TITLE PAGE

Title of project:

Role of Pharmacists in Delivery of Patient Care Within Legalized Medical Marijuana States With a Defined Role for the Pharmacist

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ABSTRACT

Specific Aims

#1: Describe and characterize role of the pharmacist and lay employee within medical marijuana

dispensary.

#2: Describe and differentiate between type and quality of care delivered between both groups.

Methods A questionnaire was given over the phone to lay employees and registered pharmacists at

specifically identified medical marijuana dispensaries. This questionnaire asked eight demographic data

relating to the location and type of practice as well as 27 various yes/no questions relating to the extent

of patient counseling and assessment that was done by employees with patients in the dispensary.

Main Results No employee from the state of New York nor pharmacist from Arkansas was willing to

participate in the study**.** Of the 27 patient counseling questions, significant difference in response

occurred in four questions: 10, 22, 23, 27 (p=0.033, 0.008, 0.002, 0.033, respectively). All of these had

more positive pharmacist responses versus lay employees. Questions 22 and 23 were regarding

comorbidities and illicit drug use with zero lay employees responding positively and question 10 and 27

related to asking about personal use and formulation respectively.

Conclusions Both pharmacists and lay employees provide various forms of assessment ranging from

what condition is being treated to and drug-drug interactions. Pharmacists, overall, asked more

assessment-type questions as well as more medication specific questions compared to lay employees.

This indicates that with a pharmacist employed, there can be an expected base amount of counseling

they are comfortable with performing; while with a lay employee, there is a more variability in the

comprehensive counseling a patient will receive.

INTRODUCTION

Marijuana legalization is a very contentious topic not only in healthcare but nationally. More than half of the states have legalized medical marijuana along with few that have recreational use. The research and studies for pharmacological uses of cannabis are limited due to the FDA classification as a Schedule I drug. It is not currently possible to add cannabis, although there are cannabinoid analogs, to a medication list on a database to search for drug interactions. Education currently in schools does not address marijuana pharmacodynamics nor pharmacologic properties and many pharmacists are not specifically educated on how to discuss marijuana use in the context of other medications or drug interactions. Yet, some states require pharmacists or physicians on site to counsel on patients at the dispensaries.

This study aimed to speak with both lay employees as well as the pharmacists employed by dispensaries in which the pharmacist has a defined role, to determine if they feel more qualified to provide quality care than lay employees. Not many of the laws regarding use are consistent across states and states can have vastly different requirements for medical use. One specific study, by Chapman, et. al, studied showed that across all states in which marijuana is legalized (recreationally or medically), there was a broad range of laws put in place from the initiation of obtaining marijuana, restriction on amount or quantity, as well as distribution through dispensaries[1].

This research study was created to shed light on the types of assessments and recommendations that are currently being made by both pharmacists and lay employees and to determine if either group was providing more comprehensive assessments than another. As more states look into passing legal regulations regarding marijuana use, it can be helpful to see the positive and negative aspects that exist in current systems in order to determine which policies can provide the highest benefit to providers and patients alike.

At present, due to the legalization status of marijuana in the United States, funding and research for medicinal marijuana is minimal. There is little to no studies that have been done that focus on the healthcare professional's role in medical marijuana or how healthcare providers can work this new and developing system. Various studies by Chapman et al. and Mitchell et al.[2] explored the laws and opinions surrounding various programs associated with medical marijuana but no studies were found that compare the roles of a pharmacist to a non-healthcare personnel who also interacts with patients. This project explored specific states in which pharmacists have defined roles and was able to gain information not assessed before regarding interactions of patients and employees. Many studies including one by Baron et al.[3] assess the use of marijuana as a replacement to opioids or other pain-type medications, these previous studies are important and helped this report to determine the type of questions that would be relevant to a positive outcome with a patient. Since there is little clinical data regarding the type of marijuana that is the most beneficial, the evidence that exists for replacement of prescriptions with marijuana is anecdotal. This research avoided looking specifically into prescription substitution but still wanted to address possible clinical changes that employees are seeing.

Other studies currently, like Temple et al.[4] looked into barriers for optimal medical marijuana use. For each of the barriers that Temple identified, like inadequate scientific database information, dose delivery, or drug interactions, this study wanted to assess if and how having a pharmacist on staff could alleviate these problems.

The purpose of this study is to explore the roles of both pharmacists and lay employees for patrons of medical marijuana dispensaries as well as discuss the quality and type of care that is provided in order to determine the overall efficacy and benefit of pharmacist counseling.

METHODS

Design: This is a descriptive study that is comparing type of care provided by pharmacists versus lay employees in a medical marijuana dispensary.

