Contents lists available at ScienceDirect

Journal of the American Pharmacists Association

journal homepage: www.japha.org

RESEARCH NOTES

Personnel training and patient education in medical marijuana dispensaries in Oregon

Roberto Linares, Jo Choi-Nurvitadhi, Svetlana Cooper, YoungYoon Ham,
Jane E. Ishmael, Ann Zweber[*]

ARTICLE INFO

ABSTRACT

Objectives: To determine the knowledge and training of Oregon Medical Marijuana Dispensary (OMMD) personnel and describe the information and type of advice provided to patients who use Oregon dispensaries.

Methods: Statewide cross-sectional email survey of OMMD personnel.

Results: Of the 141 surveys, 47 were initiated. The most frequently referenced types of training were on-the-job training and the Internet. Dispensary personnel most commonly used patients' preferences and symptoms as well as personal experiences to determine appropriate strains for patients. The majority of respondents advised patients about precautions and expected effects. Respondents were least likely to advise on drug interactions, or recommend a patient talk to a pharmacist or prescriber.

Conclusion: Dispensary personnel in Oregon use a variety of resources to learn about medical marijuana. Although formal health or medical training was not indicated, personnel advise on marijuana's effects, use, and product selection. Further study is needed to assess the current training and advising on patients' ability to use medical marijuana safely and effectively.

© 2016 American Pharmacists Association. Published by Elsevier Inc. All rights reserved.

Cannabis has a long history of medicinal use in the United States and was included in the *United States Pharmacopeia* from 1850 to 1941. However, as part of the Comprehensive Drug Abuse Prevention and Control Act of 1970, the Controlled Substance Act placed marijuana in the Schedule I category.[1] During the 1980s the FDA approved synthetic delta-9-tetrahydrocannabinol (THC), dronabinol, and an isomer, nabilone, as single-agent prescription drugs. Advocacy for the medicinal properties of cannabis has resulted in more than 20 states, including Oregon, enacting legislation allowing the distribution and use of marijuana for qualifying medical purposes.

There is a strong interest in defining the mechanism of action of several major phytocannabinoids, such as THC and cannabidiol (CBD), in marijuana preparations. Marijuana is used to relieve symptoms associated with a variety of medical conditions, but clinical data to support efficacy and safety are limited. In addition, the potential for adverse effects and drug interactions is well documented.[2-4]

State laws governing the establishment of medical marijuana dispensaries vary, with most having minimal or no requirements for personnel training and patient counseling. A few states require oversight by either physicians or pharmacists. Arizona requires a physician to be a dispensary medical director, responsible for developing information and training for dispensary agents and customers.[5] Connecticut requires that a licensed pharmacist be designated as a dispensary facility manager,[6] and Minnesota requires a licensed pharmacist to consult with patients and determine appropriate dosages.[7] The expanding use of marijuana as a therapeutic agent prompted the 2015 American Pharmacists Association House of Delegates (APhA HOD) to adopt policies supporting clinical roles for providers, standardization of processes and products for medical marijuana, and facilitation of clinical research into the efficacy and safety of cannabis.[8]

As of January 2015, the Oregon Medical Marijuana Dispensary (OMMD) program had registered more than 200

businesses.[9] Dispensary regulations in Oregon focus on registration, business operations, security, product testing, and record keeping, without requirements for dispensary personnel education or training. In contrast, federal and state regulations have strict educational and licensing requirements for individuals who dispense prescription medications. Given the growth of the dispensary program in Oregon, we examined the background of personnel and counseling practices in medical marijuana dispensaries. Our use of the term marijuana is consistent with the terminology used by the Oregon legislature and the Oregon Health Authority.

Objectives

To determine the knowledge and training of OMMD personnel and to describe the information and type of advice provided to patients who utilize Oregon dispensaries.

Methods

A list of registered medical marijuana dispensaries in Oregon was obtained from the Oregon Medical Marijuana Program (OMMP) website.[9] At the time of the study, more than 200 dispensaries were listed, but only 171 had full contact information. All dispensaries with telephone numbers were contacted to request an e-mail address to receive the survey; 141 e-mail addresses were obtained.

The survey was designed to elicit information in 2 categories: (1) dispensary and personnel characteristics; and (2) interactions with patients. The survey consisted of 19 questions, and was estimated to take 15 to 20 minutes to complete. (The survey instrument is presented in Appendix 1, available at JAPhA.org as supplemental content.) Qualtrics was used to create and distribute the survey.

