

A sustained elective course on substance abuse and addiction delivered in an academic pharmacy programme

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Abstract

Objective: Prepare pharmacy students to perform their role as healthcare professionals in facing the devastating impact of substance use disorder (SUD) through educating the public and managing SUD.

Methods: An elective course designed to prepare graduates for their role in managing SUD was delivered for seven years at the Chicago State University College of Pharmacy (CSU-COP), United States (US). The course included diverse pedagogical tools to maximise student involvement and educational benefit.

Results: The course was among the top attended electives offered at the CSU-COP and some of its activities engaged the University community at large.

Conclusions: Students at CSU-COP demonstrated consistent interest in learning about the causes, symptoms, consequences and management of SUD in an elective course. A course that introduces SUD to pharmacy students should constitute an essential curricular component in healthcare education not only in the US but globally as well.

Keywords: Academic Pharmacy, Addiction, Alcoholics Anonymous, Substances Of Abuse, Substance Use Disorder

Introduction

One significant trend of the 21st century is an increased utilisation of substances of abuse with subsequent development of drug addiction. The global health and socio-economical repercussions of substance abuse has reached a point where such terms as ‘designer drugs’, ‘opioid epidemic’, ‘Narcotics Anonymous’ and ‘medical/recreational marijuana’ have become common terms in the vocabulary of life and human behaviour (Snyder & Fessler, 2014; Saloner *et al.*, 2015; Weaver *et al.*, 2015; Wilkerson *et al.*, 2016). Substance use disorder (SUD) is characterised by an aggregate of cognitive, behavioural and physiological symptoms related to use of psychoactive substances that may lead to a person’s loss of control over substance use and subsequent serious effects on his health and life (Pace & Samet, 2016). Latest statistics from the United States (US) show that 7.5% of the selected population (20.1 million people aged 12 or older) suffered from SUD, of which only 10.5% (2.2 million people) received treatment at a specialised facility (Center for Behavioral Health Statistics and Quality, 2015). The range of abused substances in one month includes alcohol (highest prevalence), marijuana, prescription pain killers (mainly opioids), cocaine, methamphetamine, heroin,

prescription stimulants (*e.g.*, amphetamine), hallucinogens and inhalants (least prevalent) (Center for Behavioral Health Statistics and Quality, 2015). According to the National Institute on Drug Abuse (NIDA), the annual cost of abuse of tobacco, alcohol, and illicit drugs is approximately US\$740 billion in healthcare expenses, fighting crime and lost work productivity. More than 10% of the estimated figure is linked to prescription opioid misuse (Trends & Statistics, 2017). In 2016, more than 64,000 US citizens died from drug overdose of which over 20,000 used synthetic opioids, such as fentanyl and related analogs (O’Donnell *et al.*, 2017).

The involvement of healthcare professionals in addressing the crisis is essential on many frontiers including education, prevention, treatment and support. Pharmacists are among those professionals expected to play a pivotal role in managing the crisis (Hemming, 2016). Pharmacists have been consistently ranked among the top two most trusted professions and are uniquely positioned as the most accessible healthcare providers to the general public (Norman, 2016). As experts in foundation science and clinical practice, pharmacists can identify patients with SUDs and provide management options. They can also reduce the occurrence of SUDs in

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their community by identifying fraudulent prescriptions and missing inventory items (Tommasello, 2004). Appeals for increased education/training regarding SUDs in pharmacy schools have appeared in the pharmacy literature since the early 1990s and are still ongoing (Baldwin *et al.*, 1991; Wenthur *et al.*, 2013). Almost two decades later and further recognising the need to prevent substance abuse among student pharmacists and to boost curricular content on abused substances and SUD in pharmacy programmes, the President of the American Association of Colleges of Pharmacy (AACP) created the Special Committee on Substance Abuse and Pharmacy Education in 2009 (Baldwin, 2013). Efforts of the committee resulted in five recommendations of which three were focused on inclusion of SUD in pharmacy curricula, accreditation/certification standards, and continuing professional education. Ten related educational goals were also recommended for pharmacy graduates (Jungnickel *et al.*, 2010). Results of a recent survey indicated that 94% of US pharmacy schools taught SUD content during the 2014/15 academic year (Thomas & Muzyk, 2018). In a recent article, Miller and Mercer reported that less than 15% of pharmacy programmes offer an extended coverage of SUD in the form of elective courses beyond what is included in the core curriculum. In the same article the authors also described their experience in teaching an elective course on drugs of abuse and addiction at Lipscomb University College of Pharmacy and Health Sciences, Nashville, Tennessee (Miller & Mercer, 2017).

