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ABSTRACT

Objective: *Assess if a classroom-based pharmacy education service for hospitalized headache patients newly prescribed a monoamine oxidase inhibitor (MAOI) results in, 1) higher self-perceived medication knowledge, or 2) lower perceived risk of using MAOIs.*
Subjects: *Individuals admitted to an inpatient headache unit over a five month period*
Methods: *Patient survey administered before and after the education service to any patient newly prescribed an MAOI.*
Results: *Seventy-eight individuals completed the study. Paired-samples t-tests showed that for each of the four items related to self-perceived medication knowledge, the scores reflected higher knowledge after the MAOI class compared to before the class ($p < 0.05$). For three out of the four items related to perceived risk of using MAOIs, the scores reflected a lower level of perceived risk after the MAOI class compared to before the class ($p < 0.05$). One item did not significantly change: "The MAOI prescribed for me is just as good as other products available for treating headache."*
Conclusion: *Our results demonstrate a pharmacist-conducted, classroom-based teaching method for newly prescribed MAOI patients can result in higher self-perceived medication knowledge and lower perceived risks.*

INTRODUCTION

Among hospitalized patients, lack of medication education is a key contributor to non-adherence, misuse of prescribed drugs, and medication errors and costs society billions of dollars.[1,2] To help address these issues in 2005 the American Society of Health Systems Pharmacy (ASHP) established their "2015 Initiative".[3] One of this project's objectives is "by 2015, 75% of hospital inpatients discharged with highly complex and high-risk medication regimens will receive discharge medication counseling by a pharmacist." This objective will undoubtedly require a resource commitment (i.e. labor) above present-day levels, thus education methods that optimize the number of patients instructed in a given amount of time are essential.

Herein, we describe how classroom-based patient-education affected headache sufferers' medication perceptions. Specifically, our objectives were to determine whether classroom-based, pharmacist-conducted education services result in, 1) higher self-perceived medication knowledge of monoamine oxidase inhibitors (MAOI), or 2) lower perceived risk of using MAOIs. We focused on patients' perceptions about their knowledge and risks because these perceptions (and not absolute knowledge or risk per se) affect patients' willingness to consume MAOIs.

Headache Unit Description
Chronic daily headache (CDH), or headache four or more hours per day on 15 or more days per month, affects 4% of the general population and causes significant patient suffering, straining health care recourses, and poses particular treatment dilemmas.[4-6] Current guidelines recommend inpatient admission of refractory headache sufferers for multiple reasons, including severe dehydration, diagnostic suspicion of organic etiology, status migraine, dependence on analgesics, ergots, opiates, barbiturates, or tranquilizers, failed outpatient detoxification for which inpatient pain and psychiatric management may be necessary, and initiation of drugs that may cause significant adverse events (e.g. MAOIs).[7] Annually, the Diamond Headache Clinic Inpatient Unit (unit) admits approximately 1200 CDH individuals, with admissions occurring every day of the week for an average seven day length of stay.

The utility of MAOIs for CDH was first reported decades ago.[8-10] Despite this success, most clinicians remain reluctant to prescribe "risky" MAOIs due to fears of hypertensive crisis, serotonin syndrome, harsh dietary restrictions, and other hazards. The foundations of these fears are poorly documented and these events' actual occurrences are infrequent, treatable, and rarely result in sustained patient harm.[11-15] Additionally, patients have misconceptions formed as a result of negative comments from health care providers or from other information sources such as the internet.

Annually, the unit initiates MAOI therapy for approximately

300 CDH individuals, utilizing either phenelzine or isocarboxazide, whichever the physician prefers. Prior to discharge, patients receive the MAOI for a minimum of three days. Also, they attend a weekly class to learn the drug's proper role and precautions; as part of a comprehensive treatment approach, the unit has a dedicated classroom hosting various weekly classes conducted by a dietitian, a physician, a physical therapist, psychologists, the Director of Nursing, biofeedback technicians, and a pharmacist.

