



Value of CEN[®] Certification Research Study: Results

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**Conducted
for the:**

**Board of Certification for Emergency Nursing
(BCEN)**

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Purpose of the Study

- The Board of Certification for Emergency Nursing (BCEN) wanted to evaluate the relationship of the Certified Emergency Nursing (CEN[®]) certification to outcomes that matter to:
 - Emergency nurses who are considering the value of certification for their own career
 - Organizations that hire emergency nurses
- BCEN is in the vanguard of credentialing organizations for sponsoring a rigorous evaluation of the value of certification



Overview

- This presentation covers the:
 - Methods used
 - Data collection and samples
 - Communications and incentives
 - Outcomes of interest
 - Response rates
 - Analyses
 - Findings
 - Implications

Study Conducted by an Independent Research Firm

- BCEN hired the Human Resources Research Organization (HumRRO) to perform the research
 - HumRRO is an independent, non-profit research organization
 - Conducting research since 1951
 - Highly experienced in performing evaluation studies of programs and policies
- The study was directed by Dr. Gina Medsker
 - Ph.D. in Human Resources Management and Organizational Behavior, Purdue University
 - Manager of HumRRO's Strategic Human Capital Management Program
 - Published author in peer-reviewed journals with over 25 years of experience conducting evaluation research

Data Collection

- HumRRO and BCEN developed two online questionnaires
 1. *Emergency Nurse Career Questionnaire*
 - Completed by CEN[®] certificants and non-certificants
 - Self-report outcomes (e.g., annual pay, self-efficacy, engagement, commitment to profession, job level)
 - Self-report “control” variables (e.g., education level, years of experience, type of work unit, type of facility)

Data Collection (cont.)

2. *Emergency Nurse Supervisor Questionnaire*

- Completed by the supervisors of career survey respondents
 - We asked each supervisor to evaluate the job performance and technical expertise of his/her subordinate nurse who had completed the career survey
 - Supervisors rated their familiarity with the career survey respondent (e.g., length of supervision, confidence in ratings)
 - Supervisors also provided data on their own certification status, education, etc.

Survey Development

- Design of the surveys focused on measurement of key outcomes and control variables
- Two main groups of outcomes
 - Outcomes of value to the individual emergency nurse
 - Outcomes of value to employers of emergency nurses
- Limited the possibilities to those readily assessed within a survey framework and that theory would suggest should relate to certification
- Used measures that had already been developed and researched before this study
 - Other researchers had already established that the measures had good statistical properties (e.g., factor analysis, reliability, validity)

Emergency Nurse Sample

- We identified potential participants using data from the:
 - Emergency Nurses Association (ENA) and
 - Board of Certification for Emergency Nursing (BCEN)
- ENA sent emails to 37,203 of its members
- HumRRO sent emails to:
 - 84,838 nurses in BCEN’s database and to
 - 3,604 other nurses whose emails were provided by survey respondents
- A total of 125,613 emails were successfully sent (did not bounce back)
 - The response rate was at least* 7.1% (8,855 complete responses)
 - This includes only respondents who were RNs, worked in emergency nursing, had CEN[®] status information, and completed the questionnaire

*We say “at least” because we do not know how many duplicate emails there were in the 3 sources - 78% of respondents were ENA members, so there was overlap in the email lists. 8

Emergency Nurse Supervisor Sample

- 3,838 (36.8%) *Emergency Nurse Career Survey* respondents provided their supervisor's name and email address
- Of those, 3,182 were working email addresses
- From the 3,182, the response rate was:
 - 31.5% (1,002) who provided complete data that could be matched to a nurse's responses and CEN[®] status

Thus, the useable supervisor response rate was 31.5%

Certificant & Non-Certificant Samples

- We succeeded in obtaining large samples of both certificant and non-certificant
 - For the 8,855 useable nurse questionnaire responses, nurses' CEN[®] status was:
 - 36.8% (3,528) never certified
 - 57.7% (5,105) currently certified
 - 5.6% (492) certification expired
 - For the 1,002 supervisor questionnaires that could be linked to a nurse's response with CEN[®] status, the nurses' status was:
 - 29.2% (293) never certified
 - 65.2% (653) currently certified
 - 5.4% (54) certification expired

