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Evidence-Based Recommendations for the Management of Prescription Stimulants Abuse (PSA) Among College Students

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EVIDENCE-BASED RECOMMENDATIONS FOR THE MANAGEMENT OF
PRESCRIPTION STIMULANTS ABUSE (PSA) AMONG COLLEGE STUDENTS

A research project submitted in partial fulfillment

of the requirements for the degree of

Master of Science in Nursing

By

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Abstract

Prescription stimulants have been identified as one of the most written psychoactive prescription medications found among college students. Likewise, prescription stimulant abuse (PSA) has greatly increased in the college campuses (5.4% in 2003 to 9.3% in 2013). Several factors such as (a) diversion and sharing of prescribed stimulants among families, friends and others; (b) lack of knowledge about the risks associated with prescription stimulants; (c) polysubstance use; (c) academic enhancement; and (d) stress from ineffective coping skills and life events, have been identified as contributing factors to the increase in PSA among college students. Various critical health-related symptoms such as tachycardia, hypertension, hallucinations, loss of concentrations and depression have been identified with PSA. College students with prescription stimulants need to be aware of the associated risks identified with prescription stimulants. In addition, healthcare providers caring for college students who necessitate prescription stimulants need to be familiar with substance abuse prevention efforts to manage PSA. Although, numerous interventions have been implemented to reduce prescription drug abuse in general. However, there is lack of evidence-based recommendations for the management of PSA among college students. Therefore, the purpose of this project was to develop evidenced-based recommendations for healthcare providers to manage PSA among college students.

Recommendations were developed after a comprehensive literature review. Based on the evidences retrieved from the reviewed literature: increase in awareness and education pertaining to prescription stimulant, collaboration approach between healthcare providers, community, family and development of spiritual competence have been suggested for healthcare providers caring for college students with prescription stimulant. In addition, healthcare providers are

encouraged to utilize these recommendations as a guiding tool when caring for college students with ADHD or with potential for prescription stimulant abuse.

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Chapter 1: Introduction and Literature Review

Introduction

The prevalence in prescription stimulants for nonmedical use among college students has rapidly increased since 2003 (from 5.4% in 2003 to 9.3% in 2013) (Cutler, 2014; McCabe, West, Teter et al., 2014; Teter, McCabe, LaGrange, Cranford, & Boyd, 2006). Stimulants have been identified as one of the main written psychoactive prescriptions among college students (4% in 1991 to 45% in 2010) (McCabe, West, Teter et al., 2014; Teter, McCabe et al., 2005). The increase in PSA among college students have been associated with several critical health-related adverse effects (Buckstein, 2014: Substance Abuse and Mental Health Services Administration: SAMHSA, 2014: Helseth, Lykke-Enger, Johnsen, & Waal, 2009). Examples of contributing factors to PSA among college students are diversion and sharing with friends, family and others, lack of awareness of the dangers involving prescription stimulant, polysubstance use and stress (Barrett, Darredeau, Pihl, 2006; Herman, Shtayermman, Aksnes, Anzalone, Cormerais, & Liodice, 2011; McCabe, Teter, Boyd, 2006). However, there is a lack of evidence-based recommendations for managing PSA among college students. Therefore, the purpose of this project was to develop evidenced-based recommendations for healthcare providers to manage PSA among college students.

Literature Review

Several studies have shown stimulants such as Amphetamine-dextroamphetamine combination agent (Adderall) and Methylphenidate (Ritalin) as one of the most written psychoactive prescriptions among college students (Arria & Dupont, 2010; Baldwin, Johnson, Gotz, Wayment & Elwell, 2006; Herman et al., 2011; McCabe, West, Teter et al, 2014; Weyandt et al., 2014). The overall rate at which stimulants are prescribed for young adults in the United

States increased from 4% in 1991 to 45% in 2010 (Akici et al., 2013; Arria & Dupont, 2010; Drug Abuse Warning Network (DAWN), 2011; National Institute of Drug Abuse (NIDA), 2012; World Drug Report, 2014). The result of a drug use study from a national perspective revealed that over one million prescription stimulants was issued to over fifty-four thousand persons in Denmark between 1 January 1995 and 30 September 2011 (Pottgård, Bjerregaard, Glintborg, Kortegaard, Hallas, & Moreno, 2013). Likewise, the estimated lifetime and past-year prevalence of nonmedical use of prescription stimulants increased significantly between 2003 and 2013. McCabe, West, Teter et al. (2014) found that the past year illegal use of stimulants among college students has significantly increased from 5.4% in 2003 to 9.3% in 2013 ($p < 0.001$). On the contrary, the estimated lifetime and past-year occurrence of nonmedical use of prescription opioids has considerably decreased over time (9.3% in 2003 to 4.5% in 2013) (McCabe, West, Teter et al., 2014). In addition, DeSantis, Noar, & Webb (2010) reported between 4.1% to 35.5% variability in the rate of prescription stimulant use among college students. The survey conducted by Herman and colleagues (2011) reveals that about 10.4% of the medical and health profession students have either used stimulants or are currently engaging in an illegal use of prescription stimulants. In fact, the national survey result from monitoring the future revealed Adderall as the most use of prescription stimulants among college students (Johnston, O'Malley & Bachman, 2013). The results showed “Adderall was used more than three times as many college students (10.7%) as was Ritalin (3.6%) in 2013” (p.380). Furthermore, amphetamine use among college students has increased from 5.7% in 2008 to 11.1% in 2011 (Johnston et al., 2013). Although, a slight decrease was noted in 2013 (10.6%), the percentage continues to place college students in the highest of prescription stimulants use for improving academic performance than 12th graders (6.6%) (Johnston et al., 2013).

Factors Contributing to PSA

There are various factors reported to have contributed to the prevalence of PSA among college students. The following three key contributing factors will be discussed in this literature review: diversion and sharing of prescription stimulants, lack of awareness of the dangers of prescription stimulants, and stress resulting from changes in life events.

Diversion and sharing. The increase in prescription stimulants for medical use has been reported to have concomitantly augmented the increase in prescription stimulant for nonmedical use (American College Health Association, 2014; Barrett, Darredeau, Bordy, & Pihl, 2005; Baldwin et al, 2006; Gomes, Song, Godwin, & Toriello, 2011; Hauer, 2010; Judson & Langdon, 2009; Low & Gendaszek, 2002; McCabe, Knight, Teter, & Wechsler, 2005; McCabe, West Teter et al., 2014). The increase in percentage of prescription stimulants for medical use such as to treat the symptoms of attention-deficit hyperactivity disorder (ADHD) in college students increases from 1.9% in 2003 to 4.7% in 2013. Concurrently, the percentage of nonmedical use of prescription stimulants such as the diversion of the prescribed stimulants to friends and family appears to have increased from 5.4% in 2003 to 9.3% in 2014 (McCabe, West, Teter et al., 2014). McCabe, West, Teter et al. (2014) reported the following findings from the College Student Life Survey (CSLS) conducted in the winter semester of 2003 through 2013 among undergraduate population of full time college students of a public research university:

- Prescription stimulants are the most diverted and shared prescription medication among college students.
- There is increase in prescription stimulants and prescription stimulants diversion (selling, trading, or giving away) among college students.

- About 54-percent undergraduate students with prescription stimulants for medical use have shared, sold or gave away the prescribed stimulants to family or friends.

While the CSLS result revealed a decrease in diversion rate of stimulants from 53.0% to 46.2%, the percentage that represents the decrease in diversion rate of prescription stimulants (46.2%) is higher than the percentage that represents diversion rate of other psychoactive drugs such as “sleeping medication” (18.9%), “sedative or anxiety medication” (22.2%), “pain medication” (14.4%) (McCabe, West et al., 2014). Moreover, the opportunity for being offered prescription stimulants and PSA have been associated with age and year spent in the college campus (DeSantis, Noar et al., 2010). A study by Garnier-Dykstra, Caldeira, Vincent, O’Grady & Arria (2012) also showed the opportunity for being offered prescription stimulant and PSA increases from 36.0% in the first year in college to about two-thirds (61.8-percent) by the end of fourth year in college. This result shows (a) there is a chance of being exposed to prescription stimulants in the college campuses; (b) college students with prescription stimulants have a habit of sharing or diverting their prescription stimulants to friends and others without the authorization of their healthcare providers and; (c) college students who are being offered prescription stimulants have tendency to abuse or misuse the prescription stimulants.

Lack of awareness concerning the dangers of prescription stimulants. According to Kuhar (2014), prescription stimulants have been accepted as non-dangerous as long as they are dispensed as ordered, used as prescribed, and closely monitored by licensed professionals. Several research articles have described methylphenidate (MPH) and amphetamines as highly effective pharmacological management of ADHD (Baldwin et al., 2006; Barrett, Darredeau, Bordy et al., 2005; Bukstein, 2014; Cutler, 2014; Judson & Langdon, 2009; Low & Gendaszek, 2002; Mészáros, Czobor, Bálint, Komlósi, Simon, & Bitter, 2009; Teter, McCabe, Cranford,

Boyd, & Guthrie, 2005; McCabe, Knight, Teter et al, 2005; McCabe, Teter, Boyd et al., 2006; Weyandt et al. 2014). Furthermore, the high effectiveness of prescription stimulants in the management of ADHD has made them acceptable as the first line pharmacological agents for treating the symptoms of ADHD (American College Health Association, 2014; Baverstock & Finlay, 2003; Bukstein, 2014; Cutler, 2014; Krull, 2014; Weyandt, et al., 2014). A meta-analysis of six short-term clinical trials comparing stimulant medication with placebo in adults with ADHD shows patients receiving the stimulant experienced greater improvement in ADHD symptoms compared with placebo, with an estimated effect size in the medium-to-high range (Cohen's $d = 0.67$, $p < 0.0001$ vs. placebo) (Mészáros et al., 2009). Therefore, the United States Food and Drug Administration (FDA) has approved the efficacy of stimulant medication for the treatment of ADHD (Spencer, Biederman, Wilens, 1998 as cited in Weyandt et al., 2014).

Furthermore, several studies have disclosed most college students who abuse prescription stimulants perceived stimulants to be more appropriate than the street drugs because they are usually prescribed by licensed professionals (DeSantis, Noar et al., 2010; Cutler, 2014; Gomes et al., 2011; McCabe et al., 2008; Teter, McCabe et al., 2005). Cutler (2014) reported college students' perception of prescription stimulants "as opposed to illegal stimulants (such as cocaine and methamphetamine) as "safer" choices for experimentation and getting high because they have been approved by the Food and Drug Administration (FDA) and are "pure," having known chemical compositions and predictable side effects" (p.278). The result of the semi-structured interviews conducted between 2010 and 2011 academic year among seventy-six college students from a large, public northwestern university documented 'safety' as one of the major reasons for PSA among college students (Cutler, 2014). In addition, the study conducted by Arria, Caldeira, Vincent, O'Grady & Wish (2008) also revealed one out of four students perceived increased risk

of harm from occasional PSA (25.2%). Therefore, high perceived harmfulness was associated with lower PSA ($p < 0.05$). These scholars revealed individuals who perceived “no risk” in PSA as the most likely to use stimulants ($b=3.4$, $p<0.01$), followed by those whose perceived risk was “slight” ($b=2.8$, $p<0.01$) or “moderate” ($b=0.9$, $p=0.11$).

