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Impact of reflective learning
on physicians' attitudes and care

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ABSTRACT

Reflection is thought to play a significant role in health professionals' implementation of learning from continuing medical education (CME) courses into practice. The use of reflective learning as an integral aspect of CME activities to enhance learning and practice changes has not been studied. Therefore, the specific aim of the study is to examine the impact of a Web-based CME activity that emphasizes reflective learning on the attitudes and professional activities of family physicians. Individuals participating in online CME modules were asked to complete a Transition to Practice (t2p) questionnaire that was designed to encourage the participant to reflect on actual changes made in their practice, barriers faced during implementation, and strategies put in place to maintain the change. Responses to specific questions were coded to identify trends and important themes. Of the 1,599 physicians enrolled in at least one of the online CME modules, 71 (4.4%) of these physicians completed the entire t2p questionnaire and process. More than three-quarters (78.2%) of participants who completed Step 3 of t2p reported changes to their thoughts and attitudes regarding their management of patients with diabetes or at risk of developing diabetes. Reflective learning in CME with the use of Web-based learning modules and the t2p instrument impacted the attitudes and patient care activities of participating physicians.

INTRODUCTION

Continuing medical education (CME) activities have historically used lectures, audiovisual presentations, and printed materials to address specific topical areas. The overall effectiveness of this strategy in terms of changing physician behaviors and improving patient outcomes is unclear. Some reports indicate that lecture-based activities can change short-term physician behavior and improve performance based on specific quality indicators [1,2].

In contrast, other reports and reviews have noted that didactic sessions do not appear to impact physician performance and quality of care. In a review to collate and interpret the effect of formal CME interventions on physician performance and health care outcomes, Davis [3] noted that didactic sessions do not appear to be effective in changing physician performance. Mansouri [4] noted that CME has a medium effect size on

physician knowledge and a small effect size on physician performance and patient outcome.

Interactive CME sessions that enhance participant activity and provide learners with the opportunity to practice skills can effect change in professional practice, and on occasion, health care outcomes [3]. Bloom [5] noted that interactive techniques, academic detailing, and outreach are the most effective at simultaneously changing physician care and patient outcomes. Multiple interventions, two-way communications, preprinted and graphic materials provided in person, and locally respected physicians as educators are other strategies to deliver CME that changes physician behavior [6]. Furthermore, CME activities that are interactive, use multiple methods, and are designed for a small group of physicians from a single discipline are most effective in regard to

physician performance and patient outcome [4]. Multicomponent electronic continuing education and appropriately designed, evidence-based online CME can also change health professionals' practice patterns and improve provider knowledge.

Within the context of formal and informal learning, the process of reflection allows physicians to draw on any combination of formally taught knowledge; informally learned knowledge (eg, from educational programs, reading, or other sources); tacit knowledge; experience; critical incidents; and emotion to create new knowledge and skill [7]. Reflection is thought to be significant in physicians' implementation of learning from CME courses into practice [8,9].

Dolcourt [10] recognized that physician education is intertwined with their ongoing practice and practice issues, making it likely that what physicians learn will be adapted toward the needs and contexts of practice. A commonly used method of encouraging participants to reflect on a course is the commitment-to-change (CTC) statement. CTC statements are completed immediately after the course, and help participants consolidate new information and commit to changes in practice [10-13].

The use of reflective learning as an integral aspect of CME activities to enhance the acquisition of knowledge and skills that ultimately results in improved practice and patient care has not been studied and needs to be examined as new models of CME are implemented. The objective of this study is to examine the impact of a Web-based CME activity that emphasizes reflective learning on the attitudes and professional activities of family physicians.

METHODS

Physicians participating in one or more of the American Academy of Family Physicians' six AAFP Live: Diabetes and Associated Complications online CME modules, or one or more of the three AAFP Live: Diabetes and Cardiovascular Disease modules were asked to participate. As part of this study, each physician was asked to complete a previously developed Transition to Practice (t2p) questionnaire (Table 1). This questionnaire was designed to encourage the physician to reflect on actual changes made in their practice, barriers faced during implementation, and strategies put in place to maintain the change. Furthermore, the t2p questionnaire allowed the physicians to review how the CME activity affected their thoughts and attitudes, identify additional resources needed to help implement the change, and identify remaining questions they have that were not answered during their engagement with the associated CME activities. The questionnaire was previously pilot tested using selected live national courses, online CME

modules, and several issues of the journal *Family Practice Management*.

