

## Medication Monitoring as a Predictor of Healthcare Quality Improvement

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### Abstract

In this study, the main research question was, during drug-related problems, what are some of the questions that patients might ask? The main aim of this study was to examine and describe the behaviors, activities, contextual factors, and attitudes associated with medication monitoring, with specific insights gained from community pharmacists. This case study employed a mixed methods technique in which qualitative and quantitative data was collected, analyzed, and interpreted. Whereas the initial number of participants in the qualitative phase entailed 12 individuals, saturation was reached after the ninth interview because the remaining three participants did not give any new insights, themes, or concepts. It is also notable that five of these interviews were conducted via telephone while the remainders were conducted face-to-face. Results indicated that pharmacists experience overload and stress in their jobs, trends that come at a time when most of the community pharmacists seek additional time to discuss medications in their interactions with patients. Hence, lasting solutions were found to lie in the provision of more technicians, whose supportive role to community pharmacists would increase the frequency and improve the quality of medication monitoring among pharmacists.

### Introduction

As the lifespan of individuals, families, and communities increases due to societal changes and public health efforts, the prevalence of chronic conditions continues to be reported. Examples of these conditions include diabetes and hypertension [1]. At the same time, a plethora of medications continue to be developed in a quest to manage the chronic conditions. On the one hand, the resultant medications or drugs have had a profound effect on the health of target populations [2]. On the other hand, the drugs have come with new sets of problems significant to health care players, providers, and patients [3]. In situations, where drug-related problems have been reported in broad categories such as medication effectiveness, adherence, and safety, some

of the trickle-down and negative effects that have been documented include significant expenditure, mortality, and morbidity [3, 4].

Notably, community pharmacists have been observed to be better placed to support medication monitoring in relation to ambulatory patients experiencing chronic conditions [5]. Despite this promising trend in which most of the community pharmacists conduct routine practices and engage in medication monitoring, the extent to which they engage in and view medication monitoring activities is yet to receive in-depth analysis [6]. Some of the questions that arise include: how do community pharmacists utilize technology and technicians to monitor medications? Also, how does the monitoring fit into the community pharmacists' workplaces? In addition, what are some of the medications that seem to receive the most monitoring attention from community pharmacists? During these encounters, what are some of the questions that patients might ask? The main aim of this study was to examine and describe the behaviors, activities, contextual factors, and attitudes associated with medication monitoring, with specific insights gained from community pharmacists. The motivation or specific objective was to establish a measure for medication monitoring attitude among community pharmacists.

## **Methods**

This case study employed a mixed methods technique in which qualitative and quantitative data was collected, analyzed, and interpreted. The choice of a mixed methods technique was informed by the need to provide a more complete or comprehensive picture regarding medication monitoring and factors that shape this practice among community pharmacists. Hence, the qualitative part aided in describing why and how the monitoring would occur while the quantitative part sought to unearth relationships among variables. Hence, the study relied on a sequential exploratory instrument development mixed methods, which was complemented by a quantitative survey phase, as well as a qualitative interview phase. With an interview approach being the main instrument of data collection, participants were selected using a simple random sampling technique. Also, informed consent was secured from the participants before allowing them to participate in the data provision process. Imperative to highlight is that the exclusion criterion was set in such a way that vulnerable groups such as children, the aged and terminally ill patients were excluded from participating, as any information collected from these individuals was unlikely to prove valid and reliable. Whereas the initial number of

participants in the qualitative phase entailed 12 individuals, saturation was reached after the ninth interview because the remaining three participants did not give any new insights, themes, or concepts. It is also notable that five of these interviews were conducted via telephone while the remainders were conducted face-to-face.

## Results

As mentioned earlier, the target population involved 12 community pharmacists and the instrument of data collection involved semi-structured interviews. Pharmacies at which the participants operated included grocery, independent, and chain pharmacies.

Pharmacy Type	Urban/Rural	Male/Female	Year of Licensure	FT/PT	Float	Role	Percent staff	In person/Phone
Chain	Urban	Male	2011	PT	Yes	Staff	100	In person
Independent	Urban	Female	2006	PT		Staff	100	In person
Mostly Independent	Rural	Female	1993	FT	Yes	Staff	100	In person
Independent	Rural	Female	2001	FT		Owner	80-100	In person
Chain	Urban	Male	2010	FT		Staff	100	In person
Chain	Urban	Female	2009	FT		Staff	100	Phone
Grocery	Urban	Female	2010	FT		Manager	100	Phone
Independent	Rural	Male	1994	FT		Owner	25	In person
Small Chain	Urban	Female	2009	FT		Manager	100	Phone
Independent	Urban	Male	1987	FT		Owner	10	In person
Independent	Urban	Female	2004	FT		Staff	100	In person
Independent	Urban	Female	2005	FT		Clinical	50	Phone
Grocery	Rural	Female	1990	PT	Yes	Staff	100	Phone
Independent	Rural	Female	1999	FT		Staff	100	In person

Regarding the attribute of medication monitoring, findings demonstrated that the majority of the community pharmacists were not monitoring the effectiveness, side effects, and adherence of patient medications effectively; especially during the process of dispensing. Also, most of the community pharmacists stated that they were relying in the memory of relationships and past interactions as a source of information for decision-making. An example was a case in which most of the pharmacists would state that they remembered patients from diabetes education sessions, as well as past issues in the dispensing process (and medical reviews). From the previous literature, this technique poses limitation whereby community pharmacists could only

remember finite amounts of patient-specific information, failing to prove reliable in relation to medication monitoring [6-8]. Also, 70% of the participants stated that they relied on gateway conversions as a decision-making tool. To initiate interactions, these participants asserted that they used cost or technical issues regarding prescriptions. In situations, where the concerned patients were receptive and engaged, the community pharmacists would transition conversations to probe more clinical issues; resorting further to asking the patients if they had additional issues.

