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Community Pharmacist Attitudes on Medication Synchronization Programs

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Abstract

Background: Medication synchronization is a service offered by an increasing number of community pharmacies that aligns refilling of a patient's multiple medications. Purported benefits include increased adherence and improved dispensing efficiency.

Objective: To assess community pharmacist agreement with a set of declarative statements about medication synchronization programs and to identify variation related to pharmacist characteristics. **Methods:** In 2015, a cross-sectional survey was mailed to 1,000 pharmacists from 5 Midwestern U.S. states using 4-contacts and an online option. Respondents used a 7-point Likert scale to agree or disagree with 5 statements about medication synchronization. Demographic and workplace characteristics were collected. Data were analyzed using descriptive statistics and factor analysis. Multiple linear regression tested the relationship between pharmacist characteristics and a 4-item attitude composite. **Results:** There were 258 usable responses for a response rate of 28.8%. About half (45.0%) reported their pharmacy offered medication synchronization. Most pharmacists (82.6%) agreed this service has a positive impact on patient adherence but 57% agreed that a "significant change to workflow" was or would be required. Pharmacist agreement that the program provides financial benefits to the pharmacy was higher than agreement that the service provides more opportunities for patient interactions ($p < 0.001$). In the multiple regression analysis, having a PharmD and working at a pharmacy offering Medication Therapy Management were associated with more positive scores on the medication synchronization benefits composite whereas working in a staff role (rather than a manager/owner) was lower. No demographic predictors were significantly associated with agreeing that a significant change to workflow would be required for implementation. **Conclusions:** Pharmacists generally were positive about medication synchronization programs, although some negative views were present, especially regarding the need for workflow change. Research is needed to understand barriers and facilitators to how medication synchronization programs are implemented and maintained and their effects on outcomes.

Keywords: Adherence, pharmacist, medication synchronization, community pharmacy

Introduction

Non-adherence to medications by patients with chronic diseases results in significant avoidable morbidity, mortality, and expense.^{1,2} Numerous patient factors have been associated with non-adherence such as out of pocket costs, pill burden, regimen complexity, forgetfulness, perception of disease severity, beliefs about medication necessity and safety, mental illness, and others.^{1,3,4} Pharmacists are positioned to intervene on non-adherence because in most cases, they are the final healthcare professional to interact with patients before they take the medications at home.

Community pharmacies have been pursuing various strategies to increase medication adherence in an effort to increase the quality of patient care and increase revenues. Strategies for improving adherence have included automated refills and medication packaging services that make organizing and taking medications more convenient.^{5,6}

These interventions will be increasingly important as payers move to evaluating and paying pharmacies for the value of their services rather than the number of prescriptions dispensed. A prime example is the Star rating system associated with Medicare Part D.⁷ In the future, pharmacy reimbursement likely will be influenced by adherence metrics such as the proportion of patients with diabetes who are adherent to their oral antidiabetic medications.

A recent service development has been termed medication synchronization and based on the results of a 2014 survey, was estimated to be available in some form at about 8% of retail pharmacies in the U.S. and used with about 1.5 million pharmacy patrons.⁸ Multiple approaches are available, but the service generally includes aligning prescription refills so they can all be picked up at the same time once every month (synchronization) which addresses the patient-reported problem of running out of medications because they come due on different days.^{9,10} When accompanied by a regular clinically focused discussion with the pharmacist, the service has been called the appointment based model.¹⁰ Purported benefits of medication synchronization programs include a streamlining of workflow for pharmacies, more frequent refills resulting in greater pharmacy revenues, and improved chronic disease management resulting from better patient adherence.¹⁰

Initial investigations of medication synchronization programs show that patients who have signed up for the program are

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satisfied¹¹ and have improved claims-based refill rates compared to those that have not enrolled.¹²⁻¹⁴ A limitation of these analyses of secondary data, however, is the potential for residual confounding, particularly due patient self-selection into the medication synchronization program through their voluntary sign-up, possibly resulting in greater tendency toward adherence than their matched counterparts who perhaps are not as committed to their regimen and therefore would not want to be locked into a rigid refill structure.^{9,15} One study of medication synchronization without a clinical component found patients that voluntarily signed up for synchronization already had high levels of adherence and only improved their rates slightly after participating in the program.¹⁶ The authors suggested such patients would have been unlikely to benefit from the additional counseling component of the appointment based model.¹⁶

There is a significant body of literature about service adoption by community pharmacists, including their attitudes and expectations related to offering medication therapy management services.¹⁷⁻¹⁹ Such studies are scant for medication synchronization despite a call for research to characterize pharmacists' attitudes and experiences with medication synchronization programs.⁵ The present study provides initial data on pharmacists' perspectives on medication synchronization programs.

Objectives

To assess community pharmacist attitudes on medication synchronization programs and to identify differences related to pharmacist demographics and workplace characteristics.