On the other hand, stimulants are recognized as potentially addictive chemical substances (Barrett, Darredeau, Bordy et al., 2005; Bukstein, 2014). The addictive characteristics of CNS stimulants may lead to dependency that could ultimately affect the overall wellbeing of a person including the mental, emotional, physical, occupational, intellectual, and spiritual aspects (Chen, 2006; Chidarikire, 2012; Helseth, Lykke-Enger, Johnsen, & Waal, 2009; SAMHSA, 2013). Moreover, the rate of addiction or dependency among individuals with medical use for ADHD treatment has not been well established (Bukstein, 2014). However, the later the age of initiation of prescription stimulant the lower the tendency for prescription stimulant addiction. Individuals who started using prescription medication at age 13 were found to have developed prescription drug abuse and dependence versus those individuals who began using at or after 21 years of age (McCabe, West, Morales, Cranford, & Boyd (2007). The probabilities of developing any lifetime prescription drug abuse among non-medical users was reduced by approximately 5% with each year the non-medical use was delayed (McCabe, West, Morales et al., 2007). In addition, the effects of prescription stimulants abuse on the cardiovascular system remain controversial. For example, Habel et al. (2011) research study showed no associated risk of prescription stimulants on the cardiovascular system among young and middle-aged adults. A non-randomized cohort study conducted among 18 years and older with methylphenidate prescription revealed a lack of a dose-response relationship (Schelleman et al., 2012). The result of the study revealed the age-standardized incidence rate per 1,000 person-years of sudden death or ventricular arrhythmia was

2.17 (95% CI=1.63-2.83) in methylphenidate users and 0.98 (95% CI=0.89-1.08) in nonusers, for an adjusted hazard ratio of 1.84 (95% CI=1.33-2.55) (2012). This result showed the dose of methylphenidate is inversely related to the risk experienced by an individual. For this reason, the authors concluded there may be no causal relationship between methylphenidate and cardiovascular side effects. Even if a 1.8 fold increase in the risk of sudden death or ventricular arrhythmia was reported in young and middle adult at the initiation of methylphenidate (Schelleman et al., 2012). Similarly, some studies have reported prescription stimulant use without the supervision of licensed health care providers is associated with cardiovascular, psychological, spiritual, and mental adverse effects such as cardiac arrhythmias, tachycardia, hypertension, syncope, hopelessness, psychosis, depression (Bukstein, 2014; Helseth, Lykke-Enger, Johnsen & Waal, 2009; McCabe, & Teter, 2007; NIDA, 2012; Ruwald, Ruwald, & Tønder, 2012; SAMHSA, 2013; Schelleman et al., 2012; Stiefel & Besag, 2010 as cited in Martinez-Raga, Knecht, Szerman, & Martinez, 2013; Teter, Falone, Cranford, Boyd, & McCabe, 2010; Volkow, 2010). The meta-analysis randomized clinical trials conducted by Castells, Cunill, Capellà (2013) showed the use of methylphenidate for the treatment of ADHD symptoms was discontinued among ten percent adult because of the adverse effects experienced during treatment. Other identified mild to moderate adverse effects associated with prescription stimulants are dry mouth, insomnia, restlessness, irritability, dysphoria, loss of appetite, weight loss, depression, headaches and potential for sudden cardiac death (Bukstein, 2014; Castells et al., 2013; Martinez-Raga et al., 2013; Teter, Falone et al., 2010). Depressed moods have been recognized in about 30 percent college students who frequently abuse prescription stimulants (Teter, Falone et al., 2010). Some other identified side effects are the exacerbation of existing motor and vocal tics as well as new onset of tics, amphetamine-induced psychosis, and

schizophrenia disorder (Bukstein, 2014; Bramness, et al., 2012). Therefore, prescription stimulant is not safe because they have a potential addictive effects and the addictive characteristics may potentially affect the overall well-being and lead to sudden death

Additionally, Baldwin and colleagues (2006) conducted a needs/assets assessment survey on college campuses using six focus groups, with a total of 45 undergraduate college students from various majors. The college students generated a list of 25 substances used in the college campuses and reported to divert these drugs for nonmedical uses. The report of this survey also revealed college students fake medical conditions to obtain prescription for methylphenidate or other prescription stimulants for the following reasons such as for recreational use, mixing with alcohol to achieve “high” and for financial purpose. The results of the survey also indicated that the students were not adequately educated on the adverse effects associated with the prescription stimulants abuse. At the same time, the researchers discovered that the healthcare providers in the college campuses were not cognizant of the variety of substances used among students and the ways the students obtain these substances. These results not only highlight the importance of further education to raise awareness, but also stress the value of team approach (students, faculty and health-care providers) in preventing substance abuse in college campuses.

Moreover, some studies have shown the relationship between prescription stimulant abuse and other controlled substances such as alcohol and other psychoactive drugs (Arria et al., 2008; Arria & Dupont, 2010; Barrett, Darredeau, Bordy et al., 2005; Barrett, Darredeau Pihl, 2006; DeSantis, Noar et al., 2010; Johnston et al., 2013; Judson & Langdon, 2009; McCabe, Knight, Teter et al., 2005; ; McCabe, Teter, Boyd et al, 2006; McCabe, West, Morales, Cranford, & Boyd, 2007; McCabe, West, Teter et al, 2014; Teter, McCabe et al., 2005). The result of Barrett and colleagues’ (2006) study showed “those who misused MPH were more

likely to have used various other prescriptions and nonprescription stimulant drugs over their lifetimes.” In this study, those who abuse MPH agreed to recreationally utilize other variety of substances during their lifetimes (mean 7.7, SD 3.0) relative to control subjects (mean 3.8, SD 3.1) ($t = 5.98$, $df 98$, $P < 0.001$). Moreover, the Chi-square tests also showed that MPH users were more likely to report recreational use of ecstasy, cocaine, ephedrine, d-amphetamine, and psilocybin (all P s < 0.001) than were control subjects (Barrett 2005. P. 458). These results show that college students are not fully aware of the danger of the use of prescription stimulants including potential for poly-substance abuse.

Stress. Another factor identified with the increase in PSA among college students is stress (Herman et al., 2011). Freshmen college students face challenges from new responsibilities, new curriculum, and higher expectations that are different from high school settings (Herman et al., 2011; Teter, Falone et al., 2010). The workload of college, meeting deadlines, keeping up with social lives, and waiting to the end of the semesters to study for final examinations are some of the stressors identified with college students (Macan, Shahani, Dipboye, & Phillips, 1990; Alzayyat, & Al-Gamal, 2014). The fear of failure and anxiety as a result of change in curriculum reported among college students are encouraging prescription stimulant abuse (Desantis, Noar et al, 2010; Garnier-Dykstra et al., 2012; Gomes et al., 2011; Teter, Falone et al., 2010). However, college students who are able to cope effectively and manage their new environment with change in academic and social lifestyles have shown improvement in academic performances (Forbus, John, & Sanjay, 2010; Kearns & Gardiner, 2007; Macan et al., 1990). DeSantis, Webb, & Noar (2008), survey shows most students who are unable to cope with the workload of college use stimulants for academic performance enhancement. Most college students reported the reason for engaging in prescription stimulant was to improve their grade point average (GPA) (a

measure of academic performances) (Garnier-Dykstra et al., 2012). DeSantis, Webb et al. (2008) study also revealed about 65-percent of students using Adderall to enhance concentrations, 59.8 percent students use Adderall to study, and 47.5-percent use Adderall for increase alertness to study longer. Among all the motives, studying was identified by most college students as the predominant purpose of engaging in prescription stimulant abuse (73-percent to 91.5-percent annually) (Garnier-Dykstra et al., 2012).

On the contrary, the use of prescription stimulant has been reported to have no relationship with increasing the GPA. Those who abuse prescription stimulants have been reported to have lower GPAs when compared to non-users (DeSantis, Noar et al., 2010). The result of the questionnaires administered by Advokat, Lane, & Luo (2011) to a total of 92 students with a self-reported diagnosis of ADHD who use prescription stimulants for ADHD symptoms management was compared with 143 controlled students in a survey of academic performance. The result showed the GPA of the ADHD students who took the medications was still significantly lower than the control group GPA ($p = .022$). McCabe, Knight, Teter et al. (2005) mail survey result also showed students who received a B or lower GPA were almost two times more likely to report prescription stimulant abuse (5.2% (95% CI= 4.2, 6.5) compared to students who earned a B+ or higher (3.3% (95% CI= 2.6, 4.1).

Interventions For Decreasing Substance Abuse Among College Students

The risk for polysubstance use increases among college students who engage in any kind of substance abuse (Barrett, Darredeau, Pihl, 2006; DeSantis, Noar et al., 2010; Johnston et al., 2013; Teter, McCabe et al., 2005; NIDA, 1995). Therefore, most interventions are specifically developed to address substance abuse in general. These interventions can be grouped into three

categories such as the ecological, or environmental approach, the group-centered approach, and the individual-centered approach (Baldwin et al., 2006).

The ecological or environmental approaches. These approaches focus on the institution, community and public policy level in relation to physical and social environment (Baldwin et al., 2006; DeJong, Gomberg, Towvim, & Schneider, 2007; Kann, Telljohann, & Wooley, 2007). The ecological approaches proposed that young people's decision to abuse a substance is fashioned by a "complex combinations of physical, social, economic, and legal factors." These combinations also have a great impact on the substance's demand and accessibility (DeJong et al., 2007, p.231). Therefore, the objective of these preventive strategies is to adjust the physical and social environment in the reduction of substance abuse in the community including college campuses. For example, DeJong and the colleagues (2007) developed 12 policies and enforcement strategies to reduce alcohol problems on campuses. The researchers used a random sample of 9,600 students from 32 four-year colleges and universities. A voluntary, anonymous email survey was administered to assess the students' alcohol-related attitudes, perceptions, behaviors and their supports for the alcohol policies and enforcement strategies. The results showed that the majority of the students at all 32 schools supported stricter enforcement policies and penalties to maintain a safe and substance-free campus. Saltz and DeJong (2002) also concluded that modifying the environment through institution, community, and public policy changes are the most resource-efficient way of reducing substance abuse problems.

Furthermore, several studies have shown the effectiveness of school-based intervention programs on prevention of substance abuse among students. For example, programs which facilitate (a) growth awareness and resistance skills such as messages from media, normative

education, resistance to peer influences, and emphasis on healthy behavior; (b) personal efficacy and social skills such as decision-making, coping and stress management, and communication; and (c) effective components such as improving self-esteem have demonstrated positive effects in reducing the amount of illegal drug found among students (Champion, Newton, Barrett, & Teesson, 2013; Kann, Telljohann, & Wooley, 2007 as cited in Kumar, O'Malley, Johnston, & Laetz, 2013). In general, these approaches empowered students, staff, and faculty with leadership skills to promote policies and plans against all kinds of substance abuse, permit students to embrace positive values and promote a better social interaction among students and faculty (Bucknam, 1994; DeJong et al., 2007).