For seven consecutive years (2010-2016), CSU-COP offered a two-hour elective (two lecture hours/week, 28 contact hours per semester) on substances of abuse and SUD to its third year students as an extended coverage of the same topic included in its core curriculum (six contact hours). The goal of this article is to describe the authors' approach in teaching this elective and to outline areas of difference and overlap with other published approaches. In doing so, the authors hope to raise awareness about the essential need to prepare pharmacy students for their role as effective team members of current and future SUD management efforts.

Description of course

In designing this course, the authors' approach was to be aligned as much as possible with the latest guidelines for inclusion of substance abuse and addictive disease in pharmacy education (Jungnickel *et al.*, 2010). Although the depth and range of topics covered in an elective course are relatively limited, the authors would still be able to introduce student pharmacists to components of the suggested guidelines so they could gain a better understanding of SUDs affecting patients, families, colleagues, themselves, and society. Thus, course learning objectives were as follows:

1. Summarise the major theories of addiction as related to genetic, physiological, psychological and environmental factors (Ruiz & Strain, 2011).

2. Identify the different classes of drugs of abuse and individual drug(s) belonging to each class.
3. Describe the pharmacological effects of each drug and its impact on abuse potential and addiction treatment.
4. Explain the socio-economical impact of drug abuse and the role of the practicing pharmacist in its treatment/management including pharmacological and non-pharmacological approaches.
5. Summarise the guidelines established to classify and monitor substances of abuse.
6. Identify and describe the analytical techniques utilised to detect and monitor drug abuse.

Table I: Core topics delivered in the lecture component of the substance abuse elective

Major Classes of Abused Substances	
Stimulants, Depressants, Hallucinogens, Marijuana, Dissociative Anesthetics, Inhalants, Anabolic Steroids	
Foundation Knowledge (delivered by E.A. Abourashed)	Therapeutics/Management / Epidemiology (delivered by W. Cross & invited speakers)
Nature, source, and historical facts	Environmental and genetic components of addiction
General classification & information about most frequently abused agents in each class:	Addiction as a brain disease
Legal status/scheduling	The psychological dynamics of relapse
Mode(s) of administration	Addiction in healthcare professionals
Mechanism of action and addiction	Co-existing psychiatric disorders
Adverse effects and withdrawal symptoms	Pharmacists role in:
Treatment/management of abuse	Opioid abuse epidemic
Methods of detection in biological fluids	Fraudulent prescriptions
Relevant statistics	Impact of abuse on family and co-dependents
Additional information (e.g., street names)	Therapeutic intervention in SUD
	Twelve-step Recovery
	Mindfulness in substance abuse management

Enrolment in this course was not capped and students could enrol as late as during the first week of class. The course met for two hours once a week during the Autumn semester of each year and the employed pedagogy was mostly lecture-based with some group-discussions, invited guest speakers and out-of-class assignments. As shown in Table I, lectures provided foundation knowledge about major classes of abuse-associated drugs, their clinical management, and socio-economical impact. Invited speakers delivered two hours of the course and were content experts or professionals who

introduced students to alternative resources for management of SUD, such as mindfulness practice and support organisations for healthcare professionals. Recovering healthcare professionals including pharmacists, physicians and nurses were also invited to share their experiences during one hour of class time. In addition to course description, learning objectives, meeting times and lecture topics, the syllabus also included three required textbooks: (i) Basic & Clinical Pharmacology (Katzung *et al.*, 2009); (ii) Pharmacotherapy: A Pathophysiologic Approach (DiPiro *et al.*, 2008); and (iii) Foye's Principles of Medicinal Chemistry (Lemke *et al.*, 2007). There were also two recommended textbooks: (i) Karch's Pathology of Drug Abuse (Karch & Drummer, 2008); and (ii) Drugs of Abuse (Wills, 2005). Additional resources, such as published articles, were distributed to students as needed.

Active learning in the form of small discussion groups was employed to examine how students could use what they had learned in class in their pharmacy practice. Two case studies were employed to achieve this goal. The first involved a healthcare professional (peer) who was clearly showing signs of a SUD. The second involved a patient of the pharmacy who also clearly showed SUD symptoms. Options open to the pharmacist in terms of an intervention were discussed in class. These case studies prompted some very lively discussions and student engagement.

