

Integration of Quality and Safety Education for Nurses Into Nursing Curriculum: Small Steps or Comprehensive Redesign

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Abstract

International health and nursing organizations have called for significant changes in nursing education to improve health outcomes. In the United States, a national initiative of Quality and Safety in Nursing Education (QSEN) has been underway to articulate competencies to improve patient safety and health outcomes. The purpose of this study was to evaluate the integration of QSEN competencies into an undergraduate nursing curriculum. Student self-reports of QSEN competencies were evaluated with the Student Evaluation Survey. Data was collected at baseline, and after Year 1 and Year 2 following implementation of a QSEN integrated curricular intervention. Two-sample T-tests, was used to analyze data from comparable groups. Although the findings were not statistically significant, this is an important area of inquiry as it represents one undergraduate program's efforts to quantify and measure QSEN integration through curricular changes. Suggestions are made to quantify curricular change and lessons learned are discussed.

1. Introduction

Nursing and health-care delivery systems are undergoing rapid change throughout the world. These changes have resulted in many common education and workforce challenges for nurses globally [1].

Global health and international nursing organizations have been generating competencies for global nursing education to improve safety and outcomes for patients [2, 3]. Key professional organizations in the United States including the American College of Nursing, the Institute of Medicine, and the Carnegie Foundation for Health Education have all called for significant changes in nursing education to reduce medical errors and improve health outcomes. The Quality and Safety Education for Nurses (QSEN) initiative addresses the challenge of preparing nurses with the competencies necessary to continuously improve the quality and safety of the health care systems within which they work. QSEN faculty members adapted the Institute of Medicine competencies for nursing including; patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics, and proposed definitions that describe essential features of what it means to be a competent and professional nurse. Using competency definitions, statements of the knowledge, skills, and attitudes (KSAs) for each competency were developed, detailing that which should be integrated into pre-licensure nursing education [4].

Subsequently a series of regional QSEN Faculty Development Institutes were held throughout the United States in 2010 and 2011 to provide nursing faculty with strategies to integrate quality and safety content into their curricula. The interactive coursework focused on the six core QSEN competencies. Using a train-the-trainer approach, the QSEN Faculty Development Institute Directors enabled nursing faculty attendees to (a) lead their institution's faculty to incorporate quality and safety content into the curriculum for students; (b) teach and mentor students to deliver high quality and safe patient care; and (c) train other faculty to accomplish these goals. Over 1,100 nursing faculty from across the United States from all types of programs attended the institutes [5]. While the QSEN initiative launched a national movement to improve the education of pre-licensure nursing students, the Gordon and Betty Moore Foundation funded a series of activities in California over four years (2009-2013) to support the implementation and evaluation of the impact of incorporating the QSEN content into nursing curricula in 22 schools of nursing in the San Francisco Bay Area. The purpose of the institutes was not only to present a series of workshops for faculty and clinical leaders to support curricular revision and academic-clinical partnerships in the format described about but also to conduct a longitudinal evaluation of the impact of incorporating the QSEN competencies into these schools of nursing, and implement a set of "deep dives" in a subset of these schools through on-site visits. Results show that the initiative made a difference. Self-report data from schools indicate majority of schools instituted many aspects of the knowledge, skills, and attitudes for the six competencies; significant curricular change is reported as occurring; and academic-clinical partnerships have been strengthened [6]. Current global standards for professional nursing education closely reflect QSEN competencies [2, 7]. This paper presents the experience and research evaluation project of one university school of nursing seeking to integrate QSEN competencies into the nursing curriculum. Outcomes and lessons learned from the process and evaluation will be discussed.