Although most respondents who started the survey completed it, some completed only a portion of the survey. Responses were tabulated even if a respondent did not complete the full survey. Percentages of responses were calculated per question. A chi-square fit test was used to determine if respondents represented the distribution of the registered dispensaries in Oregon.

The study was reviewed by the Oregon State University Institutional Review Board and considered to be exempt. A link to the survey, along with survey instructions, was e-mailed from January 21 to March 17, 2015. Two reminders were sent a week apart before the survey closed. All survey e-mails included an opt-out link.

Results

Forty-seven surveys were initiated. Participants were not required to provide answers to every question, so the total number of responses for each question varied. All completed responses for each question were entered into the study, for a response rate of about 30%.

Dispensary and personnel characteristics

The majority of respondents (64%) were 31 to 50 years old (Table 1). The distribution of respondents, in terms of the population size of dispensary locations, correlated with the

Table 1

Characteristics of medical marijuana dispensaries in Oregon

Characteristic	n (%)
Age of respondents	
18−30 y	8 (17)
31−50 y	30 (64)
51−60 y	8 (17)
>65 y	1 (2)
Total	47 (100)
Background/training[a]	
On-the-job training	43 (98)
Conferences	15 (34)
Certificate program	4 (9)
Other	25 (57)
Educational background[a]	
High school diploma	26 (60)
College or university	25 (58)
Community college	10 (23)
Specific training or workshops	10 (23)
Other	13 (30)
Information sources[a]	
Internet	39 (91)
Medical literature	35 (81)
Patients	34 (79)
Colleagues	28 (65)
Subscriptions	20 (47)
Workshops	19 (44)
Listservs	5 (12)
Other	17 (40)

[a] Respondents could choose more than one item.

data available from OMMP.[10] A chi-square fit test showed that the sample distribution was not significantly different from the OMMP-registered dispensary distribution ($P = 0.63$).

Ninety-eight percent of respondents chose "on-the-job training" for the type of training in medical marijuana. Other types of training included personal experience with using and growing marijuana, undergraduate studies in sociology of cannabis culture, and reading and watching materials about marijuana.

Table 1 presents education levels of respondents. Those that did not mark high school did mark either community college or college/university, indicating that all respondents had a high school degree or equivalent. Of those who marked college/university as their education level, 10 (40%) indicated a business-related field of study. Other areas included sociology, public policy, political science, culinary, and gardening. Two indicated study in biology or health sciences.

More than 90% of respondents selected the Internet as a source of information about medical marijuana. Other sources included medical literature (81%) and patients (79%). The top 3 text entries for medical marijuana information included Leafly.com (n = 15), followed by Skunk Pharm Research (n = 4) and Cannabis Pharmacy (n = 3). Other sources included books, personal experience, marijuana growers, vendors, local doctors and herbalists, cannabis associations, and conferences. There were no evidence-based medical literature references listed.

Patient interactions

Sixty-two percent of respondents (n = 26) spent 15 to 30 minutes with new patients. The remaining spent 1 to 15 minutes (19%; n = 8) or 30 to 60 minutes (19%; n = 8) with new patients. Most spent less time (1 to 15 minutes) with returning patients (69%; n = 29). Approximately one-third of

respondents (n = 13) spent 15 to 30 minutes with returning patients. Similarly to the OMMP data,[9] severe pain was the most frequent medical condition for which patients used marijuana. Other common conditions included post-traumatic stress disorder, muscle spasms, and cancer.

Factors that influence strain selection

A patient's medical condition and/or symptoms were common determinants for the most appropriate strain (100%; n = 41). The patient's previous experience (93%; n = 38) and personal preference for a particular effect (90%; n = 37), previous knowledge of a desired strain (80% n = 33), and route of administration (73%; n = 30) were also reasons for product selection. Other factors included patient's age and sex, personal experience with using marijuana, information from local growers, working with a prescribing physician, training in various methods of ingestion, and CBD and THC content.

Dispensary personnel were asked how often they advised patients in several categories. Figure 1 shows these categories organized by the percentage of respondents who marked the frequency for which they advised in a particular category. Respondents were most likely to advise about precautions while using marijuana and least likely to advise on interactions with other substances. Other categories, in decreasing order of counseling likelihood, included expected effects, time to onset of effects, duration of effects, and regulatory requirements.