The group-centered approaches. The objectives of the group-centered approaches in the prevention of substance abuse focus on the relationship between students and their perceptions concerning drinking standards on college campuses (DeJong & Langford, 2002). These approaches allow for strategic planning of different levels of interventions to specifically reduce the abuse of alcohol among college students (DeJong et al., 2002). One of the interventions suggested is the implementation of social norms campaign. Social norms is viewed as perceiving a certain behavior such as the episodic drinking in the college campuses as normal (Moreira, Smith & Foxcroft, 2009). A study by Matten & Neighbours (2005) revealed a correlation between promotions of social norms campaigns and changes in perceived drinking norms. The paired samples t-tests of the study disclosed a reduction in perceptions of individual college student drinking occurrence and amount. The result of the study shows a reduction in the drinking level of alcohol when the idea surrounding drinking in the college campuses was promoted as abnormal and unacceptable. However, the reduction in drinking level was noticed only among the students who perceived episodic drinking was normal in the college campus.

The implementation of social norms has shown a changing effect on students' perceptions of drinking norms which reduces levels of drinking among college students (Matten et al., 2004).

The individual-centered approaches. These approaches include a brief intervention (BI)/ brief motivational intervention (BMI), feedback, provider screening, and mailed feedback on the possible consequences related to substance abuse (Baldwin et al., 2006; Fachini, Aliane, Martinez & Furtado, 2012; Larimer & Cronce, 2007). The purpose of the individual-centered approach is to provide education/awareness and early screening to detect alcohol abuse and its related harmful consequences among college students (Fachini et al., 2012; Larimer et al. 2007). For this reason, the approaches include early identification, education, prevention, treatment with professional advice and feedback. The conclusion of the literature review on the effectiveness of the individual-focused college drinking prevention strategies conducted from 1999-2006 by Larimer and colleagues (2007) revealed BMI as effective method for the individual who wants to quit or not yet dependent on a controlled substance. The individual-centered approaches also were categorized as the information/knowledge programs and the brief motivational intervention (BMI) programs.

The information/knowledge programs. The program provided “a pamphlet with information about risks of drinking, in which participants recorded information about their drinking to a wait-list control.” (Larimer et al. 2007, p. 2443). As an education/awareness program, the overall conclusion of the information/knowledge programs revealed reductions in number of drinks per week over time, and there was no reduction in heavy episodic drinking. Hence, one out of ten reviewed research articles supported the information/knowledge programs.

The brief motivational intervention. The purpose of the BMI program is to reduce extreme drinking by providing early screening and intervention to reduce the number of alcohol-

related problems in the college campuses (Fachini et al., 2012). Several studies have revealed a positive long-term effect on reduction of alcohol abuse among college students after several years with BI/ BMI (Fachini et al., 2012; Larimer et al., 2007; Marlatt et al., 1998 as cited in Baldwin, 2006). A systematic review and meta-analysis conducted by Fachini and colleagues revealed the effectiveness of BI/BMI on college students with episodic drinking. The motivational intervention delivered to these college students was based on the principles of the Brief Alcohol Screening Intervention for College Student (BASICS) protocol. The BASICS protocol includes using (a) techniques of motivational interview and personalized feedback based on students drinking behavior; (b) delivering face-to-face intervention which is usually conducted over the course of two structured sessions and (c) comparison with other conditions (such as control group or alternative intervention) (Fachini et al. 2012, p. 2). The samples of the college student ranged from 54 to 1275 (median=212). The review concluded students receiving BASICS had a significant reduction in alcohol consumption (difference between means =-1.50 drinks per week, 95% CI: -3.24 to -0.29) and alcohol-related problems (difference between means =-0.87, 95% CI: -1.58 to -0.20) after approximately 12-month of follow-up compared to the control group. However, the efficiency of BMI/BI in reducing other drug-related abuse in people not seeking help has not been well established (Hingson, & Compton, 2014; Young, Stevens, Galipeau, Pirie, Garritty, Singh, & Moher, 2014; Saitz, Barrio, & Miquel, 2014). The meta- analysis review also shows 10 out of 14 reviewed studies support BMI. Overall, brief intervention for college students utilizing the BASICS protocol and delivered face-to-face can lower both alcohol consumption and negative consequences in college students.

Problem Statement

The rate at which stimulants such as Amphetamine-dextroamphetamine combination agent (Adderall) and Methylphenidate (Ritalin) are prescribed has rapidly increased (4% in 1991 to 45% in 2010) (Akici et al, 2013; NIDA, 2012; World Drug Report, 2014). The research conducted by McCabe and colleagues in 2013 and Teter and colleagues in 2006 revealed increase in prevalence of PSA among college students from 5.4% in 2003 to 9.3% in 2013. The health related consequences associated with PSA are physical, psychological, spiritual and some risks taking behaviors such as polysubstance abuse (American College Health Association, 2014; NIDA, 2011; Arria & Dupont, 2010; Barrett, Darredeau, Bordy et al., 2005; Barrett, Darredeau, Pihl, 2006; Becker & Starrels, 2014; Bukstein, 2014; Castells et al., 1013; Chen, 2005). While several approaches have been implemented to manage substance abuse in general, there is lack of evidence-based recommendation for managing PSA among college students. Therefore, the purpose of this project was to develop evidence-based recommendations for managing PSA among college students.

Chapter 2: Concept Analysis

The concept analyzed in this chapter is prescription stimulant abuse. The method of concept analysis by Walker & Avant (1985) was used for the analysis.

Definitions

Stimulants

Stimulants are one of the classes of psychoactive drugs that act to alter the activities in the brain (Bukstein, 2014). According to Bukstein, stimulant ingestion increases the “intrasynaptic concentrations of dopamine and norepinephrine” in the brain (2014). Dopamine and norepinephrine are among the neurotransmitters found in the brain and assist in the conduction of signals in the brain and other vital areas (Mandal, 2013; McCance & Huether, 2010, p. 448, 2010). These neurotransmitters act as “chemical messengers”. The effect of dopamine and norepinephrine may be inhibitory or excitatory. The excitatory effects of synthetic dopamine and norepinephrine in the brain stimulate the sympathetic nerves and may produce some physiological symptoms such as tachycardia, hypertension, euphoria, jittering, hyperglycemia, and restlessness (NIDA, 2014). The inhibitory effects of chemical messengers on the parasympathetic nerves may slow down most activities of the body and result in depression and drowsiness (Mandal, 2013; McCance et al, p. 448, 2010). In addition, stimulants such as amphetamines (Adderall and Dexedrine) and MPH (Ritalin and Concerta) are classified as one of the schedule II drugs. Schedule II drugs provide positive therapeutic effects, however, they have a significant potential for abuse (DEA.Gov. 2005 & NIDA, 2006). Therefore, this class of drugs may only be used if prescribed and signed by a licensed practitioner. A refill of schedule II drugs is permitted only after the patient returns to the licensed practitioner for additional assessment (Arcangelo & Peterson, 2013). Furthermore, stimulants are classified as

long-acting with sustained release and short acting with immediate release (Bukstein, 2014). For example, amphetamines are available in immediate and sustained-release formulations with an onset of action of 20 to 60 minutes. The duration of methylphenidate's clinical effect varies such as short-acting (3 to 5 hours); intermediate-acting (4 to 8 hours); and long-acting (8 to 12 hours). Moreover, the immediate-release formulation of mixed amphetamine salts has a duration of up to six hours and the longer-acting formulations last up to 10 hours (Daughton & Kratochvil, 2009).

Prescription Stimulants

The word 'prescription' can be variously defined. However, the working definition embraced for this project is from Aronson (2012). The research article by Aronson (2012) defines prescription as an officially written instruction or message provided by a licensed healthcare provider for a specific condition. In addition, the written instruction or message from a licensed professional will be "balanced" if it includes a detailed information of the medicine or therapy, the form, frequency, dosage, route, and to whom the medication or therapy will be given (Aronson, 2009 & Aronson, 2012). Prescription stimulants used as prescribed by a licensed health care practitioner for managing specific symptoms are simultaneously referred to as medical use prescription stimulants (MUPS) (Teter, McCabe et al., 2005). Therefore, a prescription stimulants is referred to as "balanced" prescription when it contains information provided by a licensed healthcare practitioner, for a patient's appropriate condition(s) and also within the therapeutic goal to provide more benefits than harm the patient (Aronson, 2009 & Aronson, 2012).

Prescription Stimulant Abuse (PSA)

PSA is defined as unlawful use of prescription stimulants by an individual in a way that is not prescribed or authorized by a licensed care practitioner (Cutler, 2014; DAWN, 2011; Greydanus, 2014; McCabe et al, 2006; NIDA, 2014; Teter, McCabe et al., 2007, Barrett et al., 2006; Volkow & Swanson, 2003; Volkow, 2010). The unlawful way of obtaining and using prescription stimulants or PSA are also refer to as a “nonmedical use” of stimulants (NMUPS) (Baldwin et al., 2006; Barrett et al., 2006; Cutler, 2014; McCabe, Knight, Teter et al., 2005; McCabe et al, 2006; NIDA, 2014; Teter, McCabe et al., 2005; Rozenbroek & Rothstein, 2003). The use of prescription stimulants for an enjoyable effect such as recreational use in abundant quantities and getting ‘high’ is referred to as PSA or nonmedical use (Barrett et al., 2006). The nonmedical users of prescription stimulants have been also known to use prescription stimulants via intranasal, smoking on inhalation and or intravenous (Teter, McCabe et al., 2005; Barrett et al., 2006). Therefore, the prescription stimulants use in another way or route other than indicated by a licensed practitioner is characterized as PSA

Defining Attributes of PSA

The defining attributes of PSA are:

‘Unauthorized Use’

The prescription stimulants (long or short acting) which are being used other than for the right patient, dose, frequency, route are viewed as unauthorized use (Aronson, 2009; Aronson, 2012; Bukstein, 2014; Gunter, 2013; Judson et al., 2009; Weyandt, et al, 2014).

Diversion or Sharing

The prescription stimulants that are diverted or shared with friends, family or others are also characterized as PSA (Ellis & Mullan, 2009; Barrett et al., 2006; Garnier-Dykstra, 2012). The primary source of MPH abuse has been identified as through diversion from friends or family with MUPS (Barriett, et al., 2006; McCabe, West, Teter et al., 2014; Garnier-Dykstra, 2012).

Antecedents To PSA

The Increase In The Prescription Of Stimulant And Diversion

Most PSA occurs as a result of the increase in the availability of stimulants through written prescription and diversion to friends, family and others (American College Health Association, 2014; Barrett et al., 2005; Baldwin et al, 2006). As discussed in previous chapters, several studies have shown stimulants such as Amphetamine-dextroamphetamine combination agent (Adderall) and Methylphenidate (Ritalin) as one of the most written psychoactive prescriptions among college students (McCabe, West, Teter et al, 2014; Akici et al, 2013; Baldwin et al., 2006; Herman et al., 2011; Weyandt, et al., 2014). Likewise, the increase in the prescription of stimulants among college students has paved the way for the increase in diversion or sharing among college students.