2. Literature review

A further review of the literature suggests schools that have engaged in implementing QSEN projects have conducted mostly descriptive work to assess student and faculty perspectives of quality and safety content in their nursing programs. One study with 17 US schools of nursing used the Student Evaluation Survey (SES) tool to evaluate student knowledge of QSEN competencies. Students reported exposure to QSEN knowledge areas more often in classroom and clinical learning settings than in skills lab/simulation settings. In general, students reported relatively high levels of preparedness in all types of pre-licensure nursing programs and endorsed the importance of quality and safety competencies to professional practice [8]. Another program, which focused on clinical education as part of the curriculum revision, involved an innovative model of clinical education. [9]. The model emphasized integration and application of concepts across multiple didactic courses and envisioned the student as an active member of the health care team. The goal was to increase student exposure to one clinical site to appreciate system issues and effectively work with a stable health care team. Implementation of this model which required a strong academic/clinical partnership is described. Barton and colleagues [10] conducted a Delphi study, using a developmental approach involving beginning, intermediate, and advanced stages of the curriculum, to identify where in the curriculum the various 162 QSEN competencies should be introduced and where they should be emphasized. An international study focused on measurement of QSEN competencies with nurses [11].

A current integrative literature review critically appraised the content of patient safety in pre-licensure nursing education, the teaching and learning methods used, and subsequent nursing student learning [12]. The 20 research studies reviewed in this study revealed that patient safety in nursing curricula was not necessarily obvious. However, patient safety was taught within both academic settings and clinical environments. The identified content of patient safety was learning from errors, responsible individual and inter-professional

team working, anticipatory action in complex environments, and patient safety-centered nursing. Recommendations from this integrative review emphasized patient safety in the nursing curriculum require broad, comprehensive attention and development as a specific theme with an inter-professional approach. Another integrative review evaluated research published since 2007 on safety as a skill performance outcome of high-fidelity simulation [13]. Findings from this review reveal that simulation-enhanced clinical experiences may decrease medication errors but any evidence about perceived improvement in safer communication has not been translated into practice. Knowledge and attitudes of safety may be improved with simulation, depending on the students' educational levels. Little work has been done to evaluate changes in student knowledge skills and attitudes based on QSEN focused curricular changes. Therefore the purpose of this project was to integrate QSEN competencies into our current curriculum and evaluate the impact of those curricular changes on student self-reports using the SAS instrument.

3. Background

Faculty from a Bay Area public University participated in San Francisco Bay Area Institute, June 2010. The QSEN faculty experts provided information on national trends in quality and safety, presented theory bursts on the six QSEN competencies, lead small group sessions exploring issues around curricular change and lead a pragmatic session on organizational change [6]. Many resources were made available with the expectation they would be used in a "train the trainer" model for dissemination of QSEN information to other faculty at participants' home institutions. Resources included handouts, PowerPoints and the QSEN website that contained QSEN information and strategies to integrate competencies into undergraduate curriculum. After the initial institute all full time faculty at the university were trained on the QSEN competencies.

For this curricular innovation research project, initial dissemination of the QSEN material to faculty occurred during a faculty retreat at the start of the 2010 academic year, where faculty did mapping of QSEN competencies in the current curriculum. Level teams met to strategize methods of integration into specific theory and clinical courses. Additionally a Blackboard course was set up and all faculty enrolled. The Blackboard course housed all resources given to QSEN institute participants including state of the science papers on each competencies, PowerPoints detailing each competency, extensive reference lists of current literature, lists of on-line resources, glossary of terms, toolboxes with various teaching strategies and information on the QSEN website. The initial training in 2010 discussion of QSEN occurred at curriculum meetings and subsequent annual retreats. At each faculty meeting throughout the year, QSEN was an agenda item and faculty were asked to report on strategies or steps taken to incorporate QSEN in the curriculum.

The authors of this paper also participated in QSEN institutes in 2011 and 2012 and were able to bring that information back to faculty. Faculty also engaged as one of six schools that participated in the "deep dive" to evaluate the QSEN impact on curriculum. During those deep dive visits faculty were able to interact with QSEN expert visitors and discuss challenges with implementation of the competencies in the classroom and clinical and explore solutions [6].

Because our intention was to infuse the curriculum with QSEN competencies, we wanted to be able to evaluate the changes. In the start of the academic year in 2010, a survey was sent to all undergraduate nursing students using the Student Assessment Survey (SAS) instrument [8] to collect baseline data. The survey was then sent out again at the end of the first year after QSEN curricular changes were implemented, and at the end of year two of the integration of QSEN into courses in the curriculum.

