# Enhancing Prescription Drug Monitoring Programs Knowledge and Intent for Use: A Provider Educational Approach

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Abstract

The purpose of this pilot study was to assess and measure the impact of education to prescriber's regarding the use of a prescription drug monitoring program (PDMP); and further to assess for change in prescription provider's perceptions and intent to utilize PDMP. Implementation of prescriber education, to increase knowledge and intent to use PDMP's can assist in identifying and treating prescription misuse or abuse. A cross-sectional, pre and post, survey design was utilized to measure study objectives. Medication providers in a community psychiatric clinic that completed the effective approaches to reduce misuse or abuse of prescribed drugs program had a significant improvement in post-test perception and intent to use PDMP as compared to pre-test scores. Specifically, these results suggest post educational intervention prescriber's expected it was more likely than unlikely that they will use the PDMP in the next three months compared to pre intervention.

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## Introduction

In the United States there is a great level of concern from the Center for Disease Control (CDC) and Prevention about deaths from prescription drug overdose. According to the CDC, the prescription painkiller epidemic alone leads to 44 deaths per day from overdose (Center for Disease Control [CDC], 2015). These medicines are prescribed to treat pain during recovery from surgery, injury or disease and are highly addictive and have a high potential of abuse and misuse. Substance misuse and abuse is a significant health issue. Approximately two million Americans abused prescription painkillers in 2013, and nearly 7,000 people are evaluated per day in emergency departments due to misuse or abuse of medicines used to treat pain (CDC, 2015).

### Background and Problem Statement

Prescription drug misuse and abuse is complex with many different precipitants contributing to the problem. Circumstances that are thought to assist in the development of addiction are factors such as genetic predisposition, substance misuse in one's environment, mental illness, biological pain and other medical conditions.

CDC research suggests that making providers aware of the prescription histories of their patients via prescription drug monitoring programs designed to prevent the abuse of prescription drugs, such as opioids and benzodiazepines, may deter prescription drug overuse, diversion and reduce prescription provider shopping (Center for Disease Control [CDC], 2015). In identifying those at risk for prescription abuse and dependence, providers can facilitate access to effective

substance treatment and treat prescription misuse for those affected by this aspect of addiction disease.

The increased incidence in the United States of prescription drug abuse and dependence is in part a result of prescription drug diversion. Doctor shopping places those affected by substance disease at risk for increased morbidity and mortality from a drug overdose. As providers gain exposure to PDMP, educational tools and substance abuse prevention strategies, the incidence of drug abuse, misuse and overdose in the United States can be decreased.

## Literature Review

The review of literature on education interventions and PDMPs from 2005 to 2015 in the clinical databases CINAHL and Medline documents that that there is a positive relationship between pharmacy and medical providers being knowledgeable about a PDMP and the use of a PMDP. The use of a PMDP can decrease prescriptions dispensed or written to patients that may misuse or abuse these substances.

A series of articles (Fleming et al., 2013; Fleming et al., 2014; Fleming et al., 2015), assessed education interventions for pharmacists on PDMPs, and its effect on their clinical practice. These studies were conducted examining pharmacists' use of the PDMP, tool, their education regarding PDMPs, and their effect on perceptions, attitudes, and future utilization intent. These studies were prospective, cohort studies involving a similar team of researchers. Fleming et al., (2013) concluded that pharmacists with enhanced clinical pharmacy education in substance abuse, diversion and PDMP programs had a greater intent to intervene when abuse is suspected. Fleming et al., (2014) examined a pharmacist's behavioral intention to utilize the PDMP, and assess if they have a perceived obligation as it relates to this intent and Fleming et al., (2015) provided an education program to pharmacists in the state of Texas on the registration

and use of the states PDMP system. The authors concluded 73.7% of pharmacists surveyed were very likely and 21.1% were likely to use the PDMP in the next 30 days after education (Fleming et al., 2015).

