



## The Practice Environment Scale of the Nursing Work Index: An updated review and recommendations for use



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### ABSTRACT

**Objectives:** The Practice Environment Scale of the Nursing Work Index (PES-NWI) is an instrument, which measures the nursing practice environment – defined as factors that enhance or attenuate a nurse's ability to practice nursing skillfully and deliver high quality care. The purpose of this paper is to provide an updated review of the Practice Environment Scale of the Nursing Work Index's use to date and provide recommendations that may be helpful to nursing leaders and researchers who plan to use this instrument.

**Design:** A narrative review of quantitative studies.

**Data sources:** PubMed, EMBASE, and the Cumulative Index to Nursing & Allied Health Literature were searched to identify relevant literature using the search terms, *Practice Environment Scale of the Nursing Work Index* and *PES-NWI*.

**Review methods:** Studies were included if they were published in English between 2010 and 2016 and focused on the relationship between the Practice Environment Scale of the Nursing Work Index and patient, nurse, or organizational outcomes. Data extraction focused on the reported survey scores and the significance and strength of the reported associations.

**Results:** Forty-six articles, from 28 countries, were included in this review. The majority reported significant findings between the nursing practice environment and outcomes. Although some modifications have been made, the instrument has remained primarily unchanged since its development. Most often, the scores regarding staffing and resource adequacy remained the lowest.

**Conclusion:** The frequency of use of this instrument has remained high. Many researchers advocate for a move beyond the study of the connection between the Practice Environment Scale and nurse, patient, and organizational outcomes. Research should shift toward identifying interventions that improve the environment in which nurses practice and determining if changing the environment results in improved care quality.

#### What is already known about the topic?

- The Practice Environment Scale of the Nursing Work Index (PES-NWI) has been used to measure the nursing practice environment in many countries.
- Although originally developed for use with registered nurses, the PES-NWI is being used with many other nurse types such as licensed practical nurses and nursing assistants.

#### What this paper adds

- When studying the nursing practice environment and its association with nurse, patient, and organizational outcomes, effect sizes and false discovery rates should be reported.
- Further research is needed to determine the minimum number of nurse respondents needed at the hospital and unit-level to measure and achieve group consensus.

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- Prospective interventional studies are still lacking in this field of study.

The Practice Environment Scale of the Nursing Work Index (PES-NWI) is an instrument which measures the nursing practice environment – defined as factors that enhance or attenuate a nurse’s ability to practice nursing skillfully and deliver high quality care (Lake, 2002). Many studies have associated higher composite scores on the PES-NWI with better nurse reported patient outcomes such as care quality, medication errors, and patient falls, as well as better patient reported experiences of care (Friese, 2005; Kutney-Lee et al., 2009; Laschinger and Leiter, 2006; Manojlovich and DeCicco, 2007; McCusker et al., 2004; Patrician et al., 2010). Although there are other instruments that measure the nursing practice environment, the PES-NWI is most commonly used because of its low respondent burden, satisfactory psychometric performance, opportunity for comparison across studies, and high discriminant ability (Lake, 2002; Warshawsky and Havens, 2011). It is also free to use. The discriminant ability of the PES-NWI demonstrates that the instrument is sensitive enough to detect differences in the nursing practice environment between known groups such as Magnet® and non-Magnet hospitals (Bonnetterre et al., 2008). Thirty-one items make up five empirically derived subscales which are: Nurse Participation in Hospital Affairs; Nursing Foundations of Quality Care; Nurse Manager, Leadership, and Support of Nurses; Staffing and Resource Adequacy; and Collegial Nurse-Physician Relations (Lake, 2002).

In 2011, Warshawsky and Havens reviewed the global use of the PES-NWI providing an overview of the instrument’s utilization across practice settings and countries. In addition, the review identified PES-NWI scoring ranges, instrument modifications, associations with various outcomes, and recommendations for future research. The original review covered a time period beginning with when the instrument was first published in 2002 and concluded with the first quarter of 2010 (Warshawsky and Havens, 2011). More than five years have passed since the Warshawsky and Havens (2011) paper was published, which has been cited upwards of one hundred times (Google Scholar, 2016; Scopus, 2016). Therefore, this review includes articles published in the second quarter of 2010 through the first quarter of 2016. The Warshawsky and Havens (2011) review included research conducted in five countries; however, searching with similar criteria now results in a pool of 46 articles with research conducted in at least 28 countries. The purpose of this paper is to provide an updated review of the PES-NWI’s use to date and provide practical recommendations that may be helpful to nursing leaders and researchers who would like to use this instrument. This updated review identifies recent PES-NWI scoring ranges and associated effect sizes; evaluates progress on research recommendations outlined in the original article; identifies modifications and scoring variations; and illuminates the use of the PES-NWI with non-registered nurse populations.