4. Methods

This study addressed the research question: Does integration of QSEN competencies in the curriculum in this university nursing program change student outcomes/learning of knowledge, skills, and attitude regarding quality and safety in nursing?

4.1. Design

The study was designed as an evaluation study to assess and evaluate the effect of integration of QSEN competencies in the curriculum. The study was approved by the IRB of the university with which the researchers are associated.

4.2. Sampling

Participants were recruited via email invitation to all students enrolled in the baccalaureate nursing program in fall 2010-spring 2012. The email included the direct link to the survey. Reminder emails were sent to all students at two weeks following the initial launch and at four weeks. A total of 172 students responded to the baseline survey which was a 45.9% response rate, evenly spread over each level; 156 students responded to the second survey at the end of Year 1 for a response rate of 50.3%; and 155 students responded for a response rate of 41.3% at the end of Year 2.

4.3. Curricular integration

Curricular integration of QSEN competencies was developed by faculty and integrated in all three levels of the curriculum. Specifically, in the beginning of academic Year 1 of the project (2010-2011) QSEN curricular integration included content integration such as development of specific lectures in sophomore level classroom courses and introduction of an EBP research paper assignment and review of safety protocols and patient-centered care. In the junior level each of six specialty courses were assigned a QSEN competency on which to focus, and other lecture courses provided review of QSEN content. At the senior level, an evidence-based practice research utilization project in research class focused on patient safety outcomes. Other curricular integration approaches were developed individually by the faculty following the initial faculty orientation. After initial training faculty committed to integrate at least one QSEN competency into every course for the start of the academic year in 2010.

4.4. Survey instrument

This evaluation project used the QSEN Student Evaluation Survey (SES) tool, an instrument developed by the researchers on the original QSEN project, to evaluate nursing skills, knowledge, and attitudes regarding core competencies of patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement and informatics, as well as safety. The tool assesses student perceptions of the incorporation of QSEN in the nursing program with regards to content of QSEN competencies included in the curriculum, the student's perception of their own skill level for the QSEN competencies, and the student's perception of the importance of QSEN competencies. [8]. The QSEN SES tool was developed based on the six core QSEN competencies. Items were developed by expert QSEN reviewers (providing content validity) and pilot tested with students (N=25) from three schools. SES has been used to assess students (N=565) from 17 participating schools in a descriptive study. [8]. The QSEN SES tool includes three components 1) the knowledge scale,

2) the skills-preparedness scale and 3) the attitude scale. Knowledge scale includes 19 items and evaluates/assesses student perception of what content was included in the curriculum. The skills-preparedness scale includes 22 items of student self-report of skill preparedness using 4-point Likert-type scale with responses ranging from very unprepared to very prepared. The attitude scale assessed student perception of importance of the QSEN competency skills [8]. Psychometrics on the scale have not been published.

4.5. Data analysis

The survey data was divided into cohort/level groups for analysis. Means were calculated based on survey responses when at least half the responses were available (non-missing). Means of pre- and post-intervention groups who had received the same number of years of instruction were compared. We used two-sample T-tests, assuming equal variance between groups. The two-sample T-test was used as the statistical analysis because it is designed to test if there is a difference between two means from two different groups, comparing baseline means to equivalent groups post QSEN curricular intervention.

Prior to the implementation of the QSEN curricular change in fall 2010, we collected baseline data for sophomore, junior and senior students using the SAS instrument. For the analysis we compared equivalent groups to each other to evaluate the effectiveness of the QSEN curricular change. We had three comparison groups (See Table 1). For example, beginning junior level students in the fall were compared to end of spring semester sophomore students that completed one year of the QSEN infused curriculum. For the second comparison we compared baseline junior level students to end of spring semester sophomores in year. For the third comparison group we compared baseline seniors to end of Spring Juniors. The reason they were comparable groups was that they had completed the same number of years in the program.

