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Cultural Competency, Risk, Patient Safety Web Curriculum For Labor And Delivery Providers

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ABSTRACT
Background: Patient safety, cultural competency, and risk management are essential topics for all Obstetrics providers and learners.
Objective: Our objective is to evaluate internet-based learning for OB/GYN healthcare providers in areas of cultural competency, risk management, and patient safety.
Study Design: Paired, uncontrolled before-after intervention pilot study of medical students, nurses, resident, and attending physicians caring for patients on Labor and Delivery. Seventy-five participants completed the pre-test, 44 completed the post-test, and 36 completed all portions of the study over 3 months with an anonymous link. The pre-test consisted of the Tucker Culturally Sensitive Health Care Inventory (TCSHCI) and a demographic information questionnaire. Subjects then watched 5 videotaped internet lectures by regional experts in areas of Patient Safety, Risk Management, and Cultural Competency, and then were reassessed with the TCSHCI, the primary outcome. Information was collected regarding secondary outcomes including patient safety markers on the Labor and Delivery Unit, and results of the Patient Satisfaction Survey from Press Ganey®. Power calculations were not performed due to the pilot nature of the study.
Results: TCSHCI scores remained unchanged throughout this pilot study with mean score pre-test 3.26 (95% CI 2.61-3.89) versus post-test score 3.33 (95% CI 2.77-3.90), p=0.21. Patient safety outcomes and patient satisfaction scores on Press Ganey® Surveys showed no statistically significant difference for all participants or for paired, matched participants.
Conclusion: An internet-based educational intervention for Labor and Delivery healthcare providers resulted in no measured improvement in areas of patient safety, risk management, and cultural competency.

Key Words: Obstetrics, Patient Safety, Cultural Competency, Risk Management

INTRODUCTION

Obstetrics admissions are the leading cause for women being hospitalized in the United States, with four million discharges annually, thus putting millions of women at potential risk[1]. Patient safety has evolved into a field that can not simply be summed up by "nonmalfiescence," but must include a culture of safety where communication, documentation, patient assessment, training, staffing, and individual responsibility are much more valued than physician autonomy, respect for our elders, and blind faith in experts. The CLER (Clinical Learning Environment Review) Pathways to Excellence established by the Accreditation Council for Graduate Medical Education in 2007, requires residency programs to educate learners about Patient Safety, and reduce healthcare disparities[2].

The Office of Minority Health in the United States Department of Health and Human Services presented national standards for culturally and linguistic appropriate health standards in 2000. Cultural Competence is defined as: … A set of congruent behaviors, knowledge, attitudes, and policies that come together in a system, organization, or among professionals that enables effective work in cross-cultural situations[3].

Cultural competency, risk management, and patient safety are rarely addressed explicitly in health care education curriculum, and have not been assessed simultaneously in one study in the existing OB/GYN literature. Based on needs assessment interviews done by the author in preparation for this project, overall proficiency in these areas is thought to be strong for most providers. It was thought that some healthcare providers need early identification, a structured curriculum, and improvement, yet formal education sessions and assessment in these areas was lacking based on a PubMed literature review.

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High risk obstetrics in Philadelphia, Pennsylvania, is characterized by a mixture of patients, many with public insurance, non-compliance with appointments and medicines, high rates of obesity and substance abuse, and medical or cultural illiteracy due to their countries of origin or lack of education. This creates a challenging environment to persistently achieve favorable outcomes in a university based hospital, training setting, and the mastery of risk management, patient safety, and risk management is of the utmost importance, as adverse events occur regularly.

The aim of this project is to evaluate the efficacy of a patient safety, cultural competency, and risk management curriculum for Labor and Delivery healthcare providers in a high risk obstetrics environment. The hypothesis is that a cultural competency, risk management, and patient safety web-based curriculum will lead to the primary outcome of improved cultural competency scores on the Tucker-Culturally Sensitive Health Care Inventory (TCSHCI) Provider Form[4], as well as secondary outcomes of increased patient satisfaction scores on the Press Ganey® survey[5] and fewer poor obstetrics outcomes on the Labor and Delivery Unit. This project was registered at ClinicalTrials.gov, Registration Number NCT02355847.