METHODS

The study was approved by the University of Minnesota's Human Subjects Review committee. A Before-After Quasi-Experimental Design was employed and patients received the survey questions as outlined below. Over a five-month span, any patient newly prescribed an MAOI was eligible to participate. Any individuals who had previously received MAOI education (n=27) were ineligible. As per established procedure, during weekdays the pharmacist identified new MAOI patients and reminded them about Wednesday's 60-minute class as well as sought their enrollment. Patients admitted on weekends were seen the subsequent Monday. Two identical surveys, administered before and after the class, were used as data collection instruments. Demographic information was collected to help describe the sample and interpret results. The surveys included four items that measured aspects of perceived knowledge and four items that measured aspects of perceived risk associated with using MAOIs.[16-18] For the measurement of perceived risk, we focused on assessing a person's belief about perils associated with the product's performance. Performance risk is related to the uncertainty and consequence of a product not functioning at some expected level. Table 1 contains questions used for this study.

During initial enrollment, individuals received written and verbal instructions regarding the survey's purpose, voluntary nature, anonymity, and lack of impact on their care. Patients' questions regarding the study were addressed during this enrollment session, but specific drug questions were deferred until the class. Those agreeing to participate were then administered the first questionnaire. Patients were allowed to complete the requested information privately, to return the form at their convenience prior to class, and were purposely not informed that the survey would be re-administered.

To help control for testing effect bias, a minimum of 24 hours elapsed after the class before the pharmacist re-visited MAOI patients to seek their enrollment in the post-survey portion, again explaining the survey's purpose, anonymity, voluntary nature, and lack of impact on their care. Patients could then complete the survey privately and return it anytime prior to discharge. Each pre-class and post-class survey was uniquely numbered to allow a mechanism to ensure that intra-patient response comparisons were performed.

The same pharmacist taught all classes, utilizing the Indian Health Service counseling technique of patients demonstrating they can answer three essential questions: What is the medication for? How will you take the medication? What should you expect? The pharmacist explained key concepts for chronic headache patients including the role of MAOIs as preventive agents, how MAOIs are believed to interrupt headache pathology, and the need to utilize these drugs at least four to six weeks prior to assessing effectiveness. Management principles for common adverse-effects (AE) were discussed and the treatment options for hypertensive crisis were specifically explained. Potential drug interactions were reviewed and the rationale for a Medic-alert bracelet was explained. Patients could ask questions during the class and were allotted a portion of time specifically for discussions at the end of class.
Besides pharmacy education, all patients were required to attend a 60-minute class taught every Friday by a dietitian regarding the current food recommendations for MAOIs, which is liberal in comparison to historically restrictive MAOI guidelines. Though the diet class was not a component of our study, we suspect it contributed to patients' overall MAOI knowledge.

Data were entered into a computer using SPSS, Inc. statistical software for analysis. Descriptive statistics and the paired-samples t-test were used for compare the before and after class results. The significance level for statistical tests was set at 0.05.

RESULTS

All 78 eligible patients agreed to participate. Of these individuals, 77% were female and 82% had more than a high school education. Their average age was 40 years (range = 18 to 59). Admission histories revealed that the typical participant used five prescription medications per day, with four of these being used for headache. Forty percent of the sample members used one or more over-the-counter (OTC) medications daily and 21% of the sample members used one or more OTC medications for headache.

Table 2 shows results for the paired-samples t-tests for items related to self-perceived medication knowledge of MAOIs and items related to perceived risk associated with using MAOIs. For each of the four items related to self-perceived

medication knowledge, the scores reflected higher knowledge after the MAOI class compared to before the class. For three out of the four items related to perceived risk of using MAOIs, the scores reflected a lower level of perceived risk after the MAOI class compared to before the class. One item did not significantly change: "The MAOI prescribed for me is just as good as other products available for treating headache."