Subjects: To be eligible for this study, any participant must be employed by the dispensary in Arkansas, Connecticut, Minnesota, New York, or Pennsylvania. Pharmacist must be a registered pharmacist (RPh) practicing in their state, while lay dispensary employees must be over 21 years of age. This study was submitted and approved by the University of Arizona Human Subjects Protection Program and Institutional Review Board.

Measures: Data was collected using a questionnaire. No specific reference questionnaire was used in the development of the one used in this study as no similar studies have been conducted to the knowledge of the authors. The questionnaire consisted of 8 demographic questions and 27 patient counseling questions. The patient counseling section was broken into 5 sections: patient interaction, background knowledge, patient assessment, patient recommendations, and clinical outcomes. This questionnaire helped to determine both pharmacist and lay employee knowledge as well as the roles within the medical marijuana dispensing process. One single questionnaire was given to both groups, one demographic question, regarding if the employee was a licensed pharmacist, was included to identify pharmacist versus lay employee for study differentiation. The primary dependent variables are the assessment and recommendation that employees make through their patient counseling and referrals. Assessment includes: diet, lifestyle, other medication use, adherence, and comorbidities. Recommendation includes: type of product, usefulness of product related to condition, and discussion about referral to primary care physician.

Data Collection: For this study, data was collected through a survey using UA Qualtrics software. The students conducting the survey recorded the respondent's answers as they were asked during the phone call. A copy of the questionnaire is attached in Appendix A.

Data analysis: Initially ten dispensaries from each of the five states were identified for a possible total of

100 respondents, which would have been adequate to identify a difference between groups.

Frequencies and percentages were used for demographic data and groups were compared using a Chi

square test. The a priori p-value was 0.05. General trends were also analyzed in the data by comparing

pharmacist versus lay employee responses to questions to determine if there were specific sets of data

favored by one group over another.

RESULTS

The demographic data showed a well-distributed subject selection across all categories, results

are shown in Table 1. More females participated in the study (61.5%) and a majority was white (68.2%).

Other than New York, which was unable to participate due to willingness of respondent, all states had at

least 2 respondents. The largest difference in demographic data was within the pharmacists group itself

showing that 71.4% of the pharmacists have practiced for more than 5 years versus only 28.6%

practicing for 1-5 years.

Clinical counseling questions, questions 9-34 of the survey, are listed with their associated p-

value in Table 2. Six of the questions have no associated p-value as all respondents answered with the

same response. For questions 21 and 26, which corresponded to asking about exercise habits and if the

employee performs any physical assessment, all participants responded negatively, meaning they did

not ask patient's those questions. For questions 31 through 34 all respondents responded positively;

these questions asked employees if they felt patients had improved outcomes from their marijuana use

and asked if the employees' interventions positively impacted patients. Of the questions with

statistically significant results, questions 10, 22, 23, and 27, pharmacists responded more positively than

lay employees. Question 10 (p=0.003) asked about personal use of the product and every pharmacist

responded that they do ask that question while only three lay employees responded positively. For

Question 22 and 23 (p=0.008 and p=0.002), asking about comorbidities and illicit drug use respectively, all lay employees denied asking while five and six pharmacists responded that they do ask those questions respectively. Finally, question 27 (p=0.033), asking about specific formulation for the patient's condition, all pharmacists responded positively while only three lay employees asked that question. All other questions had various levels of pharmacist versus lay employee responses, generally, pharmacists asked more questions than lay employees especially about other medication use, allergies, and diet. For only one question, number 29, did lay employees ask more than pharmacists and this was regarding referral to an outside physician. Lay employees stated often they will refer to their in-house pharmacist for questions and that was considered a positive response to question 29.

DISCUSSION

The most important results from this study are the overall trends that were seen when discussing how employees assess and counsel patients. Other than one outlying pharmacist who responded negatively to many questions, most pharmacists asked a large majority of the questions that were considered to be assessment and counseling questions. Pharmacists are trained during their schooling to ask assessment-type questions to patients when determining if the medication is right for them or how a medication is working and it was seen during this study that pharmacists at dispensaries are asking those same types of questions that would be expected at a traditional pharmacy. Both lay employees and pharmacists indicated they received outside training or training within their workplace specifically related to marijuana use, during discussion with some pharmacists and all but one respondent had done training or research on their own. Some pharmacists, during the questionnaire indicated that some pharmacy schools are providing elective or required marijuana information classes to help ensure optimal medication use.

It was evident during the questioning process that pharmacists had similar goals when

assessing patients and what types of counseling they provided while lay employees had a much wider

range of what their duties are. Some lay employees are extremely educated and have a high level of

understanding of medicinal marijuana, while others asked few questions to their patients and assessed

efficacy or appropriateness little. It seems that with lay employees it is unpredictable what type of

involvement they may have in their patient's care, while with a pharmacist, some may know more than

others but generally there is a baseline of counseling that a patient will receive.

