

## RESEARCH ARTICLE

# A SCOPING REVIEW ON FACTORS AFFECTING THE NCLEX-RN PERFORMANCE OF INTERNATIONALLY EDUCATED NURSES

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## Abstract

**Purpose:** This scoping review aims to describe the factors affecting the National Council Licensure Examination-Registered Nurses (NCLEX-RN) performance of internationally educated nurses (IEN).

**Background:** The United States relied heavily on IEN to help address the nursing shortage. However, IEN face challenges in passing the NCLEX-RN with almost half failing the NCLEX-RN the first time. There is a lack of studies on IEN, in general, and factors affecting their NCLEX-RN performance, in particular.

**Method:** A literature review of IEN NCLEX-RN studies from 1994 to 2020 was conducted. The Preferred Reporting for Items for Systematic Reviews and Meta-Analysis (PRISMA) was used to describe the search process.

**Findings:** Based on the review of the available literature, the most commonly identified factors affecting IEN NCLEX-RN performance include proficiency with the English language, differences in nursing education, and unfamiliarity with the NCLEX-RN. Language, country of nursing education, healthcare experience, support system, the Commission on Graduates of Foreign Nursing Schools certification exam, (CGFNS CE), and time-lag between graduation or initial licensure and NCLEX-RN are statistically significant predictors of NCLEX-RN performance.

**Conclusion:** Individual, academic, and environmental factors influence IEN NCLEX-RN performance. Identifying these factors can help in designing individual and multi-level interventions to assist IEN to pass the NCLEX-RN.

**Keywords:** *internationally educated nurses, NCLEX-RN, nursing education*

## Introduction

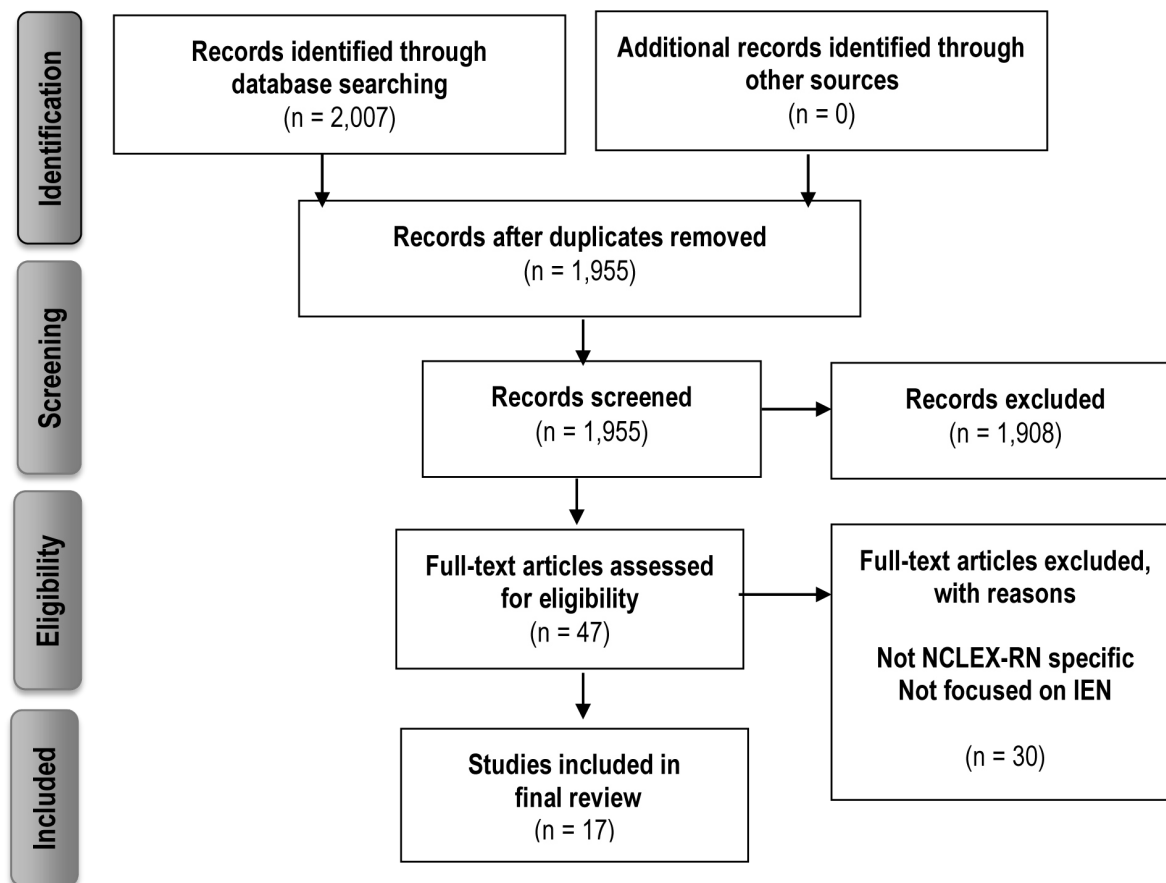
According to the 2017 National Survey on Registered Nurses, internationally educated nurses (IEN) comprise 6% of the U.S. nursing workforce (Smiley et al., 2019) and more than 50% of IEN in the U.S. are from the Philippines (Squires, Ojemeni, & Jones, 2016). To practice nursing in the U.S., IEN must pass the National Council Licensure Examination-Registered Nurses (NCLEX-RN), a computer-adaptive test that determines an applicant's entry-level competency to provide safe nursing practice (NCSBN, 2019). The increased patient acuity in the U.S. is reflected in the complexity of NCLEX-RN questions, which increased the level of difficulty of the test and made it more

