

IMPACT OF TEAM-BASED LEARNING ON PHYSICIAN ASSISTANT STUDENTS' SELF-EFFICACY TO IMPLEMENT BREAST CANCER RISK ASSESSMENT AND STRATIFICATION

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INTRODUCTION

- Breast cancer is the second leading cause of cancer death among women in the United States.^{1,2}
- Early detection of breast cancer can increase access to prompt treatment, shorten treatment duration, and decrease mortality.³
- Breast cancer risk assessment and stratification is a personalized approach to early detection utilized by healthcare professionals, particularly primary care physician assistants (PAs), to provide individualized screening recommendations and specialist referrals.⁴⁻⁶
- Insufficient education and training on breast cancer risk-based screening has been identified as the most common barrier to conduction of breast cancer risk evaluation.⁵
- The Physician Assistant Cancer Education (PACE) project, funded by NCI Grant 1 R25 CA109743-01A2/05, developed a cancer risk assessment and management curriculum, which was incorporated within a modified team-based learning (TBL) module in the Baylor College of Medicine (BCM) PA Program's Women's Health (WH) course.^{7,8}
- Team-based learning, comprised of pre-class study, readiness assurance testing and application, has been shown to improve critical thinking skills, team collaboration, and learning outcomes.⁹
- There is limited research on the impact of TBL on breast cancer risk-based screening education among PA students.

OBJECTIVES

- [1] To determine the impact of a didactic-phase, modified Breast Cancer TBL Module on PA students' self-efficacy to:
- Identify personal and family factors that place someone at increased risk of breast cancer
 - Stratify breast cancer risk based on personal and family factors
 - Select appropriate screening methods and genetic testing referrals based on the assigned risk level and current screening guidelines
- [2] To determine PA students' overall impressions of TBL for cancer education.

METHODS

- This pilot study, exempt from IRB approval, involved a quasi-experimental post-then-pre-survey design made available to 32 eligible first-year PA students enrolled in the WH course during the didactic phase at BCM's PA Program.
- The modified Breast Cancer TBL Module was comprised of two phases: home reading of the PACE Breast Cancer Module with individual Readiness Assurance Test (iRAT) (Phase 1) and two-hour group learning session with group Readiness Assurance Test (gRAT) (Phase 2) (Figure 1).
- Upon completion of the TBL Module, the 23-item post-then-pre survey was administered, and students self-assessed knowledge and abilities at three different timepoints, in the following order: Post-Phase 2, Post-Phase 1, and Pre-TBL (Figure 1).
- The survey included five demographic questions, 15 statements of self-efficacy rated using a five-point Likert-type scale where 1 = strongly disagree and 5 = strongly agree, and three items using the same Likert-type scale assessing participants' attitudes toward TBL.
- Data was analyzed via Excel Spreadsheet. Descriptive statistics were used to measure frequencies, means, standard deviations, and percentages of responses. Inferential statistics were used to determine statistical significance via two-tailed paired T-test between the TBL timepoints (p-value < 0.05 considered statistically significant).

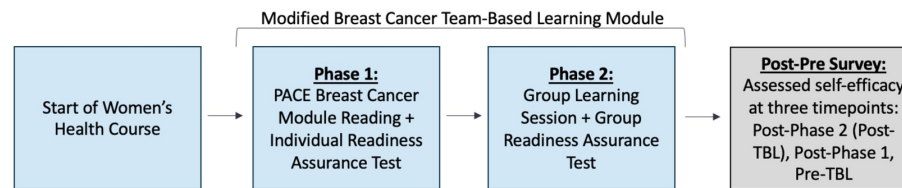


Figure 1: Schematic of study design and data collection.

RESULTS

- Overall response rate was 75% (n=24). Participants were predominantly female (83.3%), not Hispanic or Latino (83.3%), and with an average age between 20 to 29 (95.8%). All (100%) participants had prior healthcare/clinical experience, and close to half (45.8%) had experience working with cancer patients.

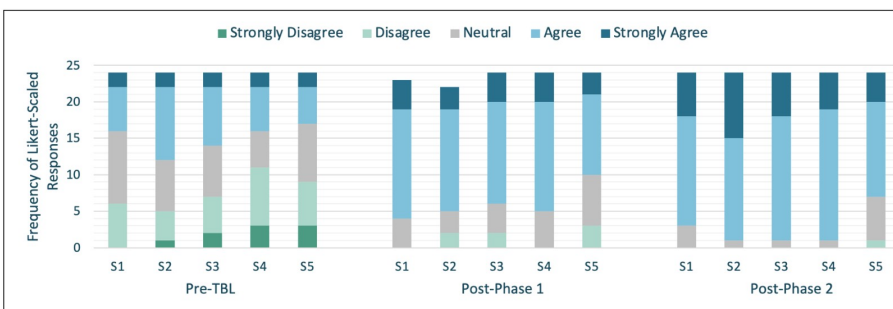


Figure 2: Comparison of breast cancer self-efficacy statement responses at TBL timepoints.

- Frequency of responses "agree" and "strongly agree" increased for all self-efficacy statements from Pre-TBL to Post-Phase 1 and Post-Phase 1 to Post-Phase 2.

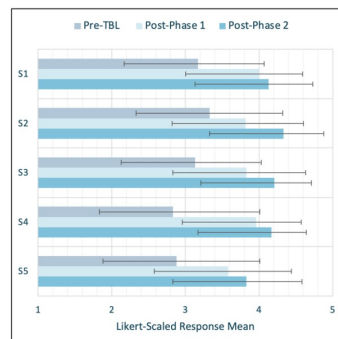


Figure 3: Comparison of breast cancer self-efficacy statement means between TBL timepoints.