Methods

A cross-sectional survey was mailed to a random sample of pharmacists from 5 Midwestern U.S. states (North Dakota, South Dakota, Nebraska, Minnesota, and Iowa) from September 2015 to November 2015, using a 4-contact approach.²⁰ These states belong to District 5 of the National Association of Boards of Pharmacy who funded the research. Lists of pharmacists were obtained from each state's board of pharmacy or other agency that maintains licensing information. For each state, 200 pharmacists were randomly selected. This sample size is relatively large because of anticipated non-response from non-community pharmacists who we were unable to remove from the mailing. The lists from Iowa and South Dakota allowed for community pharmacists to specifically be selected but no such specification was available on the other 3 lists to focus the initial mailing. A post-card was included with the pre-notification letter that allowed the recipient to respond back if they were not a community pharmacist or did not want to participate in the study, although completing this was up to the recipient's initiative. Persons found to be ineligible were not replaced, but were removed when calculating the response rate. Approximately 10 days later the first survey

packet was mailed with a postage paid return envelope. This was followed by a reminder postcard in two weeks and for non-respondents, a final mailing with an additional copy of the survey and postage paid return envelope several weeks later. An easy to enter internet address to an identical web-based survey was included with each mailing so the pharmacist could complete the survey online as an alternative response method. Respondents could make their survey anonymous by blacking out or tearing off the survey identifier used to remove their name from future mailings. As an incentive, respondents were randomly entered into a raffle for 1 of 10, \$50 gift cards. The study was approved by the University of Iowa Institutional Review Board.

The survey included a set of demographic and workplace items including if they currently offer a medication synchronization program. For the main study variables, 5 declarative statements about medication synchronization programs were posed and respondents were asked to use a 7-point Likert-type scale ranging from 1=very strongly disagree, 2=moderately disagree, 3=slightly disagree, 4=neither agree nor disagree, 5=slightly agree, 6=moderately agree, and 7=very strongly agree to measure their level of agreement with each item. These medication synchronization attitude items were developed based on benefits and challenges reported in published articles and assessed patient receptivity, adherence improvement, increased time interacting with patients, financial benefits to their pharmacy, and amount of workflow change required.^{8,10,11} Since it was anticipated that a significant portion of the pharmacists in the sample would not have first-hand experience with medication synchronization programs, items were written such that the respondent could forecast their expectation for the program and complete the item that way. Medication synchronization was defined for respondents under the heading of "medication synchronization perspectives" using the following description. "Several programs have been developed to help pharmacies synchronize patient medication refill dates so persons can pick them up all together, once a month." No additional specification was provided about the use of an appointment model with specific counseling elements. Space was available for open-ended comments about medication synchronization.

Returned mail surveys were entered into an Excel workbook, as were responses from the online survey. Data were cleaned and imported into IBM SPSS v24 (Chicago, IL) for analysis. Analyses included basic descriptive statistics for each item. For the 5 medication synchronization attitude Likert-type items, a principle components analysis was performed to identify the number of factors by examining Eigenvalues and the Scree plot. Based on this output, a factor analysis using the number of extracted factors was performed using a Promax rotation to examine the items for those with a factor loading <0.5 which would be considered for removal. Coefficient alphas were calculated to examine the internal consistency of the resultant

factor solutions. Multi-item means were calculated for factors where coefficient alpha exceeded 0.7.

Multiple linear regression was performed using the multi-item mean(s) as composite measure(s) (given strong internal consistency) and/or single items from the factor analysis to determine if the demographic predictors of degree type, pharmacy role, number of technicians, if the pharmacy offers medication synchronization, and if the pharmacy offers medication therapy management. Offering medication therapy management was included as a surrogate for pharmacies that are more clinically oriented.

Results

One-thousand surveys were mailed and none were returned undeliverable. Seventy-nine replied that they were not a community pharmacist and therefore did not meet inclusion criteria, 22 were excluded for being retired and 3 were omitted due to missing data among the 5 medication synchronization items. This resulted in 258 responses used in the present analysis for a response rate of 28.8%. Independent pharmacists represented the largest group (47.1%) of those providing their pharmacy type, as did pharmacists in a staff role (58.5%) (Table 1). Iowa and South Dakota had the most responses among the 5 states (Table 1), these also were the 2 states where non-community pharmacists were omitted from the original mailing lists. Between 7% (North Dakota) and 30% (Minnesota) of the state's returned surveys were completed online.

Medication synchronization was reported to be offered at 45.0% of all pharmacies (Table 1) and at 46.6% of medication therapy management offering pharmacies. On average, respondents slightly to moderately agreed that patients are receptive to the program, it improves adherence rates, and is good for the pharmacy financially but were neutral that the program would increase time for patient interaction (Table 2). Pharmacists reported the most negative of all items in relation to the amount of workflow change associated with the service.

