACKGROUND

The Covid-19 pandemic has had significant negative impacts on the ability of healthcare organizations to recruit and retain full-time RN staff.

Turnover of bedside RNs increased from 15.9% in 2020 to 18.7% in 2021 (Nursing Solutions Inc. (NSI), 2021).

The national RN vacancy rate as of 2021stands at 9% with 62% of organizations reporting an RN vacancy rate higher than 7.5% (NSI, 2021).

Increase in the RN Recruitment Difficulty Index from 2020 to 2021 which ranged from 66 to 126 days depending on specialty and geographic location (NSI, 2021)

BACKGROUND

As a result of the continuing nursing staffing crisis, healthcare leaders must look for evidence-based ways to retain RNs.

The literature suggests that resiliency has the potential to positively impact **mental health** (García-Izquierdo et al., 2018), **physical heath** (Labrague, 2021), and **turnover intention** (Falatah, 2021; Lin, Hu, Danaee, Alis, & Wong, 2021; Witkoski Stimpfel et al., 2021) **in the RN workforce**.

BACKGROUND

Addressing organizational barriers to improving RN resiliency, physical health and mental health will also be important for ensuring patient safety.

Mazurek-Melnyk et al. (2018) conducted an analysis of the impact of RNs' physical and mental health on medical errors and **found that nurses with poor physical health were 26%** (OR = 1.26, 95% CI = 1.04-1.53) -71% (OR = 1.71, 95% CI = 1.40-2.08) **more likely to make a medical error. Nurses with poor mental health including depression were significantly more likely to make medical errors** (OR 1.34, 95%CI 1.05) (Mazurek-Melnyk et al., 2018).

LITERATURE REVIEW

Resiliency in RNs measured during the Covid-19 pandemic was found to be moderate but varied widely with the country of practice (Baskin & Bartlett, 2021; Jo et al., 2021).

Jo et al. (2021) reported that RNs practicing in the United States reported greater resiliency (*p*<.001) than in other countries. However, **resiliency in this demographic also declined from pre-pandemic levels** (Baskin & Bartlett, 2021).

LITERATURE REVIEW

RNs also reported impacts on physical health during the Covid-19 pandemic **including symptoms such as headaches, diarrhea, muscle tension, and unwanted weight loss** (Häussl et al., 2021).

Mental Health was also significantly impacted. **Mental health sequela reported by RNs included anxiety and depression** (Ali, Shah, Talib, 2021; Batra, Singh, Sharma, & Schvaneveldt, 2020; Sánchez- Sánchez et al., 2021; Witkoski Stimpfel, Ghazal, Goldsamt, Zhanay, & Vaughn Dickson, 2021), Post-traumatic Stress Disorder (PTSD) (Batra et al., 2020; Honarmand et al., 2022**), insomnia, psychological distress, and burnout** (Ali et al., 2021; Batra et al., 2020)

LITERATURE REVIEW

Additional implications related to the impact of the Covid-19 pandemic on RNs **included turnover intention** (Falatah, 2021; Lin, Hu, Danaee, Alis, & Wong, 2021; Witkoski Stimpfel et al., 2021).

Witkoski Stimpfel et al. (2021) **reported that one in four** (28%) **nurses reported planning to leave their employer within the next year.**

Lin et al. (2021) **reported that of a sample of nursing students, 49.1% would choose a different career path and 45.4% often think of not going into nursing in the future.**

LITERATURE REVIEW

Resiliency in RNs was found to have a significant positive association with job satisfaction (p<.001) (Brown, Wey, & Foland, 2017) (ß = 0.694; *p* < .01) (Zhao et al., 2021), **compassion satisfaction** (r = 0.372; p < .01) (Atay, Sahin, & Buzlu, 2021), **and social support** (ß = -0.355, *p* < .01) (Zhao et al., 2021).

Resiliency was also found to be negatively correlated with burnout (r = -0.379; *p* < .01) **and compassion fatigue** (r = -0.336; *p* < .01) (Atay et al., 2021).

LITERATURE REVIEW

The impact of resiliency on mental health outcomes was found to include an inverse relationship to Covid-19 related stress (r = -0.202, p< .001) (Manzanares et al., 2021) and anxiety (ß = -0.152. p = 0.008) (Labrague & De los Santos, 2020).