- Observed improvement for all self-efficacy statement means from Pre-TBL to Post-Phase 1 and Post-Phase 1 to Post-Phase 2.

Table 1: Significance of Changes in Breast Cancer Self-Efficacy Means Between TBL Timepoints

S	Survey Statements	Pre-TBL → Post-Phase 1		Post-Phase 1 → Post-Phase 2		Pre-TBL → Post-Phase 2	
		Change in \bar{X}	p-value	Change in \bar{X}	p-value	Change in \bar{X}	p-value
1	Knowledgeable about breast cancer screening guidelines	+0.83	<0.001	+0.13	0.492	+0.96	<0.001
2	Ability to identify breast cancer risk factors	+0.49	0.029	+0.51	0.009	+1.00	<0.001
3	Ability to stratify risk factors to classify a patient's overall risk for breast cancer (average/high risk)	+0.70	0.008	+0.38	0.025	+1.08	<0.001
4	Ability to select appropriate screening modalities based on a patient's risk for breast cancer	+1.13	<0.001	+0.21	0.057	+1.34	<0.001
5	Ability to determine if genetic testing referrals are warranted based on a patient's risk for breast cancer	+0.70	0.001	+0.25	0.104	+0.95	<0.001

- Significant increase in self-efficacy means for all five statements from Pre-TBL to Post-Phase 1 and Pre-TBL to Post-Phase 2. Significant increase in self-efficacy from Post-Phase 1 to Post-Phase 2 in two out of five measures of self-efficacy.

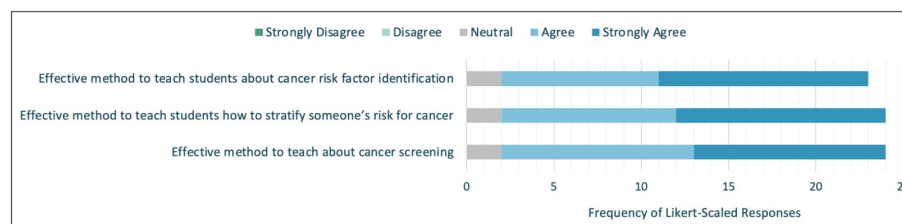


Figure 4: Students' overall impressions of TBL for cancer education.

- Frequency of PA student responses were generally agreeable towards effectiveness of TBL for cancer education.

Tables and Figures Legend: TBL: team-based learning. PACE: Physician Assistant Cancer Education. Pre-TBL: perceptions prior to the TBL Module. Post-Phase 1: perceptions after the individual home reading of the PACE Breast Cancer Module and individual Readiness Assurance Test. Post-Phase 2: perceptions after the two-hour group learning session and group Readiness Assurance Test. S: self-efficacy statement number. \bar{X} : sample mean.

DISCUSSION

- This is the first study evaluating the impact of a modified TBL module on PA students' self-efficacy to assess and stratify breast cancer risk.
- Overall, BCM PA students' self-efficacy significantly improved after completion of the modified Breast Cancer TBL Module that addressed: (1) breast cancer screening guidelines, (2) identifying breast cancer risk factors, (3) stratifying risk, (4) selecting appropriate screening modalities, and (5) providing recommendations for genetic referrals based on a patient's risk for breast cancer.

Effect of TBL Components on Self-Efficacy

- The individual learning aspect (Phase 1) of the TBL Module had a significant impact in all five measured statements of self-efficacy, whereas the group aspect (Phase 2) resulted in a significant improvement in two out of the five measured statements of self-efficacy. This could be due to the shorter duration of the group session versus unlimited time for the individual portion or due to differences in student learning styles.
- Prior to the TBL Module, student self-efficacy was lowest regarding selection of appropriate screening modalities based on risk; subsequently, students' self-efficacy with screening tool selection was most improved following the TBL Module. The TBL Module likely provided valuable, new knowledge regarding selection of screening modalities based on risk for this sample of PA students.
- The lowest self-efficacy score after the entire TBL Module was related to ability to determine if genetic testing referrals are warranted based on a patient's risk for breast cancer. This offers a potential area of improvement of the TBL Module with expanded emphasis on genetic testing referrals based on breast cancer risk level.

Attitudes Toward TBL

- Students' overall impressions were agreeable towards TBL as an effective method for education in cancer screening, cancer risk factor identification, and stratifying risk for cancer.
- The findings in this study supports prior research demonstrating TBL as an effective method for medical education.¹⁰

Limitations and Future Study

- This study was limited by a small sample size, evaluation of a single institution, lack of formal validity testing of the survey instrument, modified rather than standardized TBL format, and lack of generalizability to all types of cancer.
- Implementation of a standardized TBL format and expansion of the sample size could further elucidate the generalizability of this research.

CONCLUSIONS

- The modified Breast Cancer TBL Module was effective at significantly improving PA students' self-efficacy towards identifying breast cancer risk factors, stratifying risk, and selecting appropriate screening and genetic referrals based on assigned risk level and current screening guidelines.
- Both the individual and group components of the TBL Module had a positive impact on PA students' self-efficacy.
- The modified TBL Module was perceived by students as an effective method for cancer education.
- These results support continued implementation of the modified TBL Module within the BCM PA Program's WH course, as well as consideration of utilizing similar TBL activities for other types of cancer education.

REFERENCES

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