ORIGINAL RESEARCH

From nursing students to newly licensed registered nurses: A longitudinal survey study on burnout, perceived stress, generalized health, and intent to leave

Natasha Barrow*[1], Lois James[2], Connie Kim Yen Nguyen-Truong[3], Denise A. Smart[2]

[1] *Bellingham Technical College, Nursing, Bellingham, Washington, United States*
[2] *College of Nursing, Nursing and Systems Science Department, Washington State University Health Sciences Spokane, United States*
[3] *College of Nursing, Nursing and Systems Science Department, Washington State University Vancouver, United States*

Received: August 11, 2025 **Accepted:** October 29, 2025 **Online Published:** November 11, 2025
DOI: 10.63564/jnep.v15n11p20 **URL:** https://doi.org/10.63564/jnep.v15n11p20

ABSTRACT

Introduction: There is a critical nursing shortage worldwide, and newly licensed registered nurses (NLRN) are needed to fill the gap. There is a consistent loss of 1/3 NLRN in the first year and 1/5 within the second-year post-graduation. This loss has been attributed to burnout, with NLRN leaving the workforce (job) or nursing field. The aim of this longitudinal survey study was to examine the potential relationship between burnout, perceived stress, and generalized health with intent to leave the workforce.
Methods: Surveys were administered from September 2023 to December 2024: baseline, graduation, 3-month, and 6-month post-graduation. Measures used were Maslach Burnout Inventory, Perceived Stress Scale, Generalized Health Questionnaire-12, and intent to leave.
Results: Emotional exhaustion had a very strong direct correlation with depersonalization (.778) indicating the higher level of emotional exhaustion, the higher degree of depersonalization. Emotional exhaustion had a very strong direct correlation with perceived stress (.875), indicating the higher the perceived stress, the higher the degree of emotional exhaustion. Bachelor degree students showed higher levels of emotional exhaustion compared to associate degree students. Depersonalization had a moderately-strong correlation with thoughts of entering nursing, although 55% disagree about thoughts of leaving the nursing profession.
Conclusions: This study lays a crucial longitudinal foundation on burnout, perceived stress, generalized health, degree program, and intent to leave. This study showed a very strong correlation between emotional exhaustion-perceived stress, emotional exhaustion-depersonalization, with students in Bachelor degree programs showing higher levels of emotional exhaustion. However, more research is needed exploring degree program, burnout, perceived stress, and their impact on intent to leave.

Key Words: Associate degree program, Bachelor degree nursing program, Burnout, Intent to leave, Newly licensed registered nurse, Pre-licensure nursing student, Stress

1. INTRODUCTION

1.1 Background

There is a critical nursing shortage worldwide. The United States estimates a need of 200,000 nurses per year between 2021 and 2031.[1,2] An average of one out of five newly licensed registered nurses (NLRN) will leave the field within the first year, and by the second year, over 1/3 more will leave in the United States.[3–5] Canada documented a 60,000-

*Correspondence: Natasha Barrow; Email: nbarrow@btc.edu; Address: Bellingham Technical College; Bellingham, Washington, United States.

nurse shortage in 2022, with predictions up to 117,000 nurse shortage by 2030.[6] The European Union, in their Nurses' Early Exit Study showed an average of 9.3% of new European Nurses leaving the healthcare field.[4] In 2022, the International Council of Nurses released a report indicating a need for 13 million more nurses over the next decade worldwide.[6] NLRN are needed to close the gap; however, this data shows a concerning high trend of loss of NLRN both nationally and internationally.

There is scant literature that examines the long-term effects of burnout from students being in nursing programs and continuing to follow them post-graduation across time. There is also scant information that investigates whether there are impacts on burnout and perceived stress when comparing pre-licensure degree programs.

1.2 Research aims

Research shows that nursing students are experiencing burning out while in their program;[7] however, the extent to which this is occurring is still unknown. What is known is that nursing curriculum, which has both didactic and clinical practice at the same time, exposes students "to the effects of stress resulting from academic and work pressures and overload".[8,9] The transition from student to NLRN can be difficult leading to NLRN reporting "high levels of stress and stress-related illness".[10,11] While more research regarding burnout in nursing students and NLRN is emerging, there remains a gap in the literature. Therefore, the main aims of this longitudinal survey study were to:

Aim 1 – Identify the association between burnout level, perceived stress, and generalized health using the standardized scales in both pre-licensure nursing students and NLRN: Maslach Burnout Inventory (MBI), Perceived Stress Scale (PSS), and Generalized Health Questionnaire (GHQ)–12.

Aim 2 – Identify differences between burnout levels and perceived stress in pre-licensure nursing students in associate degree programs versus bachelor degree programs. Aim 3 – Investigate a potential link between intent to leave the workforce and perceived stress, burnout, and generalized health.

The secondary purpose was to describe the key challenges, strengths, and lessons learned from conducting a longitudinal study in the field.

1.3 Framework

The theoretical framework used to guide this study was the socioecological model (SEM). The SEM examines factors that impact all levels of health from an interaction and interdependence perspective. A premise of the SEM is that behaviors are influenced by multiple layers of influence. A second premise of the SEM asserts that behaviors are shaped by an individual's environment.[12–14]

The SEM has five levels of influence: "(1) intrapersonal or individual factors, (2) interpersonal factors, (3) institutional or organizational factors, (4) community factors, and (5) public policy factors".[14] This study focused on intrapersonal, interpersonal, and institutional factors of the SEM.

1.4 Ethics

This study was reviewed by a local Washington State University Human Research Protection Program/Institutional Review Board and certified as exempt research, #20201-001.

2. METHODS

2.1 Study design

This quantitative cohort research was a longitudinal descriptive survey design that focused on burnout, perceived stress, generalized health, and intent to leave. This research was designed to assess burnout levels in pre-licensure nursing students and as post-licensure NLRN, trends in burnout levels within the first 6 months post-graduation, perceived stress, and intent to leave the nursing workforce. Independent surveys specific to burnout, perceived stress, and generalized health, were combined into a single survey to collect quantitative data or numeric descriptors of the attitudes and perceptions of nursing students and NLRN.[15]

2.2 Study sample population and setting

The sample pool consisted of pre-licensure registered nursing students attending school in both Washington and Oregon states in the U.S. Pacific Northwest. A total of five pre-licensure nursing student cohorts graduating in Fall 2023, Winter 2024, and Spring 2024 from both associate degree of nursing (ADN) and bachelor of science in nursing (BSN) degree programs comprised the sample population. Figure 1 shows the sample population based on quarter/semester graduating and degree program.

