Impact of a Transitions of Care Training Module on Community Pharmacists' Knowledge and Attitudes

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Abstract

Background: Community pharmacists' accessibility to patient histories and personal patient relationships situates them to have a potentially significant impact on transitions of care. Recent literature has demonstrated that improved patient outcomes and an overall reduction in health care costs occur when pharmacists are involved in medication reconciliation during transitions of care. **Objective:** To develop a transitions of care training module for community pharmacists. To assess the training module's impact on pharmacists' transition of care knowledge and their attitude toward actively participating in the transitions of care for their patients. **Methods:** Community pharmacists practicing in a supermarket pharmacy chain participated in this study. A pretest and posttest were administered around a 30-minute transitions of care training module. The attitude assessment consisted of a 5-point Likert-type scale, while the knowledge-based assessment consisted of true/false and multiple-choice questions. SPSS version 21.0 was used to generate descriptive and nonparametric statistical analyses. The study was approved by the University of Toledo Social, Behavioral, and Educational Institutional Review Board. **Results:** Thirty-six pharmacists (72%) successfully completed the pre-post survey. The average pharmacist posttest knowledge survey score improved from the pretest score, 73% to 99%. A paired Student's *t* test demonstrated the posttest percentage of correct questions on the knowledge-based survey improved from the baseline knowledge. Pharmacists' average posttest attitudes regarding participation in patients' transitions of care statistically improved compared to their pretest attitudes. **Conclusion:** Community pharmacists' transitions of care knowledge and attitudes can be improved through a training module.

Keywords

community practice, counseling, education, medication therapy management, pharmaceutical care, teaching/training

Introduction

The movement patients make among health care practitioners and settings as their condition and care needs change during the course of a chronic or acute illness is defined as transitions of care.¹ Providing adequate transitions of care is an ever important role health care providers must deliver. It is our duty to serve those in need and penalties for not doing so are rapidly increasing.

Nationally, two thirds of all eligible hospitals were penalized in 2013 based on excessive 30-day readmission rates for a total of \$280 million.² Additionally, approximately 1.5 million preventable adverse drug events occur annually as a result of medication errors, at cost of \$3 billion per year.³ Twenty percent of all adverse drug effects and approximately half of all hospital-related medication errors have been tracked back to poor communication at the transition and interaction of care.^{4,5} Taking into account all emergency department visits nationwide, approximately

2.5% of visits are the result of unintentional injuries as a result of adverse drug effects, and of these, 6.7% lead to hospitalization.^{3,6} If an adverse medication effect should lead to hospitalization or if a person is admitted for any other reason, the process of collecting the current medication history from the patient has a 30% to 70% chance of containing an unintended medication discrepancy.^{6,7} The largest medication reconciliation study indicated that on admission to a hospital, 36% of patients had medication errors and of these 85% originated from patients' medication history.⁸ These errors could then follow a patient into

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their hospital stay, and potentially affect their hospital treatment. Strategies shown to reduce medication errors at the transitions of care include pharmacist medication review at discharge.^{6,9}

To improve the medication needs of patients during transitions of care, a rigorous medication reconciliation service has to be implemented. For a medication reconciliation program to have a meaningful impact in the care of patients, the American Pharmacists Association and the American Society of Health-System Pharmacists recommend it should contain the following: (a) a key process to improve patient care and outcomes in care transitions; (b) a patient-centered process focusing on patient safety; (c) an interdisciplinary, collaborative approach; (d) a culture of accountability basis; (e) a standardized process; (f) coordinated communication between the patient and health care providers; (g) integration of health information technology solutions; and (h) a process for continuous quality improvement.¹⁰ The medication reconciliation process has resulted in new services such as prescription bedside delivery programs, which serve to ensure that patients receive their prescribed medication regimen as soon as possible after leaving the care of a medical service.

Several different forms of the prescription bedside delivery programs have developed. Medical facilities such as Froedtert Hospital have provided this service using their own outpatient pharmacies to deliver the medication to a patient's bedside, while others have utilized their outpatient ambulatory clinics for providing follow-up medication education such as the Hennepin County Medical Center. Several medical facilities also have community pharmacies located within them to provide outpatient medications, and others have partnered with community pharmacies outside of their 4 walls calling, faxing, or electronically sending prescriptions to patients' preferred pharmacies.¹¹ The present study addresses if community pharmacists' transitions of care knowledge and attitudes can be affected through a training module. The objectives of this study were (a) to develop a transitions of care training module for community pharmacists and (b) to assess the training module's impact on pharmacists' knowledge and attitudes toward actively participating in the transitions of care for their patients.