Other essential components of the course included: (i) required attendance at an 'open' Alcoholics Anonymous (AA) meeting; and (ii) completion of a group project. Open AA meetings as opposed to closed AA meetings are open to anyone interested in learning about Alcoholics Anonymous or alcohol use disorder in general. In preparation for the open AA meeting experience, a list of suggested locations and dates was shared with the students. It was also explained to students that they would be welcome at these meetings. Students were told what to expect throughout the meeting, how to introduce themselves, and how to participate in discussions and activities as needed. Each student was required to return a form (Figure 1) which indicated the time and location of the meeting and reflective answers to a number of questions summarising their experience. Early in the course, it seemed that this exercise was beyond the students' realm of experience and as a result, there was some initial trepidation. However, as students began to discuss their experiences in class, attendance increased rapidly. Some students attended the meeting alone while most chose to go in small groups. At the beginning of nearly every class, discussions took place answering questions regarding issues that had come up during the meeting that they did not understand. To the authors this appeared to be a significant experience as the students were literally "in the trenches" with individuals with SUDs. Student reflections documented in their visit report clearly demonstrated the transforming effect these visits had on the students.

The group project evolved and adopted different formats as the course progressed. Irrespective of its format, each

project covered a specific topic that was either new or reinforced content discussed in class. In Year 1, each student group delivered a 15-minute oral presentation to the rest of the class. During Year 2-4, each group was

Figure 1: Report Form for the Alcoholics Anonymous visit

Chicago State University College of Pharmacy
PHAR 6515
Substances of Abuse and Addiction

Alcoholics Anonymous Visit Report

Student name: _____ Venue: _____
Date: _____ Start Time: _____ End Time: _____

1.	Describe your impression upon arrival at the meeting location.	
2.	What was on the meeting agenda?	
3.	How many cases were discussed?	
4.	Summarize the above cases.	
5.	Describe your interactions, if any, before, during and after the meeting.	
6.	Describe your final thoughts at the end of the meeting.	
7.	Was this meeting useful to you? Why?	

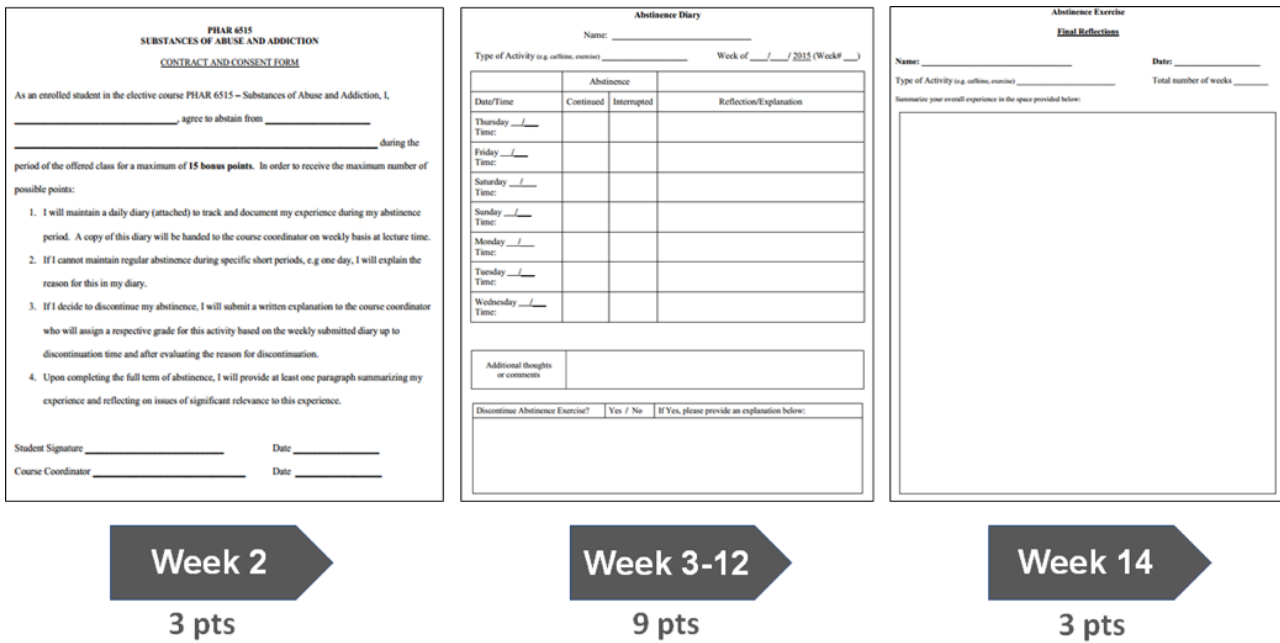
responsible for making a poster that was presented in a dedicated event during the last week of class. Event announcement flyers were designed by students enrolled in the class and propagated across campus as a substances of abuse awareness poster session. Oral and poster presentations were judged by invited pharmacy faculty using a detailed rubric. Student peer evaluations were also included in the grading process. In Year 5 and 6, each group was required to generate a written document in the form of a review article (Year 5) or a drug information sheet (Year 6). The activity for Year 7 was a reversed classroom in which each group taught one of the topics of the first six weeks to the rest of the class instead of the instructor. Each group also submitted five multiple-choice questions for possible inclusion in midterm and/or final exams. The submitted questions were reviewed by the course instructor for accuracy and alignment with learning objectives. Table II includes all activity types and topics covered during Year 1-7 of course delivery.