difficult to pass (Quinn, Smolinski, & Peters, 2018). The NCLEX-RN first-time pass rate (FTPR) of nursing graduates is used as a gauge to evaluate the quality of nursing programs in the U.S. (Taylor, Loftin, & Reyes, 2014) and it is a reflection of the relative comparability of nursing education internationally (Aiken, 2007).

The NCLEX-RN FTPR of IEN is lower than the U.S.-educated nurses (USEN) FTPR (Montegrigo, 2020; NCSBN, 2020), which has been a concern since the start of standardized nursing licensure examination and still exists to date. Currently, there is a lack of literature to understand why almost half of IEN fail the

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**Figure 1.** Preferred Reporting for Items for Systematic Reviews and Meta-analysis (PRISMA) flow diagram. Adapted from Moher, Liberati, Tetzlaff, & Altman, (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Med* 6(7): e1000097. doi:10.1371/journal.pmed1000097.



NCLEX-RN. As IEN are important to the U.S. nursing workforce, we need to determine factors affecting their NCLEX-RN performance. The lack of number and scope of studies on IEN and the NCLEX-RN is a significant gap in the literature, which is the impetus for this scoping review. Thus, this review discussed the current literature around the factors affecting the NCLEX-RN performance of IEN.

## Methods

An online search of IEN NCLEX-RN studies published from 2014 to 2020 was initially conducted on various databases such as the Cumulative Index on Nursing and Allied Health Literature (CINAHL), PubMed, Medline, Scopus, Education Resources and Information (ERIC), and Google Scholar using the keywords *NCLEX-RN*, *internationally educated nurses*, *international nurses*, *foreign-educated nurses*, and *foreign nurses*, which yielded a total of 2,007 articles. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) was used to describe the selection process of articles for this literature review (Figure 1).

Articles that are empirical studies, published in English, and used IEN as participants were considered for this review. Articles that investigated general issues on IEN, but not specific to the NCLEX-RN and NCLEX-RN studies on USEN were excluded from the review. After the initial review of abstracts, there were only 13 studies published on NCLEX-RN on IEN. This warranted inclusion of earlier relevant studies from 1990-2013, which produced an additional four articles. A total of 17 studies were included in this scoping review.