After completing an online module, each physician was asked to complete the t2p questionnaire. To begin Step 1 of the process, physicians were presented with an online form asking them to summarize what they had learned, describe their motivation for making the change, and provide a written description of the change they intended to implement into practice.

Upon submission of their response to Step 1, participating physicians were provided an explanation for Step 2 of the t2p process. In Step 2, participants were encouraged to implement the change they described in Step 1. Thirty (30) and 90 days after completion of the initial questionnaire, the participant was sent an e-mail with a link to the questionnaire as a reminder to complete the third and final stage of t2p. In Step 3, participants accessed the link to complete the Reflection Summary questionnaire, which included the participants' responses from Step 1. The questionnaire was designed to determine what changes to practice were made; barriers to the change; how the identified barriers were overcome, or what barriers remained; what additional information was needed to help implement the change; what thoughts and attitudes changed as a result of the CME and their translation of learning into practice; what steps were taken to ensure the maintenance of the changes made in practice; and what additional questions still remained unanswered (Figure 1).

Data collected from the t2p tool were stored in a customized database, where primarily qualitative (open-text field responses) data were collected. Data containing responses to Steps 1 and 3 of t2p for all participants from all six AAFP Live: Diabetes and Associated Complications online CME modules were accessed. Qualitative data analysis methods were used to organize and summarize the participant responses (Figure 2).

The responses were coded, with trends and important themes identified [14-16]. Statements of planned changes from Step 1 as well as actual change statements from Step 3 were coded into categories of change types. Once the change types were determined, all comments related to practice change were coded accordingly. The same process was used to code changes in thoughts and attitudes as a result of the CME and the translation of learning into practice, and descriptions of steps taken to ensure the maintenance of these changes to practice.

The CME Learning Transfer Barrier Framework was adapted and used to code identified barriers-to-change comments [17]. Barriers were coded into one of 12 categories, and then further grouped into one of several

Table 1. Directions for commitment to change statement and reflective questions addressed by participants during step 1 and 3 of this study (Step 2 was actual implementation of a change).

| Step 1 |
| --- |
| Based on what you have learned in this CME, write a Commitment to Change Statement that outlines your plan to implement a change in process or practice. Your Commitment to Change Statement should include*: a summary of the key information you have learned, an explanation of the change you plan to implement in process or practice, and a description of your motivation for implementing this change. |
| Step 3 |
| Welcome back to the AAFP Translation to Practice CME. Now that you have implemented a change in process or practice, please respond to all the question in the Reflection Summary to earn your Translation to Practice CME credit. What change(s) did you make in your practice after completing the CME? If you were able to make the change, what steps have you taken to ensure the maintenance of these changes in your practice? What barriers did you encounter in implementing the change you identified? Describe how your thoughts and attitudes have changed as a result of the CME and your translation of learning into practice. |
| * Responses are in the form of open text with 1,250 character limit |
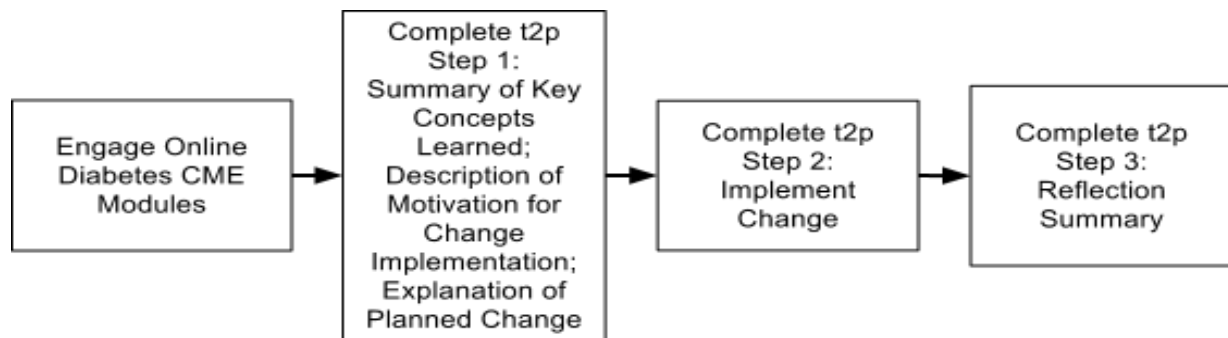
Figure 1. The sequence of study questionnaire steps completed by each participant of this study.
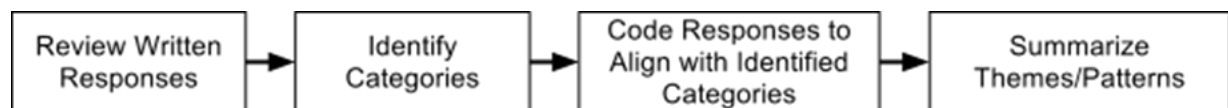

