Exploring stages of pharmacist–physician collaboration using the model of collaborative working relationship

Yifei Liu and William R. Doucette

Abstract

Objective: To compare factors affecting pharmacist–physician collaboration across three groups of study participants with increasing collaboration using the model of collaborative working relationship (CWR).

Methods: A random sample of 750 Iowa pharmacists were surveyed. The measures for CWR constructs used 5- and 7-point scales. Descriptive statistics of exchange characteristics such as relationship initiation, trustworthiness, and role specification were calculated for each tertile group. A one-way analysis of variance (ANOVA) and post hoc ANOVAs were used to compare exchange characteristics across groups. In addition, for each tertile group, a linear regression was conducted in which collaborative care was regressed over relationship initiation, trustworthiness, role specification, professional interaction, practice setting, and physician specialty.

Results: The usable survey response rate was 33% (n = 239). Exchange characteristics increased from the first tertile group to the third tertile group. The regression model of CWR explained variation in collaborative care for each tertile group (range 23–76%). Trustworthiness and role specification were key factors affecting collaborative care. Role specification had a strong effect on collaborative care for the first tertile group. Internal medicine as a physician specialty was a significant predictor for collaborative care for the third tertile group.

Conclusion: The impact of predictors on collaborative care differed across three groups according to the tertiles of collaborative care. These findings support a multistage model of CWR. In addition, future studies of CWR can add other predictors for collaborative care.

Keywords: Pharmacist–physician collaboration, collaborative care, medication therapy management services.

J Am Pharm Assoc. 2011;51:412–417.
doi: 10.1331/JAPhA.2011.10068

Pharmacist–physician collaboration can resolve medication therapy problems and improve medication safety for patients.[1] Effective communication between pharmacists with patients' primary care providers also plays a key role in successful provision of medication therapy management (MTM) services.[2] Understanding the development of such collaboration can facilitate the implementation of MTM services and therefore benefit patients. The model of collaborative working relationship (CWR) is a theoretical framework to examine pharmacist–physician collaboration.[3] CWR proposes five progressive stages in collaboration: professional awareness, professional recognition, exploration and trial, professional relationship expansion, and commitment. Three sets of characteristics, including individual, context, and exchange, influence the collaboration process, and each set of characteristics includes multiple variables. Because of the complexity involved with five stages and various variables, previous applications of CWR have used a simplified model that does not incorporate the five stages directly.[4–8]

In the simplified model, collaborative care—a single construct used to measure the overall collaborative process—is influenced by individual, context, and exchange characteristics. Individual characteristics consist of variables such as age, years in practice, or personality; context characteristics include practice setting and professional interaction; and exchange characteristics include relationship initiation, trustworthiness, and role specification. In previous regression analyses of CWR, collaborative care has been the dependent variable and the other variables have been independent variables.[4,6,8] Most applications of CWR used cross-sectional surveys to identify factors affecting collaborative care.[4–7] However, efforts to distinguish the five collaborative stages of CWR have been limited. This knowledge gap is important because health care providers might be in different stages of collaboration and the impact of predictors on collaboration might vary across stages. Therefore, an intervention customized for a specific collaborative

Received May 24, 2010, and in revised form August 25, 2010. Accepted for publication August 26, 2010.

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Disclosure: The authors declare no conflicts of interest or financial interests in any product or service mentioned in this article, including grants, employment, gifts, stock holdings, or honoraria.

Previous presentation: American Pharmacists Association Annual Meeting & Exposition, Washington, DC, March 12–15, 2010.

stage could effectively promote collaboration for providers in that stage.[8]

Two approaches may address this knowledge gap. One approach is to study the development of pharmacist–physician collaboration longitudinally, which could allow researchers to compare early- and late-stage predictors of collaboration. Liu et al.[8] tracked the development of pharmacist–physician collaboration for 3 months and found that predictors of collaborative care at baseline and 3 months were different, which may support the multistage model of CWR. Another approach could be to divide cross-sectional data into different groups using cut-off values of collaborative care to create stages. The assumption is that the group with a higher value of collaborative care is in a more collaborative stage. Because CWR states that greater collaboration occurs at later or higher stages,[3] making this assumption is reasonable. Next, the impact of predictors on collaborative care could be examined for each group and compared across groups. This study is a further analysis of the baseline survey data in a previous study.[8] We created the tertiles based on the collaborative care score, which represented the collaboration. Then, we divided study participants into three groups according to tertiles of collaborative care and identified factors affecting collaborative care for each group. As noted above, we assumed that a higher tertile of collaborative care would correspond to a more advanced collaborative stage.