## Results

Table 1 presented the studies that investigated the factors affecting IEN NCLEX-RN performance. This included eight quantitative (47.1%) and four qualitative (23.5%) studies. There were three articles and two literature reviews. Fourteen studies (82.4%) directly investigated factors affecting NCLEX-RN performance. The sample size of these studies ranged from 10 to 200,453. Two studies were secondary data analysis of CGFNS data (Davis & Nichols, 2002) and NCLEX-RN data (Squires et al., 2017). Only one study used an instrument (Li, Li, Dou, & Wang,

Table 1. Matrix of Studies on Factors on NCLEX-RN Success on IENs

Author (Year)	Country of IEN	Research Design	Sample Characteristics	Factors affecting NCLEX-RN Performance
Bahari (2015)	Saudi Arabia	Literature review		Test anxiety, language proficiency, application-based content, test-taking skills
Bohnen & Balantac (1994)	International	Interviews, observation, secondary data	California IEN No description of sample	Academic discrepancies on IEN nursing education
Choe & Yang (2009)	Korea	Qualitative Semi-structured interviews	N=26 All employed as nurses, females, age ( $\bar{x}$ =31.6, range 23-46)	Motivation, English language, work-family balance, finances, and time; Lack of confidence, regret from not studying harder while in nursing school; NCLEX review course at Korean universities
Covell, Primeau, Kilpatrick, & St-Pierre (2017)	Canada	Correlation	N=2280 Age ( $\bar{x}$ =47), female (85.2%), minority (57.5%); RN (89.2%), LPN	3-5 years of healthcare experience and presence of support
Davis & Nichols (2002)	International	Secondary data analysis of CGFNS data	N=185,000 (Single, female, age 23-27; 71% with BSN; 73% IEN from the Philippines)	CGFNS Certification Exam, English language, and country of nursing education; with smaller time lag between graduation and licensure/CGFNS exam. Increased time lag between passing the CGFNS exam and NCLEX-RN reduced chances of passing the NCLEX-RN.
Genovese, Schmidt, & Brown (2015)	USA	Article	International graduate students	IEN have higher risk of failing the NCLEX-RN.
Hou, Chen, Sabwarhal, Fan, Yan, & Wang (2019)	China	Article		Differences in nurse licensure exams (NLE)
Li, Li, Dou, & Wang (2015)	China	Letter to the Editor Test Anxiety Scale (TAS)	N=1,527	Test anxiety Differences in academic preparation and unfamiliarity with meds and equipment are factors affecting NCLEX-RN outcome.
Mathew, McFarquhar, & Wright (2015)	USA	Survey	N=10	IEN Nursing education Unfamiliarity with the NCLEX-RN test plan.
McGillis Hall, Jones, Lalonde, Strudwick & McDonald (2016)	Canada	Survey	N=2,107	Differences in nursing practice and licensure exam.
McGillis Hall, Lalonde, & Kashin (2016)	Canada	Qualitative	N=202	Differences in US and Canada NCLEX-RN test content and context, lack of French resources, and test translation issues are factors that impact NCLEX-RN outcome among Canadian nurses.
Montegrigo, J. (2020)	International Focus on Philippines	Quantitative	N=245,669	Differences in nursing education and nursing practice influenced NCLEX-RN outcomes.
Parrone, Sredl, Miller, Phillips, & Donaubaer (2008)	International	Quantitative	N=52	Standardized testing (HESI)
Petrovic, Doyle, Lane, & Corcoran (2019)	Canada	Institutional ethnography		Curriculum, test environment, test format, nursing practice, language. Nursing education; unfamiliarity with CAT, differences in practice, poor translation; lack of French test prep materials Noise at testing site, scheduling, travel.
Salfi & Carbol (2017)	Canada	Review of 2 studies	N=2	Differences in nursing education preparation
Squires (2017)	Mexico	Descriptive	N=53	Nursing education. English, lack of psych, lack of clinical experience/facilities/ teachers, work-life balance
Squires, Ojemeni, & Jones (2016)	International	Quantitative Secondary data analysis	N=200,453	Individual IEN, quality of nursing education, and changes in the exam; English language

2015) to measure the influence of anxiety on NCLEX-RN performance. Majority of these studies (76.5%) were published between 2014 to 2020. A foundational study by Bohnen and Balantac (1994) was included due to its relevance as the first international study to explore educational differences in the global nursing curricula and their influence on IEN NCLEX-RN performance.