Each year, two recovering healthcare professionals volunteered to share their SUD and recovery experiences. They were, most often, between the ages of 25 and 30. Their younger age appeared to make it easier

Table II: Types of activities and assigned topics performed by student groups

Year	Activity	Topic	Students per group	Venue
2010	Oral presentation	<ul style="list-style-type: none"> The Problem of Alcoholism Opioid Drug Addiction and Management Drugs Used as Adjuncts in the Treatment of Addiction Group Therapy of Drug Abusers-Alcoholics Anonymous and Beyond Methamphetamines Abuse Legalization of Abused Drugs: The Marijuana Situation Nicotine Dependence The Role of the Pharmacist in Identification and Management of Drug Abusers 	6-7	Classroom
2011	Poster presentation	<ul style="list-style-type: none"> Detection of Substances of Abuse in Biological Fluids Twelve-Step Therapy of Substance Abuse The Role of the Pharmacist in Management of Substance Abuse Non-traditional Substances of Abuse: (OTC drugs, VSA) Marijuana in the News - Abuse, Health & Legal Issues The Dark Side of Smoking Substance Abuse Among School and College Students Abuse of Prescription Medications Methamphetamine and Designer Drugs Alcoholism - Social, Economical, Health Impact and Approaches towards its Management 	4	"Over and Under the Counter: Unscripted" - A Poster Session on Substances of Abuse
2012	Poster presentation	<ul style="list-style-type: none"> Drug Scheduling in the US – History, Status & Impact on Substance Abuse Opium in the 21st Century – Update on the Past Decade 'Power' Products - Legal, Illegal and What is In-Between Prescription Medications – Beyond the Prescription Alcoholic Beverages – How far Can You Go? Addiction – Can it Happen to You? What If it Does? Body Building/Over Exercising - The Pros & Cons Psychotropic Recreational Drugs – How Good is the Ride? Nicotine – The Habit & The Therapy Food Addiction – Fact or Fiction? 	2	"Selected Topics on Substances of Abuse" Poster Session Main Lobby – College of Pharmacy, Chicago State University
2013	Poster presentation	<ul style="list-style-type: none"> Substance Abuse in Adolescents – Gateways, Prevention & Management Substance Abuse in Healthcare Professionals – Impact & Management Substance Abuse Treatment Centers – Potential, Accomplishments & Challenges Medical Marijuana: Ethics, Legislation & Practice The Street Scene – Part A: Barbiturates & Benzodiazepines The Street Scene – Part B: Hallucinogens The Street Scene – Part C: Cocaine & Amphetamines The Street Scene – Part D: Opioids & Newcomers Cigarette Smoking & Nicotine Addiction Mindfulness Practice and Utility in Substance Abuse Treatment - Part A: Overview Mindfulness Practice and Utility in Substance Abuse Treatment - Part B: Clinical Trials The 12-Step Recovery System for Substance Abusers (AA/NA) Prescription Drug Abuse – Latest Trends & Updates 	3	"Hugs not Drugs" - A Poster Session on Substances of Abuse Main Lobby – College of Pharmacy, Chicago State University
2014	Mini-review	<ul style="list-style-type: none"> The Street Scene – Statistics and Impact of Recreational Drug use in the United States The Street Scene – Spotlight on Newly Introduced Substances of Abuse Substance Abuse in Adolescents – Gateways, Prevention & Management Mindfulness Practice and Utility in Substance Abuse Treatment The Pros and Cons of E-Cigarettes 	4	Graded by instructors
2015	Drug flyer	<ul style="list-style-type: none"> Semisynthetic Opiates Amphetamine/methamphetamine LSD, designer hallucinogens & PCP Marijuana Cocaine Nicotine 	3	Graded by instructors
2016	Flipped classroom	CNS stimulants, Hallucinogens, CNS depressants, Marijuana & Nicotine, Inhalants	4-6	Graded by instructors