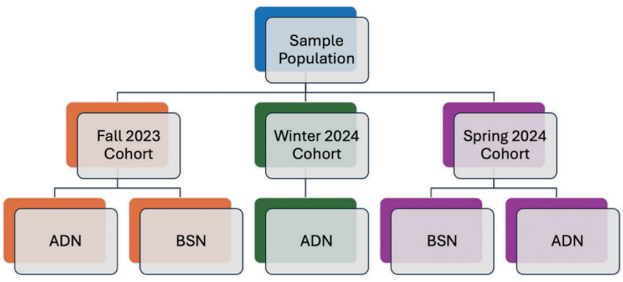

Figure 1. Cohort graduation time and associate degree or bachelor degree in nursing programs

Quantitative data was collected using the Qualtrics online survey software (Qualtrics, Provo, UT). See figure 2 for a total

combined sample size of those who fully completed surveys (i.e., completeness) based on the individual timepoints.

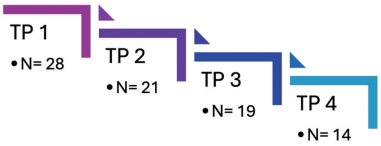

Figure 2. Completeness sample size (N) based on timepoint (TP) of survey

2.3 Data collection

Associates degree programs graduate on a quarter system, whereas Bachelors degree programs graduate on a semester system. Quantitative data was collected at four different time points. Timepoint 1 (TP1), the baseline survey, was collected at the beginning of the quarter/semester per cohort. Timepoint 2 (TP2) was collected at the end of the participants' respective academic quarter/semester. Timepoint 3 (TP3) was collected 3 months post-graduation. Timepoint 4 (TP4) was collected 6 months post-graduation. Participants were randomly selected, up to 25 people per survey, to receive a U.S. $15 Visa gift card as a modest renumeration for appreciation of their time. See Figure 3 for the data collection timeline.

Surveys were created that combined several standardized scales (described below) as well as questions to assess intent to leave the workforce. All survey timepoints contained the Perceived Stress Scale (PSS) and the Generalized Health Questionnaire – 12 (GHQ-12). The Maslach Burnout Inventory (MBI) was used to assess burnout, with the Student Survey version at Timepoints 1 and 2 and the Human Services Survey version at Timepoints 3 and 4. Intent to Leave questions were added to the surveys for Timepoints 3 and 4. Demographic questions were in the survey at Timepoint 1 with specific questions related to changes in demographic data included in Timepoints 2 to 4 surveys.

Figure 3. Data collection timeline based on cohort and timepoint.
Baseline data is the beginning of the program, Timepoint 2 is at the end of the program, Timepoint 3 is 3-months post-graduation, and Timepoint 4 is 6-months post-graduation.

2.3.1 *Maslach Burnout Inventory – Student Survey (MBI-SS)*

Burnout is commonly described in relation to three main characteristics: emotional exhaustion, cynicism, and depersonalization.[16–20] The Maslach Burnout Inventory, initially published in 1981, was designed to measure the "phenomenon of burnout", at a time when there was little to guide research related to burnout.[21] The Maslach Burnout Inventory – General Survey-Student (MBI-GS[S]) is based on the MBI-General Survey, which assesses burnout in a wide range of occupation settings. The MBI-GS(S) assesses burnout in students by evaluating, for example, associations, general feelings of emotional exhaustion (EE), "feelings of indifference or a distant attitude towards school", or cynicism (CY), and effectiveness at studies or personal efficacy (PE).[21] The MBI-GS(S) is a 16-question survey using a 7-point Likert scale with scores ranging from 0 (never) to 6 (everyday). The lead scientist (first author) obtained permission to administer the complete MBI instrument and reproduced the following sample questions from the MBI-GS(S): "I feel emotionally drained by my studies", "In my opinion, I am a good student", and "I doubt the significance of my studies"

(Copyright ©1996, 2016 Wilmar B. Schaufeli, Michael P. Leiter, Christina Maslach & Susan E. Jackson. All rights reserved in all media. Published by Mind Garden, Inc., www.mindgarden.com). Psychometrics for the MBI-GS, parent survey, and studies that published psychometrics for the MBI-GS(S) can be found in Table 1.

Table 1. Psychometrics MBI-GS and Cronbach's Alpha values

Sample Size and Studies		EE	CY	PE
12,140 employees from varied organizations [21]		.88	.76	.76
9,055 forest industry employees [21]		.86	.75	.83
3,312 employees from four occupational groups [21]		.87-.90	.74-.80	.70-.77
2,431 working adults [21]		.83	.79	.74
Measuring burnout among university students: factorial validity, invariance, and latent profiles of the Italian version of the MBI-SS [22]	7,757 University students	.86	.82	.77
Validity and reliability of Maslach Burnout Inventory Student Survey in Sri Lanka [23]	194 grade 13 students	.84	.87	.88
Exploring burnout and depression of Thai medical students: the psychometric properties of the Maslach Burnout Inventory [24]	545 undergraduate medical students	.89	.81	.70

Notes. Emotional Exhaustion (EE), Cynicism (CY), Professional Efficacy (PE).

2.3.2 *Maslach Burnout Inventory – Human Services Survey (MBI-HSS)*

The MBI-HSS is specific to medical personnel, such as nurses who provide direct patient care. Large, multinational studies were completed to obtain the reliability and validity of the scale. Psychometrics show the MBI-HSS consistently and reliably measures burnout across occupational groups and in various settings. Internal reliability was completed with Cronbach's alpha, with EE, DP, PA estimating at .90, .79, and .71 respectively.[25] Standard errors (EE = 3.80, DP = 3.16, & PA = 3.73) were measured for each scale.[25] In addition to its reliability and validity in measuring burnout, the MBI has been shown to be predictive of intent to leave the workforce. A study done with public contact workers showed higher burnout scores correlating with intent to leave the workforce within one year.[25] These findings support this scale being the best at measuring associations regarding burnout and its effect on the intent to leave the workforce.