Eight IEN NCLEX-RN studies (47.1%) had IEN participants from multiple countries. Three studies exclusively investigated IEN from Canada (17.5%), two from China (11.8%), and one each (5.89%) from Mexico, the Philippines, Saudi Arabia, and South Korea. These studies identified individual, academic, and environmental factors that affect NCLEX-RN performance. English language proficiency (47.1%), differences in nursing education internationally (41.2%), and unfamiliarity with the NCLEX-RN test plan, questions, and computerized adaptive testing (29.4%) were the most commonly identified factors affecting IEN performance in the NCLEX-RN. English language proficiency, country of nursing education ( $p = 0.002$ ), Commission on Graduates of Foreign Nursing Schools Comprehensive Examination (CGFNS CE), healthcare experience (OR=1.612, 95% CI [1.252, 2.075]), time lag ( $p < .001$ ), and support system (OR=2.373, 95% CI [1.929, 2.918]) were statistically significant predictors of IEN NCLEX-RN performance.

### Individual Factors

Language, previous education, and healthcare experience influence IEN NCLEX-RN performance (Bahari, 2015; Cheo & Yang, 2009; Davis & Nichols, 2002; McGillis Hall, Lalonde, & Kashin, 2016; Petrovic et al., 2019; Squires et al., 2016). Proficiency of the English language is the most common factor and predictor of IEN NCLEX-RN performance. IEN who speak English and who received nursing education from Canada and the United Kingdom (U.K.) have 12-13% higher NCLEX-RN first-time pass rates compared to IEN first-time pass rates from non-English speaking countries (Davis & Nichols, 2002; Squires et al., 2016). IEN from Korea, Mexico, and Saudi Arabia attributed their low NCLEX-RN performance to language issues (Bahari, 2015; Cheo & Yang, 2009; Squires et al., 2016). Translation issue of the NCLEX-RN from English to French was a reason for the decrease in the Canadian NCLEX FTFR in 2015, from 89% to 67% (McGillis Hall et al., 2016; Petrovic, Doyle, Lane, & Corcoran, 2019). Additionally, secondary data analyses of IEN data from CGFNS (Davis & Nichols, 2002) and NCLEX-RN (Squires et al., 2016) provide evidence on the predictive ability of the English language on NCLEX-RN performance. Healthcare experience also influenced NCLEX-RN performance. IEN with three to five years of healthcare experience had increased odds of passing the NCLEX-RN

compared to those who had less than one year of healthcare experience (Covell, Primeau, Kilpatrick, & St-Pierre, 2017). IEN from Korea reported that preparing for the NCLEX-RN and working at the same time had a negative impact on their NCLEX-RN performance (Choe & Yang, 2009).

Critical thinking, clinical judgment, stress, anxiety, confidence, and motivation influence NCLEX-RN performance. IEN had variations in critical thinking that may explain their low NCLEX-RN performance (Bohnen & Balantac, 1994). Bahari (2015) reported that critical thinking is not emphasized in Saudi nursing education. Stress and anxiety have negative influences on IEN NCLEX-RN performance. In addition, moderate to severe anxiety was found to be prevalent on IEN from China before taking the NCLEX-RN. Lack of confidence and lack of regard for education had negative impacts on the IEN NCLEX-RN performance (Bahari, 2015; Choe & Yang, 2009; Li et al., 2015; Woo et al., 2009)