Communications & Incentives

- BCEN announced the study at the ENA's conference, via email blast sent prior to the survey's release, in BCEN's newsletter, and on Facebook
- ENA and HumRRO sent invitation emails Dec. 2, 2016
- HumRRO sent emails to supervisors starting Dec. 8
 - We sent to new addresses every 7-10 days til Jan. 13 for nurses and Jan. 20 for supervisors
 - We sent reminder emails every 2 weeks to those who had not completed a questionnaire
- Incentives were 15 Apple iPads, awarded by random selection
 - Nurses and supervisors who completed a questionnaire got an entry in the drawing
 - Nurses who completed a questionnaire got an additional entry for providing their supervisor's name/email
 - Nurses and supervisors got up to 5 additional entries for each additional nurse name/email they provided

Preparation for Analyses

- We checked for:
 - Within-survey inconsistencies (e.g., work 80 hours per week on primary job but say the job is not fulltime)
 - Across-source inconsistencies (e.g., nurse says has expired certification, BCEN data says it is still current)
 - We used BCEN database value for CEN[®] status if the nurse and BCEN data differed
 - Outliers (e.g., annual salaries of \$150 or \$900,000)
- We only included those eligible (i.e., RNs in emergency nursing)
- We screened out supervisors not familiar with nurse
- We used factor analysis and reliability analysis to ensure that multi-item scales (e.g., engagement, empowerment) had items that were highly related to one another and appropriate for combination
 - We averaged items in a multi-item scale to get the value for the combination of items

Analyses

- We used “control variables” to statistically analyze, or control for, other possible explanations for differences on outcomes for certificants and non-certificants
 - For example, if certified nurses have a higher level of education than non-certified nurses, education might be the actual reason if we find certified nurses get paid more than non-certified nurses
- We used hierarchical multivariate regression to control for other possible influences, such as education, on the outcomes
 - That is, we entered the control variables in the analysis before we entered certification status in a later step of the same analysis
 - If certification status is still significantly related to an outcome, even with all other control variables already in the analysis, we interpret that to mean that the other variables did not “explain away” the relationship before certification status and the outcome

Control Variables

- We entered 3-4 sets of control variables in regression analyses, before entering CEN[®] certification status:
 1. Personal Characteristics
 - Highest level of nursing education
 - Continuing education units earned in the last 4 years
 - Number of other BCEN certifications
 - Other nursing certifications
 - Years of experience in emergency nursing
 - Number of different employers worked for during nursing career
 - Years with the current primary employer
 - Gap in career of 6 months-3 years and over 3 years
 - Active in or a member of a professional association

Control Variables (cont.)

2. Job Characteristics

- Job Level: Entry, Intermediate, Fully Proficient Staff, Expert Staff Nurse, Charge Nurse/Clinical Nurse Manager, Manager/2nd-line Supervisor, Director/Manager, Certified Nurse Practitioner, Trauma Coordinator, Nurse Educator, Clinical Nurse Specialist
- Hours worked per week
- Fulltime job
- Receive overtime or shift differential pay
- Pay is negotiated by a union

Control Variables (cont.)

3. Employer Characteristics

- Unit Type: Emergency Department, Pediatric Emergency, Flight Transport, Critical Care Ground Transport, Urgent Care, Critical Care, Trauma Service, Education/Professional Staff Development, Academic Institution, Other
- In US or Not in US (i.e., Canada or other)
- Urban, Suburban, or Rural
- Public Hospital, Private Hospital, Free-standing Emergency Center, Federal/Military Facility, Other
- Visits per year to the Emergency Facility
- Employer is a Magnet or Pathway to Excellence Organization

Control Variables (cont.)