Methods

Study Sample

Fifty pharmacists within a Midwest district of a supermarket chain of community pharmacies were invited to participate in the research study. Pharmacists participating in a scheduled business meeting were asked if they would like to volunteer to participate in the research study. If pharmacists were not interested they were free to leave with no consequences. Demographic information regarding the participants was

collected. Per the approval of the University of Toledo Social, Behavioral, and Educational Institutional Review Board, a signed informed consent was not collected.

Program Development

Investigators developed a training course aimed at increasing pharmacists' knowledge and improving their attitudes toward participating in transitions of care for their patients. The training module took approximately 30 minutes, with an additional 20 minutes allotted for completion of the survey. Materials for the training module were adapted from various transitions of care information resources.¹⁻¹¹ The course consisted of a lecture component and an active learning component. The lecture component was designed to define the term *transitions of care* and identify how actively participating in transitions of care would affect our society. The lecture component also reviewed the best practices of nationally recognized transitions of care programs and compared them with what is practiced locally at the supermarket chain community pharmacies. The opportunities to influence the transitions of care for patients who use the supermarket chain of community pharmacies were also identified through the lecture component. The active learning component of the training module consisted of periodically asking for input from the participants on their opinion of transitions of care and how it was currently being conducted in their pharmacies.

Data Collection and Analysis

The transitions of care training module was conducted on 2 days: February 6, 2014, and February 11, 2014. Participants were asked to complete a pre-survey and post-survey prior to and immediately after participating in the training session. All survey material was kept anonymous with a unique code linking pre-survey data to post-survey data. The survey consisted of 20 knowledge-based questions (Appendix A) and 5 attitude-based questions (Appendix B). The knowledge-based questions were used to assess the following 4 themes: pharmacists' ability to define transitions of care, their knowledge of the medication reconciliation process, the components of medication therapy management, and the statistical impact of a transitions of care program. The Kuder-Richardson Formula 20 (KR20) test was used to measure the intrinsic reliability of the dichotomous choices, as the participants were scored on each question being answered as correct or incorrect on the knowledge-based test. The attitude-based questions were used to assess the following 4 themes: pharmacists' comprehension of the concept of transitions of care, their ability to influence transitions of care for their patients, their ability to provide transitions of care services for their patients, and their willingness to provide transitions of care services for their patients. Cronbach's α test was used to assess the intrinsic

Table 1. Pharmacists' Attitudes Toward Transitions of Care Services.

Attitude Assessment	Pretest Median ^a	Pretest Range ^a	Posttest Median ^a	Posttest Range ^a	P Value
I understand the concept of transitions of care.	3	2.0-5.0	4	2.0-5.0	<.001
I feel I can have a significant positive impact on the transitional care of recently discharged patients.	4	2.0-5.0	4	3.0-5.0	.005
I understand the ways I can impact the transitions of care of a patient.	4	2.0-5.0	4.5	3.0-5.0	<.001
I feel confident in my ability to provide meaningful services to recently discharged patients in their transitions of care.	4	2.0-5.0	4	4.0-5.0	<.001
I am willing to help positively impact the transitional care of a patient.	4	2.0-5.0	5	3.0-5.0	.01

^a1 = Strongly disagree; 5 = Strongly agree. A higher number indicates a more open attitude to providing transitions of care services.

reliability of the Likert scale-based attitude questions, since the KR20 is only a dichotomous choice-based analysis. Four community chain pharmacists and one pharmacy intern were used to pilot test the comprehensibility and validity of the survey instruments. Feedback was assessed and revisions were made accordingly. The training module and survey material were approved by the University of Toledo Social, Behavioral, and Educational Institutional Review Board. Survey data collected were analyzed using SPSS Version 21.0. Cohen's *d* was used to measure the effect size of the training module, while a Kolmogorov-Smirnov test was used to determine the distribution of the data. Student's paired *t* test and Wilcoxon signed ranks tests were used to compare score improvements of the knowledge-based and attitude-based questions, respectively. Knowledge assessment questions left unanswered were counted as incorrect, and attitude assessment questions left unanswered were not included in the statistical analysis so as not to assume the intention of the participant.