Resiliency was also found to have a protective effect against depression (r = -0.268, *p* < .001) (Manzanares et al., 2021) **and burnout** (ß = -0.132, *p* < .001) **and to partially mediate the relationship between personal burnout and depression** (ß = -0.132, *p* < .001) (Serrão, Durante, Castro, & Teixeira, 2021).

LITERATURE REVIEW

Little was found in the literature related to the impact of resiliency on RN physical health.

One study did report that resiliency partially mediated the impact of pandemic fatigue on sleep quality (ß = -0.326, *p* < .001) (Labrague, 2021).

Resiliency was found to have an impact on physical health in other populations including trauma exposed military service members and veterans (ß = -0.42, *p* < .001) (Sheerin et al, 2019) **and older adults undergoing hip fracture surgery** 95 % CI (0.71 – 1.59, *p* < .001) (Lim et al., 2019).

METHODS

IRB approval was obtained to conduct this exempt research through the Regional Medical Institutional Review Board.

A Qualtrics survey was used for data collection. An explanation of the study and informed consent was provided at the beginning of the survey. Participants were informed that they could stop at any time or not answer any question if they so desired.

METHODS

Resilience was assessed using the Connor-Davidson Resilience Scale (CD-RISC). The CD-RISC includes 25 items, and each item has 5-point Likert-type response options ranging from 0=not true at all to 4=true nearly all the time. Degree of resilience was reflected by the sum score of the 25 items, with higher scores reflecting greater resilience. The CD-RISC had high psychometric ratings with internal consistency estimated using Cronbach's α (0.89).

Self-perceived health status was assessed using the PROMIS Global Health short form v1.1 (PROMIS v1.1). The PROMIS v1.1 is a 10-item public available instrument that measures both Global Physical Health and Global Mental Health components. The estimated results were calculated based on a standardized and published scoring and rating system. The scale has internal consistency reliability coefficients of 0.81 and 0.86 for Global Physical Health and Global Mental Health measurements, respectively.

METHODS

The descriptive statistics of the pre-and post-survey respondents' characteristics and outcome measurements (i.e. resiliency score, physical and mental health scores) were presented and compared using frequency tables.

The independent two-sample t-tests were performed to compare the differences between the pre-and post-survey respondents for continuous variables (i.e. age, resiliency score, physical and mental health scores)

χ^2 tests were used for categorical variables.

A p-value <.05 was considered statistically significant. All data were analyzed using Stata/MP 14.0.

RESULTS

Table 1. Demographic Data and Nursing Experience Characteristics

Characteristics	Pre (N=79) n (%)	Post (N=136) n (%)	p value
Age in years (mean ± SD)	44.13 ± 13.1	42.98 ± 12.28	.5236
Gender			.123
Female	75.0 (94.9%)	134.0 (98.5%)	
Male	4.0 (5.1%)	2.0 (1.5%)	
Race/ethnicity			–
Non-Hispanic White	79.0 (100.0%)	136.0 (100.0%)	
Highest nursing degree			.305
RN Diploma	0.0 (0.0%)	4.0 (2.9%)	
ADN	7.0 (8.9%)	18.0 (13.2%)	
BSN	57.0 (72.2%)	93.0 (68.4%)	
MSN or higher	15.0 (19.0%)	21.0 (15.4%)	
Work hours per week			.982
0 – 24 hours	9.0 (11.4%)	17.0 (12.5%)	
25 - 36 hours	25.0 (31.6%)	40.0 (29.4%)	
37 - 40 hours	43.0 (54.4%)	76.0 (55.9%)	
40+ hours	2.0 (2.5%)	3.0 (2.2%)	

RESULTS

Overtime hours worked per week			.981
None	32.0 (44.4%)	58.0 (43.6%)	
0.5 – 4 hours	25.0 (34.7%)	44.0 (33.1%)	
4.5 – 8 hours	9.0 (12.5%)	19.0 (14.3%)	
More than 8 hours	6.0 (8.3%)	12.0 (9.0%)	
Work hours			.746
Days	64.0 (81.0%)	109.0 (80.1%)	
Evenings	1.0 (1.3%)	1.0 (0.7%)	
Nights	13.0 (16.5%)	21.0 (15.4%)	
Rotates days, nights or evenings	1.0 (1.3%)	5.0 (3.7%)	
RN experience			.951
Up to 2 years	6.0 (7.7%)	8.0 (5.9%)	
2-5 years	10.0 (12.8%)	19.0 (14.0%)	
5-10 years	10.0 (12.8%)	19.0 (14.0%)	
10+ years	52.0 (66.7%)	90.0 (66.2%)	
Experience in current uni/department			.302
Up to 2 years	18.0 (23.1%)	26.0 (19.1%)	
2-5 years	18.0 (23.1%)	42.0 (30.9%)	
5-10 years	14.0 (17.9%)	32.0 (23.5%)	
10+ years	28.0 (35.9%)	36.0 (26.5%)	