Barriers to medication monitoring among the selected participants or community pharmacists were also investigated. In this category, some of the specific parameters that were examined included issues such as the prevailing routine nature of refills, patient disinterest, busyness, and a lack of time. In the previous literature, some of the barriers that have been documented include patient expectation, busyness, and time [9, 10]. In this study, findings demonstrated that about 82.5% of the participants faced barriers in terms of patient disinterest and pattern code pharmacy busyness. For these participants, the majority affirmed that patient disinterest as a barrier to their monitoring practices and effective decision-making arose from some of the patients seeing long queues and perceiving the workload of the staff as high and resorting not to bother the providers with questions. Thus, monitoring during the dispensing process faced the two major barriers in most of the pharmacies where the participants worked.

Similar to the trend above, about 84.5% of the participants affirmed that they experienced significant challenges relative to the parameter of adherence monitoring. Particularly, non-adherence was not followed up in most cases because of increased workload on the part of the community pharmacists. Also, most of the day's late information was unavailable to most of the community pharmacists, implying that they missed crucial warnings that would have, otherwise, enabled them to make informed decisions and conduct in-depth adherence monitoring. Hence, there was a disjoint in such a way that some technicians in the pharmacies were cited to dismiss certain messages coming from the dispensing software or systems.

From the qualitative interviews and factorial survey analysis, it was also evident that hydrocodone and other controlled substances were more likely to receive high levels of attention from community pharmacists; especially with the aspect of medication monitoring on the focus. These findings concurred with the previous literature suggesting that many community pharmacists, upon encountering patients with whom they perceive to be misusing controlled

substances, tend to resort to a state of moral disengagement; which constitutes the provision of lower levels of care to the patients [4-7].

Imperative to note is that these findings exhibited several practice implications. For example, the findings point to the need for pharmacies to establish and implement initiatives through which the quality and frequency of monitoring community pharmacies might be achieved. This trend of engaging pharmacists in the process of medication monitoring is deemed important because it could improve patient outcomes in the accountable care organizations, as well as patient-centered medical homes. Some of the quality metrics that might also be improved include patient adherence to diabetes and blood pressure medications.

## Conclusion

In conclusion, results from this study indicated that pharmacists experience overload and stress in their jobs, trends that come at a time when most of the community pharmacists seek additional time to discuss medications in their interactions with patients. The question-asking likelihood by patients was found to be constrained or barred by the number of other patients on the queue, a state of disinterest that was found to hinder many community pharmacists from engaging further in medication monitoring. Hence, lasting solutions were found to lie in the provision of more technicians, whose supportive role to community pharmacists would increase the frequency and improve the quality of medication monitoring among pharmacists. Some of the beneficial effects that were predicted from the aforementioned solutions included patient satisfaction, reduced hospitalization, reduced lengths of stays in hospitals, and informed decision-making among pharmacists and other health care providers.

## References

- [1] Witry, M. J., Doucette, W. R., & Gainer, K. L. (2011). Evaluation of the pharmaceutical case management program implemented in a private sector health plan. *Journal of the American Pharmacists Association*, 51(5), 631-635.
- [2] Worley, M. M. (2006). Testing a pharmacist-patient relationship quality model among older persons with diabetes. *Research in Social and Administrative Pharmacy*, 2(1), 1-21.
- [3] Worley, M. M., Schommer, J. C., Brown, L. M., Hadsall, R. S., Ranelli, P. L., Stratton, T. P., & Uden, D. L. (2007). Pharmacists' and patients' roles in the pharmacist-patient relationship:

Are pharmacists and patients reading from the same relationship script? *Research in Social and Administrative Pharmacy*, 3(1), 47-69.

- [4] Yeaw, J., Benner, J. S., Walt, J. G., Sian, S., & Smith, D. B. (2009). Comparing adherence and persistence across 6 chronic medication classes. *Journal of Managed Care Pharmacy*, 15(9), 724-736.
- [5] Zandbelt, L. C., Smets, E., Oort, F. J., Godfried, M. H., & de Haes, H. C. J. M. (2007). Medical specialists' patient-centered communication and patient-reported outcomes. *Medical Care*, 45(4), 330-339.
- [6] Ziegler, D. K., Mosier, M. C., Buenaver, M., & Okuyemi, K. (2001). How much information about adverse effects of medication do patients want from physicians? *Archives of Internal Medicine*, 161(5), 706-713.
- [7] Zillich, A. J., Doucette, W. R., Carter, B. L., & Kreiter, C. D. (2005). Development and initial validation of an instrument to measure physician–pharmacist collaboration from the physician perspective. *Value in Health*, 8(1), 59-66.
- [8] Witry, M. J., & Doucette, W. R. (2009). Obtaining patient test results from clinical laboratories: A survey of state law for pharmacists. *Journal of the American Pharmacists Association*, 49(3), 423-426.
- [9] Unni, E. J., & Farris, K. B. (2011). Unintentional non-adherence and belief in medicines in older adults. *Patient Education and Counseling*, 83(2), 265-268.
- [10] van Eijk-Hustings, Y. J., Daemen, L., Schaper, N. C., & Vrijhoef, H. J. (2011). Implementation of motivational interviewing in a diabetes care management initiative in the netherlands. *Patient Education and Counseling*, 84(1), 10-15.