### Academic Factors

Bohnen and Balantac (1994) first documented the deficiencies in IEN nursing education as a reason for their low NCLEX-RN performance. In a recent study, Montegrigo (2020) claimed that differences in nursing education accounted for variations in IEN NCLEX-RN performance. IEN had deficiencies in medical terminology, nursing autonomy and delegation, interpretation of laboratory test, medications, and medication administration (Bahari, 2015; Choe & Yang, 2009; Hou et al., 2019; Li et al., 2015; McGillis Hall et al., 2015, 2016; Squires, 2017; Squires et al., 2016). IEN nursing curricula vary internationally and most are based on the traditional medical model. Psychiatric nursing is found to be lacking in nursing programs in China, Mexico, and most eastern European countries (Bahari, 2017; Bohnen & Balantac, 1994; Hou et al., 2019; Li et al., 2015; Squires, 2017). Pharmacology and dosage calculations, pathophysiology, and fluids and electrolytes are considered challenging concepts (Davis & Nichols, 2002; Mathew, McFarquhar, & Wright, 2015; Squires, 2017; Squires et al., 2016). Questions in the NCLEX-RN are designed at higher cognitive levels such as application and analysis (NCSBN, 2019). However, testing in IEN nursing schools focused on knowledge-based questions (Bahari, 2017; Li et al., 2015; McGillis Hall et al., 2016). IEN lacked familiarity with the NCLEX-RN test plan, types of test questions, computerized adaptive testing, and claimed that multiple response items, prioritization, and delegation questions are difficult (Mathew et al., 2015; McGillis Hall et al., 2016; Petrovic et al., 2019; Salfi & Carbol, 2017; Squires et al., 2016). In addition, Hou et al. (2019) described that the Chinese licensure exam consists of definition of technical terms and case studies that are asked in multiple-choice format.

## Environmental Factors

Environmental factors that may affect IEN NCLEX-RN performance include work, financial issues, family responsibilities (Choe & Yang, 2009; Squires, 2017), support system (Choe & Yang, 2009; Covell et al., 2017; Li et al., 2015), time lag or the interval between graduation and initial nursing licensure (Davis & Nichols, 2002; Woo et al., 2009), and testing environment (McGillis Hall et al., 2016). The influence of social support on IEN NCLEX-RN performance showed conflicting results. The presence of IEN social support while studying resulted in increased odds of passing the NCLEX-RN (Covell et al., 2017). On the contrary, the absence of social support and the pressure exerted by a support system, have a negative influence on NCLEX-RN performance (Choe & Yang, 2009; Li et al., 2015). Li et al. (2015) claimed that the opinion of others caused anxiety, which may negatively affect NCLEX-RN performance.

Work and family responsibilities limited IEN time to prepare for the NCLEX-RN (Choe & Yang, 2009; Woo et al., 2009). These responsibilities prolong their time to study (four to six months), which increase the time lag before taking the NCLEX-RN and may potentially affect the IEN NCLEX-RN performance (Davis & Nichols, 2002; Woo et al., 2009). The chances of passing the NCLEX-RN decreases as the time lag increases (Woo et al., 2009). Moreover, IEN expressed concerns about noise and distractions in their testing environments while taking the NCLEX-RN, which can constitute construct-irrelevant variance (Waltz et al., 2017) that may affect their NCLEX-RN performance (McGillis Hall et al., 2016).

Institutional factors and enrollment in school-based and commercial review programs influenced IEN NCLEX-RN performance as well. IEN reported that deficiency in faculty academic requirements and lack of clinical rotation in psychiatric nursing may have accounted for their low NCLEX-RN performance (Squires, 2017). Parrone, Sredl, Miller, Phillips, and Donaubaue (2008) measured the use of a computerized standardized exam, the Health Education Systems Incorporated (HESI) exit exam, to predict NCLEX-RN performance on IEN. In their study, HESI predicted 37% NCLEX-RN passing in first-time examinees. Attending a one to two-year university-based NCLEX-RN review program has a positive impact on NCLEX-RN performance (Choe & Yang, 2009). Regulatory factors such as the CGFNS CE may also influence IEN NCLEX-RN performance. Historically, most U.S. boards of nursing required that IEN must pass the CGFNS certification exam prior to taking the NCLEX-RN because it is a predictor of NCLEX-RN passing. IEN who passed the CGFNS certification exam had a higher chance (86%) of passing the NCLEX-RN than those who did not pass (43%) the CGFNS certification exam (Davis & Nichols, 2002).