The TCSHCI is an externally validated questionnaire, originally validated for third- and fourth-year medical students, and is a 141-item self-report measure of behaviors and attitudes that low-income or racially/ ethically diverse primary care patients have indicated as important for their provider. Each item is scaled 1 to 4, with the minimum and maximum score being 141-564, where higher scores indicate increased levels of patient-centered culturally sensitive health care behaviors and attitudes[4].

MATERIALS and METHODS

A needs-based assessment was performed with informal interviews of the Labor and Delivery Program Director, OB/GYN Residency Program Director, OB/GYN Medical Student Clerkship Director, and the OB/GYN Generalist Division Head, and it was discovered that improved training in the areas of patient safety, cultural competency, and risk management, specifically relating to obtaining informed consent, documentation, and communication, were needed. This project was meant to help fill an educational gap at our large, university based training hospital home and is designed as a cross-sectional prospective pilot study. IRB exemption was obtained for this paired uncontrolled before-after intervention pilot study. Labor and Delivery nurses, medical students, and attending and resident physicians were recruited from the OB/GYN, Anesthesia, Pediatrics, and Family Medicine services at Thomas Jefferson University via monthly email announcements to all 150 eligible health care providers. Recruitment started in January 2013 with flyers and weekly emails aimed at all health care providers on Labor and Delivery to avoid selection bias. Inclusion criteria were OB/GYN medical students, Labor and Delivery nurses, and resident/ attending physicians in OB/GYN, Pediatrics, Anesthesia, and Family Medicine. Exclusion criteria were those providers that refused participation, or those that did not complete the lectures by March 2013, or complete the assessment by June 2013.

Subjects were verbally consented by the author. As subjects were participating in an IRB exempt study, no written informed consent was required. Subjects were assessed with the TCSHCI, an externally validated multiple choice 141 item paper questionnaire focusing on cultural competency[4], but were not given feedback about their responses. The TCSHCI was used to identify improvement in participants in relation to cultural sensitivity. TCSHCI scores were broken down into Competence/Confidence, Sensitivity/ Interpersonal Skill, and Respect/ Communication. Lectures in this curriculum specifically addressed sensitivity issues, respect, and communication directly, while indirectly addressing competence, confidence, and interpersonal skill in the area of Cultural Competency. Lecturers did not know how learners would be assessed. Subjects also had demographic information recorded, including age, race, department, years in current role, and years at Jefferson. An anonymous link was used to track the subject's TCSHCI results.

Subjects then watched five lectures over a three month window by regional experts that were videotaped for this study, and found on the Jefferson Intranet, focusing on Patient Safety using a Team STEPPS approach[6], Cultural Competency, and Risk Management, specifically highlighting Documentation and Informed Consent. Each lecture lasted 30-60 minutes. Subjects then completed an Honor Statement, verifying that they watched all five lectures and took the TCHSCI again before the conclusion of a three month window, and results were tracked using their anonymous link. Press Ganey® patient multiple choice satisfaction survey scores[5] were obtained from Press Ganey® OB/GYN Department hospital report and were used to compare provider and patient experiences before and after the educational intervention. Poor obstetrics outcome measures, such as 5 minute APGAR less than 5, Neonatal Intensive Care Unit admissions, c sections, neonatal seizures, maternal seizures, and maternal mortality were obtained from electronic medical record and compared for the three months before, during, and after the curriculum.

This was a pilot project, and sample size was difficult to calculate, but the goal was to have 100 participants complete

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the curriculum and assessments. Seventy-five providers completed the pre-test assessment; 44 providers completed the pre-assessment, online education course, and the post-test assessment but did not all use their anonymous link to track their scores; while 36 of these subjects performed all aspects of the study and had a verified anonymous link, connecting their pre- and post-test scores. All participants were compensated $100 for their complete participation in all portions of the project, and informed about the compensation rules at the time of verbal consent. Weekly emails, fliers, and posters were sent to participants to encourage them to complete missing data and discourage selection bias for those more interested in these aspects of medicine. The project was funded by a "Rapid Response" grant from the American Society for Healthcare Risk Management.