Figure 2: Utilized Forms and Timeline of the Optional Abstinence Exercise



for the students to relate to. There was a discussion session with student questions answered after each speaker. These speakers adopted a professional demeanour that was significantly different from the stereotype the students had originally conceptualised. Each speaker included a component of their story which related how they eventually figured out they actually had a SUD. This component generally included many signs and symptoms of SUD *e.g.*, driving while intoxicated, losing their job, marital problems and finally, extensive craving for the particular drug they were addicted to. They shared that, upon reflection, these signs and symptoms of SUD were the driving factor in their acceptance of the fact that they did, in fact, have a significant problem.

A non-essential component was optional participation in a guided abstinence exercise, modelled around the same design reported by Baldwin (Baldwin, 2008). For almost the entire duration of the course, each student was provided an opportunity to abstain from one regular habit while maintaining a weekly diary to document his/her experience. The diary was submitted to the course instructor at the end of each week. A final document was also submitted at the end of the semester with student reflections about this exercise and how it relates to a real-life drug withdrawal experience. Before starting their exercise, students had to sign an agreement in which they disclosed their willingness to participate and indicated which type of item/activity they planned to abstain from. Students who could not complete their abstinence exercise received pro-rated grades based on their signed contract and the number of submitted weekly diaries. Various forms of caffeinated beverages topped the list of abstinence items, followed by soda drinks, smoking, fast foods, candy/sweets, texting while driving, cursing/

yelling, nail biting and Facebook. Timeline and forms utilised in the abstinence exercise are summarised in Figure 2.

Many components of the course were aligned with at least three Standards of the 25 required by the Accreditation Council for Pharmacy Education (ACPE, 2015). Standards 1 and 2 (foundational knowledge, and essentials of practice and care, respectively) were achieved by delivering the core content of the course. Standard 4 (personal & professional development) was addressed by inclusion of student reflections (in AA reports and abstinence exercise) and presentations (group projects, poster sessions, flipped classrooms) which enhanced self-awareness, leadership, advocacy and professionalism.

Table III: Grade distribution of all assessments included in the substance abuse elective

Assessment	Weight (%)	Description
Exams	42%	Mid-term & Final
Quizzes	21%	Five
Group activity	13%	Rubric
AA meeting	13%	Visit Report
Attendance	11%	Mandatory. Absence accepted with valid excuse
Total	100%	
Abstinence Exercise	4%	bonus

Assessments were designed to be objective, comprehensive, and balanced in order to meet students' expectations for the course and to reflect student gains. As shown in Table III, acquired knowledge was assessed by both traditional (quizzes/exams, 63% of total grade) and non-traditional (activities/attendance, 37% of total grade) methods. Quizzes and exams were delivered as multiple-choice questions while other activities utilised forms and rubrics as described above. Although not required for elective courses, the CSU end-of-course survey was administered to students in the Autumn 2015 semester. The optional survey was paper-based and included 16 statements with a 5-level rating response to each statement in addition to four open-ended questions about benefits, challenges, recommended changes and invited speakers (Figure 3). The survey was completed and returned by students during final week class time.

Figure 3: Representative course evaluation form filled and returned by students in class during the Autumn 2015 semester

Course Evaluation Form
PHAR 6515 (Substances of Abuse) - Fall 2015
Instructors: Ehab Abourashed and Wally Cross

Please respond to the following statements by marking the appropriate rating on a scale of 1-5 as follows:
5: strongly agree, 4: agree, 3: somewhat agree, 2: disagree, 1: strongly disagree. NA = Not applicable