The MBI-HSS is a 22-statement survey measured using a Likert scale with point ranges from 0 (never) to 6 (everyday) in relation to the three characteristics of burnout. The scale consists of 22 questions with 9 questions on emotional exhaustion (EE), 5 questions on depersonalization (DP), and 8 questions on personal accomplishment (PA). The lead researcher obtained permission to administer the complete MBI instrument and reproduced the following sample questions from the MBI-HSS: "I feel emotionally drained from work", "I have accomplished many worthwhile things in this job", and "I don't really care what happens to some recipients" (Copyright ©1981 Christina Maslach & Susan E. Jackson. All rights reserved in all media. Published by Mind Garden, Inc., www.mindgarden.com). The MBI was selected to measure burnout due to its reliability, validity, and its ability to measure levels of burnout experienced in a setting. Higher scores of EE and DP indicate higher levels of burnout. PA scoring is inverse to scores on EE and DP in that lower scores indicate higher levels of burnout.[25]

2.3.3 *Perceived Stress Scale*

The Perceived Stress Scale (PSS), a widely used measurement tool, was used to measure the perception of stressful situations in an individual's life. The PSS works by using specifically worded questions that are designed to measure whether individuals find their lives unpredictable, uncontrollable, or overloaded by the situations they are experiencing in their lives.[26,27] The PSS is a 10-item survey that is measured on a Likert scale from 0 (never) to 4 (very often). Scoring on the PSS is done by reversing the scores of the 4 positively stated (0 = 4 to 4 = 0) items and then summing all the scores together.

Scores on the PSS can range from 0 to 40. Scores between 0-13 indicate low stress levels, scores between 14-26 indicating moderate stress, and scores between 27-40 indicating high perceived stress levels. It is important to note that scores are based on the participants' perception of the stress they are experiencing, therefore two individuals can score the same but have different contributors to stress.[27] The PSS is the most appropriate and frequently used scale since its development in 1983.[26,27]

2.3.4 *Generalized health questionnaire – 12 (GHQ-12)*

Generalized health was assessed using the GHQ-12. This survey is a screening tool that can be used to measure common disorders such as depression, anxiety, social withdrawal, and somatic disorders. This survey allowed us to identify

potential relationships between generalized health risk and susceptibility to burnout in pre-licensure nursing students and NLRN.[28–30] The GHQ comes in different length versions (12, 28, 30, 60). The current study used the GHQ-12 survey due to its brevity and validity in measuring if the symptoms are present and to what extent.[28]

The GHQ is scored using a Likert scale from 0-3 with 0 = not at all and 3 = much more than usual.[28,29] It consists of equal numbers of negatively and positively phrased items.[28] Scores on the GHQ-12 range from 0-36, with a score of 3 or more warranting further evaluation.[29] Reliability for the scale is strong, with reliability coefficients ranging from 0.78 to 0.95 across various studies.[29]

2.3.5 *Intent to leave*

The nursing shortage gap widens when NLRN leave the workforce, and the literature shows that NLRN tend to have higher rates of attrition within a couple of years.[31] Intent to do something is a good predictor of whether an individual will complete the task, in this case, intent to leave the job or workforce.[32,33] Intent to leave can be measured with a few choice questions for associations, specifically asking intent to leave the nursing profession and intent to leave a specific job.[32–34] In our study, job refers to the participants' current position/role within an organization and profession refers to the career of nursing altogether.

Two different Likert scales were used to measure intent to leave the job and intent to leave the profession. Intent to leave the job was measured using a Likert scale with score from 0-7 (0 = very unlikely to 7 = very likely).[35] Intent to leave the profession was measured with a Likert scale from 0-5 (0 = strongly disagree to 5 = strongly agree).[33–35] Independent analysis of the intent to leave scale using a principal component analysis "explained 62% or more of the variance".[34] In addition, the intent to leave scales had Cronbach's alpha at 0.8 or more "indicating reliability that was adequate to excellent".[33,34] A total of 6 questions (3 for intent to leave job and 3 for intent to leave profession) was asked regarding intent to leave.

2.3.6 *Demographic questions*

A demographic survey was used to assess age, race, previous degree/higher education, program enrolled, family information such as children, relationship status, and questions regarding financial status, including income and work status (i.e., per diem, part-time, full-time). Demographic information for the NLRN portion of the study (timepoints 3 and 4) included questions regarding shift type, shift length, unit, patient load, transition to practice adequacy, and satisfaction with current position. Open-ended questions were used so participants could indicate what signs and symptoms they equated as an indication of burnout.

2.3.7 *Field notes*

The lead scientist created Core Data Tracker Tools for data collection as field notes-based data.[36] The publicly published Core Data Tracker tools regarding the strategic creating, implementation, evaluation, and utilization of field based notes are described elsewhere.[36] The six areas are the following: Nursing Program Tracker, Descriptive Data Collection Tracker, Completion Rate Tracker, Attrition Rate Tracker, Sample Size Tracker, and Survey Send out Dates and Reminders.

2.3.8 *Research analyses*

IBM SPSS Statistics, version 29.0.2.0, was used for statistical analysis. Correlation analysis was used to assess Aim 1, whether there is an association between burnout, perceived stress, generalized health in both nursing students and NLRN. A one-way analysis of variance (ANOVA) was used to assess differences in burnout, perceived stress, and generalized health between Timepoints 1 to 2 and Timepoints 3 to 4. Independent samples *t*-test was used to analyze Aim 2, whether there were differences in burnout and perceived stress based on program type. Correlation analysis was used to assess if there was a link between intent to leave and perceived stress and burnout in Aim 3. For the secondary purpose, we evaluated patterns regarding challenges, strengths, and lessons learned in conducting this longitudinal study.

3. Results

3.1 Sample population

The demographic results showed 93% female participants, with 78% of the sample being pre-licensure nursing students of white race. Most households of the participants had an income of less than $25,000. At baseline, 60% of participants were enrolled full-time in an ADN program. See Table 2 for detailed sociodemographic data of the research.

3.2 Study psychometrics

Psychometrics for the MBI-GSS were analyzed for each of the factors, emotional exhaustion (EE), cynicism (CS), and professional efficacy (PE). Cronbach's alphas for EE, CY, PE were .918, .827, .817, respectively. These results are in alignment with prior psychometrics of the scale. For the MBI-HSS, each factor, EE, depersonalization (DP), and professional efficacy (PE) were analyzed for Cronbach's alphas. Cronbach's alphas for EE, DP, PA were .950, .793, .817, respectively. These are in alignment with prior psychometrics of the scale.