Participants were characterized with regard to demographic variables such as age, and ethnicity, and psychological assessment measures. Continuous variables were summarized by the mean, standard deviation, 95% confidence interval, median, and range. Where variables cannot be reasonably considered normally distributed, transformations were applied to achieve approximate normality where appropriate. Categorical variables, nominal and ordinal, are summarized by frequencies. Analysis of variance (ANOVA) was used for comparing the effects of class for continuous normally distributed variables (some of which have been transformed for this purpose), with the Kruskal-Wallis test used for the non-normal variables. Categorical variables were compared using either the Chi-square or Fishers exact test. STATA 13 was used to process this data (College Station, Texas).

RESULTS

One hundred and fifty people were invited to participate in this project in person and via fliers, posters, and email reminders once weekly during the study period. Seventy-five people participated in the initial pre-test phase of the study and completed the initial assessment. Forty-four participants completed the pre- and post-test portion of the study, however not all of these subjects remembered to use an easy anonymous link to track their progress. Thirty-six people participated in both the pre-test, watched all of the videos, and then completed the post-test portion, with their anonymous link.

Age, gender, department, position, and duration at the hospital were all similar between the pre- and post-test groups. (Table 1)

Cultural Competency for Obstetricians. Table 1. Demographics. This table describes participants in this study, using sample size and percentages, where appropriate. Pre-test group includes participants assessed with TCSHCI before the curriculum intervention. Post-test group includes participants assessed with TCSHCI after the curriculum intervention. "Duration" refers to duration of employment at this hospital. Groups had no statistically significant differences.

	Pre-Test (n=75)	Post-Test (n=44)
Age	**32.8+/-9.9**	**35.4+/-11.9**
Gender		
Male	**17.3% (13)**	**18.2% (8)**
Female	**82.7% (62)**	**81.8% (36)**
Department		
OB/GYN	**92.0% (69)**	**90.9% (40)**
Family Med	**8.0% (6)**	**9.1% (4)**
Position		
Med Student	**22.7% (17)**	**15.9% (7)**
Resident	**36.0% (27)**	**27.3% (12)**
Nurse	**33.3% (25)**	**47.7% (21)**
Attend/Other	**8.0% (6)**	**11.3% (5)**
Duration		
<1 year	**18.7% (14)**	**22.7% (10)**
>1 year	**81.3% (61)**	**81.3% (34)**
Race		
Black	**6.7% (5)**	**4.5% (2)**
Asian	**18.7% (14)**	**18.2% (8)**
White	**69.3% (52)**	**75% (33)**
Other	**5.3% (4)**	**2.3% (1)**

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Male gender participation (17.3-18.2%) was low in this study, and mirrors the make-up of our institution. The majority of the participants were OB/GYN nurses and physicians (90.9-92.0%), and again this is representative of the healthcare providers on our Labor and Delivery Unit. Drop-out from the pre-test group to the post-test was substantial (41.3%), and every effort was made to keep participants in the study. In focused interviews after the conclusion of the project, the main reason for drop-out was the 3-4 hour time commitment which was viewed by participants as overly burdensome. The pre-test TCSHCI assessment portion of the project occurred in January-February 2013, the lectures were available from January-March 2013, and the TCSHCI assessment post-test portion occurred in April-June 2013. Scores for the TCHSCI are found in Table 2. Of note, none of these test domains show statistical improvement, although "Sensitivity/ Interpersonal Skill" does come close to statistical significance for those subjects with paired test results. (Table 2)

Cultural Competency for Obstetricians. Table 2. TCSHCI scores before (pre-test) and after (post-test) the curriculum. Numbers are reported in means and 95% Confidence Intervals.