Lack Of Awareness Of The Negative Impacts Of Prescription Stimulants

Other antecedents to PSA are lack of awareness of the negative impact of prescription stimulants and stress (Barrett et al., 2006; Cutler, 2010; Garnier-Dykstra et al., 2012). Most college students perceive prescription stimulants as safe because they are prescribed by licensed healthcare practitioners. However, a study by Barrett and colleagues (2006) revealed the risk of

simultaneous polysubstance use among drug-using college students. The result of the study indicated that most students who recreationally utilize a controlled substance have the tendency to engage in more than one substance such as alcohol and other psychoactive drugs (Barrett et al., 2006).

Stress

The stressful event of college student life has been revealed to precipitate the increase of PSA (DeSantis, Webb et al., 2008; McCabe, West, Teter et al., 2014). Most college students (73%-91%) have identified studying for good grades as one of the most reasons that precipitated the reason for their PSA (Garnier-Dykstra, et al., 2012).

Consequences Of PSA

The addictive characteristics of CNS stimulants may lead to dependency that could ultimately affect the overall wellbeing which includes the “mental, emotional, physical, occupational, intellectual, and spiritual aspects of a person's life.” (Bukstein, 2014; SAMHSA, 2013; Chen, 2006; Chidarikire, 2012; DeSantis, Webb et al., 2008). Studies have shown the relationship between prescription stimulant abuse and other controlled substances such as alcohol and other psychoactive drugs (DeSantis, Webb et al., 2008; Barrett et al, 2005; Arria, et al., 2008; McCabe, West, Teter et al, 2014; Johnston, O'Malley, & Bachman, 2013).

Prescription stimulants use without the supervision of licensed health care providers have been associated with cardiovascular adverse effects such as cardiac arrhythmias and hypertension (Ruwald, Ruwald, & Tønder, 2012 & Stiefel & Besag, 2010 as cited in Martinez-Raga, Knecht, Szerman, & Martinez, 2013).

Case Model

MK was a 19-year-old male and freshman college student. He came to the outpatient clinic for a refill on his ADHD medication (Ritalin IR 30mg twice daily). Ritalin was prescribed to MK 10 days ago, and the instruction was to have a 30-day supply from his pharmacy. MK stated he had his 30-day supply but had increased his frequency of dosage from twice daily to as needed. MK also stated using his medication more than three times daily due to the stressful events surrounding his upcoming final examination.

After completing the history and physical examination, MK was discovered to have given some of his prescribed medications to his roommate (SL) who knows MK's health diagnosis. MK stated SL told him he had read on the internet the efficacy of Ritalin (a stimulant) in increasing concentration and time for study. MK stated he was not sure of how many of his medication SL had taken but knew SL had been crushing and inhaling some medication. MK also stated they both keep their medications in one medicine cabinet in the same bathroom he shares with his roommate.

In this case model, MK demonstrated some attributes of PSA such as taking prescribed stimulants not as authorized by his health care practitioner, using the wrong dose with the wrong frequency and sharing his prescribed stimulant with his roommate. MK's roommate (SL) also demonstrated the attribute of PSA by utilizing prescription stimulant without authorization and through the route not approved or recommended by a licensed healthcare practitioner.

Application To The Project

The importance of increasing awareness of PSA among college students and their providers is critical to the management of PSA. College students with prescription stimulants need to be aware of the associated risks identified with prescription stimulants. Similarly, health

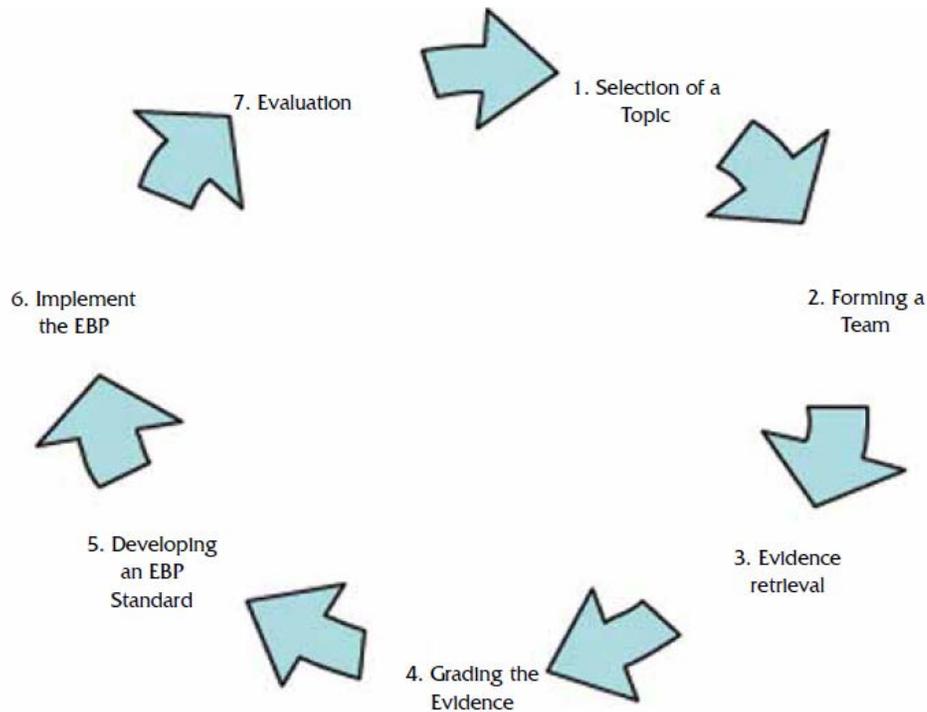
care providers caring for college students who necessitate prescription stimulants need to be familiar with substance abuse prevention efforts to manage PSA. Evidence-based recommendations for managing PSA can be used as a guiding tool for healthcare providers when healthcare providers provide face-to-face consultation in the primary care settings to college students with prescription stimulants. In addition, collaborating with family of the college students with prescription stimulants and the community is very crucial to the management of PSA. Therefore, the evidence-based recommendations generated from this project will be useful also in reminding health care providers to involve the family of college students in the management of their stimulant prescriptions.

Chapter 3: Methodology and Framework

Methodology and Framework

The IOWA Model of Evidence- Based Practice (EBP) was used to guide this evidence-based project. The IOWA model provides a systematic approach to describing knowledge transformation and to guide the implementation of research into clinical practice (Titler et al., 2001). This model has shown effectiveness in improving health care outcomes internationally across a variety of practice settings (Titler et al., 2001). Advanced practice nurses may use this model to identify a significant clinical problem relevant to their clinical practice, develop evidence-based solutions and implement the solutions to the practice setting.

Figure 1: **Seven Steps of Iowa Model of Evidence-Based Practice (EBP)**



by Doody & Doody, 2011.

The Iowa Model of EPB involves seven steps 1) select a topic, 2) form a team, 3) retrieve evidences, 4) grade evidences, 5) develop an evidence-based standard, 6) implement the evidence-based standard, and 7) evaluate the implementation of the evidence-based standard. However, this study will focus on steps one through five of the model. (See Figure 1 for Seven Steps of the IOWA Model) (Doody & Doody, 2011; Titler et al., 2001). This project focuses only on steps one through five.

Step One: Selection Of A Topic

The topic of this project was selected based on the concerns expressed by various research articles regarding the increase in the occurrence of PSA especially among college students' populations (Barrett et al., 2006; Cutler, 2014; McCabe et al., 2006; McCabe, West Teter et al., 2014; SAMHSA, 2013; Teter, McCabe et al., 2005; Underhill & Langdon, 2013). As one of the highest priority of public health concerns, prescription stimulants such as Adderall, Vyvanse, concerta and Ritalin are reported as some of the most widely misused and abused than opioids or other psychoactive prescriptions (McCabe, West. Teter et al., 2014; NIDA 2011: Johnson et al., 2013). The number and percentage of persons aged 12 and older who currently use methamphetamine increases in 2010 from 353,000 (0.1-percent) to 595, 000 (0.2-percent) in 2013 (SAMHSA, 2013). In addition, the result of the American College Health Association-National College Health Assessment (ACHA-NCHA II) released in the spring of 2014, reported 10.6-percent college male and 8.0-percent college female students using prescription stimulants within the last 12 months (ACHA-NCHA II, 2014). In 2009, DAWN associated about 93, 562 emergency room visits with amphetamines and methamphetamine misuse (NIDA, 2011). College students who lack awareness of the dangers surrounding the abuse of prescription stimulant face several health consequences which can impact their total well beings. Based on

this information, a close therapeutic monitoring of the prescription stimulant by healthcare providers and comprehensive approach of management is essential to minimize the abuse of prescription stimulants and reduce some health-related consequences (He, Sense, & Antshel, 2015; McCabe, West, Teter et al., 2014).

Step Two: Forming A Team

The team members include a MSN capstone committee (Cedarville University, School of Nursing), and a healthcare provider from a local health network.

Step Three: Evidence Retrieval

This step involves retrieving related research evidences from educational databases to support the project. The following stages were followed to retrieve evidences for this project:

Databases. Articles were retrieved from the following databases: Academic Search Complete, Alt HealthWatch, AMED - The Allied and Complementary Medicine Database, CINAHL Plus with Full Text, Cochrane Database of Systematic Reviews, Health Source-Nursing/Academic Edition, MEDLINE with Full Text, New Testament Abstracts, Old Testament Abstract, Psychology and Behavioral Sciences Collection, and PUBMED.

Key Terms. The following key terms used for retrieving articles from the databases are: prescription stimulant abuse, nonmedical prescription use, prescription abuse, ADHD, stimulant abuse intervention, stimulant abuse management, college health, substance abuse prevention, substance abuse management, prescription stimulants, PSA prevention, young adults and college students. Articles were not limited to full-text articles and the University's holdings: Inter-Library Loan method was used to retrieve articles from other institutions for a comprehensive literature reviews.

Inclusion Criteria. The research articles were retrieved based on the following inclusion criteria: 1) peer-reviewed research articles from the studies conducted in the United States and from the international studies, 2) articles published in the last fifteen years with exception of classic studies on PSA and substance abuse in general, 3) articles on PSA and other substance abuse studies that use college students/young adults as the study participants, 4) practice guidelines and position statements from professional organizations such as Agency for Healthcare Research and Quality's (AHRQ) National Guideline Clearinghouse were included this project.

Step Four And Five: Grading The Evidence and Developing EBP Recommendation

During this phase, articles were reviewed and organized. The strength of the research findings was graded. For this project, Melnyk's grading system was used to grade the strength of research evidences, and the Joanna Briggs Institute (JBI) binary grading system of recommendation was used to grade the evidence-base recommendations. The Melnyk grading system (2011) consists of seven levels with level I being the strongest and level VII being the weakest evidence. The grading system is presented below in table 1.

Table 1: Hierarchy for Grading Data

Level I	Evidence from a systematic review or meta-analysis of all relevant RCTs
Level II	Evidence obtained from well-designed RCTs
Level III	Evidence obtained from well-designed controlled trials without randomization
Level IV	Evidence from well-designed case-control and cohort studies
Level V	Evidence from systematic reviews of descriptive and qualitative studies
Level VI	Evidence from single descriptive or qualitative studies
Level VII	Evidence from the opinion of authorities and/or reports of expert committees

Note. Adapted from *Evidence-based practice in nursing and healthcare: A guide to best practice*, by Melnyk, B.M. & Fineout-Overholt, E., 2011, Philadelphia: Lippincott, Williams & Wilkins.