- In equations where we used supervisor data for outcomes (i.e., nurse job performance, nurse expertise) we included a set of control variables for the supervisors:

4. Supervisor Characteristics

- Years You've Supervised and Familiarity with the Nurse
- Involved in Hiring the Nurse
- Confidence the Supervisor Has in the Performance Ratings
- Supervisor Thinks the Nurse is CEN[®] Certified, Thinks Nurse is Not Certified, Isn't Sure if Nurse is Certified (compared to Supervisor Knows the Nurse is Certified)
- Supervisor's CEN[®] status and Other Certifications
- Supervisor's Highest Level of Education
- Supervisor's Years of Emergency Nursing Experience
- Supervisor's Job Level

Independent Variable of Interest

- The final step in each regression analysis was for the independent variable, or the variable of core interest in this study:
 - CEN[®] Status
 - For CEN[®] Status, we included Current CEN[®] in the equation
 - Results are interpreted in comparison to those who did not have a Current CEN[®]
 - (i.e., we used reference, or indicator, variables for categorical variables)

Reference, or Indicator, Variables

- For categorical variables, the reference category is normally the largest category or a category that will ease interpretation of results
- In our regressions, these are the reference categories:
 - Highest Nursing Education: *Diploma/Certificate*; Job Level: *Staff Nurse*; Involved in Professional Association: *Not a Member*; Location: *Urban*; Facility Type: *Private Hospital*; Unit Type: *Emergency Department*; Supervisor Belief about CEN[®] Status: *Nurse Has CEN[®]*
- For CEN[®] Status, we included Current CEN[®] in the equation, so results should be interpreted as a comparison to those who do not have a Current CEN[®]
 - Reference category: Those who have never had the certification or have an expired certification

Summary of Findings – Value to Individual

Outcome	Current CEN [®]
1. Annual pay	+
2. Level in career	
a. Of 7 job levels	+
b. In career ladder	+
3. Self-efficacy	+
4. Engagement	-
5. Empowerment	ns
6. Employability	+
7. Career satisfaction	+

ns = non-significant

- There were positive relationships between having a current CEN[®] and most of these outcomes
 - Even after controlling for many other factors
- Having a current CEN[®] was related to:
 - Getting paid \$1,397 more per year, on average, as an emergency nurse
 - Attaining a higher level in one’s career (measured 2 different ways)
 - Feeling more confident (self-efficacious) about working as an emergency nurse
 - A greater belief one could find another nursing job with similar pay and benefits
 - Higher satisfaction with one’s career achievements

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Summary of Findings – Value to Individual (cont.)

- There was a slight negative relationship between the CEN[®] and work engagement (2 of 3 items)
 - A very slight difference, but statistically significant ($p < .05$) given the large sample size
- Correlations of the CEN[®] and empowerment were positive and significant for 2 of 4 items:
 - *My employer trusts me to make decisions and I am able to become involved in committees and policies.* But not significant for *I am able to work autonomously* or *I have influence on policies.*
 - However, the entire 4-item empowerment scale was not significantly related in regression analysis

Summary of Findings – Value to Employer

Outcome	Current CEN [®]
8. Emergency nursing expertise	+
9. Job performance	ns
10. Commitment to the profession	–
11. Turnover intentions	
a. Probability within year	ns
b. Actively seeking job outside current employer	ns

ns = non-significant

- Supervisors rated nurses higher on emergency nursing expertise if the nurses had the CEN[®]
 - The supervisor's *belief* that the nurse has a CEN[®] was even more important to expertise ratings than actually having the CEN[®]
- 5 job performance items on technical performance and ethical behavior were positively correlated ($p < .05$) with having a current CEN[®]
 - 3 were positive in regressions with 1 performance item at a time as the dependent variable
 - But the CEN[®] was not related to the 16-item job performance scale in regression analysis
 - This may have been because the majority of nurses were rated so highly on job performance (above 4.5 on a 5-point scale) – there was little variance

Summary of Findings – Value to Employer (cont.)

- There was a slight negative relationship between the CEN[®] and commitment in regression analysis and correlations (4 of 8 items)
 - Differences were slight, but statistically significant given the large sample
- Those with a current CEN[®] were neither more nor less likely to plan to leave their current employer

What do these findings mean for?

Emergency Nurses

- CEN[®] certification is positively associated with several outcomes of value to nursing professionals—even after controlling for alternative explanations for the outcomes

Employers of Emergency Nurses

- CEN[®] certification is also positively associated with supervisors' ratings of nurses' emergency nursing expertise and with technical aspects of job performance

Please Note...