Figure 2. Assessment, categorization, and coding of responses used in the qualitative data analysis of the results of completed questionnaires.

descriptive subcategories. These data were then examined for trends to establish the primary barriers that participants experienced as they attempted to implement their changes into practice.

Quantitative data were analyzed using descriptive methods to analyze participation and completion rates, and to quantify barriers to change, changes in attitudes, plans to maintain changes, and additional remaining questions.

RESULTS

Of the 1,599 physicians enrolled in at least one of the online CME modules, 71 (4.4%) of these physicians completed Step 3 of t2p and were considered participants (Table 2). The mean age for participants was 47.4 ($\pm$10.3) years old and 28.2% had been out of residency for seven years or less. The participants who completed the study and were used in the analysis were similar to the overall population of physicians who at least began the CME activity.

Table 2. Demographic information of enrolled and participating physicians

		Enrolled physicians	Participants	p
Gender				
	Female	812 (50.8)	35 (49.3)	
	Male	676 (42.3)	28 (39.4)	0.9803
	Missing	111 (6.9)	8 (11.3)	
Years Out of Residency				
	≤7	681 (42.6)	20 (28.2)	
	8-14	295 (18.4)	14 (19.7)	
	15-21	199 (12.4)	11 (15.5)	0.293
	≥22	274 (17.1)	13 (18.3)	
	Missing	150 (9.4)	13 (18.3)	
Age				
	Mean	45.8 (±10.2)	47.4 (±10.7)	0.2627

Table 3. Responses (frequency) of participating physicians to t2p questionnaire

	Responses (%)
Changes in Thoughts/Attitudes	
• None	19 (21.8)
• Increased awareness/focus on issue	15 (17.3)
• More pro-active/More screening	12 (13.8)
• More thoughtful management	31 (35.6)
• Improved physician-patient communication/ counseling	10 (11.5)
Type of Change Made	
• None	7 (7.4)
• Screening/diagnosis/risk assessment	43 (45.7)
• Referral/coordination of care	1 (1.1)
• Patient education/lifestyle changes	20 (21.3)
• Appointments/follow-up	6 (6.4)
• Prescribing/Pharmacologic	17 (18.1)
Steps to Maintain Implemented Changes	
• None	14 (15.1)
• Use of EHR/other HIT	9 (9.7)
• Standardize routine/procedures/documentation (FP)	32 (33.3)
• Standardize test/lab order procedures	2 (2.2)
• Increase patient participation (decision making) & Communication	16 (17.2)
• Standardize routine/procedures/documentation (staff/care team)	20 (22.6)
Steps to Maintain Implemented Changes	
• None	14 (15.1)
• Use of EHR/other HIT	9 (9.7)
• Standardize routine/procedures/documentation (FP)	32 (33.3)
• Standardize test/lab order procedures	2 (2.2)
• Increase patient participation (decision making) & Communication	16 (17.2)
• Standardize routine/procedures/documentation (staff/care team)	20 (22.6)
Type of Identified Barrier to Implementation	
• None	16 (16.6)
• Time	8 (8.4)
• Organization	17 (17.9)
• Patients	33 (34.7)
• Provider	16 (16.8)
• Staff	1 (1.1)
• Diagnosis (health condition)	2 (2.1)
• Content of CME	1 (1.1)
• Roles	0 (0.0)
• Cultural competency	1 (1.1)

Changes in Thoughts/Attitudes

More than three-quarters (78.2%) of participants reported changes to their thoughts and attitudes regarding their management of patients with diabetes or at risk of developing diabetes (Table 3). Of this group, 35.6% of participants were implementing more thoughtful management of diabetic patients, and 17.3% of physician-learners increased their overall awareness, focus, and motivation to improve the management and care of their diabetic patients. More thoughtful management included the reassessment of processes and protocols related to their diabetic patients and development of a more team-based approach to care. Of note, 27.9% of participants indicated no change in their thoughts or attitudes.