5. Findings

The results of the statistical test on the data suggest that the curricular change did not have an impact on student survey responses (See table 2). Only one statistically significant finding was evident, and that was in the first comparison group on skills with evidenced-based practice. Information on evidenced-based practice is presented primarily in a senior level research course. That is an interesting finding that did not hold up with comparison groups later in the curriculum when students are exposed to much more information on evidence-based practice in a senior level research Course. These results try to take into account the fact that pre-test Level 2 should be equivalent to post-test Year 1 to test the impact of the curricular innovation on skills. These results try to take into account the fact that pre-test Level 3 should be equivalent to post-test Year 2 to test the impact of the curricular innovation on skills.

6. Summary

Although the findings were not statistically significant, this is an important area of inquiry as it represents the efforts of one university school of nursing to quantify and measure curricular changes. It was our experience that trying to integrate curriculum with QSEN competencies through individual courses by highlighting what faculty reported as already being in the curriculum did not result in statistically significant improvement in scores as measured by the SES tool.

7. Limitations

The authors believe the inability to achieve statistically significant findings may have resulted from courses being infused with QSEN competencies in small steps by individual faculty rather than of QSEN into the curricular framework and structure through comprehensive curriculum program redesign. Implementation of QSEN integration was neither consistent nor rigorously monitored. Our intention was to integrate QSEN throughout the curriculum. In reality, we were using an infusion process to bring QSEN into courses, which turned out to be too subtle and not sufficiently comprehensive to effect change. We now see that to achieve QSEN integration in the curriculum we will need comprehensive curricular redesign.

Faculty may not have had sufficient time to develop the integration strategies and incorporate them into the curriculum in the first quarter or year of the implementation. It may also be the integration strategies into particular courses were not sustainable, as they were the responsibilities of individual instructors and not systematized into the curricular structure. It may be the SES tool was not sensitive or was not the appropriate tool to use to measure KSA changes as part of a curricular change as psychometrics has not been reported on the instrument.

8. Conclusion

These findings did result in continued faculty work on QSEN integration and accountability to incorporate the some or all of the six QSEN competencies into the nursing courses. Specific courses have been refined to reflect course-specific outcome competencies that reflect the QSEN competencies. Faculty continue to develop and integrate innovative teaching and QSEN-based learning strategies in clinical skills, simulated learning labs, and classroom settings. We urge colleagues to use these findings to engage in discussions around what these findings say about making change in nursing education. Our experience reported here is that a systematic program-wide curricular change may be the best way to make change. Factors outline by QSEN experts that may have contributed to our lack of success include: a lack of a tracer method to ensure that all competencies KSA's are leveled and covered, a safety officer was not created, QSEN competencies were not part of clinical evaluation tools, and a need to tighten linkages between level courses [6]. Based on our lack of success with achieving real curricular change as indicated by the student measured outcomes, the faculty have started comprehensive curricular redesign looking towards a curriculum based on QSEN competencies. For example our program mission and outcomes have been changed to reflect QSEN competencies. Additionally courses are being refined to include QSEN outcome competencies and clinical education and evaluation will also reflect the competencies. In conclusion, highlighting QSEN competencies in existing courses was too subtle and not comprehensive enough to result in a change in student outcomes in QSEN competencies, we are engaged in comprehensive curricular redesign. Preventing adverse events and enhancing patient safety in health care are key objectives of nursing education and QSEN competencies are being used across nursing programs to achieve curricular change with the end goal of improved patient outcomes.

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Table 1. Comparison groups

Comparison	Pre-intervention group	Post-intervention group	Total number of years of program instruction
1	Baseline Juniors	Year 1 Sophomores	1
2	Baseline Juniors	Year 2 Sophomores	1
3	Baseline seniors	Year 1 Juniors	2