Table 2. Baseline survey demographics

Characteristic	Total		Associate Degree Nursing		Bachelor Degree Nursing	
	n	%	n	%	n	%
Enrollment Status						
Full Time	30	100.0	18	60.0	12	40.0
Age of Participants						
18-24	15	51.7	4	13.8	11	37.9
25-34	9	31.0	8	27.6	1	3.4
35-44	3	10.3	3	10.3	0	0
45-54	2	6.9	2	6.9	0	0
Gender						
Male	2	6.9	2	6.9	0	0
Female	27	93.1	15	51.7	12	41.4
Race						
White	22	78.6	14	50.0	8	28.6
Black or African American	1	3.6	1	3.6	0	0
Asian	3	10.7	2	7.1	1	3.6
Two or More Races	2	7.1	0	0	2	7.1
Of Spanish, Hispanic or Latino origin						
Yes	6	20.7	2	6.9	4	13.8
No	23	79.3	15	51.7	8	27.6
Employment Status						
Working full-time	5	10.0	5	10.0	0	0.0
Working part-time	15	30.0	10	20.0	5	10.0
Homemaker or stay-at-home parent	1	2.0	1	2.0	0	0.0
Student	26	52.0	15	30.0	11	22.0
Other	3	6.0	1	2.0	2	4.0
Highest Education Level						
High school diploma or General Education Development	1	3.4	1	3.4	0	0.0
Some college, but no degree	7	24.1	3	10.3	4	13.8
Associates or technical degree	13	44.8	8	27.6	5	17.2
Bachelor's degree	6	20.7	3	10.3	3	10.3
Graduate or professional degree	2	6.9	2	6.9	0	0.0
Total Household Income						
Less than $25,000	9	31.0	7	24.1	2	6.9
$25,000-$49,999	4	13.8	2	6.9	2	6.9
$50,000-$74,999	4	13.8	3	10.3	1	3.4
$75,00-$99,999	3	10.3	0	0.0	3	10.3
$100,000-$149,999	3	10.3	2	6.9	1	3.4
$150,000 or more	3	10.3	2	6.9	1	3.4
Prefer not to say	3	10.3	1	3.4	2	6.9
Relationship Status						
Married	18	38.3	14	29.8	4	8.5
Living with a partner	7	14.9	3	6.4	4	8.5
Divorced-separated	2	4.3	2	4.3	0	0.0
Never been married	20	42.6	10	21.3	10	21.3

3.3 Aim 1 results

Aim 1 of this study was to assess the association between burnout levels, perceived stress, and generalized health scores at timepoint 1 and timepoint 2. Correlation analysis was completed using the factors of PSS, MBI–GSS, GHQ-12, timepoint, and program type.

A Pearson r correlation analysis revealed both direct and indirect significant relationships between multiple factors. There was a moderately strong direct and indirect relationship at the .01 level between EE and CY, EE and PE, and EE and PSS (Pearson r = .657, -.503, and .578 respectively). The research also found a direct and moderately strong relationship at the .01 level between GHQ and PSS (Pearson r = .557). Table 3 shows the results of this correlation analysis.

Table 3. Correlation analysis at Timepoint 1 and 2, using PSS, GHQ-12, MBI-GSS, and program type

Variable	1	2	3	4	5	6	7
1. MBI Emotional Exhaustion (AVG)	—						
2. MBI Cynicism (AVG)	.657**	—					
3. MBI Professional Efficacy (AVG)	-.503**	-.477**	—				
4. Perceived Stress Scale	.578**	.378**	-.275	—			
5. Generalized Health Questionnaire	.369**	.275	-.362*	.557**	—		
6. Time	-.016	.128	-.117	-.257	.024	—	—
7. Program Type	.244	.071	.036	-.102	-.039	—	—

**Correlation is significant at the .01 (2-tailed).

*Correlation is significant at the .05 level (2-tailed).

Aim 1 of this study also assessed the association between burnout levels, perceived stress, and generalized health scores at timepoint 3 and timepoint 4. Correlation analysis was completed using the factors of PSS, MBI–HSS, GHQ-12, timepoint, and program type.

A Pearson r correlation analysis revealed both direct and indirect significant relationships between multiple factors. The research found a very strong direct relationship at the .05 level between EE and DP and EE and PSS (Pearson r = .778 and .875 respectively). There was a moderately strong direct and indirect relationship at the .05 level between DP and PA, DP and PSS, and DP and GHQ (Pearson r = -.500, .633, and .500 respectively). There was a moderately strong direct and indirect relationship at the .05 level between EE and PA and EE and GHQ (Pearson r = -.557 and .712 respectively). Lastly, there was a moderately strong indirect relationship at the .05 level between PSS and GHQ (Pearson r = -.651). Refer to Table 4 for the results of the correlation analysis.

Table 4. Correlation analysis at Timepoint 3 and Timepoint 4 using PSS, GHQ-12, MBI-HSS, and program type

Variable	1	2	3	4	5	6	7
1. MBI Emotional Exhaustion (AVG)	—						
2. MBI Depersonalization (AVG)	.778**	—					
3. MBI Personal Accomplishment (AVG)	-.557**	-.500**	—				
4. Perceived Stress Scale	.875**	.633**	-.669**	—			
5. Generalized Health Questionnaire	.712**	.500**	-.273	-.651**	—		
6. Time	.204	.401*	-.050	.118	.140	—	—
7. Program Type	.449*	.286	-.390*	.306	.145	—	—

**Correlation is significant at the .01 (2-tailed)

*Correlation is significant at the .05 level (2-tailed)

A one-way ANOVA was used to compare the factors of the MBI, PSS, and GHQ-12 across timepoints. The three factors of the MBI-GSS (EE, CY, PE) was assessed for differences across timepoints 1 and 2. The results showed no significant differences at the 0.05 level in EE (F [1,48] = .012, p = .914), CY (F [1,47] = .783, p = .381), or PE (F [1,48] = .671, p = .417) between timepoints 1 and 2. When assessing for differences between timepoint 3 and timepoint 4 in relation to the three factors of the MBI-HSS (EE, DP, PA), the results showed the mean of depersonalization at timepoint 3 was significantly lower when compared to timepoint 4 at the .05 level, F [1,29] = 5.555, p = .025, with an Eta-squared effect size of .161. No significant differences were observed between timepoint 3 and 4 for EE (F [1,29] = 1.264, p = .270) and PA (F [1,29] = .072, p = .791). The PSS was assessed across all 4 timepoints with no significant differences observed at the .05 level (F [3,82] = .966, p = .413). The GHQ-12 was assess the across all 4 timepoints with no

significant differences observed at the .05 level (F [3,78] = 1.678, p = .179).