Objective

Using CWR, we sought to compare factors affecting collaborative care across three groups of pharmacist–physician relationships according to tertiles of collaborative care.

Methods

This study used a cross-sectional mail survey with a random sample of 750 Iowa pharmacists[9,10] and was approved by the University of Iowa Institutional Review Board. In the survey, pharmacist–physician collaborative activity could include "establishing a formal team, referring patients to each other, sharing information about patient care, and making recommendations to the physician about patients' medication therapy." "The physician" was defined as one physician with whom the pharmacist was interested in working, either currently or in the future. Respondents were asked to rate their relations with one physician only.

The measures for CWR constructs (Appendix 1 in the electronic version of this article, available online at www.japha.org) used a 5-point response scale for relationship initiation and a 7-point response scale for trustworthiness, role specification, and collaborative care.[4–6] Individual characteristics included age, gender, ethnicity, years in practice, and physician specialty; context characteristics included practice setting and professional interaction; and exchange characteristics included relationship initiation, trustworthiness, and role specification. Overall scores were calculated for each person by averaging item response of the corresponding items for relationship initiation, trustworthiness, role specification, and collaborative care. To calculate the overall score of professional interaction, "yes" items were counted as 1 point each and "no" items as 0 points each, then the item scores were summed.[6–8]

For study participants, bivariate correlations between variables were calculated and reliability analysis was performed for multiple-item construct measures. Then, study participants were divided into three groups according to tertiles of collaborative care. The use of tertiles allowed comparison of multiple levels of collaboration and maintained acceptable group sizes. Exchange characteristics such as relationship initiation, trustworthiness, and role specification were calculated for each group. A one-way analysis of variance (ANOVA) was used to examine the overall difference of exchange characteristics across three groups, and post hoc ANOVAs including least-squares difference test, Tukey's test, and Scheffe's test were used to examine the difference of exchange characteristics between any two groups.

Within each tertile group, a linear regression with ordinary least squares was conducted. In each regression, the dependent variable (collaborative care) was regressed on relationship initiation, trustworthiness, role specification, professional interaction, practice setting of pharmacist, and physician specialty. The inclusion of these variables as independent variables was based on previous studies.[4,6,8] Among individual characteristics, only physician specialty was included in the regression because it was the only variable that had significant correlation with collaborative care. Collinearity was assessed by variance inflation factor (VIF).[11] Collinearity occurs in regression analysis when high correlation exists between any two independent variables, and VIF is a diagnostic indicator for collinearity. Previous studies of CWR have not assessed the interaction effects in the regression models.[4,6,8] We performed the data analyses using SPSS version 15.0 (SPSS, Chicago).

Results

A total of 25 surveys were returned undelivered or not applicable to pharmacists' practice. Among 281 respondents, 239 were currently practicing as pharmacists and were the study participants. The usable response rate was 33%. For these 239 pharmacists, the mean age was 39.8 years with a mean of 14.6 years in practice (Table 1). Of respondents, 66% were women and 98% were white. For practice setting, 31% worked in hospital inpatient pharmacy, 27% in large community chain pharmacy, and 11% in mass merchandiser pharmacy. The reliability of each multi-item construct measure was 0.7 or more.

To assess nonresponse bias, we divided participants into two groups according to the sequence of survey mailing and compared the characteristics between the two groups. A total of 162 pharmacists responded to the first mailing of surveys (early responders), and 77 responded to the second mailing (late responders). Between the two groups, we used

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