I. Evaluation of Course

	NA	1	2	3	4	5
This course challenged me to learn and/or develop new skills.						✓
This class provided a positive learning environment.						✓
I have become more competent or knowledgeable in this area since taking this course.						✓
The course syllabus accurately reflected the expectations of the course.						✓
The course expectations, grading and evaluation system were explained.						✓
The organization and/or sequencing of the course topics was logical.						✓
The course goals and objectives matched the course materials presented.						✓
The in-class activities and/or homework reinforced the objectives.						✓
The assigned readings were pertinent to course topics.						✓
The pace of the course was conducive to learning.						✓
Discussion/workshop sessions helped to clarify/reinforce the course materials.						✓
Examination questions reflected the course objectives.						✓
The time allowed for examinations was appropriate.						✓
The grading throughout the course was fair and consistent.						✓
The Courses Coordinator was responsive to students' comments and feedback.						✓
The overall quality of the course met my expectations.						✓

What was most beneficial about this course?
Learning about all the facts about addiction that I never knew

What did you find most difficult about this course?
memorizing detailed #s and dates, (may not be a requirement of the course)

What one thing would you recommend to be changed in this course and why? How would you change it?
more videos for visual demos.

If appropriate, please indicate which outside speaker (excluding the two course instructors) contributed the most to this course and why?
Dr. [redacted] her story was really interesting. hope she gets back to practice soon.

Evaluation

The CSU-COP offered 21 elective courses to its pharmacy students in Years 2 and 3 of the curriculum. Of these electives, ten courses were offered during the Autumn semester. In seven consecutive Autumn semesters in which the Substances of Abuse elective was offered, total enrolment was 224 students (average of 32 students/year, ca. 40% of average class size). This is the

highest enrolment for any Autumn elective, with the courses 'Women's Health' and 'Current Topics in Healthcare' coming in 2nd (15 students/year) and 3rd (12 students/year) place, respectively. Of the 21 total electives, 'Substances of Abuse' achieved 2nd highest enrolment after 'Medical Spanish' (53 students/year) which was offered during the Spring semester. This high level of enrolment reflects students' strong interest in learning about substances of abuse and addiction in a professional pharmacy programme.

Table IV: Most significant statements in the student course evaluation survey (Autumn 2015)

Category	Comment
Benefits	<ul style="list-style-type: none"> • Enjoyed learning about different drug classes and the pathophysiology of addiction. • Liked the fun stories about drug origins and history of substance abuse. • Enjoyed going to the AA meeting. • Wish all courses had this 'stressless' learning environment. • Will recommend this class to all future P3 students. • Thank you for a wonderful semester! This class has given me a foundation and enhanced my passion for the topic.
Challenges	<ul style="list-style-type: none"> • Many quizzes. • Chemistry of substances of abuse. • Mindfulness lecture. • Pamphlet project: the allocated space (2 pages) was too limited to include all needed information.
Recommendations	<ul style="list-style-type: none"> • Bring more speakers to share their stories. • Include more video clips during lectures. • Include more history and background stories to reinforce topics. • Replace pamphlet project to a poster project. • Provide alternatives for those who cannot attend AA meetings. • Do not change anything. All parts were very helpful.

With regards to overall class performance, 66% earned an 'A' grade (148 students), 33% earned a 'B' (74 students), and 1% earned a 'C' (two students) during the seven years. Average grade was 90%. Contributing factors to the relatively high grades are: (a) students earning full 13% of course grade by attending an AA meeting and submitting the reflections form; (b) high class attendance resulting in 11% of the total grade earned by most students, which also enhanced student performance on periodic assessments (quizzes and exams); and (c) added 4% bonus for more than 90% of enrolled students who completed their abstinence

exercise. Although not required for elective courses, during the Autumn 2015 semester, course evaluation surveys were collected from 13 students out of 20 enrolled students (65% response rate). The average score of 16 statements was 4.88 on a 5-point scale where 5 = strongly agree, 4 = agree, 3 = somewhat agree, 2 = disagree, and 1 = strongly disagree. A representative survey is shown in Figure 3 and some of the most significant comments included in the Autumn 2015 semester are summarised in Table IV.

More specific comments were obtained as part of the AA meeting reports and the abstinence exercise final reflections. For example, one student's response to the question 'Was the meeting useful to you? Why?' was:

"The meeting was certainly helpful because it allowed me to understand the causes that propel someone to resort to drinking alcohol and what obstacles and consequences they have to face in order for them to realise that they must take action to change this harmful behaviour. It is always helpful and practical to hear things from another person's perspective to get a grasp of their reality and understand how I can potentially help someone like them seek help".

One answer for the question 'Describe your final thoughts at the end of the meeting' was:

"Everyone in attendance was very friendly and receptive of what the speakers had to share about their personal experiences. I would definitely attend another AA meeting or a similar one such as Narcotics Anonymous".