3.4 Aim 2 results

Aim 2 of this study was to assess if there were differences in burnout levels, perceived stress, and generalized health between those who completed an ADN program versus a bachelor degree program. An independent samples t-test was completed to test for statistical differences between the means of program type when comparing burnout (using the MBI-HSS), perceived stress, and generalized health scores. A summary of all the results of the analysis can be found in Table 5.

Table 5. Independent samples t-test for degree program versus factors

	Associate Degree Program		**Bachelor Degree Program**		***t* (29)**	***p****	**Cohen's d**
	M	**SD**	**M**	**SD**			
MBI_HSS Emotional Exhaustion	2.93	1.38	4.46	1.39	-2.705	.011*	-1.110
MBI_HSS Depersonalization	1.54	1.38	2.40	1.03	-1.608	.119	-.660
MBI_HSS Personal Accomplishment	4.78	.72	4.09	.78	2.280	.030	.936
	Associates Program		**Bachelor's Program**		***t* (32)**	***p****	**Cohen's d**
	M	**SD**	**M**	**SD**			
Perceived Stress Scale	16.72	7.54	22.44	9.54	-1.821	.078	-.708
Generalized Health Questionnaire	15.72	4.60	17.44	7.11	-.831	.412	-.332

* 2-sided significance

When comparing burnout across program types, ADN program graduates showed lower levels of emotional exhaustion (m = 2.93, sd = 1.38) when compared to bachelor's degree program graduates (m = 4.46, sd = 1.39). The difference is statistically significant at the .05 level (t = -2.705, df = 29). For personal accomplishment, ADN program graduates showed higher levels (m = 4.78, sd = .72) when compared to bachelor degree program graduates (m = 4.09, sd = .78). The difference is statistically significant at the .05 level (t = 2.280, df = 29). Depersonalization, perceived stress, and generalized health scores, when compared across program types, was not significantly different between programs.

3.5 Aim 3 results

Aim 3 of this study assessed the impact of burnout, perceived stress (PSS), and generalized health (GHQ) on intent to leave. Intent to leave was examined between Timepoint 3 (3 months post-graduation) and Timepoint 4 (6 months post-graduation). When asked, "How likely are you to have thoughts of quitting their job", 23.5% (8) of participants indicated they were somewhat unlikely to have thoughts of quitting their job. When asked, "How likely are you to search for another job", 29.4% (10) of participants indicated they were extremely unlikely to search for another job. When asked, "You are thinking about leaving the nursing profession?", 55.9% (19) stated they strongly disagreed. When asked, "How likely are you to apply for another job", 41.2% (14) indicated this was extremely unlikely. When asked, "If I could get a job making the same income in a different profession, I would take it", 26.5% (9) participants either strongly disagreed or somewhat agreed. When asked, "I am disappointed I ever entered nursing", 47.1% (16) strongly disagreed. See Table 6 for a full display of the survey results.

The results of a Spearman's correlation analysis (see Table 7) showed both a direct and inverse relationship when examining the individual factors with the intent to leave questions. When asked, "How likely are you to have thoughts of quitting their job", there was a direct and moderately strong relationship at the .01 level between EE (Spearman's rho = .70), DP (Spearman's rho = .64), and PSS (Spearman's rho = .66) and a moderately strong and inverse relationship at the .01 level with PA (Spearman's rho = .73). When asked, "How likely are you to search for another job", there was a direct and moderately strong relationship at the .01 level between EE (Spearman's rho = .51) and PSS (Spearman's rho = .57) and a moderately strong and inverse relationship at the .01 level with PA (Spearman's rho = -.64). When asked, "How likely are you to apply for another job", there was a direct and moderately strong relationship at the .01 level with PSS (Spearman's rho = .55) and a moderately strong and inverse relationship at the .01 level with PA (Spearman's rho = -.64). When asked, "If I could get a job making the same income in a different profession, I would take it", there was a direct and moderately strong relationship at the .01 level with EE (Spearman's rho = .61), DP (Spearman's rho = .52), and PSS (Spearman's rho = .60). Lastly, when asked "I

am disappointed I ever entered nursing", there was a direct and moderately strong relationship at the .01 level with EE (Spearman's rho = .72), PSS (Spearman's rho = .58), and GHQ (Spearman's rho = .55) and a moderately strong and inverse relationship at the .01 level with PA (Spearman's rho = -.51). There was a very strong direct relationship with DP (Spearman's rho = .75).

Table 6. Intent to leave questions; shown as % of participants

	Extremely Unlikely	Somewhat Unlikely	Neither Likely nor Unlikely	Somewhat Likely	Extremely Likely	No Response
How likely are you to have thoughts of quitting your job?	20.6	**23.5**	5.9	20.6	20.6	8.8
How likely are you to search for another job?	**29.4**	14.7	14.7	14.7	20.6	5.9
How likely are you to apply to another job?	**41.2**	14.7	8.8	11.8	17.6	5.9
% response of participants, n = 34						
	Strongly Disagree	**Somewhat Disagree**	**Neither Agree nor Disagree**	**Somewhat Agree**	**Strongly Agree**	**No Response**
You are thinking about leaving the nursing profession?	**55.9**	17.6	8.8	11.8	0.0	5.9
If I could get a job making the same income in a different profession, I would take it.	**26.5**	8.8	20.6	**26.5**	11.8	5.9
I am disappointed I ever entered nursing.	**47.1**	26.5	11.8	8.8	0.0	5.9
% response of participants, n = 34						

Table 7. Intent to leave Spearman's correlation analysis with MBI-HSS, PSS, and GHQ-12

	MBI-HSS – Emotional Exhaustion	MBI-HSS – Depersonalization	MBI-HSS – Personal Accomplishment	Perceived Stress Scale	Generalized Health Questionnaire - 12
How likely are you to have thoughts of quitting your job?	.698**	.636**	-.729**	.657**	.439*
How likely are you to search for another job?	.505**	.436*	-.644**	.573**	.331
How likely are you to apply to another job?	.491**	.425*	-.636**	.554**	.397*
You are thinking about leaving the nursing profession?	.219	.176	-.250	.305	.179
If I could get a job making the same income in a different profession, I would take it.	.607**	.515**	-.385*	.602**	.410*
I am disappointed I ever entered nursing.	.723**	.750**	-.508**	.580**	.554**

*. Correlation is significant to the .05 level (2-tailed)
**. Correlation is significant to the .01 level (2-tailed)

3.6 Secondary purpose results

3.6.1 *Challenges encountered and strengths*

Recruitment and retention were the greatest challenges of this longitudinal research. Recruitment of participants was the most labor intensive and time heavy part of this research study, leading to the creation of the core data trackers. Over 60 nursing program administrators were contacted for participation, with five schools requiring a modified Research Institutional Review Board (IRB) submission prior to even being able to recruit students. One school IRB declined participation due to anonymity of the data and no connections to individual schools. One school declined participation over concerns of survey fatigue in its students. Seven schools did not respond to any communication regarding the research study participation. The dedicated time, purposeful, and diligent research into the systematic tracking of numbers, such as locations, contacting schools in the Pacific Northwest, and documentation and journaling were strengths in this research.