Another series of articles assessed education interventions for prescribers on PDMPs, and its effect on their clinical practice (Thomas et al., 2014; Weiner et al., 2013; LeMire, Martner, & Rising, 2012; Perrone, DeRoos, & Nelson, 2012; Feldman, Williams, Knox, & Coates, 2012; and Gershman, Gershman, & Popovici, 2014). The six studies were piloted utilizing the PDMP, examining prescribers' use of the tool, an education component regarding PDMPs, and its effect on usage of the program. All studies utilized a cross-sectional survey of prescribers in medicine and nursing to assess the influence of knowledge and education on the use and intent to use the PDMP. Two of the studies (Thomas et al., 2014 and Weiner et al., 2013) reviewed the value of PDMP pharmacy data in educating prescribers to alert them of patient prescriptive patterns that need further assessment for misuse, abuse and diversion. Another study (LeMire, Martner, & Rising, 2012) reviewed the influence of PDMP on Advance Practice Nurse prescribers in North Dakota. All of the remaining studies (Perrone, DeRoos, & Nelson, 2012; Feldman, Williams, Knox, & Coates, 2012;Gershman, Gershman, & Popovici, 2014), examined physician use, education and intentions toward the PDMP program. The studies demonstrated providers had enhanced knowledge and intent to use the PDMP tool post education.

The literature suggests that general educational approaches are important to emphasize the use and benefits of a PDMP. Best practice modeling, providing training and education to medication prescription providers on the benefits of PDMP have shown efficacy in changing the intent of use in prescribing and clinical practices.

**Theoretical Framework**

The theory of planned behavior that guided the current project was proposed by Icek Ajzen in 1985, and has been cited by researchers for greater than thirty years. The theory has demonstrated the ability to infer future beliefs, attitudes and behavioral intentions across multiple research studies. According to Ajzen, "human behavior is guided by three kinds of considerations: beliefs about the likely consequences of the behavior (behavioral beliefs), beliefs about the normative expectations of others (normative beliefs), and beliefs about the presence of factors that may facilitate or impede performance of the behavior (control beliefs)" (n.d., p. 1). Behavioral beliefs, normative beliefs, and control beliefs are predictors of behavior, such prescription providers' perceptions and intent to utilize PDMP.

In this project specifically, the theory of planned behavior measures the impact of education to prescribers beliefs, attitudes and behavioral intentions regarding the use of PDMP via pre and post educational intervention survey format designed by Ajzen, (n.d., p. 1). In evaluating the influence of PDMP education thru the lens of the theory of planned behavior, future knowledge and intent to use PDMP's can be investigated.

**Purpose**

The adverse impact of drug misuse on an individual person's life, health and well-being is widely recognized as a public health problem. Medication providers are in a vital position to make a significant effect on the morbidity and mortality resulting from misuse or abuse of prescribed drugs. Yet, most have limited formal education on prevention and evaluating those at risk. The intervention of the PDMP has shown promise in the literature to identify and intervene in patients at risk or engaged in prescription drug abuse and dependence. In States where healthcare providers utilize data from PDMPs there is data which "suggest PDMPs reduce the

prescribing of Schedule II opioid analgesics, lower substance abuse treatment admission rates, and result in lower annual increases in opioid misuse or abuse in states with PDMPs compared to those without them" (HHS, n.d., p. 26).

The purpose of this project was to assess and measure the impact of education to prescribers regarding the use of PDMP, to assess for change in prescription provider's perceptions and intent to utilize PDMP pre educational intervention and post educational intervention.

## Methodology

### Design

This project utilized a pre-test post-test survey design to identify differences in subject's perceptions and intent to use PDMP following an educational presentation. Differences were measured between pre educational intervention and post educational intervention in order to determine whether there was evidence of a change in prescription provider's perceptions and intent to utilize PDMP

### Sample and Setting

The convenience sample was taken from a group of Outpatient Psychiatric Mental Health community clinics in Northeast Massachusetts. Data were collected from psychiatric mental health providers, who were eligible to write for prescription medication in the state of Massachusetts. The sample for this study included only prescription providers, who consented to participate in the study and in an educational intervention between September 11th and October 23, 2016. Participants were recruited via interagency Email, and identified in collaboration with the Outpatient Psychiatric Mental Health services community clinical director, and medical director. The prescribers received an email explaining briefly the aims of this project, and web

links to participate in the online education, the consent and survey. PDMP perceptions and intent pre-survey and post-survey instruments were anonymous and de-identified.