RESULTS

Most time (>51%) involved in…			.330
Direct patient/population care	61.0 (77.2%)	114.0 (84.4%)	
Administration/management	15.0 (19.0%)	19.0 (14.1%)	
Education/professional development	3.0 (3.8%)	2.0 (1.5%)	
Area of work			.558
Acute care	52.0 (68.4%)	88.0 (66.2%)	
Ambulatory/primary care	21.0 (27.6%)	40.0 (30.1%)	
Long term care	1.0 (1.3%)	0.0 (0.0%)	
Education	2.0 (2.6%)	5.0 (3.8%)	
Days miss work in past 3 months			.937
None	58.0 (73.4%)	102.0 (75.0%)	
1 day or shift	11.0 (13.9%)	19.0 (14.0%)	
2-3 days or shifts	10.0 (12.7%)	15.0 (11.0%)	
Ever thought of quitting current job			.067
Never	33.0 (41.8%)	36.0 (26.5%)	
Sometimes	39.0 (49.4%)	86.0 (63.2%)	
Usually or Always	7.0 (8.9%)	14.0 (10.3%)	

RESULTS

How often think workload is too much		
Never	10.0 (12.7%)	16.0 (11.8%)
Sometimes	58.0 (73.4%)	95.0 (69.9%)
Usually or Always	11.0 (13.9%)	25.0 (18.4%)
Currently enrolled in nursing education program		
No	61.0 (77.2%)	118.0 (86.8%)
Yes	18.0 (22.8%)	18.0 (13.2%)
Program enrolled		
RN-BSN	3.0 (16.7%)	9.0 (50.0%)
MSN/MN	13.0 (72.2%)	9.0 (50.0%)
Post Master's certificate or Doctorate	2.0 (11.1%)	0.0 (0.0%)

RESULTS

Table 2. Resiliency Scores

Outcome measurements (mean ± SD)	Pre (N=79) n (%)	Post (N=136) n (%)	*p* value
Resiliency score	82.01 ± 11.71	78.33 ± 12.27	.0339

* Higher score reflecting greater resilience
* US general population mean score= 80.7

RESULTS

Table 3. Physical and Mental Health Resiliency Scores

Outcome measurements (mean ± SD)	Pre (N=79) n (%)	Post (N=136) n (%)	P value
Physical health score	50.06 ± 5.01	43.48 ± 5.44	<.0001
Mental health score	50.5 ± 7.89	48.16 ± 7.58	.0338

* Higher score reflects better physical or mental health
* The mean score is 50 for both physical and mental health

The raw Physical and Mental Health Scores were standardized to the general population using the T score. Analysis revealed a statistically significant decline in both Physical Health Scores (p <.0001) and Mental Health Scores (p = .03338).

DISCUSSION

- Mean resiliency scores for the study group declined significantly from a pre- Covid-19 mean of 82.01 +/- 11.71 to a post Covid-19 mean of 78.33 +/- 12.27 (p = 0.0339).

- This decline also brought the total resiliency score, for the group, below the U.S. general population mean of 80.7 another concerning change from the pre-Covid 19 data.

- While the literature did suggest that the Covid-19 pandemic was responsible for negative impacts on RN resiliency, (Baskin & Bartlett, 2021; Jo et al., 2021) minimal information was found that specifically addressed the nuance and reasons for this decline.

DISCUSSION

- The data analysis also revealed significant declines in both the physical and mental health domains of the study participants.

- The pre-pandemic physical health mean of 50.06 +/- 5.01 declined to a post-pandemic score of 43.48 +/- 5.44 ($p < .0001$).

- The pre-pandemic mental health mean of 50.5 +/- 7.89 declined to a post-pandemic score of 48.16 +/- 7.58 ($p = .0338$).

- The post-pandemic scores are both below the mean score of 50.

DISCUSSION

- Little information was found regarding specific factors that may have impacted the relationship between the Covid-19 pandemic and declines in RN physical and mental health.