Results

Fifty pharmacists, 27 females and 23 males, were present at the business meeting and were offered to participate in the research study. Thirty-eight chose to participate (76%), with 36 pharmacists (72%) successfully completing the pre- and post-survey. Demographics data indicated that every participating pharmacist had practiced for at least 2 years in community pharmacy. Table 1 shows the change in attitude of the study participants.

Knowledge-Based Assessment

The knowledge-based test indicated that pharmacists' average test scores increased from 73% to 99% ($P < .001$) after participation in the transitions of care training module. Based on a Student's paired *t* test analysis, there was an improvement in pharmacists' pretest knowledge test scores (mean = 73%) and posttest knowledge scores (mean = 99%), $P < .001$. The training module had a large effect on

the participating pharmacists' knowledge, as evidenced by Cohen's $d = 2.18$.

Attitude-Based Assessment

Pharmacists' attitudes toward providing transitions of care services for their patients improved on the assessment overall, $P < .001$, and for each individual question (Table 1). The training module had a large effect on the participating pharmacists' attitudes, as evidenced by Cohen's $d = 2.8$. The pharmacists' attitudes toward transitions of care services were assessed using the 5-point Likert-type scale statements (see Appendix B).

Discussion

In an article by Cassano et al,¹¹ the best practices of transitions of care programs were identified. The article highlighted several health systems throughout the country that are renowned for their programs. The article also outlined how community pharmacies play a role in each program making it as great as it is; however, the article did not state how these community pharmacists were trained in transitions of care and their level of knowledge or attitude in partaking in this form of patient care. The study presented here was designed to accomplish this missing information.

The presentation was delivered in person during an established business meeting for the community pharmacist subjects. This allowed for a higher response rate than would be anticipated if the training course was electronically distributed to the same sample population. Additionally, the training course was added into an already existing business meeting mitigating the potential bias of only highly motivated individuals participating in the research.

For this pilot study, the intrinsic reliability of the knowledge-based test and attitude-based test was assessed. The value for the knowledge test questions was determined to be KR20 = 0.367. The benchmark value for this measurement indicting all of the questions are attempting to assess the same concept is 0.7.¹² The reasoning for this is contributed

to the broad topic of transitions of care and the 4 themes the questions were attempting to address instead of focusing on a specific facet of the concept. This breadth of questions could have been responsible for the assessments questions to appear unrelated to participants. Further survey testing with a larger pilot group would be required to determine where the knowledge test could be improved. The Cronbach's α value for the attitude questions was determined to be 0.895. The attitude assessment set of questions was considered to have acceptable intrinsic reliability if it resulted in a Cronbach's α value of 0.7 or greater. The value for the attitude assessment exceeded this, indicating the 5 attitude-based questions and their corresponding themes were all assessing the same concept.¹³

The knowledge-based assessment prior to the administration of the training module resulted in the average pharmacist's knowledge score of 73% compared to the posttraining module knowledge assessment value of 99%, $P < .001$. This difference in values indicates that the participants had improved their transitions of care knowledge due to the training module. The effect size of this training module on the knowledge of the participants was analyzed using a Cohen's d score.¹⁴ Cohen's d was 2.18, demonstrating a large effect was made on the study population as it surpassed the 0.8 benchmark. This infers that the training module did influence the community pharmacists' transition of care knowledge.

To assess the impact of the training module on the community pharmacists' attitudes, Cohen's d score was used. Cohen's d was 2.8, inferring a significant impact was made on the attitudes of study subjects from the training module.

The resultant data from the attitude assessment was not normally distributed; thus, a Wilcoxon signed ranks test was used to measure the change in the subjects' totaled Likert-type scale attitude values pretest to posttest. Pharmacists' attitudes toward participating in transitions of care services for their patients were found to improve through this training module, $P < .001$.

This study has limited generalizability as it was conducted with a relatively small group of community pharmacists in a specific region of the country as compared to the number of community pharmacists throughout the entire nation. However, no study on this topic using these methods has been conducted before. Given the significance of this topic, these data provided meaningful results.