Identified Changes Made

Of the participants, 92.6% of them identified implementing changes to the care they provide diabetic patients, while 45.7% of participants indicated making changes related to screening, diagnosis, and risk assessment of their diabetic patients. Diabetic patient education and lifestyle change recommendations were the second most identified changes implemented. A few participants (7.4%) did not implement any changes in the care of their diabetic patients.

Steps Taken to Maintain Changes Made to Practice

Approximately 85% of t2p completers developed and instituted steps to maintain implemented changes to the care they provide diabetic patients. One-third (33.3%) of participants standardized their own routines, procedures, and documentation related to diabetic patients, and 22.6% of them standardized the routine, procedures, and documentation of diabetic patients as it relates to members of their staff or patient care team. Standardization included self-reminders, training and education, and more frequent team meetings. A lesser percentage of participants (15.1%) reported no changes made to maintain implemented changes.

Identified Barriers to Implementation

The most commonly reported barrier to change, as identified by 34.7% of participants, was patients. More specifically, noncompliance with treatment and lifestyle change recommendations, failing to appear for group visits or additional testing, and reluctance to use or change recommended treatment options were the primary issues related to patients. The other most commonly identified barriers were organizations (17.9%) (ie, cost, lack of insurance, reimbursement issues from insurance companies, electronic health records/health information technology unavailable or inadequate, cost of testing, lack of diagnostic equipment/supplies, and inadequate/untimely processing of labs); provider (16.8%) (ie, physician lacking the knowledge of the treatment options available, confusing guidelines, remembering to screen or remembering new treatment plans, breaking old habits, opportunity/lack of patients with regard to planned change, and remembering to carry out the planned change(s); and none (16.8%).

DISCUSSION

As part of physicians' professional lifelong learning, the acquisition and application of knowledge to improve their practice of medicine is essential. Formats used in this education have included participation in didactic experiences, individualized reading of enduring materials, interactive audience response systems, procedural workshops, and integration of simulators and computer technology through hands-on experiences. As noted, the ability of these types of educational experiences to impact physician attitude and practice has been shown to be minimal.

Based on the results of this study, the use of a Web-based CME activity that emphasized reflective learning appears to have impacted the attitudes and practice of most of the participating physicians. Furthermore, these physicians were able to identify common barriers to change as well as steps necessary to maintain any of the changes implemented, which are important aspects of any activity meant to improve the care of patients. Of particular note, changes in screening, diagnosis, and risk assessment were the most frequently identified barriers by the participants. While the integration of performance measures into practice may be easier to track and, as such, lend themselves more easily to reflective learning, the potential for this type of change to ultimately improve patient care and outcomes is significant. Furthermore, nearly half of the participants reported that they would attempt to be more thoughtful in their management of diabetic patients, and more than half were attempting to standardize their office protocols through the use of patient care registries and standing orders. These activities are often cited as means to improve quality of patient care.

Many professions are moving toward reflective learning as an educational format. In medical schools and residency training programs, journals are being used to encourage reflective learning [18]. The use and impact of reflective learning as an educational technique specific to CME for practicing physicians already in practice is not well known. This study is one of the first to review a method of applying the principles of reflective learning in the CME setting.

While this program did have positive results in terms of impacting a large proportion of participants, the long-term outcomes of this education activity have yet to be determined. Whether the changes implemented persist

or previous activities return requires further study.

This study has several limitations. The participation rate was low, as only 4.4% of participants who participated in at least one CME module completed Step 3 of the t2p process. Participant awareness or understanding of the t2p portion of the program may not have been optimal, because the t2p invitation displayed as a terminal screen as participants were completing the online program. Additionally, a lack of awareness of the opportunity, not understanding the directions, technical issues with the system being used, minimal incentive for completion, and unfamiliarity with the reflective learning process might have contributed to the low participation rate.

In addition, the demographic distribution of participants is minimal and the results may not be generalizable to a larger population. The changes in attitudes and other activities measured in individuals who chose not to participate are unknown, and a control group was not used to determine whether just measuring attitudes and other activities without specifically requesting for any specific reflective-type activity would have obtained similar results.

Despite these limitations, reflective learning in CME with the use of Web-based learning modules and the t2p instrument impacted the attitudes and patient care activities. Whether this educational format has long-term influence and improves patient care requires further study.

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