- Several studies conducted pre-Covid-19 did find **associations between work environment related factors and nurses' physical and mental health** (Elbejjani et al., 2020; Mohamadirizi & Reza Dalvi, 2019). Specifically, Mohamadirizi & Reza Dalvi (2019) reported that **nurses who had sufficient work resources; related to working conditions, supervisor support, co-worker support, and emotional support; reported significantly better physical** ($r = 0.23$; P, 0.001) and **mental health** ($r = 0.17$; $P < 0.001$).

LIMITATIONS

- A small and heterogeneous sample with lack of gender and racial/ethnic diversity.

- Results of the analysis only reflect the levels of resiliency and mental and physical health of one rural, Magnet designated facility and therefore are not generalizable to the larger population of nurses.

- Pre and post-data groups were not identical.

- The small sample size prevented the conduct of inferential statistics aimed at investigating potential relationships between self-reported nursing experience characteristics and the endpoint outcomes of resiliency, physical health, and mental health.

ORGANIZATIONAL IMPLICATIONS

- Organizational leaders must give serious consideration to the results of this study.

- The implications for both RN outcomes, workplace, and patient outcomes related to the decline in RN resiliency, physical health, and mental health are clear.

- **Resiliency in RNs** was found to have **a significant positive association** with **job satisfaction** (Brown, Wey, & Foland, 2017; Zhao et al., 2021), compassion satisfaction (Atay, Sahin, & Buzlu, 2021), and **social support** (Zhao et al., 2021).

- **Resiliency** was also found to be **negatively correlated** with **burnout** and **compassion fatigue** (Atay et al., 2021). Finally, **resiliency directly predicts transition shock and turnover intention** (Zhao et al., 2021).

ORGANIZATIONAL IMPLICATIONS

- Henshall, Davey, and Jackson (2020) suggest that due to the high demand for nurses and the strains that the Covid-19 pandemic has put upon the RN workforce, organizations must look for ways to ensure the presence of a robust and resilient nursing workforce.

- While resilience is an inherently personal characteristic, organizations should seek to implement system level support mechanisms aimed at assisting nurses in maintaining and increasing personal levels of resiliency (Henshall et al., 2020).

- Rushton, Batcheller, Schroeder, and Donohue (2015) report that increased resiliency in nurses is associated with statistically significant improvements in both hope (P < 0.01) and stress ($p < 0.5$).

ORGANIZATIONAL IMPLICATIONS

- Organizational leaders should select evidence-based interventions that align with the organization's mission, vision, and values. Selected interventions should then be implemented to ensure that RNs have the organizational resources necessary to maintain and build resiliency (Henshall et al., 2020).

- Presentation of the interventions will be of the utmost importance (Henshall et al., 2020). Organizational leaders should approach these interventions carefully to ensure that RNs do not misinterpret the interventions to mean that the organization is placing judgment or criticism or perceives them as weak or unable to cope with challenges (Henshall et al., 2020).

ORGANIZATIONAL IMPLICATIONS

RNs need significant organizational support:

◦ To rebuild both personal and professional resources after enduring the Covid-19 pandemic and its associated challenges.

◦ Organizational leaders must step up to ensure that these needs are met in order to ensure a healthy and resilient RN workforce capable of meeting the ever-increasing demands of healthcare's future.

REFERENCES

Ali, S. A., Shah, J., & Talib, Z. (2021). Covid-19 and mental well-being of nurses in a tertiary facility in Kenya. *PLOS ONE, 16*(7), 1-10. https://doi.org/10.1371/journal.pone.0254074

Atay, N., Sahin, G., & Buzlu, S. (2021). The relationship between psychological resilience and professional quality of life in nurses. *Journal of Psychological Nursing, 59*(6), 31-36. https://doi.org/10.3928/02793695-20210218-01

Baskin, R. G., & Bartlett, R. (2021). Healthcare worker resilience during the Covid-19 pandemic: An integrative review. *Journal of Nursing Management, 29*(8), 2329-2342. https://doi.org/10.1111/jonm.13395

Batra, K., Pal Singh, T., Sharma, M., Batra, R., & Schvaneveldt, N. (2020). Investigating the psychological impact of Covid-19 among healthcare workers: A meta-analysis. *International Journal of Environmental Research and Public Health, 17*(9096), 1-33. https://doi.org/10.3390/ijerph172390906

Brown, R., Wey, H., & Foland, K. (2018). The relationship among change fatigue, resilience, and job satisfaction of hospital staff nurses. *Journal of Nursing Scholarship, 50*(3), 306-313. https://doi.org/10.1111.jnu.12373