The outpatient psychiatric mental health clinics provide child, adolescent and adult services for mental health and/or developmental disorders in Northeast Massachusetts. The PDMP education was delivered on line via a link to a video about PMDP and study instruments were also delivered online pre-post the education intervention using qualtrics survey software.

**Intervention and Implementation Plan**

First, solicitation of prescriber's requesting participation in this study was done via email from the management teams at the clinics. The email explained briefly the aims of the project and web links to the Informed consent, PDMP perceptions and intent to utilize pre-survey, educational video presentation and PDMP perceptions and intent utilize post survey to be completed in order described.

Next, Demographic data (education, years of prescribing practice) was obtained from the prescribers during the PDMP perceptions and intent pre-survey phase. The online web based survey service qualtrics was used to opt into the project after viewing informed consent and before starting pre-survey. PDMP perceptions and intent to utilize pre-survey, and PDMP perceptions and intent to utilize post survey were taken before and after the web based educational video presentation. The prescribers used a 1-7 Likert scale that contained 8 questions related to PDMP based on the theory of planned behavior survey format designed by Ajzen, (n.d., p. 5-7). The theory of planned behavior (Ajzen, 1991) is considered valid and reliable by researchers (Armitage & Conner, 2001) in a meta-analytic review utilizing a database of 185 independent studies.

The education intervention was conducted online via a 20-minute video presentation developed by the researcher and was presented on YouTube to prescribers. The researcher using evidence-based content from the CDC, SAMSHA, and NIDA produced the presentation.

The content of the online presentation included essential information on PDMPs, and how they may be used as a tool to improve patient care and safety, public health, and to reduce the abuse and diversion of prescription drugs. The program provided guidance on best practices to address prescription drug abuse and misuse with prescription controlled substances. The education emphasized that the PDMP is dependent upon its utilization by prescribers to identify trends of misuse or abuse. The central message of the video is in using the PDMP, providers' ability to obtain access to a patient's history of controlled substance dispensing information, with the goal of thwarting future adverse prescribing and subsequent prescription drug abuse.

The PDMP perceptions and intent to utilize pre-survey and post-survey instruments were anonymous and de-identified by having the participants create their own code to match pre to post test, being the first three letters of their town they were born in, and the last four numbers of their cell phone number. The UMass Lowell IRB approved the project in August 2016.

Data collection and Data analysis

SPSS 23 was utilized to conduct the data analyses. A paired t test was used to determine whether the mean difference between the pre and post test questionnaires related to provider's perceptions and intent to use the PDMP was significant.

## Results

Of the 12 surveys assumed delivered, there were 10 useable responses for a response rate of 83.0%. Two responses had no data, the 10 respondents answered all 8 survey questions completely pre and posttest. Survey respondents had an average of 9.1years of prescribing practice, and 3.5 years of education post baccalaureate degree. Medication prescribers surveyed reported a significant difference in all question categories from pre educational intervention to post educational intervention.

Table 1

Paired Samples Statistics Pre and post survey

| | | Mean | SD | t | p |
|---|---|---|---|---|---|
| Q1 In my practice, use of the prescription drug monitoring program (PDMP) before prescribing a new narcotic medication will result in increased knowledge about my patients prescribed narcotics overall. (1 Unlikely-7 Likely) | Pre survey | 5.00 | 1.333 | 3.503 | 0.007 |
| | Post survey | 6.50 | .707 | | |
| Q2 In my practice, the use of the prescription drug-monitoring program (PDMP) is (1 Bad- 7 Good) | Pre survey | 5.00 | 1.247 | 4.385 | 0.002 |
| | Post survey | 6.90 | 0.316 | | |
| Q3 In my practice, other prescribers think this about my use of prescription drug-monitoring program (PDMP) (1 I should not use -7 I should use) | Pre survey | 5.00 | 1.333 | 3.431 | 0.008 |
| | Post survey | 6.70 | 0.483 | | |
| Q4 When it comes to matters of my own prescribing practice, I want to do what other prescribers think I should do. (1 Disagree -7 Agree) | Pre survey | 3.80 | 1.687 | 3.404 | 0.008 |
| | Post survey | 6.00 | 1.414 | | |
| Q5 Most of my peer medication providers who have used the prescription drug monitoring program (PDMP) have used it before | Pre survey | 4.50 | 1.841 | 3.791 | 0.004 |
| | Post survey | 6.20 | 1.135 | | |