Table 2. Findings

QSEN Competence: Patient Centered Care								
Pre-group	Post-group	Years of instruction	QSEN Category	Mean (pre)	Mean (post)	T-statistic	DF	P-value
Baseline Juniors	Year 1 Sophomores	1	Knowledge	2.97	3.16	-0.852	125	0.396
			Skills	3.26	3.34	-0.653	112	0.515
			Attitudes	3.62	3.66	-0.263	112	0.799
Baseline Juniors	Year 2 Sophomores	1	Knowledge	2.97	2.64	1.283	115	0.202
			Skills	3.26	3.26	0.061	98	0.951
			Attitudes	3.62	3.64	-0.123	98	0.902
Baseline Seniors	Year 1 Juniors	2	Knowledge	3.27	2.91	-1.604	135	0.103
			Skills	3.58	3.41	-1.762	120	0.081
			Attitudes	3.92	3.85	-1.122	119	0.264
QSEN Competence: Teamwork and Collaboration								
Baseline Juniors	Year 1 Sophomores	1	Knowledge	2.44	2.76	-1.470	125	0.144
			Skills	3.14	3.28	-1.164	112	0.247
			Attitudes	3.63	3.68	-0.323	112	0.748
Baseline Juniors	Year 2 Sophomores	1	Knowledge	2.44	2.34	0.436	115	0.664
			Skills	3.14	3.34	-1.512	98	0.134
			Attitudes	3.63	3.67	-0.311	98	0.757
Baseline Seniors	Year 3 Juniors	2	Knowledge	2.69	2.46	-1.142	135	0.256
			Skills	3.35	3.32	-0.338	119	0.736
			Attitudes	3.92	3.79	-1.576	120	0.118
QSEN Competence: Safety								
Baseline Juniors	Year 1 Sophomores	1	Knowledge	2.77	2.74	0.153	121	0.878
			Skills	3.21	3.31	-0.744	109	0.459
			Attitudes	3.72	3.74	-0.127	112	0.899
Baseline Juniors	Year 2 Sophomores	1	Knowledge	2.77	2.50	1.018	112	0.331
			Skills	3.21	3.37	-1.220	97	0.225
			Attitudes	3.72	3.79	-0.536	98	0.593
Baseline Seniors	Year 1 Juniors	2	Knowledge	2.57	2.61	0.151	130	0.880
			Skills	3.62	3.48	-1.454	118	0.149
			Attitudes	3.98	3.88	-1.683	119	0.095
QSEN Competence: Quality improvement								
Baseline Juniors	Year 1 Sophomores	1	Knowledge	2.48	2.68	-0.876	112	0.383
			Skills	2.56	2.67	-0.728	112	0.468

			Attitudes	3.54	3.56	-0.118	112	0.906
Baseline Juniors	Year 2 Sophomores	1	Knowledge	2.48	2.29	0.767	112	0.444
			Skills	2.56	2.64	-0.534	98	0.594
			Attitudes	3.54	3.53	0.059	98	0.953
Baseline Seniors	Year 1 Juniors	2	Knowledge	2.49	2.39	-0.468	134	0.640
			Skills	2.96	2.86	-0.523	117	0.602
			Attitudes	3.75	3.68	-0.703	119	0.484
QSEN Competence: Evidenced based practice								
Baseline Juniors	Year 1 Sophomores	1	Knowledge	2.30	2.48	-0.789	123	0.431
			Skills	2.92	3.24	-3.445	112	0.001*
			Attitudes	3.62	3.65	-0.274	112	0.785
Baseline Juniors	Year 2 Sophomores	1	Knowledge	2.30	2.13	0.700	112	0.486
			Skills	2.91	3.09	-1.627	98	0.107
			Attitudes	3.21	3.53	0.605	98	0.547
Baseline Seniors	Year 1 Juniors	2	Knowledge	2.59	2.36	-1.013	134	0.313
			Skills	3.52	3.22	0.144	118	0.886
			Attitudes	3.82	3.78	-0.507	119	0.613
QSEN Competence: Information based technology								
Baseline Juniors	Year 1 Sophomores	1	Knowledge	2.30	2.19	0.367	93	0.715
			Skills	2.72	2.93	-1.385	112	0.169
			Attitudes	3.42	3.51	-0.634	112	0.527
Baseline Juniors	Year 2 Sophomores	1	Knowledge	2.30	1.86	1.416	83	0.160
			Skills	2.47	2.81	-0.663	98	0.509
			Attitudes	3.42	3.52	-0.706	98	0.482
Baseline Seniors	Year 1 Juniors	2	Knowledge	2.15	2.06	-0.367	110	0.714
			Skills	2.98	2.99	0.069	118	0.945
			Attitudes	3.55	3.68	1.181	119	0.240