To recruit beyond contacting individual schools, an organization charged $500 for dissemination of research study information. This organization was unable to commit to a specific timeframe for posting about the research study opportunity, stating it could be anywhere between one month to four months. Another nursing student organization did not allow for research study posting and recruitment for dissertation research or research in general. Recruitment material was posted on a different nursing forum with no response from students or administrators of the nursing student forum.

Attrition is an expectation of any type of research. Attrition and retention become especially challenging when starting with a small candidate pool and the nature of the topic is on

burnout, stress, generalized health, and intent to leave. Clear communication to participants, follow-up communication, and providing next steps to the participants was a strength of this research study.

4. Discussion

4.1 Aim 1

Depersonalization, a component of burnout, is defined as having a detached response to the job or emotional insensitivity.[25,37,38] In our study, we found the higher the emotional exhaustion, the higher the degree of depersonalization. This means the participants were more likely to have a detached response when having higher levels of emotional exhaustion and perceived stress. Prior researchers found that a "higher score of depersonalization corresponds to greater degrees of experienced burnout"[25] and when compared to levels of emotional exhaustion can indicate a strong association with turnover intention.[25] Having a detached response can also be a mechanism for responding to emotional exhaustion.

Emotional exhaustion, another component of burnout, is defined as feeling "emotionally overextended and exhausted by one's work"[25] and "depleted of one's emotional and physical resources".[37,38] In our study, we found the higher the emotional exhaustion the higher the perceived stress. This means that individuals who perceived having higher levels of stress were also shown to have to have higher levels of emotional exhaustion. Prior researchers asserted if the PSS works by measuring whether individuals find their lives unpredictable, uncontrollable, or overloaded by the situations they are experiencing,[29,30] then the more unpredictable, uncontrolled, and overloaded the experiences, the more emotional exhaustion is manifested.

4.2 Aim 2

Aim 2 investigated if there were differences between degree programs when comparing perceived stress, burnout, and generalized health. The study finding suggests that participants from an ADN program have a significantly lower level of emotional exhaustion when compared to those from a bachelor degree program. It is difficult to determine whether these results can be attributed to degree program or if the results are skewed because a higher number of participants graduated from an ADN program. There is no literature available during the time of this report that compares differences in burnout levels based on program type.

Regardless of program type, there were no significant differences in depersonalization, perceived stress, and generalized health scores. This could indicate that if stress, burnout, and perceived stress are being experienced by the participants, there is not a difference in levels of experience based on program type.

4.3 Aim 3

Study findings suggested that various factors impacted intent to leave the job or nursing field. Participants who had higher levels of feeling personal accomplishment were less likely to have thoughts of quitting their job. Almost a quarter of participants were somewhat unlikely to have thoughts of quitting their job. The more emotional exhaustion experienced, the more likely the participants was to have thoughts of quitting their job. Regardless of having thoughts of quitting their job, almost a third of participants indicated it was extremely unlikely they would search or apply for another job. Although nearly half of participants strongly disagreed they were disappointed in entering the nursing field, a moderately strong correlation of having thoughts of disappointment ever having entered the field of nursing with depersonalization. Hence, the more detached they felt, the more likely they were to be disappointed in their career choice. Although there appears to be a moderately strong relationship between depersonalization, personal accomplishment, and emotional exhaustion, slightly above half of participants denied having thoughts of leaving the nursing profession.

4.4 Strengths, limitations, and recommendations

There was a need to continuously evaluate the progress of the study in real time. Therefore, a strength of this study was the creation of the core data trackers. The core data trackers allowed for real time data collection over the course of 16 months. A second strength of this study was the creation of a safe environment that allowed for open communication of thoughts and experiences from participants. Lastly, we learned from conducting this research the crucial need of multi-method or mixed-method research.

A limitation to this study was the small sample size and the data collection timeline. Data collection was extended an additional six months for a total of 16 months of data collection for an opportunity to increase the candidate pool numbers. Data collection was limited to students in the final academic term and following them to the first six months post-graduation, which was a total of nine-months of data collection per participant. We recommend that our approach to this study be expanded with a larger sample of participants across a larger region to add more generalizable knowledge. We also recommend extending the timeline to one to two years post-graduation to assess for connections to the attrition rate of one out of five nurses in the first year and one out of three nurses in the second year.[3–5]

A recommendation is completing more research examin-

ing the impact of burnout, perceived stress, and generalized health on retention of nursing students and newly licensed nurses using a larger sample size and extending the timeline beyond six months post-graduation. Future research should examine whether tools like the MBI, PSS, and GHQ-12 can predict levels of burnout for early recognition and implement timely interventions. Another recommendation is introducing scales like the MBI and PSS, for example, surrounding self-care topics in nursing students and newly licensed nurses that may promote awareness and identification of a need for resources to help toward a pathway in mitigating the effects of burnout. This research has laid a foundation that can be built upon and for research utilization and uptake by systems/institutional levels.

There remains a dearth of knowledge on the impact of program type, associate degree versus bachelor degree, on burnout, stress, and intent to leave the workforce. One prior study showed that associates degree nurses were more likely to have job satisfaction than graduates of bachelor degree programs,[32] but there is a lack of knowledge on the impacts of education program type, burnout, and intent to leave. More research is needed regarding stress and burnout in pre-licensure nursing students and NLRN at the degree type level and the systemic level with transition to practice. This implication and recommendation support the American Association Colleges of Nursing,[39] Domain 10 (personal, professional, and leadership development), specifically Essential 10.1a: "Demonstrate health, self-care behaviors that promote wellness and resiliency".[39] The goal of AACN Essentials Domain 10 is to "promote diversity and retention in the profession, self-awareness, avoidance of stress-induced emotional and mental exhaustion…".[39] Having a larger sample size, extending the study to cover the entirety of their academic program, and extending the post-graduation collection time to one to two years could allow for further investigation across time on varying factors within and across program types and what would be generalizable.