Conclusions

Community pharmacists' knowledge and attitudes regarding transitions of care can be improved by a training module. Educating community pharmacist about the tools they have available to them does improve their knowledge and attitudes toward providing better transitions of care for their patients. This research is important to community pharmacy as the Affordable Healthcare Act plays a larger role in shaping the US health care system and the need for more ambulatory clinical services continues to increase. The more community pharmacists know about the opportunities and tools they have available to them to improve transitions of care for their patients, the better our health care system will be.

Appendix A

Knowledge-Based Questions Used for Pre-Survey and Post-Survey

Knowledge-Based Questions

True/False: Please indicate if each statement is true or false by circling either true or false for each statement.

1. Transition of Care is defined as the movement patients make between health care practitioners and settings as their condition and care needs change during the course of a chronic or acute illness.
True False
2. Strategies shown to reduce medication errors at transitions include pharmacist's medication review at discharge.
True False
3. Medication reconciliation is a KEY process required to improve patient care and outcomes in care transitions.
True False
4. Medication reconciliation is a patient-centered process focusing on patient safety.
True False

5. Medication reconciliation requires an interdisciplinary and collaborative approach.
True False
6. Medication reconciliation must be based on a culture of accountability.
True False
7. Medication reconciliation requires integration of health information technology solutions.
True False
8. Medication reconciliation DOES NOT require a process of continuous quality improvement.
True False
9. Medication reconciliation is the comprehensive evaluation of a patient's medication regimen anytime there is a change in therapy in an effort to avoid medication errors such as omissions, duplications, dosing errors, or drug interactions.
True False
10. The purpose of medication reconciliation is to observe compliance and adherence patterns.
True False
11. The process of medication reconciliation should include a comparison of existing and previous medication regimens.
True False
12. The medication reconciliation should occur at every transitions of care in which new medications are ordered, existing medications are rewritten or adjusted, or if the patient has added nonprescription medications to their self-care.
True False
13. In each of the eight transitions of care best practice models, medication reconciliation is conducted.
True False

Multiple Choice: Please circle the letter associated with the best answer to each question.

14. Medication therapy management as it relates to transitions of care is composed of which of the following components:
 - a) Medication Reconciliation
 - b) Personal Medication Record
 - c) Medication-Related Action Plan
 - d) Intervention and/ or referrals
 - e) Documentation and Follow-up
 - f) All of the above
15. What percentage of all adverse drug events (ADEs) and what portion of all hospital related medications errors have tracked back to poor communication at the transition and interaction of care?
 - a) 20% and half
 - b) 50% and two thirds
 - c) 60% and two thirds
 - d) 80% and half

16. Approximately ____ million preventable adverse drug events (ADEs) occur annually as a result of medication errors?
 - a) 1.5
 - b) 7
 - c) 15
 - d) 30
17. On average a hospitalized patient is subject to _____ medications error(s) everyday?
 - a) At least 1
 - b) 3
 - c) 5
 - d) 7
18. Of all emergency department visits approximately what percentage is the result of unintentional injuries caused by adverse drug effects?
 - a) 2.5%
 - b) 7%
 - c) 14%
 - d) 21%
19. At the time of hospital admissions the occurrence of unintended medication discrepancies ranges from?
 - a) 1% to 90%
 - b) 30% to 70%
 - c) 55% to 85%
 - d) 70% to 100%
20. The largest medication reconciliation study indicates what percentage of patients had medication errors upon hospital admission?
 - a) 1%
 - b) 36%
 - c) 54%
 - d) 72%

Appendix B

Attitude-Based Questions Used for Pre-Survey and Post-Survey

Attitudes Toward Transition of Care

Please indicate, by circling a number 1 through 5, how strongly you agree with each statement (1 = Strongly disagree and 5 = Strongly agree).

1. I understand the concept of Transition of Care.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
2. I feel I can have a significant positive impact on the transitional care of recently discharged patients.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
3. I understand the ways I can impact the transition of care of a patient.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

4. I feel confident in my ability to provide meaningful services to recently discharged patients in their transition of care.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

5. I am willing to help positively impact the transitional care of a patient.

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

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