This study is unique in that there are no other studies that assess care by pharmacists and lay

employees within the medical marijuana dispensaries. The results of this study indicate that there is still

no standard of care that has been set for patient counseling in a dispensary and it will depend on the

specific employee that the patient interacts with. This does seem to agree with other studies that have

been conducted that show variability in knowledge base and comfort with marijuana as a medical

product. Particularly the Mitchell et al. study, which assessed hospital pharmacists' opinions of

Marijuana for Medicinal Purposes program (MMP) in Canada. The results from that study found that

44% of respondents found marijuana safe, while 55% found it effective; the study also showed that

although pharmacists feel that it is safe and effective, only about 17% agreed that they were

knowledgeable and 65% of respondents reported no training on this topic at all[2]. Their results are similar

to this project although this project found that more respondents are receiving training in hopes to

combat the lack of education of the topic in schools and it seems that more pharmacists working in

dispensaries are more likely to find marijuana safe and effective for their patients.

The implications of this study would conclude that by having a pharmacist employed by a

dispensary, all patients are expected to receive a certain level of counseling, including questions on

reason for use, formulation, other medication use, drug and food interactions. Lay employees may ask

these questions during their time with a patient but their responses varied much more than those of the

pharmacist. When speaking with lay employees it was very evident that some had a vast knowledge of

marijuana properties and use while others were less educated and trained. Further investigation into this topic should be considered and the more mainstream marijuana use is becoming, it is likely that more untrained employees will have more knowledge as well as more studies that can be conducted to gather more clinical data that employees, lay and medical alike, have at their disposal to use when discussing use with a patient. Other studies, from patients' perspectives, may also provide more information on the need or lack thereof of a medical professional within the medical marijuana dispensary.

The biggest limitation to this study was the low respondent numbers. Although discussion with employees as well as some of the responses gathered indicated a clinically significant difference in counseling abilities of lay employees versus pharmacist, the small sample size did not reflect statistically significant differences in responses. It would be expected that more responses would provide more information and a better overall understanding between the actual differences in the two groups. Two states, Arkansas and New York, did not provide any or few responses including no responses from New York dispensaries and no pharmacist response from Arkansas. Another limitation to this study was with the administration of the questionnaire via telephone during business hours. If it was possible to have emailed the survey to the respondents to do on their own time and not during working/business hours, it is possible that there would have been more responses.

CONCLUSIONS

Both lay employees and pharmacists who worked within the dispensary performed some type of assessment or engaged in counseling of some capacity, from asking about formulations of products to assessing possible drug-drug interactions. Lay employees had more varied responses indicating that each lay employee has a different level of comfort or engagement in patient interactions. In comparison, all pharmacists had similar questions that they responded positively to, showing that although some

pharmacists may be more in depth with certain aspects of their assessment, it can be expected that a

pharmacist will have a basis of comfort of patient counseling that may not be seen in a lay employee. In

conclusion, having a pharmacist employed in a dispensary can almost guarantee that a patient will have

a comprehensive counseling when choosing a marijuana product while lay employees have a much

higher variability in the types of counseling they may provide.

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TABLES AND FIGURES

Table 1.

Demographic Data of Study Respondents

	Total Number	Percentage
Age		
21-29 years	6	46.2%
Over 30 Years	7	53.8%
Gender		
Male	5	38.5%
Female	8	61.5%
Race		
White	9	68.2%
Non-White	4	30.8%
State		
Arkansas	2	15.4%
Connecticut	5	38.5%
Minnesota	3	23.1%
Pennsylvania	3	23.1%
Population		
Less than 100,000	5	38.5%
More than 100,000	8	61.5%
Job		
Pharmacist	7	53.8%
Non-pharmacist	6	46.2%
Practicing as RPh		
1-5 years	2	28.6%
More than 5 years	5	71.4%
Years Employed		
Less than 1 year	4	30.8%
1-5 years	9	69.2%
Hours Worked		
Less than 40 hours	9	69.2%
More than 40 hours	4	30.8%

Table   **2.**

Questionnaire Questions with Associated Chi-Squared p-values

Question	P-Value	Question	P-Value
9	0.097	22	**0.008**
10	**0.033**	23	**0.002**
11	0.097	24	0.135
12	0.429	25	0.097
13	0.906	26	All 'no' responses
14	0.335	27	**0.033**
15	0.725	28	0.261
16	0.097	29	0.416
17	0.097	30	0.155
18	0.053	31	All 'yes' responses
19	0.164	32	All 'yes' responses
20	0.391	33	All 'yes' responses
21	All 'no' responses	34	All 'yes' responses

APPENDICES

Appendix A: Questionnaire

PHARMACISTS' ROLE IN THE MEDICAL MARIJUANA DISPENSARY
This questionnaire has been designed to determine the role of pharmacist and lay employees in the medical marijuana dispensary as well as examine the type and extent of care that is provided.