The principle components analysis supported a 2-factor solution for the 5 Likert-type items with items 1 through 4 comprising a factor which was labeled "benefits" and item 5 about workflow change comprising the other factor. Item 3 about increased time with patients could have loaded on either factor, but the reliability was low when paired with the workflow change item. The coefficient alpha for the 4 benefit items was 0.758 which was deemed acceptable for the creation of a composite measure which had a mean of 5.31 (SD=1.00) (Table 2).

The multiple regression for the composite medication synchronization benefits measure (Table 3) showed that respondents with a PharmD degree, whose role was as a manager or owner, and worked at a pharmacy offering

medication therapy management had significantly higher benefit scores compared to the converse characteristics. Working at a pharmacy with more technician support trended toward more positive composite attitude, but did not reach statistical significance. The respondent working at a pharmacy that offers medication synchronization was not associated with their composite measure. The adjusted R^2 for this model was 0.106. A multiple regression also was performed with item 5 about requiring a significant change to workflow, but there were no consistent or significant demographic predictors (data not shown).

Discussion

Pharmacists had a near universally positive attitude about patient receptivity to medication synchronization programs (90.0% agreement) and the impact of medication synchronization on improving adherence (82.6% agreement). Surprisingly, working at a pharmacy that offers medication synchronization did not appear to influence medication synchronization attitude. It may be that the effect varied among respondents so it washed out, or that expectations met reality on a consistent basis. This consistency also may forecast continued uptake by pharmacies from the 8% estimated in 2014.⁸ The present survey administered in 2015 suggests a significantly higher rate with 45% reportedly offering the service. This difference also could represent a geographic variation, as the sample for the present study was the upper Midwest, not a random sample of states. Pharmacists familiar with the service also may have been more likely to respond to their mailing.

Pharmacists more strongly agreed that medication synchronization programs would benefit the pharmacy financially (5.25 SD=1.41) than would increase opportunities to interact with patients (4.71 SD=1.45) ($p < 0.001$). This suggests some programs are being implemented without corresponding changes to counseling quality or frequency beyond the pre-implementation level. This finding is in contrast to an article by Krumme et al. which reported that medication synchronization type programs allow pharmacists to practice at the top of their license through impactful discussions with patients and adherence-related problem solving.⁸ Part of this difference may be due to the questions on the present survey focusing on the synchronization aspect of these services and not a broader appointment-based model where the pharmacist meets with the patient for a medication discussion which is included in some program designs.⁸ Future research could investigate the proportion of medication synchronization programs that include a focused adherence discussion with the pharmacist and the content and intensity of these discussions. If pharmacies are only adopting the synchronization aspect of the service, they may be missing opportunities for addressing the broader spectrum of adherence issues, for example, negative medication beliefs.¹

Over half (57.0%) of respondents agreed that these programs would require a significant change in workflow. Anecdotally, a small number of respondents wrote their concerns in the margins provided on the survey. These comments were related to the amount of time required, insurance issues, the resyncing of medications when there are changes, and how copays fit into some patient budgets. One pharmacist wrote, "We have attempted this and it has not been very successful in actually getting things synced, new meds, med changes, holidays, prn meds, etc." Another stated, "Often, once we synchronize, they get out of sync and both staff and patients get frustrated." Concerns like these could deter some pharmacies from implementing medication synchronization programs, although only a small minority of responses contained concerns (n=7). Future research could examine the implementation of these programs and ongoing workflow issues to identify barriers and facilitators that could ease concerns about workflow change. Also of note, pharmacists working at pharmacies offering medication therapy management reported higher benefit scores, which may suggest a possible facilitator. It may be that pharmacies offering medication therapy management already have made workflow changes and staffing arrangements that support more diverse service offerings.

Several demographic variables were found to be associated with higher agreement with the medication synchronization items. Those with PharmD degrees and working at sites that offer medication therapy management had more positive attitudes as measured by the 4-item "benefits" composite measure (Table 3). These characteristics may be associated with a greater value placed on improving medication adherence as a patient outcome for which the pharmacist has a responsibility and capability to improve. Based on these findings, PharmD pharmacists may be good champions of the service. Reporting a "staff role" was negatively associated with the benefit measure. This could be due to the staff pharmacist being the one to engage with the service on a day-to-day basis whereas managers and owners may champion the service, but then delegate the delivery of the program to the staff. While not statistically significant, an increasing number of technicians working at the pharmacy during an average shift emerged as a possible facilitator to pharmacists being more in favor of the program. This suggests adequate staffing is important to the implementation and maintenance of a new service like medication synchronization.

While uptake of medication synchronization programs by pharmacies are accelerating and becoming more common⁹, examining the implementation and ongoing delivery is an important future focus. This could involve identifying pharmacies that have been successful in administering medication synchronization to identify strategies to overcome workflow concerns and promote successful patient-centered interactions that improve adherence.