## Discussion

Understanding the reasons why IEN fail the NCLEX-RN has significant implications on international nursing education and the U.S. nursing workforce. The identified individual, academic, and environmental factors provide essential information to individual IEN and nursing schools internationally. Findings indicate that proficiency with the English language is the most common factor and a predictor of NCLEX-RN success. Language is a source of construct-irrelevant variance (Bosher & Bowles, 2008) and accounts for 20 percent of the variance (Johnston, 2001) when taking the NCLEX-RN. Thus, the exam may not accurately measure the nursing knowledge of IEN. To reduce this variance, the NCSBN conducts semi-annual analysis to identify and reduce potential cultural biases on the NCLEX-RN (Woo & Dragan, 2012). This reduces the impact of language as a construct-irrelevant variance. Additionally, the influence of employment is significant for IEN since they work as nurses in their respective countries, where standards of practice are different, prior to taking the NCLEX-RN. Studies conducted in the U.S. claimed that employment of more than 16 hours per week had negative effects on NCLEX-RN. This was not evaluated on IEN.

IEN nursing education has variations in their curricula (Garfield & Berryman, 2012; Lu & Kitt-Lewis, 2018; Makata, Ilo, & Agbapounwu, 2016; Montegrigo, 2020; Nair & Rujan, 2017; Shaffer & To Dutka, 2012). Muraraneza, Mtshali, and Mukaman (2017) argued that IEN nursing education is outdated, irrelevant, poorly designed, overloaded, and is mainly at the level of secondary education. The deficiency of psychiatric nursing in most global nursing curricula (Shaffer & To Dutka, 2012; Squires, 2017; Xu, 2010) can impact IEN NCLEX-RN performance since psychiatric nursing is a predictor of NCLEX-RN success (Banks, McCullough, Ketner, & Darby, 2018) and Psychosocial Integrity covers six to nine percent of the exam (NCSBN, 2019). Lack of faculty members and clinical sites in nursing programs internationally are institutional factors that may have affected individual, institutional, and licensure outcomes (Makata et al., 2016; Marcus, Quimson, & Short, 2014; Masselink & Lee, 2010; Nair & Rajan, 2017; Xu, 2010). Researchers from the Philippines and India reported concerns about the quality of their nursing education (Bautista, Ducanes, & David, 2018; Nair & Rajan, 2017; Rosales, Arugay, Divinagracia, & Castro-Palaganas, 2014). This is significant to note because they are the primary source countries of IEN for the U.S, accounting for almost 70% of all IEN NCLEX-RN applications (NCSBN, 2019; Shaffer, Bachshi, & Jacobs, 2018).

IEN were taught and tested differently in their respective nursing programs, which explains their unfamiliarity with the NCLEX-RN (Bahari, 2015; Benton, 2017; Xiao, Wu, Lin, & Zhang, 2014).

There is a lack of literature on the use of computerized testing in international nursing education. The lack of technology use in nursing education may explain the variations in NCLEX-RN outcomes. Despite the relevance of these findings in understanding the influence of academic factors on NCLEX-RN success, the impact of unexamined academic factors should not be ignored. Extraneous variables such as the competence of faculty, individual student characteristics, availability of student resources, length of nursing program, pre-nursing prerequisite courses, and quality of the institution must be considered in analyzing the overall impact of academic factors on NCLEX-RN outcomes.