Cao, X., Li, J., & Gong, S. (2021). Effects of resilience, social support, and work environment on turnover intention in newly graduated nurses: The mediating role of transition shock. *Journal of Nursing Management, 29*(8), 2585-2593. https://doi.org/10.111/jonm.13418

REFERENCES

Cella, D., Riley, W., Stone, A., Rothrock, N., Reeve, B., Yount, S., . . . PROMIS Cooperative Group. (2010). The Patient-Reported Outcomes Measurement Information System (PROMIS) developed and tested its first wave of adult self-reported health outcome item banks: 2005-2008. *Journal of Clinical Epidemiology, 63*(11), 1179-1194. https://doi.org/10.1016/j.jclinepi.2010.04.011

Chesak, S. S., Morin, K. H., Cutshall, S. M., Jenkins, S. M., & Sood, A. (2021). Feasibility and efficacy of integrating resiliency training into a pilot nurse residency program. *Nurse Education in Practice, 50*, 1-7. https://doi.org/10.1016/j.nepr.2020.102959

Connor, K. M., & Davidson, J. R.T. (n.d.). The Connor-Davidson Resilience Scale. Retrieved September 19, 2019, from http://www.connordavidson-resiliencescale.com/about.php

Connor, K. M., & Davidson, J. R.T. (2003). Development of a new resilience scale: The Connor-Davison Resilience Scale (CD-RISC). *Depression And Anxiety, 18*(2), 76-82. https://doi.org/10.1002/da.10113

DeWalt, D. A., Rothrock, N., Yount, S., & Stone, A. A. (2007). Evaluation of item candidates: The PROMIS qualitative item review. *Medical Care, 45*(5 Suppl), 12-21. https://doi.org/10.109/01.mlr.0000254567.79743.e2

Duncan, D. (2020). What the Covid-19 pandemic tells us about the need to develop resilience in the nursing workforce [Abstract]. *Nursing Management - UK, 27*(3), 22-27. https://doi.org/10.7748/nm.2020.e1933

REFERENCES

Falatah, R. (2021). The impact of the Coronavirus Disease (Covid-19) pandemic on nurses' turnover intention: An integrative review. *Nursing Reports*, *11*(4), 787-810. https://doi.org/10.3390/nursrep11040075

García-Izquierdo, M., Meseguer de Pedro, M., Ríos-Risquez, I., & Soler Sánchez, I. (2018). Resilience as a moderator of psychological health in situations of chronic stress (burnout) in a sample of hospital nurses. *Journal of Nursing Scholarship*, *50*(2), 228-236. https://doi.org/10.111/jnu.12367

Gensimore, M. M., Maduro, R. S., Morgan, M. K., McGee, G. W., & Zimbro, K. S. (2020). The effect of nurse practice environment on retention and quality of care via burnout, work characteristics, and resilience. *The Journal of Nursing Administration*, *50*(10), 546-553. https://doi.org/10.1097/NNA.0000000000000932

Häussl, A., Ehmann, E., Pacher, A., Knödl, K., Huber, T., Neundlinger, L., Osmanovic, A., Plank-Straner, A., Walter, P., Schüssler, S., & Schoberer, D. (2021). Psychological, physical, and social effects of the Covid-19 pandemic on hospital nurses. *International Nursing Review*, *68*(4), 482-492. https://doi.org/10.1111/inr.12716

REFERENCES

Henshall, C., Devey, Z., & Jackson, D. (2020). Nursing resilience interventions - A way forward in challenging healthcare territories. *Journal of Clinical Nursing*, *29*, (19-20). https://doi.org/10.1111/jocn.15276

Honarmand, K., Yarnell, C. J., Young-Ritchie, C., Maunder, R., Priestap, F., Abdalla, M., Ball, I. M., Basmaji, J., Bell, C. M., Jeffs, L., Shah, S., Chen, J., LeBlanc, D., Kayitesi, J., Eta-Ndu, C., & Mehta, S. (2022). Personal, professional, and psychological impact of the Covid-19 pandemic on hospital workers: A cross-sectional survey. *PLOS ONE*, 1-18. https://doi.org10.1371/jounral.pone.0263438

Hylton Rushton, C., Batcheller, J., Schroeder, K., & Donohue, P. (2015). Burnout and resilience among nurses practicing in high-intensity settings. *American Journal of Critical Care*, *24*(5), 412-420. https://doi.org/10.4037/ajcc2015291