The JBI grading of the evidence-based recommendation enables easy interpretation and implementation of the research evidences for both patients and clinicians into practice. The new JBI grade of recommendation are adapted from the Grading of Recommendations Assessment, Development and Evaluation also known as the GRADE approach (The Joanna Briggs Institute, 2014). The GRADE approach provides supervision to grading the quality of the primary evidence and the strength of recommendations in health care (Brozek et al., 2009). Unlike the level systems which classify findings based only on study design, the GRADE approach classifies research findings based on other factors such as “critical appraisal/risk of bias, publication bias, inconsistency, indirectness, and imprecision of evidence, effect size, dose-response relationships, and confounders.” (The Joanna Briggs Institute, 2014, p. 3). Thereby, randomized control trials study (Level I) may be ranked lower than a descriptive study (Level V or VI) or expert opinions (Level VII) when and where applicable (Brozek et al., 2009; The Joanna Briggs Institute, 2014).

The GRADE approach was created by Grade Working Group in 2000 and used to assist healthcare professionals with implementation of evidence into practice (Joanna Briggs Institute, 2014). The approach is now recognized by many evidence-based healthcare organizations such as Cochrane, World Health organizations (WHO), Agency for Healthcare Research and Quality (AHRQ), National Institute for Health and Care Excellence (NICE), British Medical Journal (BMJ) amongst others (The Joanna Briggs Institute (2014). Furthermore, the GRADE recommendation approach suggested some vital factors such as the “balance between desirable and undesirable effects, the quality of the evidence, values and preferences, and costs” while developing recommendations (The Joanna Briggs Institute, 2014, p. 7). The latest JBI binary grading system of recommendations adapted from GRADE contains two grading options: A “Strong” or “Weak” grade of recommendations with grade A being the strong recommendation, and Grade B representing a weak recommendation.

Step Six: Implementation Of The Evidence-Based Standard

Based on the graded and the quality of the evidence, the recommendation emanated from these research evidences will be incorporated into the clinical practices according to clinical protocols and guidelines. Officials from a local health network and the staff manager of a university student health center had expressed interested in this evidence-based recommendations.

Step Seven: Evaluation

The seventh step of the IOWA EBP involves evaluation of the research evidence for success and possible modification. This phase also includes follow-up process to verify the efficacy of the evidence-based recommendation.

Ethical Considerations

This project is exempted from the Cedarville University IRB since there is no potential harm involved.

Committee Members

The committee consists of two members and one professional consultant:

- Chu-Yu Huang, RN, PhD (Chair)
- Elizabeth Delaney, MS, RN, CNS, FNP-BC, OCN, ACHPN (committee member)
- Cliff Fawcett, M.S.N., M.Ed., RN, CFNP (professional consultant)

Chapter 4: Results

Twenty-six articles were used to develop evidence-based recommendations for this project. There were thirty six articles that met the inclusion criteria for this research project. Ten of the thirty six articles were excluded from the analysis due to the use of study participants from mixed age groups (such as a mix of middle school, high school and college students or adolescents with college populations and young adults) and limited evidence for managing prescription stimulants abuse. However, two longitudinal study with mixed participants was retained for this project. One of the longitudinal studies was designed as a randomized controlled trial. However, both longitudinal studies provided descriptions of the effect of prescription drug abuse interventions introduced during adolescents on future initiation of substance abuse.

The article selection process is presented in Figure 2. Table 2 presents a summary of the results from the 26 articles.

Figure 2: Article Selection Process

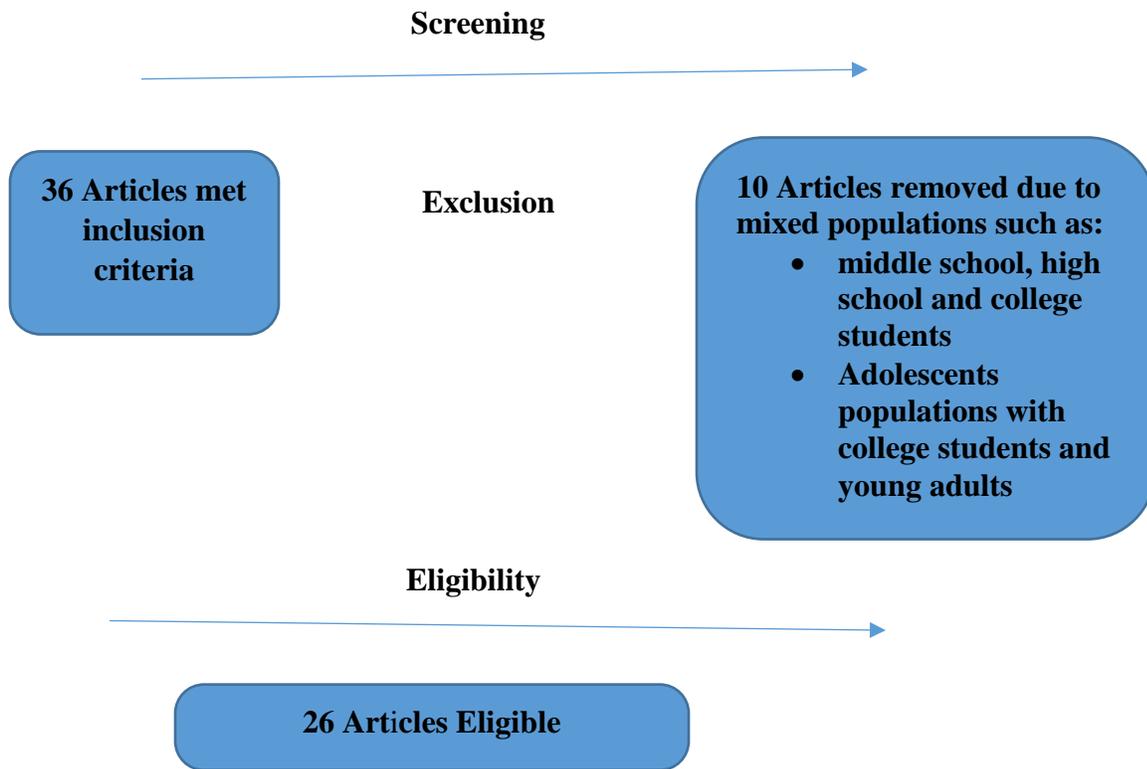


Table 2: Summary of Results from the Selected Articles

Authors & Year published	Research Titles	Design	Results	Level of Evidence
Agency for Healthcare Research and Quality (2013)	Attention deficit hyperactivity disorder. Diagnosis and management of ADHD in children, young people, and adults.	Systematic Review	<p>People with ADHD require integrated care that addresses a wide range of personal, social, educational, and occupational needs.</p> <p>Care should be provided by adequately trained healthcare and educated professionals.</p> <p>ADHD with prescription stimulants need supervision</p>	Level I
Amaro (2010)	Brief Screening and Intervention for Alcohol and Drug Use in a College Student Health Clinic: Feasibility, Implementation, and Outcomes.	Descriptive Study	<p>Drinking and drug use decreased between baseline and 6 month after Brief Alcohol Screening Intervention for College Student (BASICS) program</p> <p>Alcohol use past 6 months before intervention: Baseline: 98.4%; 6-months follow-up after intervention: 93.1% Chi-square value 14.3; p value (.0002)</p> <p>Heavy Episodic drinking past 6 month before intervention: Baseline: 67.2% 6-months follow-up after intervention: 50.3% Chi-square: 77.1; p<.0001</p> <p>Illicit drug use, past 6 months before intervention Baseline: 56.1% 6-months follow-up after intervention: 51.0% Chi-square: 190.1; p <.0001</p> <p>Illegal use of prescription drugs (any), before intervention Baseline past 6 months before intervention 19.6% 6-months follow-up after</p>	Level VI

			<p>intervention 16.9% Chi-square: 116.9 P<.0001</p> <p>At 6-month follow-up, college students reported decreases in the quantity and frequency of weekly episodic drinking (67% to 50%), decreases in alcohol or drug-use related distress and consequences, and reductions in illicit drug and prescription use.</p>	
American College Health, (2007)	Stimulant Misuse : Strategies to Manage a Growing Problem	Expert opinion	<p>Recognize the existence of this problem; survey one’s campus environment</p> <p>Cooperation of university officials, health clinicians, college pharmacies, and local law enforcement officials</p> <p>Limit availability and access to prescription stimulants Educate high school and college students regarding the dangers of stimulant abuse</p> <p>Recognize signs of stimulant misuse and abuse and provide management options</p>	Level VII
Arria, Caldeira, Vincent, Grady, & Wish (2008).	Perceived Harmfulness Predicts Nonmedical Use of Prescription Drugs Among College Students: Interactions with Sensation-Seeking	A Longitudinal Descriptive Correlational Study	<p>High perceived harmfulness of PSA is associated with lower prevalence of nonmedical use of prescription stimulant use at all levels of sensation-seeking ($p < 0.05$).</p> <p>Individuals who perceived “no risk” in PSA were the most likely to use stimulants ($b=3.4, p<0.01$), followed by those whose perceived risk was “slight” ($b=2.8, p<0.01$) or “moderate” ($b=0.9, p=0.11$).</p> <p>Increasing perceived harmfulness may be a viable prevention strategy for most students</p>	Level VI

<p>Baldwin, Johnson, Gotz, Wayment, & Elwell (2006).</p>	<p>Perspectives of college students and their primary health care providers on substance abuse screening</p>	<p>Exploratory descriptive Qualitative Face to face with focus group discussion</p>	<p>1. There are inconsistencies in substance abuse reported by the college students and the knowledge of their healthcare providers regarding the extent of substance use on college campus.</p> <p>2. Differences of opinions about who should bring up the topic of substance abuse in a college health care setting:</p> <ul style="list-style-type: none"> • Providers recognized their critical role in bringing up the topic of substance abuse with their patients and felt responsible for creating an atmosphere of trust. • However, students prefer substance abuse be addressed by a psychologist or a counselor since substance abuse is a "mental issue." • Substance abuse only becomes a doctor's issue if it is health-related, such as if the provider is about to prescribe medication or if the patient is addicted to a substance. <p>3. Difficulties in provider-patient communication reported by the healthcare provider and the student groups.</p> <ul style="list-style-type: none"> • Providers stated awkwardness in provider-patient communication about substance use. • Students were concerned about the confidentiality of information disclosed during an office visit and argued that they are afraid of negative judgment when disclosing a substance-abuse problem to a health-care provider in the university environment 	<p>Level VI</p>
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Barrett, Darredeau, Bordy, & Pihl (2005).	Characteristics of Methylphenidate Misuse in a University Student Sample.	Descriptive study Structured interviews	<ul style="list-style-type: none"> • Methylphenidate (MPH) misusers reported using a greater variety of substances recreationally throughout their lifetimes (mean 7.7, SD 3.0) relative to control subjects (mean 3.8, SD 3.1) {t = 5.98, df 98, P < 0.001}. • Chi-square tests revealed that MPH users were more likely to report recreational use of ecstasy, cocaine, ephedrine, d-amphetamine, and psilocybin (all Ps < 0.001) than were control subjects. 	Level VI
Barrett, Darredeau, Pihl (2006)	Patterns of Simultaneous Polysubstance use in drug using university students	Qualitative Descriptive study	<ul style="list-style-type: none"> • Those who misused MPH were more likely to have used various other prescription and nonprescription stimulant drugs over their lifetimes, (mean 7.7, SD 3.0) relative to control subjects (mean 3.8, SD 3.1) {t = 5.98, df 98, P < 0.001}. • The Chi-square tests showed that MPH users were more likely to report recreational use of ecstasy, cocaine, ephedrine, d-amphetamine, and psilocybin (all Ps < 0.001) than were control subjects • Chi-squared tests revealed that when alcohol was used in combination with any of cannabis, psilocybin, MDMA, cocaine, amphetamine, methylphenidate (ps<0.01) or LSD (p<0.05) its initial use preceded the administration of the other substance. • Paired samples t-tests revealed that when alcohol was used with cocaine (p<0.01) or methylphenidate (p<0.05) it was ingested in 	Level VI