> **Part I: Background, Demographic Information**
> For the following questions, please answer to the best of your ability regarding your background as an employee of your current dispensary.

1) **How old are you?**
   A) 21 - 29 years
   B) 30 - 39 years
   C) 40 - 49 years
   D) 50+ years

2) **Gender?**
   A) Male
   B) Female
   C) Would prefer not to say

3) **Race/Ethnicity?**
   A) American Indian or Alaska Native.
   B) Asian
   C) Black or African American
   D) Native Hawaiian or Other Pacific Islander
   E) White

4) **Location of practice?**
   A) Arkansas
   B) Connecticut
   C) Minnesota
   D) New York
   E) Pennsylvania

5) **Estimated population size of town where dispensary is located?**
   A) 0-50,000 people
   B) 50,000-100,000 people
   C) 100,000+ people

6) **Years as a licensed pharmacist?**
   A) I am not a licensed pharmacist
   B) Less than 1 year
   C) 1 - 5 years
   D) More than 5 years

7) **Years employed by this, or any, dispensary?**
   A) Less than 1 year
   B) B. 1 - 5 years
   C) C. More than 5 years

8) **How many hours per week do you work at the dispensary?**
   A) Less than 20 hours
   B) 20 - 40 hours
   C) More than 40 hours

Part II: Patient Counseling Information
The following questions ask about the type of questions and counseling that you perform regularly with patrons of the medical marijuana dispensary.

Please select Yes or No for each questions.

Patient interaction
1) **Do you have conversations with a new patient regarding personal use and need for marijuana?**
   ⬜ Yes   ⬜ No

2) **Do you have conversations with returning patients regarding efficacy of current marijuana use?**
   ⬜ Yes   ⬜ No

3) **Do you counsel patients on type/formulation of marijuana available?**
   ⬜ Yes   ⬜ No

4) **Do you counsel patients at check-out or after marijuana product selection is made?**
   ⬜ Yes   ⬜ No

Background Knowledge
1) **Do you get any training within your workplace regarding marijuana use for patients prior to starting your position?**
   ⬜ Yes   ⬜ No

2) **Do you do any training or research on your own regarding marijuana use or laws surrounding marijuana use?**
   ⬜ Yes   ⬜ No

3) **Have you attended any additional training programs or done any continuing education during your time at the dispensary?**
   ⬜ Yes   ⬜ No

4) **Do you know of drug-drug interactions or drug-food interactions with marijuana use?**
   ⬜ Yes   ⬜ No

5) **Do you feel properly trained to understand and counsel on marijuana use for a wide variety of patients?**
   ⬜ Yes   ⬜ No

Patient Assessment
1) **Do you ask about other prescription or non-prescription drug use?**
   ⬜ Yes   ⬜ No

2) **Do you assess allergies or intolerances to medications?**

☐ Yes ☐ No

3) Do you ask about patient's diet/eating habits?
☐ Yes ☐ No

4) Do you ask about patient's exercise habits?
☐ Yes ☐ No

5) Do you ask and counsel on other conditions or comorbidities that a patient may have?
☐ Yes ☐ No

6) Do you discuss illicit drug use?
☐ Yes ☐ No

7) Do you discuss smoking and alcohol use?
☐ Yes ☐ No

8) Do you ask and counsel on which specific condition a patient is using marijuana for?
☐ Yes ☐ No

9) Do you perform any type of physical assessment during your conversation with a patient?
☐ Yes ☐ No

Patient Recommendations
1) Are you recommending specific formulations or types of product based on a patient's condition?
☐ Yes ☐ No

2) Do you recommend frequency of use depending on product or condition?
☐ Yes ☐ No

3) Do you refer patients to outside physicians, behavioral therapy, or specialists?
☐ Yes ☐ No

4) Do you make any recommendations or avoid or add medications/supplements/foods based on current marijuana use?
☐ Yes ☐ No

Clinical/Patient Outcomes
1) Do you see improvement in a patient's qualified condition(s) with regularly use marijuana?
☐ Yes ☐ No

2) Do you feel that your interaction with a patient improves understanding, or overall awareness of marijuana use?
☐ Yes ☐ No

3) Do you feel that your interactions improves patient's quality of life?
☐ Yes ☐ No

4) Do you feel that marijuana use has decreased other prescription use by patients?
☐ Yes ☐ No

5) Do you feel that it should be a requirement to have a pharmacist employed by dispensaries?
☐ Yes ☐ No