5. Conclusions

This study lays a crucial longitudinal foundation through its exploration of burnout, perceived stress, generalized health, degree program type, and intent to leave in pre-licensure nursing students and NLRN. This research showed there is a very strong correlation between emotional exhaustion-depersonalization and emotional exhaustion-perceived stress. Bachelor degree program students had a higher level of emotional exhaustion when compared to associates degree program students. Intent to leave was moderately impacted by feelings of emotional exhaustion, personal accomplishment, and depersonalization. More research programming is needed exploring degree program, burnout, perceived stress, and intent to leave.

Acknowledgements

The authors would like to acknowledge and thank the participants for their time commitment to this study that spanned nine months. Thank you to the scientific team for your time commitment and preparation of this manuscript.

Authors contributions

Dr. Barrow is an Alum of the College of Nursing, PhD in Nursing Program, Washington State University Health Sciences Spokane, United States of America, where completed research study. Dr. James and Dr. Nguyen-Truong are the senior authors.

Conceptualization: NB, CKYN-T, LJ, and DAS. Data curation: NB, LJ, and CKYN-T. Formal analysis: NB, LJ, and CKYN-T. Funding acquisition: NB and CKYN-T. Investigation: NB, LJ, CKYN-T, and DAS. Methodology: NB, LJ, CKYN-T, and DAS. Project administration: NB, CKYN-T, and LJ. Resources: NB, LJ, and CKNT-T. Supervision: CKYN-T and LJ. Validation: NB and LJ. Visualization: NB. Writing – original draft: NB. Writing – review & editing: NB, LJ, CKYN-T, and DAS.

Funding

Dr. Natasha Barrow was awarded the Acel and Barbara Brown Nursing Scholarship that supports the overall research. Dr. Connie K. Y. Nguyen-Truong received the Washington State University Vancouver Nursing Fund for dissemination.

Conflicts of Interest Disclosure

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Informed consent

Obtained.

Ethics approval

The Publication Ethics Committee of the Association for Health Sciences and Education. The journal's policies adhere to the Core Practices established by the Committee on Publication Ethics (COPE).

Provenance and peer review

Not commissioned; externally double-blind peer reviewed.

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.

DATA SHARING STATEMENT

No additional data are available.

OPEN ACCESS

COPYRIGHTS

REFERENCES

[1] American Association of Colleges of Nursing. Fact sheet: Nursing shortage [Internet]. Washington, DC: American Association of Colleges of Nursing; 2022. https://www.aacnnursing.org/Portals/42/News/Factsheets/Nursing-Shortage-Factsheet.pdf

[2] United States Bureau of Labor Statistics. Registered Nurses: Job outlook [Internet]. Washington, DC. U.S. Bureau of Labor Statistics; 2022. https://www.bls.gov/ooh/healthcare/registered-nurses.htm#tab-6

[3] Brook J, Aitken LM, MacLaren JA, et al. An intervention to decrease burnout and increase retention of early career nurses: A mixed methods study of acceptability and feasibility. BMC Nursing [Internet]. 2021; 20: 1-12. PMid:33435972 https://doi.org/10.1186/s12912-020-00524-9

[4] Chacula KM, Myrick F, Yonge O. Letting go: How newly graduated registered nurses in Western Canada decide to exit the nursing profession. Nurse Education Today [Internet]. 2015; 35(7): 912–918. PMid:25862074 https://doi.org/10.1016/j.nedt.2015.02.024

[5] Moore A, Parks K, Beckling A. Transitioning from student to new graduate nurse. Nursing Made Incredibly Easy! [Internet]. 2020; 18(1): 51-55. https://doi.org/10.1097/01.NME.0000613640.59831.f1

[6] Baumann A, Crea-Arsenio M. The Crisis in the Nursing Labour Market: Canadian Policy Perspectives. Healthcare (Basel, Switzerland) [Internet]. 2023; 11(13): 1954. PMid:37444788 https://doi.org/10.3390/healthcare11131954

[7] Ghods AA, Ebadi A, Sharif Nia H, et al. Academic burnout in nursing students: An explanatory sequential design. Nursing Open [Internet]. 2023; 10(2): 535-543. PMid:36631731 https://doi.org/10.1002/nop2.1319

[8] Rudman A, Gustavsson JP. Burnout during nursing education predicts lower occupational preparedness and future clinical performance: A longitudinal study. International Journal of Nursing Studies [Internet]. 2012; 49(2012): 988-1001. PMid:22542085 https://doi.org/10.1016/j.ijnurstu.2012.03.010

[9] Valero-Chillerón MJ, González-Chordá VM, López-Peña N, et al. Burnout syndrome in nursing students: An observational study. Nurse Education Today [Internet]. 2019; 76: 38-43. PMid:30769176 https://doi.org/10.1016/j.nedt.2019.01.014

[10] Xie J, Li J, Wang S, et al. Job burnout and its influencing factors among newly graduated nurses: A cross-sectional study. Journal of Clinical Nursing [Internet]. 2021; 30(3-4): 508-517. PMid:33205476 https://doi.org/10.1111/jocn.15567

[11] Sampson M, Melnyk BM, Hoying J. The MINDBODYSTRONG intervention for new nurse residents: 6-month effects on mental health outcomes, healthy lifestyle behaviors, and job satisfaction. Worldviews on Evidence-Based Nursing [Internet]. 2020; 17(1): 16-23. PMid:31721425 https://doi.org/10.1111/wvn.12411

[12] Butts JB, Rich KL. Philosophies and theories for advanced nursing practice. 3rd ed. Massachusetts: Jones & Bartlett Learning. 2018. p. 253-259

[13] Rural Health Information Hub. Ecological model [Internet]. 2021. Available from: https://www.ruralhealthinfo.org/toolkits/health-promotion/2/theories-and-models/ecological

[14] U.S. Department of Health and Human Services. Theory at a glance: A guide for health promotion practice [Internet]. 2nd ed. National Cancer Institute; 2018. Available from: http://www.sbccimplementationkits.org/demandrmnch/wp-content/uploads/2014/02/Theory-at-a-Glance-A-Guide-For-Health-Promotion-Practice.pdf

[15] Creswell JW. Research design: Qualitative, quantitative, and mixed methods approaches. 4th ed. Los Angeles, London, New Delhi, Singapore, Washington DC: Sage; 2014.