Perceived Knowledge about MAOIs

For the first item related to perceived knowledge about MAOIs (I feel very knowledgeable about MAOIs) scores changed significantly from an average of 2.2 before the class to 5.3 after the class (rating scale was 1 = very strongly disagree to 7 = very strongly agree). Scores for this item increased in agreement for 75 out of the 78 study subjects (96%), remained the same for one person (1%), and decreased for two people (3%). For the second item (If a friend asked me about MAOIs, I could give him or her advice about them), the average score increased from 2.0 to 4.7. For this item, 70 (89%) of the respondents had scores that increased in agreement after the class, six (8%) remained unchanged, and two (3%) decreased. For the third item (I know enough about MAOIs so that I can make wise decisions about using them) average scores increased from 2.2 to 5.4. Seventy-two (92%) of the respondents had scores that increased in agreement after the class, four (5%) remained unchanged, and two (3%) decreased in agreement. The final item related to perceived knowledge (I feel very confident about my ability to use MAOIs correctly) increased from a score of 3.1 to 5.6 after the class. For this item, 65 (83%) of the respondents had an increase in their score, 12% of the scores remained unchanged, and 5% of the scores decreased.

Perceived Risk Associated with Using MAOIs

For the first item related to perceived risk associated with using MAOIs (I am very sure that the MAOI prescribed for me will help me feel better), the average score increased from 3.9 before the class to 4.6 after the class. For this item, 35 (45%) of the respondents' scores increased, 35 (45%) of the scores remained unchanged, and eight (10%) decreased in agreement after the class. For the second item (There is a lot of risk involved in using the MAOI prescribed for me), scores decreased from 4.4 before the class to 3.6 after the class. For this item, eight (10%) of the respondents' scores increased, 19 (25%) remained unchanged, and 51 (65%) decreased. The third item (The MAOI prescribed for me is just as good as other products available for treating headache) exhibited no change in its average score before or after the class. For this item, 44 (56%) of the respondents had no change in their before and after scores, 17 (22%) exhibited a decrease in scores, and 17 (22%) exhibited an increase in scores. The final item related to perceived risk (The MAOI prescribed for me will perform as expected) had a slight increase in agreement level from 4.3 before the class to 4.5 after the class ($p = 0.02$). For this item, 18 (23%) of the respondents had an increase in their scores, 52 (67%) had no change in score, and 8 (10%) had a decrease in score.

DISCUSSION

To the best of our knowledge, this is the first attempt to measure the benefits of patient education for people prescribed MAOIs, drugs mired in fear and misconceptions. Our results show that pharmacist-conducted classroom education increased self-perceived MAOI knowledge and lowered self-perceived MAOI risk. We believe these changes will translate into a greater self-efficacy for patients in terms of drug regimen adherence and side effect monitoring, increasing the probability of positive therapeutic outcomes.

We note with great interest that our sample's view of MAOIs in comparison to other medications did not change ("the MAOI prescribed for me is just as good as other products available for treating headache), suggesting these individuals still harbor reservations about MAOI use and might prefer a different drug. Yet, once prescribed an MAOI, our other results demonstrated that a pharmacist's education instilled a less negative, if not favorable, patient perspective of these agents.

Of important note, nearly half of the sample appears to be withholding judgment of an MAOI's ability to "help me feel better" until after an adequate trial of the medication. We interpret this as illustrating patients' awareness that drugs can affect people differently, thus they adopt a wait-and-see attitude as to how the MAOI will impact them individually.

We suspect patients' improved understanding of MAOIs resulted from multiple factors. Patients undoubtedly benefited from speaking with a pharmacist with extensive knowledge regarding MAOIs. Conducting these counseling sessions in a classroom environment was, in all probability, advantageous as patients gained from listening to the questions and experiences of other individuals.