Unpaired Measures				
Parameter	**Pre-test Mean (Range) (n = 75)**	**Post-test Mean (Range) (n = 44)**	**Difference Mean (95% CI)**	**P**
Overall	3.26 (2.61 - 3.89)	3.33 (2.77- 3.90)	0.075 (-0.04– 0.19)	0.21
Competence/ Confidence	3.39 (2.22 - 4.00)	3.41 (2.56 - 4.00)	0.016 (-0.13 - 0.16)	0.83
Sensitivity/ Interpersonal Skill	3.22 (2.22 - 3.83)	3.29 (2.56 - 4.00)	0.072 (-0.05 - 0.19)	0.23
Respect/ Communication	3.45 (2.89 - 4.00)	3.52 (2.78 - 4.00)	0.070 (-0.06 - 0.21)	0.30
Paired				
Parameter	**Pre-test Mean (Range) (n = 36)**	**Post-test Mean (Range) (n = 36)**	**Difference Mean (95% CI)**	**P**
Overall	3.30 (2.61 - 3.89)	3.34 (2.77 - 3.90)	0.038 (-0.02 - 0.10)	0.21
Competence/ Confidence	3.39 (2.22 - 4.00)	3.42 (2.56 - 4.00)	0.029 (-0.06 - 0.12)	0.54
Sensitivity/ Interpersonal Skill	3.22 (2.22 - 3.83)	3.31 (2.56 - 4.00)	0.080 (-0.009-0.17)	0.077
Respect/ Communication	3.50 (2.89 - 4.00)	3.54 (2.78 - 4.00)	0.040 (-0.05 - 0.13)	0.38

Footnote: Maximum mean score is 4.0. Analysis of variance (ANOVA) are used for comparing the effects of class for continuous normally distributed variables (some of which have been transformed for this purpose), with the Kruskal-Wallis test used for the non-normal variables.

Press Ganey® scores were obtained before, during, and after the educational curriculum intervention (Figure 1). Sample size is small, and data were obtained through convenience sampling at 2 weeks postpartum. Due to the small sample size, it is difficult to suggest a statistically significant difference in patient satisfaction associated with our intervention, and even more difficult to identify a clinically significant difference.

Labor and Delivery charge records were utilized to obtain rates of third and fourth degree lacerations, shoulder dystocia, ecclamptic seizure, neonatal death, and maternal death for 3 months before and after the educational curriculum intervention. Data from July 2012- September 2012 were compared with data from April 2013- June 2013, using Fischer's exact test. No significant differences were found in the rate of Labor and Delivery adverse outcomes before or after the curriculum (Table 3).

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Cultural Competency for Obstetricians. Table 3. Labor and Delivery adverse outcomes. N is number of births on Labor and Delivery during the study period. Data also calculated as percent of total patient population.

Outcome	Period 1 (N = 613)	Period 2 (N = 479)	p†
3rd degree lacerations	7 (1.14%)	4 (0.84%)	0.76
4th degree lacerations	0 (0%)	0 (0%)	1.0
Delivery w shoulder dystocia	11 (1.79%)	12 (2.51%)	0.53
Epilepsy complicating pregnancy	3 (0.49%)	3 (0.63%)	1.0
Neonatal death	4 (0.65%)	4 (0.84%)	0.74
Maternal death	0 (0%)	0 (0%)	1.0
† Fisher's exact test			

Footnote: Period 1 included all births on the Labor and Delivery Unit from July-September 2012, before the educational intervention. Period 2 included all births on the Labor and Delivery Unit for three months after the educational intervention, from April 2013- June 2013. [N =1092 Labor and Delivery births over the entire study period].

Figure Legend:

Cultural Competency for Obstetricians. Figure 1. Press Ganey® Mean Score Trends Over Time. Patients responded to convenience sampling two weeks after discharge. Percent Scores (y axis) represent average Overall Scores at each time point. X axis values refer to time point, and number of subjects successfully surveyed. Mean score is 83.1. Pretest period is July-September 2012. Curriculum intervention occurred January-March 2013. Posttest period was April-June 2013. No significant difference was found.

These adverse outcomes were rare, or did not occur at all during the study period.