| | | | | | |
|---|---|---|---|---|---|
| prescribing a new narcotic medication (1 False-7 True) | | | | | |
| Q6 When it comes to matters of prescribing practice, how much do you want to be like your peer medication providers? (1 Not at all-7 Very much) | Pre survey | 3.60 | 1.647 | 3.404 | 0.008 |
| | Post survey | 5.80 | 1.476 | | |
| Q7 I expect that I will use the prescription drug monitoring program (PDMP) in the next three months. (1 Unlikely-7 Likely) | Pre survey | 4.90 | 1.729 | 3.841 | 0.004 |
| | Post survey | 7.00 | 0.00 | | |
| Q8 I expect that using for the next three months the prescription drug monitoring program (PDMP) would enable me to have increased knowledge about my patients prescribed narcotics overall. (1 Disagree-7 Agree) | Pre survey | 5.20 | 1.619 | 3.285 | 0.009 |
| | Post survey | 6.90 | 0.316 | | |

## Discussion

In assessing and measuring the impact of education to prescribers regarding the use of PDMP, significant positive change was noted in prescription provider's perceptions and intent to utilize PDMP from pre educational intervention to post educational intervention. In healthcare, prescription controlled substances can improve patient's quality of life, alleviate suffering, and reduce symptoms of disease. However, with controlled substances and narcotics there also comes a risk of prescription misuse, abuse, diversion, and substance use disease. It is essential that prescribers, pharmacists, and patients must safely manage narcotic medications with use of PDMP's.

Currently in the state of Massachusetts, legislation has passed to requiring providers to register with PDMP, and mandate its use when issuing a narcotic for the first time. Additionally,

mandating checking PDMP every time prescribing a schedule two narcotic in order to identify prescription drug misuse and abuse. Federal programs are currently being enacted to interconnect PDMP programs in all 50 states, sharing data on prescriptions of abuse across state boundaries.

Implementation of prescriber education, to increase knowledge and intent to use PDMP's would assist in identifying and treating prescription misuse or abuse. Education on PDMP will be critical in tackling not only prescription drug abuse and misuse, but increasing awareness of safe prescribing practices to monitor patient's use of controlled substances.

**Recommendations and Implications for health care practice**

Ultimately the project endorses prescription provider's utilization of up to date evidence based practice education on PDMPs to target the public health crisis of prescription drug misuse and abuse. Clinical tools such as the PDMP are accessible and essential to assist providers to safely prescribe controlled substances. To increase utilization by healthcare professionals of PDMP's to promote safe prescribing, healthcare system improvements to increase educational opportunities for PDMP's knowledge and use must be provided. Prescription drug misuse and abuse endures as a major public health concern for society. Increased use of PDMP's by prescribers who know how to analyze the data provided can promote positive health outcomes. Health care prescription providers who possess knowledge on PDMP's can promote early identification, proper treatment, and raise awareness of those that are affected by prescription misuse and abuse.

## Limitations

Given this scholarly project used a quantitative, quasi-experimental design that does not include random allocation of groups or controls it lacks the internal validity of an experimental design. This study was conducted in a single organization amongst a convenience sample of medication providers limiting its generalizability. Selection bias may have been present with a convenience sample, as the project investigator knew the sample of providers for the study. Data collection methods may have had limitations relying on the sample group to watch a 20-minute online educational presentation and complete surveys in order without direct observation to confirm a true result of participants actually watching the video. However, despite the disadvantages in this study, this observational, quantitative, quasi-experimental design is strong. Additionally, the methodology of using a questionnaire based on the established theory of planned behavior reinforces the design used to study the variables.

## Conclusion

The intention of this education practice improvement project was to provide providers with increased knowledge and intent to utilize PDMP. The PDMP is a tool when properly utilized facilitates reduction in aberrant prescribing and substance use disease. Specifically, the PDMP education model and study design utilizing the theory of planned behavior demonstrates that education can increase knowledge and intent in this scholarly project. The conceivable impact of PDMP education to prescription providers is the reduction of prescription substance misuse, and improved safe prescribing practices.

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