The results of this study enhance our previous research concluding that classroom-based counseling of hospitalized headache sufferers can achieve high patient satisfaction with minimal strain on personnel resources.[19] Studies examining classroom-based education for other illnesses (e.g. diabetes) have also demonstrated favorable outcomes.[20] Based on

these studies, we propose that classroom-based services are a viable option towards achieving expanded hospitalized-patient education, either for high risk medications (e.g. MAOIs, warfarin, insulin) or for specific patient populations (e.g. diabetics, heart failure). Classroom based counseling can also address inadequate education issues among hospitalized patients raised in other studies.[1,2,20] In particular, classes maximize the number of patients a pharmacist can educate in a given period of time, minimizing labor costs. This method provides an approach towards 2015 Initiative's goals and further research regarding classroom-based pharmacists' counseling services in hospitals is warranted.

LIMITATIONS

Our results should be viewed in light of the study's limitations. MAOI therapy for CDH typically spans months to years. We measured the immediate, but vital, impact of our service on patients' perceptions when beginning an MAOI, thus our results do not demonstrate long-term benefits. A few patients' scores did not change, while a few others indicated that post-class they had less MOAI knowledge or perceived more risk. This may have resulted from simply circling the wrong response, an insensitive scale system, or the lecture may have left some patients, who prior to class were convinced that they understood MAOIs, feeling their comprehension of this drug was actually lacking. Examining patients' perceptions of MAOIs is uncharted research, thus we had to design the questions of our survey, which were based on published work examining other medications, but have not performed any validation studies.

Lastly, classroom-based pharmacy counseling is not a universal hospital service, thus our affirmative results may be partly or wholly explained by patients' positive experience with this relatively novel assistance.

CONCLUSIONS

Pharmacist conducted classes increased patients' self-perceived knowledge and lowered perceived risk upon initiation of an MAOI. Continued follow-up is recommended to help individuals make decisions about therapy as they experience both the benefits and adverse effects that are unique to each patient. Expansion of classroom-based pharmacy services within hospitals merits additional research.

Table 1

SELF-PERCEIVED KNOWLEDGE

1 = very strongly disagree to 7 = very strongly agree

a. I feel very knowledgeable about MAOIs.

b. If a friend asked me about MAOIs, I could give him or her advice about them.

c. I know enough about MAOIs so that I can make wise decisions about using them.

d. I feel very confident about my ability to use MAOIs correctly.

PERCEIVED RISK

1 = very strongly disagree to 7 = very strongly agree

a. I am very sure that the MAOI prescribed for me will help me feel better.

b. There is a lot of risk involved in using the MAOI prescribed for me.

a. The MAIO prescribed for me is just as good as other products available for treating headache.

b. The MAOI prescribed for me will perform as expected.

DEMOGRAPHICS

a. What is your gender? _____ male _____ female

b. What is your age? _____ years

c. What is the highest level of education you have completed? _____ high school or less
_____ more than high school

d. How many prescription medications do you use daily? _____ prescription drugs

e. Of these prescription medications, how many do you use for headache? _____ drugs

f. How many non-prescription medications do you use daily? _____ non-prescription drugs

g. Of these non-prescription medications, how many do you use for headache? _____ drugs

Table 2
Paired-samples t-tests for items related to perceived knowledge and perceived risk for MAOIs.

Item	Pre – Score	Post - Score	Paired-samples t-test p-value
Perceived Knowledge about MAOIs			
I feel very knowledgeable about MAOIs.	2.2 (0.15)	5.3 (0.09)	<0.001
If a friend asked me about MAOIs, I could give him or her advice about them.	2.0 (0.15)	4.7 (0.13)	< 0.001
I know enough about MAOIs so that I can make wise decisions about using them.	2.2 (0.16)	5.4 (0.09)	< 0.001
I feel very confident about my ability to use MAOIs correctly.	3.1 (0.22)	5.6 (0.10)	< 0.001
Perceived Risk associated with using MAOIs			
I am very sure that the MAOI prescribed for me will help me feel better.	3.9 (0.15)	4.6 (0.11)	< 0.001
There is a lot of risk involved in using the MAOI prescribed for me.	4.4 (0.11)	3.6 (0.14)	< 0.001
The MAIO prescribed for me is just as good as other products available for treating headache.	3.6 (0.13)	3.6 (0.15)	0.92
The MAOI prescribed for me will perform as expected.	4.3 (0.08)	4.5 (0.10)	0.02