Participants were asked to indicate what other forms of information were provided to patients. Ten (36%) indicated that they provided written information. "Other" was also marked by 10 respondents, 6 selected websites, and 2 marked support groups.

Discussion

Our survey results reveal the current status of personnel training and advice provided in Oregon dispensaries. Although more than half of the respondents noted a college/university background, the most frequent fields of study were business related. A report by Arcview market research estimated the legal cannabis industry to be $2.7 billion dollars in 2014.[10] The lucrative market, and the focus of Oregon regulations on business and security, may explain the high percentage of dispensary personnel with a business background.

Most respondents indicated that they spent 15 to 30 minutes with new patients and used a patient's condition or symptoms to recommend a product, suggesting some degree of routine clinical decision making. The Internet was the information source used by more than 90% of respondents, with Leafly.com as the most frequently listed reference. Leafly.com is an unreferenced commercial site providing information about marijuana strains targeting specific symptoms, conditions, and desired effects. No traditional medical literature references were noted by respondents. The current paucity of clinical evidence, along with emerging standards of practice for medical marijuana use, leaves the field open for interpretation by individuals without medical backgrounds.

The provision of patient education varied by type of information provided. Although advice about precautions while using marijuana was frequently provided, advice about proper storage and disposal, drug interactions, or talking with a pharmacist or prescriber was less often provided. Discussions about expected effects, including onset and duration, varied widely, and the majority of respondents did not provide written information. Although medication education is often tailored to individual patients, some components may be considered to be essential. Providing written information is a standard of practice in health care.

Study limitations

The survey results were limited to Oregon's dispensary personnel who chose to complete the survey. Contact information was obtained for two-thirds of the dispensaries
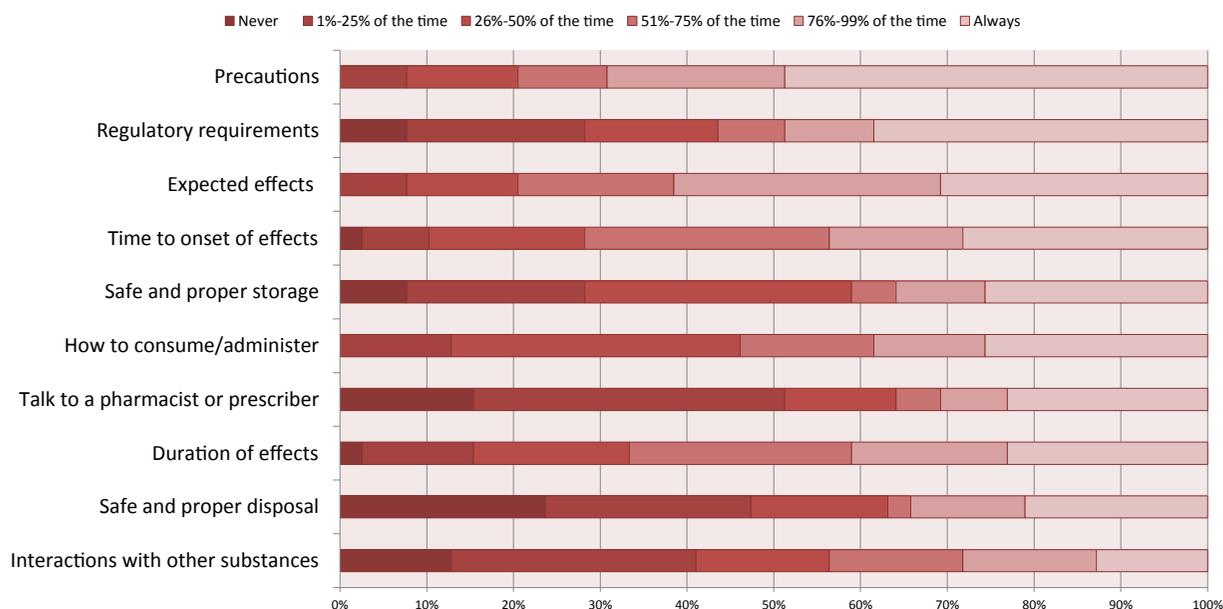

Figure 1. How often patients are advised on different aspects of medical marijuana use.

registered, and of these approximately 30% participated. Although the community populations marked by respondents closely match the distribution of dispensaries in the state, the results may not accurately reflect practices in dispensaries throughout Oregon. Survey terminology, such as "medical literature," may not have conveyed the same meaning for respondents as it would for health professionals.