Additionally, family responsibilities, presence and absence of support system, and time lag were identified environmental factors influencing IEN NCLEX-RN performance. Some cultures consider caring and providing for family members as an important individual, family, and cultural responsibility. Time lag, that is the difference in time between graduation from a nursing program to the time the IEN sits for the NCLEX-RN exam, was relevant since there is no urgency for them to take the NCLEX-RN after they graduate unless immigration and employment in the U.S. were imminent. This lack of immediacy explained the time lag experienced by IEN before taking the NCLEX-RN and it may take several years after completing a nursing degree before an IEN decides to take the NCLEX-RN.

Regulatory issues were part of the larger environment that may influence IEN NCLEX-RN performance. The CGFNS comprehensive examination is an established predictor of NCLEX-RN outcome (Davis & Nichols, 2002). However, it lost its relevance when U.S. state boards of nursing removed it as a requirement for IEN NCLEX-RN licensure to decrease the burden of testing requirements for IEN, in an effort to help address the U.S. nursing shortage. Finally, the condition of the testing environment may have an impact during testing and on test outcomes since geographical and environmental conditions can be distracting and may interfere with a test-taker's performance (Oermann & Gaberson, 2017).

Although the factors that were investigated are relevant to understanding how they influence IEN NCLEX-RN outcomes, there is a lack of rigor in some of these studies, which limits the generalizability of their findings. Methodological issues that relate to sampling and sample size were seen in Bahari's (2015) literature review where the number of studies that were reviewed was not specified. Mathew et al.'s (2015) quantitative study was based on a very limited sample size ( $n=10$ ) of IEN. McGillis Hall et al. (2016) study had an adequate sample size ( $n=202$ ) but the sample was comprised of exclusively Canadian nursing students, which limits generalizability to other IEN. Li et al.'s (2015) study revealed a high incidence and level of anxiety

among the 1,527 samples but instrument measurement was a limitation. The Chinese version of the Test Anxiety Scale was pilot tested but they did not describe the instrument and report instrument translation procedures. It was not clear if the alpha coefficient of 0.68 pertained to a scale or subscale reliability coefficient, thus affecting the consistency of the instrument (Waltz et al., 2017). Identifying and addressing instrument measurement issues are critical in ensuring the validity and reliability of any study (DeVellis, 2017; Waltz et al., 2017). Moreover, some data were collected qualitatively through interviews and quantitatively through self-report instruments (Choe & Yang, 2009; Woo et al., 2009). Self-reports can be a source of bias while qualitative data reduces the generalizability of results (Polit & Beck, 2017). In the Salfi and Carbol (2017) study, the psychometric properties of the 60-item questionnaire were not reported.

## Conclusion and Recommendations

There is a paucity of literature on IEN NCLEX-RN performance. The identified individual, academic, and environmental factors affecting IEN NCLEX-RN performance inform individual IEN and international nursing institutions to design individual or institutional interventions for addressing these factors. IEN need to develop their English proficiency skills, maximize their healthcare experience, and value their support system as they prepare for the NCLEX-RN. For countries that served as significant sources of international NCLEX-RN applications and IEN in the U.S. such as the Philippines and India, their nursing schools should develop institutional programs to strengthen English language proficiency and design educational activities that enhance students' familiarization with the NCLEX-RN. Additionally, international nursing schools should address institutional and programmatic factors to fill the gaps and issues that were identified in this review. NCSBN should continue its efforts in identifying and reducing cultural bias in the exam. Environmental factors should be addressed to limit the effects of other extraneous variables on NCLEX-RN outcomes.

The influence of demographic variables, critical thinking, academic performance, nursing courses, NLE, review programs, stress, anxiety, learning and testing styles, and familiarity on NCLEX-RN was mostly conducted on USEN. The lack of investigation of these factors on IEN warrants the need for a dedicated research program to examine their association with NCLEX-RN performance. The lack of rigor in some studies, which limited their internal and external validity, requires that future IEN NCLEX-RN research study design must be improved to increase these studies' robustness.

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“The nursing workforce is expanding in size and professional scope. However, the expansion is not equitable, is insufficient to meet rising demand, and is leaving some populations behind.”

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