			greater quantities than when used in their absence.	
Bangert-Drowns (1988)	The effects of school-based substance abuse education	Meta-analysis	<p><u>Drug-related knowledge</u>; Alcohol and drug education successfully increased drug-related knowledge, but was less successful in changing attitudes, and least successful in changing the drug-related behaviors of students. Knowledge: $t(25) = 6.83, p < .001$ Attitude, $t(17) = 5.35, p < .001$</p> <p>The average effect size for knowledge criteria was 0.76 standard deviations; attitude criteria: 0.34 standard deviations; Behavior criteria: 0.12 standard deviations.</p> <p>Only the knowledge and attitude effects were large enough to be reliably considered different from zero. The average effect for behavior was not significantly different from zero, $t(13) = 1.23, p = .24$.</p> <ul style="list-style-type: none"> • Typical substance abuse education (focus on conventional alcohol and drug prevention) had its most positive effects on knowledge and attitudes, but was unsuccessful in changing the drug-using behaviors of students. 	Level I
Espada, González, Lloret, Guillén-Riquelme, Orgilés (2015)	Meta-analysis of the effectiveness of school substance abuse prevention programs in Spain.	Meta-analysis	<p>Oral and written substance abuse prevention program information together showed statistically significant results ($d = 0.69; P < .01$).</p> <p>The type of therapist implementing the program explained part of the variability as: the programs implemented by professionals alone ($d = 0.25; p < .01$) and those implemented by professionals and teachers together ($d = 0.48; p < .01$)</p>	Level 1

			showed remarkable differences in effectiveness.	
Fachini, Aliane, Martinez, & Furtado, (2012)	Efficacy of brief alcohol screening intervention for college students (BASICS)	A meta-analysis of randomized controlled trials.	<p>Overall, brief intervention for college students: (BASICS), delivered face-to-face lowered both alcohol consumption and negative consequences in college students.</p> <p>At approximately 12 months, students receiving BASICS had a significant reduction in alcohol consumption (difference between means = -1.50 drinks per week, 95% CI: -3.24 to -0.29) and Alcohol-related problems (difference between means = -0.87, 95% CI: -1.58 to -0.20) compared to controls.</p> <p>On alcohol consumption: Q-statistics = 32.61, 11 df, p < .01). On alcohol related problems: Q-statistics = 21.38, 10 df, p = .02.</p> <p>Brief intervention used “according to the principles of BASICS protocol or very similar one: (1) BI using techniques of motivational interview and personalized feedback, (2) face-to-face intervention, and (3) Comparison with other conditions (such as control group or alternative intervention).</p>	Level I
Ford, & Schroeder, (2009).	Academic strain and non-medical use of prescription stimulants among college students.	Descriptive Correlational	<p>There is no direct connection between academic strain and stimulant use: Students who experience higher levels of academic strain should be more likely to report the presence of negative affect states.</p> <p>In the structural model, academic strain is significantly associated with depression (Beta ¼ .070), as students under greater levels of academic strain are more likely to report higher levels of depression than respondents</p>	Level IV

			<p>who report lower levels of academic strain</p> <p>Students who report higher levels of depression are more likely to report the non-medical use of prescription stimulants</p> <p>Academic strain and depression in the past year .070***</p> <p>Academic strain and stimulant use in the past year .001</p> <p>Academic strain and depression in the past 30days .192***</p> <p>Academic Strain and stimulant use in the past 30 days .002</p> <p>(Standardized parameter estimate as shown ***p < .001).</p>	
Foxcroft (2014)	Motivational interviewing (MI) for alcohol misuse in young adults.	Randomized controlled trials	<p>At four or more months follow-up, effects were found for the quantity of alcohol consumed (standardized mean difference (SMD) 0.14; 95% confidence interval (CI) -0.20 to -0.08 or a reduction from 13.7 drinks/week to 12.2 drinks/week), Moderate quality of evidence;</p> <p>frequency of alcohol consumption (SMD -0.11; 95% CI -0.19 to -0.03 or a reduction in the number of days/week alcohol was consumed from 2.74 days to 2.57 days), Moderate quality of evidence;</p> <p>Peak blood alcohol concentration (BAC) (SMD -0.14; 95% CI -0.23 to -0.05 or a decrease in peak BAC from 0.144% to 0.129%), Moderate quality of evidence.</p> <p>A marginal effect was found for alcohol problems (SMD -0.08; 95% CI -0.15 to 0.00 or a reduction in an alcohol problems scale score from 8.91 to 8.18), Low quality of evidence.</p> <p>No effects were found for binge drinking (SMD -0.05; 95% CI -0.12</p>	Level 1

			<p>to 0.01), Moderate quality of evidence; or average BAC (SMD -0.08; 95% CI -0.22 to 0.06), Moderate quality of evidence.</p> <p>Other outcomes and at four or more months follow-up we found no effects on drink-driving (SMD -0.11; 95% CI -0.31 to 0.09), Moderate quality of evidence;</p> <p>or other alcohol-related risky behavior (SMD -0.14; 95% CI -0.30 to 0.02), Moderate quality of evidence.</p> <p>Overall, no substantive, meaningful benefits of interventions for the prevention of alcohol Misuse</p> <p>Statistically Significant effects are not consistent for all misuse measures Although some significant effects were found, the effect sizes were interpreted as too small, given the measurement scales used in the studies included in the review, to be of relevance to policy or practice.</p> <p>Moreover, the statistically significant effects are not consistent for all misuse measures, heterogeneity was a problem in some analyses and bias cannot be discounted as a potential cause of these finding</p>	
Herman, Shtayermman, Aksnes, Anzalone, Cormerais, & Liodice (2011).	The Use of Prescription Stimulants to Enhance Academic Performance Among College Students in Health Care Programs.	Cross-sectional, descriptive, and associational study	<p>Approximately 10.4% (32) of students surveyed have either used a stimulant or are currently using prescription stimulants illegally.</p> <p>The most common reason for stimulant use was to focus and concentrate during studying (93.5%).</p> <p>Of the 308 students, 45.2% were female, 83.9% were Caucasian, and amphetamine-dextroamphetamine was the most commonly abused stimulant (71.4%).</p>	Level VI

			<p>Demographic Race/ethnicity: Caucasians significant for nicotine dependence, Alcohol abuse $p < .05$, alcohol dependent $p < .05$, and drug dependence $p < .001$</p> <p>Male gender significant for alcohol dependence $p < .05$ Female for nicotine dependence $p < .001$ Asian demographic is significant for stimulant dependent $p < .001$ Students in PA program also significant for nicotine dependence $p < 0.001$ compare to other professions such as RN, DO, PT and mental health counseling.</p> <p>Female for stimulant dependent Male for alcohol dependence $p < .001$</p> <p>Recommended substance abuse and awareness programs combined with stress management programs in an overall substance-abuse reduction strategy, including the use of prescription stimulant use beyond the originally intended purpose.</p>	
Kazemi, Levine, Dmochowski, Nies, & Sun, (2013).	Effects of Motivational Interviewing Intervention on Blackouts Among College Freshmen.	Experimental Longitudinal study	<ul style="list-style-type: none"> • The rate of blackouts decreased from 40% at baseline to 16% at six months ($p < .0001$). • The average number, time, and days of drinking and frequency of drug use decreased significantly ($p < .0001$). • MI had an impact on reducing alcohol consumption and the rate of blackouts among college freshmen who were engaging in high-risk drinking and illicit drug use. 	Level III
Larimer, M. E., & Cronce, J. M.	Identification, prevention, and	Literature Review	<ul style="list-style-type: none"> • No support was found for information/knowledge 	Level V

(2007).	treatment revisited: individual-focused college drinking prevention strategies 1999-2006.		<p>approaches alone, or for brief values clarification approaches alone or with other informational content.</p> <ul style="list-style-type: none"> Evidence was found in support of skills-based interventions and motivational interventions that incorporated personalized feedback, with or without an in-person intervention. Normative re-education interventions received mixed support though personalized normative feedback was associated with positive outcomes. 	
Looby, De Young, & Earleywine, (2013).	Challenging expectancies to prevent nonmedical prescription stimulant use.	Randomized Control Trials	<p>The expectancy challenge successfully modified expectancies related to prescription stimulant effects.</p> <p>19% of the total sample reported initiation of non-medical use of prescription stimulant by follow-up.</p> <p>Nearly all individuals who (17/18) who reported non-medical use attributed their use to cognitive enhancement and study assistance motivations.</p>	Level 1
Mason, Deane, Kelly, Peter, & Crowe (2009).	Do Help in the Management of Cravings in Substance Abuse Treatment?	Descriptive Cross-sectional study with interview	<p>Spirituality and self-efficacy have significant relationships with cravings</p> <p>Self-efficacy mediated the relationship between spirituality and drug and/or alcohol cravings</p> <p>There were positive correlations found between spirituality and self-efficacy ($r = .33$) and spirituality and religiosity ($r = .69$).</p> <p>Spirituality has a significant influence on “cravings” ($\beta = -.33$, $p = .04$).</p> <p>A statistically significant inverse</p>	Level VI

			<p>relationship was found between “cravings” and spirituality ($r = -.30$) No significant effect for the influence of religiosity on “cravings” ($\beta = .05$, $p = .75$).</p> <p>Self-efficacy had a significant influence on “cravings” ($\beta = -.34$, $p = .01$)</p> <p>Self-efficacy was negatively correlated with “cravings” ($r = -.42$).</p> <p>The R2 suggests that spirituality and religion account for 8.9% of the variance in “cravings.”</p>	
McCabe & Teter (2007)	Drug use related problems among nonmedical users of prescription stimulants:	Descriptive Qualitative	<p>Increase in simultaneous poly-drug use occurs among college students with NMUPS than other drug users (53.8% versus 16.9%, $p < 0.001$)</p> <p>Past year medical users of prescription stimulants will experience blackouts as a result of drug use (21.7% versus 8.3%, $p < 0.001$), engaged in illegal activities to obtain drugs (27.4% versus 9.3%, $p < 0.001$), and experienced withdrawal symptoms when they stopped taking drugs (14.6% versus 2.5%, $p < 0.001$) than other drug users.</p> <p>The frequency of (nonmedical use prescription stimulants) NMUPS was associated with drug use related problems based on the (Drug Abuse Screen Test (DAST-10)).</p> <p>Among past-year non- medical users of prescription stimulants ($n=212$), experiencing three or more DAST-10 items was reported by 42.2% of those who used on 1 to 2 occasions, 58.2% (3 to 5 occasions), 58.3% (6 to 9 occasions), and 76.3% of those who used on 10 or more occasions ($\chi^2 = 12.9$, $df=3$, $p < 0.01$).</p>	Level IV