Responses may have been biased based on an individual's decision to complete the survey. Those who chose not to complete the survey may have different characteristics, educational backgrounds, and practice approaches from those who participated. The survey was based on the assumption that marijuana sold in the dispensaries was for medical purposes. If some patients use products primarily for recreation, some educational information may not be applicable.

Conclusion

A survey of Oregon's medical marijuana dispensaries indicates a range of personnel education and training as well as advice provided to patients. Although survey respondents indicated a role in product selection and information provision, more than 95% did not have a biology or health-related background, nor were evidence-based medical literature references listed. It is not yet known how this may affect product selection for patients or patients' ability to use products appropriately. Administering the survey to dispensaries in other states may identify the impact of regulatory requirements on training and advising. Further studies on patient understanding of safe and effective use of medical marijuana, along with determination of actual use and clinical outcomes will help inform the medical community and policy makers. The survey results support the policy statements adopted by the 2015 APhA HOD to encourage clinical research and health care provider education in the medical use of cannabis.[8] Pharmacists, as medication experts, should be involved in educating patients and setting standards for education and training requirements for medical marijuana dispensary personnel.

References

1. Eddy M. *Medical marijuana: review and analysis of federal and state policies. Congressional Research Report for Congress*; 2010. Available at: http://www.crs/gov. Accessed June 15, 2015.
2. Wang T, Collet JP, Shapiro S, Ware MA. Adverse effects of medical cannabinoids: a systematic review. *CMAJ*. 2008;178(13):1669–1678.
3. Whiting PF, Wolff RF, Deshpande S, et al. Cannabinoids for medical use: a systematic review and meta-analysis. *JAMA*. 2015;313(24):2456–2473.
4. Lindsey WT, Stewart D, Childress D. Drug interactions between common illicit drugs and prescription therapies. *Am J Drug Alcohol Abuse*. 2012;38(4):334–343.
5. Arizona Department of Health Services. Medical marijuana. Dispensaries home. Available at: http://azdhs.gov/preparedness/medical-marijuana/#dispensaries-home. Accessed March 15, 2015.
6. State of Connecticut Department of Consumer Protection. Medical Marijuana Program. Available at: http://www.ct.gov/dcp/cwp/view.asp?a=4287&q=503670&dcpNav=&dcpNav_GID=2109. Accessed March 15, 2015.
7. Office of the Revisor of Statutes, Minnesota State Laws. Chapter 311—S.F. No. 2470. Available at: https://www.revisor.mn.gov/laws/?id=311&year=2014&type=0. Accessed June 30, 2015.
8. Actions of the 2015 APhA House of Delegates, San Diego, CA, March 27–30, 2015. Available at: http://www.pharmacist.com/sites/default/files/files/2015%20Report%20of%20the%20APhA%20House%20of%20Delegates%20FINAL.pdf Accessed June 30, 2015.
9. Oregon Health Authority. Oregon Medical Marijuana Dispensary Program. Available at: http://www.oregon.gov/oha/mmj/Pages/index.aspx Accessed March 15, 2015.
10. Rea P, Ooyen C, Lotilkar K, et al. The state of legal marijuana markets. 3rd ed. Executive report. Arcview Market Research. January 26, 2015.

Roberto Linares, BS, RPh, Senior Instructor, College of Pharmacy, Oregon State University, Corvallis, OR

Jo Choi-Nurvitadhi, PhD, PharmD Candidate, College of Pharmacy, Oregon State University, Corvallis, OR

Svetlana Cooper, BS, PharmD Candidate, College of Pharmacy, Oregon State University, Corvallis, OR

YoungYoon Ham, BA, PharmD Candidate, College of Pharmacy, Oregon State University, Corvallis, OR

Jane E. Ishmael, PhD, Associate Professor of Pharmacology, College of Pharmacy, Oregon State University, Corvallis, OR

Ann Zweber, BS, RPh, Senior Instructor II, College of Pharmacy, Oregon State University, Corvallis, OR

Appendix 1

Survey Questions
Medical Marijuana Dispensaries
2015

Study purpose

We are interested in learning about the information provided in Oregon's medical marijuana dispensaries. The purpose of this study is to describe the knowledge and training of dispensary employees, and describe the types of information and advice provided to patients.