Items were rated from 1 = very strongly disagree to 7 = very strongly agree, with 4 = neutral.
Results are reported as mean and (standard error of the mean)

REFERENCES

1. Rosenow EC. *Patients' understanding of and compliance with medications: the sixth vital sign?* Mayo Clin Pro 2005; 80:983-987.
2. Cumbler E, Wald H, Kutner J. *Lack of patient knowledge regarding hospital medications.* J Hospital Medicine 2010; 5:83-86.
3. Press release, "The 2015 Initiative". American Society of Health System-Pharmacy, Bethesda, MD. Available at: www.ashp.com. Accessed June 25, 2003.
4. Munakata J, Hazard, Serrano D, et al. *Economic burden of transformed migraine: results from the American Migraine Prevalence and Prevention Study*. Headache 2009; 49:498-508.
5. Lipton RB, Bigal ME, Diamond M, et al. *Migraine prevalence, disease burden, and the need for preventive therapy.* Neurology 2007;68(5):343-349
6. Lipton RB, Silberstein SD, Saper JR, Bigal ME, Goadsby PJ. *Why headache treatment fails.* Neurology 2003;60(7):1064-1070.
7. Freitag FG, Lake A, Lipton R, et al. *Inpatient Treatment of Headache: An Evidence-Based Assessment***.** Headache 2004; 44:342-360.
8. Anthony M, Lance JW. *Monoamine oxidase inhibition in the treatment of migraine*. Arch Neurol 1969; 21:263-268.
9. Freitag FG, Diamond S, Solomon GD. *Anitdepressants in the treatment of mixed headache: MAO inhibitors and combined use of MAO in the recidivist headache patient.* In: Rose FC ed. Advances in Headache Research. London: John Libbey;1987:271-275.
10. White D, Simpson G. *Combined MAOI-tricyclic antidepressants treatment: a reevaluation.* J Clin Psychopharmacol 1981; 1:262-282.
11. Tollefson GD. *Monoamine oxidase inhibitors: A review.* J Clin Psychiatry 1983; 44:280-288.
12. Wells DG, Bjorksten AR. *Monoamine oxidase inhibitors revisited.* Can J Anaesth 1989; 36:64-74.
13. Cole JO, Bodkin J. *MAO inhibitors: An option worth trying in treatment resistant cases.* Current Psychiatry 2002; 1(6):41-47.
14. Golwyn DH, Sevlie CP. *Monoamine oxidase inhibitor hypertensive crisis headache: Prevention and treatment.* Headache Quarterly 1996;7(3):207-214.
15. Diamond S, Pepper BJ, Diamond ML, Freitag FG, Urban GJ, Erdemoglu AK. *Serotonin syndrome induced by transitioning from phenelzine to venlafaxine: four patient reports.* Neurology 1998; 51(1):274-276.
16. Smith DC, Park CW. *The effects of brand extensions on market share and advertising efficiency.* Journal of Marketing Research 1992; 29: 296-313.
17. Shimp TA, Bearden WO. *Warranty and other extrinsic cue effects on consumers' risk perceptions.* Journal of Consumer Research, 1982; 9: 38-46.
18. Dowling GR. *Perceived risk: The concept and its measurement.* Psychology & Marketing 1986; 3(3): 193-210.
19. Schommer JC, Wenzel RG, Kucukarslan SN. *Evaluation of pharmacists' services for hospital inpatients.* Am J Health Syst Pharm 2002; 59:1632-1637.
20. Raji A, Gomes H, Beard JO, MacDonald P, Conlin PR. *A randomized trial comparing intensive and passive education in patients with diabetes mellitus.* Arch Intern Med. 2002; 162:1301-1304.