Limitations

The mailing lists obtained for 3 out of 5 of states contained all practice settings (e.g. hospital) in addition to community pharmacists. Those ineligible pharmacists were given a means to remove their name from the sample, but the extent to which this occurred was low and could not be specifically quantified. A previous survey of pharmacists about a related topic using similar design and mailing and methods that used a list of only community pharmacists from the originating state had a response rate of 45%, suggesting the true response rate for community pharmacists only is likely is higher than 29%.²¹ Only pharmacists randomly selected from 5 Midwestern U.S. states were included. These states have a higher proportion of independent pharmacies than other regions²² and may have different attitudes about medication synchronization, although the present study did not find a difference based on site type. The items included in the survey only represent a portion of the attitudes and experiences pharmacists may have with medication synchronization programs. We asked generally about "medication synchronization programs" on the survey, but there are multiple program formats available so pharmacists could have been basing their responses on different variations of the program. No mechanism was used to prevent multiple pharmacists from the same pharmacy from being selected due to the nature of randomization. While unlikely, this could have led to the selection of multiple pharmacists from the same pharmacy. This study also may be subject to response bias, as patients with medication synchronization experience may have been more likely to respond.

Conclusion

Pharmacists generally were positive about medication synchronization programs, although some negative views were present, especially regarding the need for workflow change. Also, pharmacists, on average, perceived the financial benefits to the pharmacy to be a more significant product of these programs than more opportunities for patient interaction. Research is needed to understand barriers and facilitators to how medication synchronization programs are implemented and maintained and their effects on outcomes.

Conflict of Interest: None

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Table 1: Respondent Characteristics (n=258)

Characteristic	N ^a	% ^b
PharmD degree	145	56.2
Staff role	151	58.5
Manager or Owner role	107	41.5
Independent pharmacy	112	47.1
Chain pharmacy	87	36.6
Mass Merchandiser	12	5.0
Grocery pharmacy	27	11.3
>= 2 technicians per shift pharmacies	200	82.0
Urban Pharmacy	124	48.6
Pharmacy offers MTM	174	67.4
Pharmacy offers Medication synchronization	116	45.0
Iowa license	75	37.5
Minnesota license	43	21.5
North Dakota License	44	22.0
Nebraska License	36	18.0
South Dakota License	50	25.0

^aMay not total to 100% due to missing data

^bValid percents

Table 2: Pharmacist agreement with statements on medication synchronization (N=258)

Question	Mean (Std Dev)	Very Strongly Disagree N (%)	Moderately Disagree N (%)	Slightly Disagree N (%)	Neither N (%)	Slightly Agree N (%)	Mod Agree N (%)	Very Strongly Agree N (%)
1. Patients are/would be receptive to participating in medication synchronization	5.75 (1.12)	1 (0.4)	3 (1.2)	8 (3.1)	15 (5.8)	63 (24.4)	99 (38.4)	69 (26.7)
2. Medication synchronization does/would improve adherence rates	5.53 (1.25)	1 (0.4)	8 (3.1)	8 (3.1)	27 (10.5)	66 (25.6)	89 (34.5)	59 (22.9)
3. Medication synchronization does/would increase the time I can spend talking to patients	4.71 (1.45)	8 (3.1)	12 (4.7)	26 (10.1)	64 (24.8)	64 (24.8)	60 (23.3)	24 (9.3)
4. Medication synchronization is/would be good for the pharmacy financially	5.25 (1.41)	6 (2.3)	6 (2.3)	8 (3.1)	57 (22.1)	55 (21.3)	72 (27.9)	54 (20.9)
5. Medication synchronization is/would require a significant change to workflow	4.54 (1.66)	14 (5.4)	21 (8.1)	34 (13.2)	42 (16.3)	67 (26.0)	50 (19.4)	30 (11.6)

Scale: 1= very strongly disagree, 2= moderately disagree, 3= slightly disagree, 4= neither agree nor disagree, 5= slightly agree, 6= moderately agree, 7= very strongly agree

Table 3: Regression analysis predicting mean of 4-item Medication Synchronization benefits measure (N=244)

Variable	B	Std Error	t	Sig	95% CI Lower Bound	95% CI Upper Bound
(Constant)	4.716	.193	24.391	.000	4.335	5.097
PharmD	.476	.128	3.728	.000	.224	.727
Staff	-.328	.124	-2.658	.008	-.572	-.085
Independent pharmacy	.086	.129	.668	.505	-.169	.341
Number of technicians	.051	.029	1.749	.082	-.006	.109
Offers MTM	.447	.131	3.402	.001	.188	.706
Offers Med Sync	.045	.123	.368	.713	-.197	.287

$R^2=0.128$, Adjusted $R^2=0.106$

Does not equal total sample N due to missing data