Participation is voluntary and confidential

- The survey consists of 19 questions, which should take about 10–15 minutes.
- Participation in this study is completely voluntary.
- Your survey responses will be kept confidential, and they will not be linked to any identifying information.
- There is a chance we could accidentally disclose information that identifies you.
- The results of this study will be reported in aggregate form for any public report or publication.

Thank you for taking the time to participate in this study. Your involvement is valuable in helping to better understand patient care provided in medical marijuana dispensaries.

You are free to opt out of any questions and you can close and decline to complete the survey at any time.

If you have any questions or technical issues regarding the survey, or any questions or concerns about the study, please contact Ann Zweber by e-mail (ann.zweber@oregonstate.edu).

If you have questions about your rights or welfare as a participant, please contact the Oregon State University Institutional Review Board (IRB) office at (541) 737-8008 or by e-mail at IRB@oregonstate.edu

1. What is your age?
   - 18–30 years
   - 31–50 years
   - 51–65 years
   - >65 years
2. Please select the best description of the location of your dispensary?
   - Town with a population less than 20,000 people
   - Town with a population of 20,000 to 60,000 people
   - City with a population of 60,001 to 200,000 people
   - City with a population greater than 200,000 people
3. How many employees at your location work directly with patients to help select products?
   - (enter the number)
4. What types of training or background in medical marijuana do your employees have? Please check all that apply.
   - On-the-job training
   - Certificate programs
   - Conferences
   - Other

   (describe the other types of training or background.)
5. Please tell us about your educational background. Please check all that apply.
   - High school diploma or equivalent
   - Community college
     (area of study)
   - College or University
     (area of study)
   - Specific training or workshops to prepare you for medical marijuana dispensing?
     (describe)
   - Other
     (describe)
6. Where do you and your staff get your information about the medical properties of marijuana? Please check all that apply.
   - Internet
   - Listerservs
   - Subscriptions
   - Medical literature
   - Workshops
   - Colleagues
   - Patients
   - Other
     (describe)
7. Please provide the specific names/titles of your top 3 references for medical marijuana information.

   _____
   _____
   _____

8. On average, how much time is spent with a new patient?
   - 1 to 15 minutes
   - 15 to 30 minutes
   - 31 to 60 minutes
   - more than 60 minutes
9. On average, how much time is spent with a returning patient?
   - 1 to 15 minutes
   - 15 to 30 minutes
   - 31 to 60 minutes
   - more than 60 minutes
10. Please estimate what percentage of your patients are in the following age ranges. Please note that the percentages should add up to 100.
    - 18–30 years
    - 31–50 years
    - >50 years
11. Please indicate by sliding scale how frequently each of the medical conditions below is a reason your patients use medical marijuana. 0 = least frequent; 12 = most frequent.
    - Cancer symptoms
    - Glaucoma
    - HIV/AIDS
    - Agitation due to Alzheimer disease
    - PTSD
    - Cachexia (weight loss)
    - Severe pain
    - Severe nausea

Seizures
Muscle spasms
Unknown
Other (specify)

12. How many different strains of marijuana does your dispensary carry?
1−10
10−20
20−30
30−40
40−50
>50

13. How many different types of edible products does your dispensary carry?
0
1−10
11−20
21−30
31−40
41−50
>50

14. How do you determine which strain is most appropriate for an individual patient? Check all that apply.
Patient already knows the strain they want
Patient's condition and/or symptoms
Route of administration (e.g., smoked, vaporized, edible, etc.)
Patient's previous experience
Patient's age
Patient's sex
Patient's preference for type of effect
Other (specify)

15. Do you sell devices (such as pipes, vaporizers, etc.) for administration?

Yes
No

16. How often do you advise patients about the following?

(*Choose one the following options for each subquestion: Never; 1%−25% of the time; 26%−50% of the time; 51%−75% of the time; 76%−99% of the time; Always.*)

a. How to consume/administer
b. Expected effects (e.g., euphoria, sedation)
c. Time to onset of effects
d. Duration of effects
e. Precautions (e.g., driving, working)
f. Interactions with other medications or substances
g. Recommend that patients talk to their pharmacist or prescriber
h. Regulatory requirements (e.g., not consuming/smoking in public place, not selling to others)
i. Safe and proper storage
j. Safe and proper disposal

17. What additional information do you provide to patients?
Websites
Written information
Support groups
Other (specify)

18. What are the most common questions patients ask you about medical marijuana?

19. What other advice do you provide to patients?

Thank you for participating in our survey!