COMMENT

No statistically significant differences were noted as a result of our internet-based Patient Safety, Risk Management, and Cultural Competency curriculum intervention in regard to TCSHCI score, Labor and Delivery Poor Outcomes, or Press Ganey® Scores. Strengths of this study include the prospective paired interventional before-after design, the ability to track learners from the beginning to end of the curriculum with an anonymous link, the inclusion of participants from multiple departments, the large sample size for an educational intervention pilot study, the portability of the online curriculum, and the unique objective assessment of patient safety, risk management, and cultural competency on a Labor and Delivery Unit in a high risk setting. Weaknesses of the study include a significant drop out rate, possibly indicating a selection bias, and an inability to accurately monitor the engagement of the learner with the online curriculum. Future directions for this work include creating a more succinct and effective curriculum for busy clinicians that may decrease dropout rate. Adding a control group that would not receive the educational intervention would also be beneficial in evaluation of the curriculum effectiveness. Showing the online lectures to a group of participants in a classroom may also help ensure participation and engagement with the material.

While the drop out rate of participants was significant, the length of participation required by learners was substantial, requiring three hours of their time, which was a high demand for healthcare professionals in stressful, challenging settings with little time away from work. All efforts were made to keep enrolled participants in the study until its completion with weekly emails and fliers posted on the Labor and Delivery Unit. Had more participants completed all phases of the study, greater improvement in TCSHCI scores may have been seen. Lecturers were selected from regionally and locally respected figures, in hopes that this would engage learners and encourage learners to complete the course. While the lectures, compensation, and lecture topics served to encourage participants to complete the course, ideally no compensation would be needed to help adult learners attain important information in their profession. External validity may be problematic in this regard, and improved, more focused curriculum or lecturers may serve to decrease the portion of learners who fail to complete the coursework and obtain benefit from the lectures.

In attempting to involve this Department in an important educational intervention, this project failed to recruit a majority of providers. The enormous challenge of getting healthcare providers with many onerous tasks to complete

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an important patient safety educational intervention needs to be addressed locally, regionally, and nationally in our field. While in some OB/GYN Departments, Chairs could be effective at creating time and space for important patient safety improvements, a national or regional focus could be more appropriate. Participants in patient safety, risk management, or cultural competency curriculae could receive recognition awards for dedication to these important patient matters, while malpractice insurance providers may find value in risk management education, and could lower premiums for those with additional training.

Another challenge may be that we had many different types of learners participate in the study, from medical student, to nurse, and resident/ attending physician. While there was no specific control group created to look at these groups individually, these results are much more representative of a large, teaching, university hospital care provider staff. These different levels of learners may have been more engaged with lectures geared closer to their level of knowledge, so that medical students could get a better introduction to these challenging topics, while experienced nurses and attending physicians could get an advanced look at these essential topics. While more participants may have completed the study if material was geared specifically to their learning level, it was impossible to make up more lectures and specify them for smaller groups in this pilot setting. Also, the TCSHCI was validated for third- and fourth-year medical students, but not OB/GYN physicians or nurses. A different assessment may have better identified Cultural Competency skills at the pre-assessment phase, and better marked improvement at the post-assessment phase for all levels of learners.

Using the prospective design was helpful in monitoring the progress of learners and those on the Labor and Delivery Unit. Because of the prospective design, it is difficult to know if our results were related solely to this curriculum, or other concomitant improvement in our healthcare providers. Only associative, and not causative statements can be made due to the design of this project. A ceiling effect is also possible, where learners in this study had already received a substantial curriculum in their prior training, and the topics addressed and assessed in this project were already optimally understood, or that those who chose to complete the task cared more about this topic, presenting a selection bias. This would dampen any effect of the curricular intervention on the participants.

In conclusion, our cultural competency, risk management, and patient safety curriculum showed no improvement in participants on the TCSHCI. Secondary outcomes of Poor Obstetrics Outcomes and Press Ganey® scores showed no statistically significant differences. Press Ganey® scores and Poor Obstetrics Outcomes included small sample sizes of patients, and thus scientific conclusions about associations of the educational intervention cannot be made. While educational value exists in including topics of Patient Safety, Risk Management, and Cultural Competency in a curriculum for Labor and Delivery healthcare providers, statistically significant changes in our outcomes were not observed.

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