## 1. Search strategy

PubMed, EMBASE, and the Cumulative Index to Nursing & Allied Health Literature were searched to identify relevant literature using the search terms, *Practice Environment Scale of the Nursing Work Index* and *PES-NWI*, resulting in 200 total articles. Similar to the inclusion criteria used by Warshawsky and Havens (2011), the search was limited to articles published in English that focused on the relationship between the PES-NWI and outcomes or reported scores on the PES-NWI for particular groups (e.g., by unit type, by care setting, or Magnet designation). Magnet hospitals are those facilities known for being favorable places for nurses to work and for providing high quality care (Kramer and Schmalenberg, 1988; McClure and Hinshaw, 2002). During the title and abstract screen of the retrieved articles, 27 were excluded because they were found to be review articles, dissertations, focused only on instrument translation, or measured the nursing practice environment with instruments other than the PES-NWI. A full text screen was

conducted on the remaining 84 articles by the first author to determine if the inclusion criteria were met. During the full text screen, 11 articles were excluded because they did not meet the previously specified inclusion criteria, were unavailable in full text, or used considerable non-standard PES-NWI scoring techniques. Lastly, during data extraction, articles were re-read by the primary author and the key findings were entered into categorized evidence tables. To enhance critical appraisal of the data extracted, findings were discussed among the co-authors until consensus was reached regarding inclusion of the article and the meaning of the findings. Throughout this process, another 26 articles were excluded, resulting in the inclusion of 46 publications. The diagram in Fig. 1 depicts this process.

## 2. Review findings

The 46 included articles were published in 25 peer-reviewed journals; almost half of the articles (43%) were published in international journals.

### 2.1. Study designs and samples

Like the Warshawsky and Havens (2011) review, only one current article was found that described an experimental study. The study investigated the impact of nursing grand rounds on the nursing practice environment, identifying both pre and post differences in the nursing practice environment. Although no statistically significant differences in the PES-NWI scores were seen after the intervention, the authors note that the lack of change may be due to a lack of sensitivity in the environment or a weak intervention (Aitken et al., 2011). The most frequently used study design was cross-sectional (93%). The experimental study used a pretest-posttest study design (Aitken et al., 2011), one study used a longitudinal design (Boev, 2012), and another used a retrospective two panel study design (Kutney-Lee et al., 2015). Primary data collection occurred in 25 of the studies; the remaining 22 studies analyzed secondary data with the earliest reported year of collection occurring in 1999 and latest occurring in 2014.

A few articles shared the same or similar samples. Two articles utilized data from the Vermont Oxford Network database collected in 2008 (Hallowell et al., 2016; Hallowell, Spatz, Hanlon, Rogowski, & Lake, 2014) and three articles reported use of the international Registered Nurse Forecasting (RN4CAST) data; however different years were analyzed (Kirwan et al., 2013; Li et al., 2013; Smeds Alenius et al., 2014). At least two studies utilized data collected in the Multistate Nursing Care and Patient Safety Survey (Kutney-Lee et al., 2015; Shang et al., 2013). Three studies conducted in Australia shared part of all of their data sources (Roche et al., 2016, 2011; Roche and Duffield, 2010) and two Swiss studies utilized data from the Swiss Nursing Home Human Resources Project (Schwendimann et al., 2016; Zuniga et al., 2015).

Nurse sample size ranged from 133 to 33,845 nurses and 59% of the articles include registered nurse (RN) responses only. In the remaining 41%, other nurse types such as advanced practice nurses, licensed practical/vocational nurses (LPN/LVN), enrolled nurses (EN – Australia), certified nurse’s assistants (CNA), nurse’s aides/technicians, and primary, junior, and senior nurses (China) were included in the analysis (Boev, 2012; Friese, 2012; Friese and Manojlovich, 2012; Friese et al., 2016; Hegney et al., 2015; Lavoie-Tremblay et al., 2011; Mainz et al., 2015; Perez-Campos et al., 2014; Prezerakos et al., 2015; Roche et al., 2016, 2011; Schwendimann et al., 2016; Tei-Tominaga and Sato, 2016; Topcu et al., 2016; Walker et al., 2010; Wang et al., 2015a,b; Zhou et al., 2015; Zuniga et al., 2015). Only a few studies included nurse managers and leaders in the sample (Anzai et al., 2014; Jafree et al., 2016; Parro Moreno et al., 2013); many included only direct care nurses and/or nurses with employment of three, six, or twelve months in their current positions (Blake et al., 2013; Hallowell et al., 2016; Havens et al., 2012, 2013; Ma and Park, 2015; Mainz et al.,

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