			Majority of nonmedical users of prescription stimulants are polydrug users and should be screened for potential drug abuse or dependence, especially those who report non-oral routes of administration.	
Redman (2008).	Stressful life experiences and the roles of spirituality among people with a history of substance abuse and incarceration.	Qualitative Descriptive	<p>Eight themes emerged from the study regarding the roles that spirituality played in the study participants' lives, including utilizing spirituality to:</p> <ol style="list-style-type: none"> 1. Seek a context for adversity in order to better cope with its impact; described combing through religious and spiritual texts for passages that might help them understand and cope with the anguish they had experienced. 2. Using a spiritual framework to understand one's own true nature: These men and women reported reading spiritual tracts, seeking guidance from religious or spiritual leaders, praying for answers, meditating, or engaging in other spiritual practices in an effort to gain greater perspective on their authentic selves. Approximately 20% of the respondents asserted that accessing explicit spiritual guidance seemed preferable to traditional mental health-related therapy or counseling 3. Seek redemption for past transgressions; more than 90% of the respondents expressed remorse over the harm they had inflicted through negligence, anger, or exploitation. They voiced the hope that a divine being might be able to redeem them for the pain they had engendered. 4. Redeem, care for, or liberate others; One- third expressed 	Level IV

			<p>a more generalized wish to allow God or some transcendent spirit to work through them in acts of kindness, compassion, and caring for others.</p> <ol style="list-style-type: none"> 5. repay the debt of having one's life saved by divine intervention; A quarter of the respondents posited that, after facing one potentially fatal situation after another, their lives had been spared by divine intervention, and they needed to repay that debt. 6. Develop a relationship with a divine entity as human beings have proven untrustworthy; Nineteen percent of the respondents utilizing spirituality as a shaping force in their lives explained that, subsequent to the many disappointments and betrayals they had endured at the hands of others, God was all they could count on. And, deepening their relationships with God would provide the intimacy and trust that was lacking in their connection with other human beings. 7. Utilizing spirituality to modify the use of drugs and or alcohol; More than half of the respondents associated spirituality with abstinence or a modification of substance use and some link abstinence with relationship with God and 8. Transform one's character: turned to God for assistance in changing his attitudes about himself and others: About 36 % articulated the theme of spirituality as a route to self- transformation. They hope that based on the changes wrought with God's assistance, they would lead a 	
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			more positive and productive life.	
Sarkar, Balachander, & Basu (2014).	Perceived Harmfulness of Substance Use	Descriptive Qualitative	<p>Greater degree of education was associated with lower harm rankings for heroin, cannabis, dextropropoxyphene, and raw opium</p> <p>Urban residence was associated with greater harm ratings for cannabis and raw opium.</p> <p>Differences in the harms were perceived for different preparations of the same active compound for alcohol and nicotine.</p> <p>Harm ratings of substances can be a useful guide while formulating policies and allocating resources.</p>	Level VI
Saitz, Barrio, & Miquel (2014).	Screening and brief intervention (SBI) for Unhealthy drug use: little or no efficacy.	Literature Review	<ul style="list-style-type: none"> • Evidence now suggests that efficacy is limited or non-existent. • Brief intervention may have some efficacy for unhealthy drug users seeking help. • The model of SBI that has effects in primary care settings on risky alcohol use may not be efficacious for other drug use 	Level V
Spoth, Trudeau, Guyll, Shin, & Redmond (2009)	Universal Intervention Effects on Substance Use Among Young Adults Mediated by Delayed Adolescent Substance Initiation	Experimental longitudinal study	<p>Universal family focused intervention: Iowa Strengthening Family program (ISFP) and Preparing for the Drug-Free Years (PDFY) were implemented</p> <p>There is a significant ($p < .05$) Iowa Strengthening Family program (ISFP) direct effects on drunkenness frequency and the Polysubstance Use Index, and a marginally significant ($p < .10$) ISFP direct effect on cigarette frequency.</p> <p>There is a significant direct Preparing for the Drug-Free Years (PDFY) effects on cigarette frequency and</p>	Level III

			<p>alcohol-related problems ($p < .05$).</p> <p>Initiating Universal family-focused interventions (ISFP and PDFY: prevention programs) for delayed substance use during adolescence can reduce problematic substance use during young adulthood</p> <p>Relative reduction rates (RRR) ranged from 19% to 31% for ISFP and from 9% to 16% for PDFY</p> <p>Early intervention of substance abuse prevention program such as universal intervention may reduce substance abuse during young adulthood.</p>	
Spoth, Trudeau, Shin, Ralston, Redmond, Greenberg, & Feinberg, (2013)	Longitudinal Effects of Universal Preventive Intervention on Prescription Drug Misuse With Late Adolescents and Young Adults	Randomized Controlled Trials (RCT) to evaluate Iowa Strengthening Families program (SFP) for parents and youth 10-14 years (SFP 10-14) and Life Skill Training (LST)	<p><u>Study One</u></p> <p>The Iowa SFP reduces prescription opioid misuse (POM) and prescription drug misuse overall (PDMO). (Relative reduction rates (RRR): age 25 years of 65%, and comparable benefits for higher and lower risk subgroups</p> <p><u>Study Two</u></p> <p>The IOWA SFP 10–14 + LST showed significant or marginally significant effects on POM and PDMO across all ages (21, 22, and 25 years); higher-risk participants showed stronger effects (RRRs = 32%–79%)</p> <p><u>Study 3</u></p> <p>Shows significant results for POM and PDMO (12th grade RRRs = 20%–21%); higher-risk and lower-risk participants showed comparable outcomes.</p>	Level 1
Treloar, Dubreuil, & Miranda JR., (2014)	Spirituality and Treatment of Addictive Disorders.	Experts opinions	Since multicultural competence can increase the ability of health care providers to work effectively with culturally diverse populations, spiritual competence among health care providers may enhance their effectiveness when working with individuals struggling with addictions.	Level VII

			<p>Effective interventions such as Motivational Interviewing and Acceptance and Commitment Therapy acknowledge the importance of the provider’s ability to allow a creation of an open, non-judgmental and compassionate environment.</p> <p>When working in the area of addiction treatment, spiritual competence may increase the ability of the provider to help the client to discover or rediscover their own purpose and core values, explore the negative consequences of the addictive behavior on these values, and to develop behaviors that support the identified core values.</p> <p>If the provider has not considered his or her own spiritual competence, or moreover, holds the view that spiritual competence is not important for treatment, he or she may be less able to recognize or attend to the client’s needs or perspectives.</p> <p>Spirituality plays a vital role in the development and recovery of addictive disorders. However, health care professionals need Spiritual competences.</p>	
Weyandt, Oster, Marraccini, Gudmundsdottir Munro, Martinez Zavras, & Kuhar (2014).	Pharmacological interventions for Pharmacology intervention for adolescents and adults with ADHD: stimulant and non-stimulant medications and misuse of prescription stimulants.	Systematic Review	<ul style="list-style-type: none"> • Both prostimulant and stimulant medications, such as lisdexamfetamine dimesylate, methylphenidate, amphetamines, and mixed-amphetamine salts, are effective in reducing ADHD symptoms in adolescents and adults with ADHD. • Individuals with ADHD may have higher rates of stimulant misuse than individuals 	Level II

			<p>without the disorder.</p> <ul style="list-style-type: none"> • Characteristics such as sex, race, use of illicit drugs, and academic performance are associated with misuse of stimulant medications. • Individuals both with and without ADHD are more likely to misuse short-acting agents than long-acting agents. 	
Young, Stevens, Galipeau, Pirie, Garritty, Singh, Yazdi, Golfam, Pratt, Turner, Porath,-waller, Arratoon, Haley, Leslie, Reardon, Sproule, Grimshaw, Moher (2014).	Effectiveness of brief interventions as part of the Screening, Brief Intervention and Referral to Treatment (SBIRT) model for reducing the nonmedical use of psychoactive substances:	Systematic review	Insufficient evidence exists as to whether BIs, as part of SBIRT, are effective or ineffective for reducing the use of, or harms associated with nonmedical use of, psychoactive substances when these interventions are administered to non -treatment-seeking, screen-detected populations.	Level I

Summary of Findings

Strengths of evidence. A summary of the levels of evidence of the 26 articles is presented in Table 3. The strength of the research evidences of these studies ranges from level I to level VII. The most commonly used research designs were systematic review/meta-analysis or single descriptive/qualitative studies. Eight studies were level I (systematic review or meta-analysis of all relevant RCTs) (30.8%) and eight studies were level VI (30.8%). Another common research findings in the project are level III (7.7%), level IV (7.7%) and level VII (7.7%). The rest of the research designs also include level IV (11.5%) and level II (3.8%). The longitudinal studies in this project revealed the effect of early substance abuse prevention program which was initiated during early adolescent’s stage to monitor the participants’ behaviors towards substance abuse through young adulthood (Spoth, Trudeau, Guyll et al., 2009; Spoth, Trudeau, Shin et al., 2013). Spoth, Trudeau, Shin et al. (2013) research study shows the

effect of universal prevention intervention initiated during early adolescents, and participants' behavior towards substance abuse was monitored through late adolescents, college and young adulthood. One of the expert opinions research designs (level VII) addressed spirituality in relation to substance disorders while the other design from the American college Health recognized the need and suggested ways to manage the problems of increasing prescription stimulant abuse among all students including high schools'.

Table 3:Summary: Levels of Evidence

Level	Types of Evidence	Number/Percentage of Studies in This Project
Level I	Evidence from a systematic review or meta-analysis of all relevant RCTs	8 (30.8%)
Level II	Evidence obtained from well-designed RCTs	1 (3.8%)
Level III	Evidence obtained from well-designed controlled trials without randomization	2 (7.7%)
Level IV	Evidence from well-designed case-control and cohort studies	3 (11.5%)
Level V	Evidence from systematic reviews of descriptive and qualitative studies	2 (7.7%)
Level VI	Evidence from single descriptive or qualitative studies	8 (30.8%)
Level VII	Evidence from the opinion of authorities and/or reports of expert committees	2 (7.7%)

Note. Adapted from *Evidence-based practice in nursing and healthcare: A guide to best practice*, by Melnyk, B.M. & Fineout-Overholt, E., 2011, Philadelphia: Lippincott, Williams & Wilkins.