[16] Fragoso ZL, Holcombe KJ, McCluney CL, et al. Burnout and Engagement. Workplace Health & Safety [Internet]. 2016; 64(10): 479–487. PMid:27282979 https://doi.org/10.1177/2165079916653414

[17] Njim T, Mbanga C, Mouemba D, et al. Determinants of burnout syndrome among nursing students in Cameroon: cross-sectional study. BMC Research Notes [Internet]. 2018; 11(1): 450. PMid:29986754 https://doi.org/10.1186/s13104-018-3567-3

[18] Patrick K, Lavery JF. Burnout in nursing. The Australian Journal of Advanced Nursing: A Quarterly Publication of the Royal Australian Nursing Federation [Internet]. 2007; 24(3): 43–48. https://www.ajan.com.au/archive/ajan_24.3.html

[19] Rudman A, Gustavsson JP. Early-career burnout among new graduate nurses: A prospective observational study of intra-individual change trajectories. International Journal of Nursing Studies [Internet]. 2011; 48(3): 292–306. PMid:20696427 https://doi.org/10.1016/j.ijnurstu.2010.07.012

[20] Rushton CH, Pappas S. Systems to Address Burnout and Support Well-being: Implications for Intensive Care Unit Nurses. AACN Advanced Critical Care [Internet]. 2020; 31(2): 141–145. PMid:32525995 https://doi.org/10.4037/aacnacc2020771

[21] Maslach C, Jackson SE, Leiter MP, et al. Maslach burnout inventory (MBI) [Internet]. 2016. Available from: https://www.mindgarden.com/117-maslach-burnout-inventory-mbi

[22] Portoghese I, Leiter MP, Maslach C, et al. Measuring burnout among university students: Factorial validity, invariance, and latent profiles of the Italian version of the Maslach Burnout Inventory Student Survey (MBI-SS). Frontiers in Psychology [Internet]. 2018; 9: 2105.

PMid:30483171 https://doi.org/10.3389/fpsyg.2018.02105

[23] Wickramasinghe ND, Dissanayake DS, Abeywardena GS. Validity and reliability of the Maslach Burnout Inventory-Student Survey in Sri Lanka. BMC Psychology [Internet]. 2018; 6: 1-10. PMid:30419960 https://doi.org/10.1186/s40359-018-0267-7

[24] Puranitee P, Saetang S, Sumrithe S, et al. Exploring burnout and depression of Thai medical students: the psychometric properties of the Maslach Burnout Inventory. International Journal of Medical Education [Internet]. 2019; 10: 223. PMid:31786565 https://doi.org/10.5116/ijme.5dc6.8228

[25] Maslach C, Jackson SE, Leiter MP. Maslach burnout inventory manual. 4th ed. [Internet]. 2018. Mind Garden Inc.

[26] Cohen S. The perceived stress scale. [Internet] Mindgarden Publishing; 1994.

[27] State of New Hampshire. (n. d.). Employee Assistance Program: Perceived Stress Scale.

[28] Hystad SW, Johnsen BH. The dimensionality of the 12-item general health questionnaire (GHQ-12): Comparisons of factor structures and invariance across samples and time. Frontiers in Psychology [Internet]. 2020; 11: 1300. PMid:32595570 https://doi.org/10.3389/fpsyg.2020.01300

[29] Jackson C. The general health questionnaire. Occupational Medicine [Internet]. 2007; 57(1): 79. https://doi.org/10.1093/occmed/kql169

[30] Watson R, Deary I, Thompson D, et al. A study of stress and burnout in nursing students in Hong Kong: a questionnaire survey. International Journal of Nursing Studies [Internet]. 2008; 45(10): 1534-1542. PMid:18241870 https://doi.org/10.1016/j.ijnurstu.2007.11.003

[31] Kovner CT, Brewer CS, Fatehi F, et al. What does nurse turnover rate mean and what is the rate?. Policy, Politics, & Nursing Practice [Internet]. 2014; 15(3-4): 64-71. PMid:25156041 https://doi.org/10.1177/1527154414547953

[32] Unruh L, Zhang NJ. The role of work environment in keeping newly licensed RNs in nursing: A questionnaire survey. International Journal of Nursing Studies [Internet]. 2013; 50(12): 1678-1688. PMid:23664142 https://doi.org/10.1016/j.ijnurstu.2013.04.002

[33] Unruh L, Zhang NJ, Chisolm L. Job and professional leaving among newly licensed RNs: A structural equation model. Western Journal of Nursing Research [Internet]. 2016; 38(1): 5-26. PMid:25433000 https://doi.org/10.1177/0193945914559290

[34] Kovner CT, Brewer CS, Fairchild S, et al. Newly licensed RNs' characteristics, work attitudes, and intentions to work. The American Journal of Nursing [Internet]. 2007; 107(9): 58-70. PMid:17721152 https://doi.org/10.1097/01.NAJ.0000287512.31006.66

[35] Blau GJ. The measurement and prediction of career commitment. Journal of Occupational Psychology [Internet]. 1985; 58(4): 277-288. https://doi.org/10.1111/j.2044-8325.1985.tb00201.x

[36] Barrow N, Nguyen-Truong CKY, Smart D, et al. Mixed method longitudinal nursing burnout and shortage research: Core data tracker tools for field notes and data statistics to systematically plan and manage the implementation. HPHR [Internet]. 2024; 87.

[37] Albuquerque RN, Barbosa AF, Pacheco GBF. Burnout syndrome in nursing students. Revista de Pesquisa: Cuidado é Fundamental [Internet]. 2021; 13(1). https://doi.org/10.9789/2175-5361.rpcfo.v13.10547

[38] Alexandrova-Karamanova A, Todorova I, Montgomery A, et al. Burnout and health behaviors in health professionals from seven European countries. International Archives of Occupational and Environmental Health [Internet]. 2016; 89: 1059-1075. PMid:27251338 https://doi.org/10.1007/s00420-016-1143-5

[39] American Association of Colleges of Nursing. [Internet]. The Essentials: Core competencies for professional nursing education. Washington, DC: American Association of Colleges of Nursing; 2021. Available from: https://www.aacnnursing.org/Portals/0/PDFs/Publications/Essentials-2021.pdf