- We cannot say that certification *caused* outcomes
 - We could not examine how outcomes changed from before to after nurses received CEN[®] certification
- However, research methods in this study are stronger than most correlational studies because
 - We controlled for a wide variety of factors that could have affected outcomes other than CEN[®] certification
 - We did not explicitly state that the purpose of the study was to examine the relationship of the CEN[®] to the outcomes to avoid biasing respondents
 - We used BCEN data to verify self-reported CEN[®] status
 - We related nurse self-report data to outcomes from a second source of data—supervisors

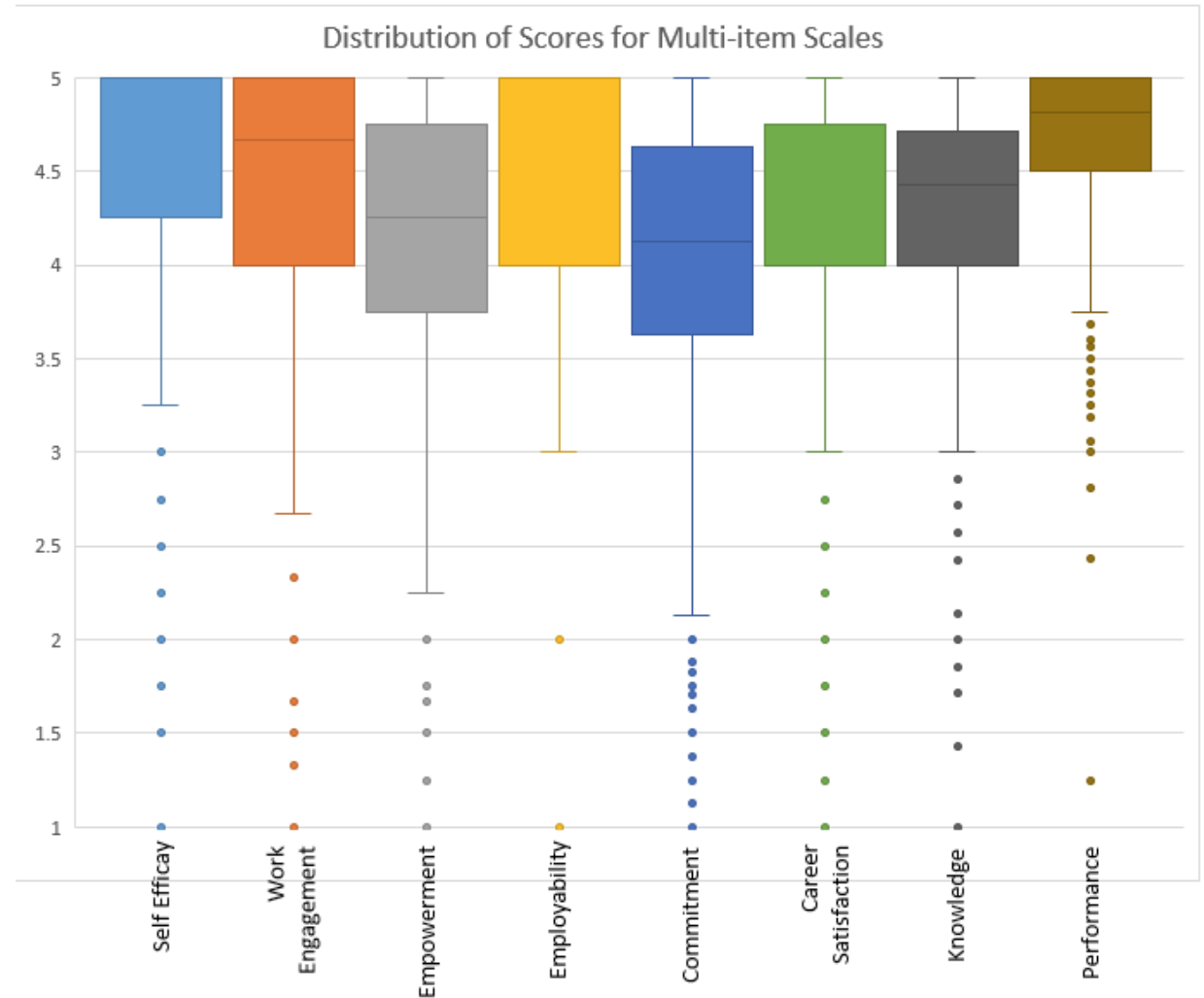
Limitations

- R^2 s were low for equations involving scales like self-efficacy, engagement, empowerment, and job performance
 - This means factors in equations accounted for relatively little variance in the outcome variables
- However, the outcome variables do not fit the profile of a normal curve with the majority of people near the middle of the scale (i.e., at “neither agree nor disagree”)
 - That really isn’t a bad thing
 - It just means that ratings are *very* high for the majority of nurses
 - Most of the respondents have very high ratings on self-efficacy, engagement, empowerment, job performance, expertise, etc.
 - So that is good for the emergency nursing profession, even if it makes it more difficult to find statistically significant differences

Limitations?

- This chart illustrates just how high the ratings were

- Boxes show the 25th-75th percentiles
- Ratings of 4= Agree or Satisfied
- Ratings of 5= Strongly Agree or Very Satisfied



Other Findings – Direct Questions to Nurses and Supervisors about the CEN[®]

- In addition to examining relationships of having a current CEN[®] to outcomes of value to individual nurses and their employers, we also asked direct questions about:
 - The importance of having a CEN[®] for career outcomes
 - The value of certification to employers and the profession
 - Employers' support for obtaining certification or recertifying
- The remaining slides document the responses to the direct questions

Other Findings – Do Employers Require or Prefer the CEN[®] in Personnel Decisions?

Supervisors indicated employers require or prefer the CEN[®] for:

Type of Personnel Action	CEN [®] Required or Preferred
Promotion	47%
Advancement in a clinical advancement or career ladder program	49%
Hiring decisions	49%