The Journal of Nursing Administration, *51*(7/8). (2021). https://doi.org/10.1097/NNA.0000000000001031

Jo, S., Kurt, S., Bennett, J., Mayer, K., Pituch, K. A., Simpson, V., Skibiski, J., Takagi, E., Karaaslan, M., Ozluk, B., & Reifsnider, E. (2021). Nurses' resilience in the face of coronavirus (Covid-19): An international review. *Nursing Health Sciences*, *23*(3), 646-657. https://doi.org/10.1111/nhs.12863

Kukihara, H., Yamawaki, N., Tamura, Y., Arita, K., & Nakashima, E. (2018). The mediating effects of resilience, morale, and sense of coherence between physical activity and perceived physical/mental health among Japanese community-dwelling older adults: A cross-sectional survey. *Journal of Aging and Physical Activity*, *26*(4), 544-552. https://doi.org/10.1123/japa.2017-0265

Labrague, L. J. (2021). Pandemic fatigue and clinical nurses' mental health, sleep quality and job contentment during the Covid-19 pandemic: The mediating role of resilience. *Journal of Nursing Management*, *29*(7), 1992-2001. https://doi.org/10.1111/jonm.13383

REFERENCES

Labrague, L. J., & De los Santos, J. (2020). Covid-19 anxiety among front-line nurses: Predictive role of organisational support, personal resilience and social support. *Journal of Nursing Management*, *28*(7), 1653-1661. https://doi.org/10.1111/jonm.13121

Lim, K., Matchar, D. B., Tan, C., Yeo, W., Østbye, T., & Howe, T. (2020). The association between psychological resilience and physical function among older adults with hip fracture surgery. *The Journal of American Medical Directors Association*, *21*(2), 260-266. https://doi.org/10.1016/j.jamda.2019.07.005

Lin, Y., Hu, Z., Danaee, M., Alias, H., & Wong, L. (2021). The impact of the Covid-19 pandemic on future nursing career turnover intention among nursing students. *Risk Management and Healthcare Policy*, *14*, 3605-3615. https://doi.org/10.2147/RMHP.S322764

Liu, H., Cella, D., Gershon, R., Shen, J., Morales, L. S., Riley, W., & Hays, R. D. (2010). Representativeness of the Patient-Reported Outcomes Measurement Information System internet panel. *Journal of Clinical Epidemiology*, *63*(11), 1169-1178. https://doi.org/10.1016/j.jclinepi.2009.11.021

Manzanares, I., Sevilla Guerra, S., Lombraña Mencia, M., Acar-Denizli, N., Miranda Salmerón, J., & Martinez Estalella, G. (2021). Impact of the Covid-19 pandemic on stress, resilience and depression in health professionals: A cross-sectional study. *International Nursing Review*, *68*(4), 461-470. https://doi.org/10.1111/inr.12693

Mazurek Melnyk, B., Orsolini, L., Tan, A., Arslanian-Engoren, C., D'Eramo Melkus, G., Dunbar-Jacob, J., Hill Rice, V., Millan, A., Dunbar, S. B., Braun, L. T., Wilbur, J., Chyun, D. A., Gawlik, K., & Lewis, L. M. (2018). A national study links nurses' physical and mental health to medical errors and perceived worksite wellness. *Journal of Occupational and Environmental Medicine*, *60*(2), 126-131. https://doi.org/10.1097/JOM.0000000000001198

Mazurek Melnyk, B., Kelly, S. A., Stephens, J., Dhakal, K., McGovern, C., Tucker, S., Hoying, J., McRae, K., Ault, S., Spurlock, E., & Bird, S. B. (2020). Interventions to improve mental health, well-being, physical health, and lifestyle behaviors in physicians and nurses: A systematic review. *American Journal of Health Promotion*, *34*(8), 929-941. https://doi.org/10.1177/0890117120920451

Mealer, M., Schmiege, S. J., & Meek, P. (2016). The Connor-Davidson Resilience Scale in critical care nurses: A psychometric analysis. *Journal of Nursing Measurement*, *24*(1), 28-39. https://dx.doi.org/10.1891/1061-3749.24.1.28

REFERENCES

Alshammari, M., & Bani Salim, M. (2019). The relationship between work resources and physical and mental health among nurses: A confirmatory factor analysis. *Journal of Education and Health Promotion*, 8(17), 1-5. https://doi.org/10.4103/jehp_277_18

NursingSolutions Inc. (2021). 2021 NSI national health care retention & RN staffing report. https://www.nsinursingsolutions.com.