Other examples from the abstinence exercise include:

"I learned how difficult it is to abstain from addictive substances."

"It is important to be mindful because relapse can occur at any time."

"Stay calm and let emotions pass to help prevent relapse."

"It is important to not judge others for being addicts."

Discussion

A literature search was conducted to identify elective courses in US pharmacy schools since 1991 when AACP curricular guidelines were first published (Baldwin *et al.*, 1991). Three publications were retrieved that were published in 1994, 2008 and 2017 (Busto *et al.*, 1994; Baldwin, 2008; Miller & Mercer, 2017). The paper by Busto *et al.* summarised their problem-based course about abuse disorders related to alcohol and psychoactive drugs. Content experts were invited to teach in this four-credit course (nine 1.5 hour sessions) that was capped at 25 students. In the first three sessions foundational knowledge was delivered followed by SUD cases

presented to students in sessions four to eight. The final session included role-playing where students practiced their acquired skills in managing special patient populations. Grading was based on group presentations (40%), drug information question responses (40%), and student participation (20%) (Busto *et al.*, 1994).

Baldwin's article described a one-credit hour course that was offered for 15 years at time of publication and focused on an abstinence experience as a means to demonstrate addiction recovery principles together with class discussions and lectures. Students gave up a habit for six weeks and utilised worksheets to record their feelings about the experience. Grading was based on in-class participation (30%), submitted worksheets and logs (30%) and a required paper on the pharmacist's role in managing addiction in different populations (40%) (Baldwin, 2008).

Most recently, Miller and Mercer described their two-credit hour course that emphasised an integrated approach to teaching drugs of abuse and addiction. This elective was taught to 3rd year student pharmacists three times over five academic years, and was developed and delivered by two faculty from the pharmaceutical sciences and clinical pharmacy departments. Delivery of course content utilised lectures, journal club, debates and discussions. Required activities included presentation of an assigned research paper and a simulated addiction exercise. The addiction exercise lasted for five days and required students to use a coloured ice solution as their "drug of choice". Students had to explore and document their experiences with controlling cravings, maintaining secrecy and burden of acquisition. Final course grade was distributed over research paper and presentation (50%), debates (30%), addiction exercise (10%), journal club (6%), and reflections on an external site visit (4%) (Miller & Mercer, 2017).

Conclusions & Future Plans

The overall enrolment rate, student performance and feedback attest to the authors' success in delivering a relevant and engaging course to professional pharmacy students. Poster events were also successful in engaging members of the CSU community. In addition to its relevance and alignment with accepted learning outcomes, the authors believe that the strong popularity of the course was due to its diverse and dynamic content coupled with objective and balanced assessments. The two instructors who taught the course had different backgrounds but matching passion for the material they taught. One faculty member has a strong academic, pharmaceutical sciences background, while the other is a pharmacist with a strong addiction therapy background. Invited speakers and diverse assignments, including attendance at open AA meetings, poster presentations, written research papers, abstinence exercise, oral presentations, and a flipped classroom in the 7th year of its delivery, further reinforced the dynamic nature of this course and content was in alignment with 3 ACPE Standards.

For future implementations of this course, forms required for activities, such as AA reflections and abstinence diary, may be revised for content and digitally managed. Other criteria that could result in a more comprehensive course evaluation include administering pre- and post-course student assessments, consistent utilisation of an institutional course evaluation tool, and coordinating efforts with institutional Student Affairs Office and Alumni Association to track the impact of this course on professional career placement of students who took this elective.

Compared to other reported electives, this course seems to have features common to some of the rest while incorporating new features of its own. Common features include lectures, group discussions, student presentations and reflections, as well as a similarity of the abstinence exercise and course continuity in one of the three courses (Baldwin, 2008). Innovative components that were introduced in this course include AA meetings, university-wide poster sessions, flipped classroom, inclusion of mindfulness as a lecture/activity topic and recovering healthcare professionals as invited speakers.

Given that less than 15% of US colleges of pharmacy offer an elective on drug abuse/addiction, the authors hope that this contribution will be helpful to other pharmacy faculty in expanding core curricular content or in developing elective courses centred around addiction issues.

Acknowledgements

The authors would like to thank Professor Jeffrey N. Baldwin, University of Nebraska, College of Pharmacy for his valuable suggestions during the development of this manuscript.

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