Retention decisions	26%
Staff nurse qualifying for higher pay	33%

- In another item, 40% of supervisors said their employer pays nurses with the CEN[®] more than those without it

Other Findings – Form of Pay for Having a CEN®

What is the form of additional pay for having a CEN®?	Percent of Supervisors	Percent of Nurses
Higher weekly, monthly, or hourly wage or salary	61%	65%
One-time bonus upon receiving certification	9%	9%
Annual bonus each year after receiving certification	21%	19%
A bonus more than once a year after receiving certification	4%	3%
Clinical advancement with a higher pay rate	11%	11%
I do not know	1%	2%

Note: Respondents could provide answers in more than 1 of the above categories.

Other Findings – Many Perceived Benefits of a CEN®

High percentages of ‘agree’ and ‘strongly agree’ responses on benefits:

As an emergency nurse, if one has a CEN® it is easier to:	Supervisors	Nurses
Get hired as an emergency nurse	71%	67%
Advance to higher levels	70%	65%
Be able to keep one’s job	38%	48%
Find a job at a good employer	70%	71%
Make more money	50%	51%
Feel a sense of accomplishment & pride	not asked	90%
Improve one’s job performance	not asked	76%
Have knowledge one needs on the job	not asked	80%
Find it easier to obtain or renew licensure	not asked	43%
Stand out in the profession	not asked	76%
Feel like one is part of the profession and affiliated with other emergency nurses	not asked	77%

Other Findings – High Perceived Value of CEN[®]

Very high percentages with ‘agree’ and ‘strongly agree’ responses on the value of the CEN[®]:

Indicate how much you agree...	Supervisors	Nurses
The CEN [®] certification is valuable to the emergency nursing profession.	95%	88%
It is important to have professional, certified emergency nurses in my organization.	92%	82%
It is important for emergency nurses to maintain their certification over time by recertifying.	93%	86%

- Also, 21% of nurses said their state Board of Nursing accepts the CEN[®] in lieu of continuing education units or towards state licensure renewal.

Other Findings – Employer Support for CEN[®] Costs

Many said ‘yes’ that their employer provides support for obtaining certification or recertification:

My Employer...	Supervisors	Nurses
Covers the fee for initial exam	68%	55%
Covers the fee for recertification	41%	26%
Covers all or part of the cost of preparatory courses to assist with studying	38%	29%
Provides preparatory review materials to assist with studying	50%	35%