Riley, W. T., Rothrock, N., Bruce, B., Christodolou, C., Cook, K., Hahn, E. A., & Cella, D. (2010). Patient-reported outcomes measurement information system (PROMIS) domain names and definitions revisions: Further evaluation of content validity in IRT-derived item banks. *Quality of Life Research*, 19(9), 1311-1321. https://doi.org/10.1007/s11136-010-9694-5

Rothrock, N. E., Hays, R. D., Spritzer, K., Yount, S. E., Riley, W., & Cella, D. (2010). Relative to the general US population, chronic diseases are associated with poorer health-related quality of life as measured by the Patient-Reported Outcomes Measurement Information System (PROMIS). *Journal of Clinical Epidemiology*, 63(11), 1195-1204. https://doi.org/10.1016/j.jclinepi.2010.04.012

Sánchez-Sánchez, E., García-Álvarez, J., García-Marín, E., Gutiérrez-Serrano, M., Alférez, M., & Ramírez-Vargas, G. (2021). Impact of the Covid-19 pandemic on the mental health of nurses and auxiliary nursing care technicians: A voluntary online survey. *International Journal of Environmental Research and Public Health*, 18(16), 1-15. https://doi.org/10.3390/ijerph18168310

Serrão, C., Duarte, I., Castro, L., & Teixeira, A. (2021). Burnout and depression in Portuguese healthcare workers during the Covid-19 pandemic: The mediating role of psychological resilience. *International Journal of Environmental Research and Public Health*, 18(636), 1-12. https://doi.org/10.3390/ijerph18020636

Shanв, C. W., Jamboulian, S. G., Kucia, E. D., Boonton, K. J., Richter, J. A., McKenzie, J. E., & Weil-Wordle (MSR7, Workgroup. (2019). The association of resilience to psychiatric, substance use, and physical health outcomes in combat trauma exposed military service members and veterans. *European Journal of Psychotraumatology*, 10(1), 1-10. https://doi.org/10.1080/20008198.

Smiley, R. A., Ruttinger, C., Oliveira, C. M., Hudson, L. R., Allgeyer, R., Reneau, K. A., Silvestre, J. H., & Alexander, M. (2021). The 2020 national nursing workforce survey. *Journal of Nursing Regulation*, 12(1), S1-S96. https://doi.org/10.1016/S2155-8256(21)00027-2

Spencer-Laschinger, H. K., Wong, C., Read, E., Cummings, G., Leiter, M., Macphee, M., Regan, S., Rhéaume-Bruning, A., Ritchie, J., Burkoski, V., Grinspun, D., Gurnham, M., Huckstep, S., Jeffs, L., Woodward Reece, S., Ruffolo, M., Shamian, J., Wolff, A., Young-Ritchie, C., & Wood, K. (2019). Predictors of new graduate nurses' healthcare for the first 3 years of practice. *Nursing Open*, 6(2), 245-259. https://doi.org/10.1002/nop2.313

United States Census Bureau. (2021). *Quick facts Jackson, County Indiana*. Retrieved March 13, 2022, from https://www.census.gov/quickfacts/jacksoncountyindiana.

U.S. Bureau of Labor Statistics. (2021, September 8). *Registered Nurses*. Retrieved March 10, 2022, from https://www.bls.gov/ooh/healthcare/registered-nurses.htm.

Weldin, K., Berneth, A. M., & Boyes, J. (2011). A methodological review of resilience measurement scales. *Health and Quality of Life Outcomes*, 9(8), 1-18. https://doi.org/10.1186/1477-7525-9-8.

Wilson-Stronks A., Mumal, L., Goldsami, L., Barney, J., & Vaughn-Dickson, V. (2021). The psychological impact of Covid-19 on registered nurses. *Health Services Research*, 56(2), 67-68. https://doi.org/10.1111/1475-6773.13800.

Zhao, F., Wang, H., Sun, G., Ma, Q., Li, H., Li, Y., Zhang, X., Xie, Z., & Sun, J. (2021). Job satisfaction, resilience and social support in relation to nurses' turnover intention based on the theory of planned behaviour: A structural equation modelling approach. *International Journal of Nursing Practice*, 27(6), 1-10. https://doi.org/10.1111/ijn.12941.