General findings about PSA. Despite being the most widely misused prescription drugs among college students, prescriptions stimulants have been accepted as non-dangerous as long as they are dispensed as ordered, used as prescribed, and closely monitored by licensed professionals (Agency for Health care Research and Quality, 2013; Weyandt et al., 2014). Nevertheless, individuals both with and without ADHD symptoms who use prescription stimulants such as Adderall, Ritalin, Concerta, and Vyvanse have been revealed as more likely to

misuse the stimulants (Weyandt et al., 2014). Furthermore, college students' perception of prescription stimulants "as opposed to illegal stimulants (cocaine and methamphetamine) as "safer and pure choices" for experimentation and getting high puts them at a higher risk for stimulant abuse than any populations (Cutler, 2014, p. 278; Herman et al., 2011). McCabe, Knight, Teter et al. (2005) revealed the lifetime prevalence of prescription stimulant use in 2001 among college students as 6.9-percent with higher rate among colleges located in the north-eastern region of the US and colleges with more competitive admission standards. In addition, the result of the survey conducted by McCabe, West and colleagues in 2014, revealed the past year illegal use of stimulants among college students has a significant increase from 5.4% in 2003 to 9.3% in 2013 ($p < 0.001$). The result of the survey also disclosed approximately one in every five individuals reported non-medical use of at least one prescription medication class in their lifetime. The probabilities of non-medical use of each prescription medication class were generally greater among males, Whites, members of social fraternities and sororities, and those with a lifetime history of medical use of prescription medications or a past-year history of being approached to divert their prescription medications (McCabe, Knight, Teter et al., 2005 & McCabe, West, Teter et al., 2014). Therefore, the increase in awareness and education with prescription stimulant abuse competence for the providers and college students are very crucial to the management of PSA among college students.

Most college students are unaware of the dangers associated with the use of prescription stimulants without the supervision of a license health care provider (Arria et al., 2008; Baldwin et al., 2006). One of the problems associated with PSA or any psycho-stimulant abuse is the problem of poly-substance abuse which increases with prescription stimulant use and abuse (Barrett, Darredeau, Bordy et al, 2005; Barrett, Darredeau, Pihl, 2006). Several studies have

revealed alcohol, nicotine and marijuana as access drugs to other psycho-stimulant abuse (Barrett, Darredeau, Pihl, 2006; DeSantis, Webb et al., 2008; DeSantis, Noar et al, 2010; Johnston et al, 2013). At the same time, the risk of misusing prescription stimulants increases with college students who smoke and abuse alcohol than other drug users. A study by McCabe & Teter, (2007) revealed increase in simultaneous poly-drug use occurs among college students with NMUPS than other drug users (53.8% versus 16.9%, $p < 0.001$) (McCabe & Teter, 2007). The increasing number of students who abuse prescription stimulant suggest lack of awareness and education about the dangers and health related consequences of PSA. Therefore, increasing perceived harmfulness through awareness and education has been suggested as a possible prevention strategy for most college students (Agency for Health care research and Quality, 2013; American College Health, 2007; Arria et al., 2008; Baldwin et al., 2006; Bangert-Drowns, 2014; Herman et al., 2011; Sarkar et al., 2014). In 2011, Herman and colleagues's study also revealed the impact of academic stress among college students who abuse prescription stimulants. The study revealed approximately 10.4-percent of the students surveyed have either used a stimulant or are currently using prescription stimulants illegally. The most common reason for stimulant use was to focus and concentrate during studying (93.5%). Of the 308 students, 45.2% were female, 83.9% were Caucasian, and amphetamine-dextroamphetamine was the most commonly abused stimulant (71.4%). Moreover, ineffective coping skills with life events and academic enhancement are among the motives identified by some college students. DeSantis, Webb, & Noar (2008), survey shows most students who are unable to cope with the workload of college use stimulants for academic performance enhancement. However, the study by Mason et al (2009) showed self-efficacy- a mediator between spirituality and drug/or alcohol cravings as part of stress management reduction program. According to Bandura, (1986), self-

efficacy is defined as an individual's belief that he or she can successfully manage or cope with difficult situations. Therefore, several studies have recommended stress management programs in an overall substance-abuse reduction strategy including the use of prescription stimulant abuse (Herman et al., 2011; Mason et al., 2009; Redman, 2008).

Interventions/management. Four studies investigated effectiveness of universal prevention interventions programs for general substance abuse such as school based and community based substance prevention program (Banger-Drowns, 1988; Espada, 2015; Spoth, Trudeau et al., 2009; Spoth, Trudeau, Shin, Ralston et al., 2013). The key aspects of the findings in this project are:

- Collaborative approach of interventions (such as community university collaboration) (Baldwin et al., 2008; Espada et al., 2015). Research findings suggested collaboration between healthcare providers and the community such as schools in implementing overall substance abuse prevention program. Family involvement intervention (Spoth, Trudeau et al., 2009; Spoth, Trudeau, Shin, Ralston et al., 2013).
- Studies have shown the effectiveness of universal preventive intervention program such as family-focused and school-based interventions in the management of youth risk-taking behaviors such as alcohol abuse and other substance abuse behavior problems (Spoth, Gyll, Trudeau et al., 2002; Spoth, Trudeau, Gyll, Shin et al., 2009; Spoth, Trudeau, Shin, Ralston et al., 2013). Family strengthening program has been suggested as the treatment with the strongest evidence of relative effectiveness (Level 1 evidence). Family therapy programs were found to be more effective than their comparison conditions and, no treatment programs were less effective. In addition, the longitudinal study by Spoth, Trudeau et al. (2014) revealed all types of

treatment such as the Preparing for Drug Free Year (PDFY) and Iowa Strengthening Family Program (ISFP) showed reductions in substance use and the greatest improvements were found for family therapy and mixed and group counseling. Moreover, the result of Spoth, Trudeau, Guyill et al (2009) showed a significant ($p < .05$) Iowa Strengthening Family program (ISFP) direct effects on drunkenness frequency and the polysubstance use index, and a marginally significant ($p < .10$) ISFP direct effect on cigarette frequency and alcohol-related problems ($p < .05$).

Significance of raising awareness through educational/training/screening programs (Agency for Healthcare Research and Quality, 2013; Arria et al., 2008; American college Health, 2007; Amaro, 2010; Barrett, Darredeau, Pihl, 2006; Barrett, Darredeau, Bordy et al., 2005; Foxcroft, 2014; Kazemi, et al., 2013; Larimer et al., 2007; McCabe & Teter, 2007; Sarkar et al., 2014; Saitz et al., 2014; Young et al., 2014). The research findings from Arria and colleagues (2008) revealed awareness through education as one of the most crucial ways to manage prescription stimulants abuse among college students. Baldwin and colleagues study revealed most providers lack of awareness of the prevalence of misuse of prescription drugs especially prescription stimulants among the college students. Healthcare providers caring for college students with prescription stimulants need to improve continuously in substance abuse management competency (Baldwin et al., 2006; Agency for Healthcare Research and Quality, 2013). Likewise, college students need to be educated on the prescription medication they are using (Baldwin et al., 2006; Agency for Healthcare Research and Quality, 2013).

Spirituality: The expert opinion regarding spirituality in the management of overall substance abuse should not be ignored (Treloar et al, 2014). Spiritual competence has been suggested for health care providers to improve their Spirituality and provide effective

substance abuse intervention programs while working with individuals struggling with addictions (Treloar, 2014). Redman (2008) study shows the meaning of Spirituality is different with individuals. However, developing Spiritual competence may assist the health care providers to be sensitive, recognize and attend to the underlying problems and needs of the patients with addiction (Redman, 2008). Treloar (2014) concluded that Spirituality plays a vital role in the growth and recovery of addictive disorders. However, health care professionals need Spiritual competences.

Evidence-Based Recommendations

Strong Recommendations (GRADE A)

1. The primary health care provider should pursue increase in knowledge/ awareness with periodic education and training regarding prescription stimulants to ensure proper and safe prescription stimulant use and reduce diversion among college students (Level I: Agency for Healthcare Research and Quality, 2013; Arrial et al., 2008; Bangert-Drowns, 1988; Espada et al., 2015; Level VI: Baldwin et al., 2006).
2. The health care provider should initiate substance abuse prevention in primary care that includes brief screening, and motivational intervention. A necessity for feedbacks and subsequent follow-ups should also be communicated to the college students (Level VI: Amaro, 2010; Level I: Fachini et al. 2012; Level V: Kazemi et al., 2013).
3. The health care provider should provide comprehensive information including major health-related harmful effects of prescription stimulant abuse to college student with ADHD symptoms who requires the use of prescription stimulants (Level IV: Arria et al., 2008; Level IV: Barrett, Darredeau, Pihl., 2006; McCabe et al., 2007).

4. The health care provider should provide information regarding poly-substance abuse for college students who use prescription stimulant. Moreover, the healthcare provider should consider screening college students with prescription stimulant for poly-substance abuse (Level IV: Barrett, Darredeau, Bordy et al., 2005; Barrett, Darredeau, Pihl, 2006; McCabe, West, Morales et al., 2007).
5. The health care providers should encourage parents of college students to take a primary role in understanding the need for family involvement in the prevention of nonmedical use of prescription stimulants (Level of evidence VI: Spoth, Trudeau et al., 2009; Level I: Spoth, Trudeau, Shin et al., 2013).
6. The health care providers should work with college student campus administrations to implement appropriate school-based substance prevention program and develop a multidisciplinary campus action plans and community collaboration to reduce nonmedical prescription stimulant use as was implemented with smoking and other illicit drugs (Level of Evidence VI: Baldwin et al., 2006; Level of Evidence 1: Espada, 2015).

Weak Recommendation (GRADE B)

1. The health care provider may consider offering spiritual support programs as substance abuse prevention program based on college students' cultures and beliefs (Level IV: Mason et al., 2009; Level VII: Redman, 2008; Treloar et al., 2014).
2. The health care provider may provide awareness programs combined with stress management programs in an overall substance-abuse reduction strategy, including the use of prescription stimulant beyond the originally intended purpose (Level of Evidence IV: Ford et al., 2009; Level VI Herman et al., 2011)

Chapter 5: Discussion

College students have been identified as one of the populations with a tendency to abuse prescription stimulants. Evidence-based recommendations were developed in this project to assist healthcare providers in the management of PSA among college students. These recommendations will serve as a guiding tool when caring for college students with ADHD, or college students with potential for prescription stimulant abuse. Moreover, these recommendations may be used in primary care settings that care for college students or young adults with a history of prescription stimulant/substance abuse and contemplate on quitting. Gough (2001) stated a change implemented by front-lines practitioners such as primary care providers is more successful than the one initiated by the management. Health care providers occupy several roles in the society such as a teacher, mentor, and guardian. Understanding the importance of managing prescription stimulant abuse to make positive changes that may lower the prevalence of PSA is crucial to health care provider's role. Initiating substance prevention interventions such as awareness, family strengthening among others earlier in life before attending college may be more beneficial in reducing the tendency to engage in PSA later in life. Nevertheless, providing awareness and education for college students and family regarding the prevalence of substance abuse in general is crucial to reducing prescription stimulant abuse among college students (Arria et al., 2008; Agency for Healthcare Research and Quality, 2013; Bangert-Drown, 1988) (also see Appendix). At the same time, healthcare providers must be knowledgeable, experienced and comfortable to address the issues which surround PSA among college students (Baldwin, 2006).

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