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Substance Use Disorder Counselors' Reports of Tobacco Cessation Services Availability, Implementation, and Tobacco-Related Knowledge

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Abstract

Purpose—Adolescence is a prime developmental stage for early tobacco cessation (TC) intervention. This study examined substance use disorder (SUD) counselors' reports of the availability and implementation of TC services (TCS) (behavioral treatments and pharmacotherapies) in their treatment programs, and the relationship between their tobacco-related knowledge and implementation of TCS.

Methods—Survey data were collected in 2012 from 63 counselors working in 22 adolescent-only treatment programs. Measures included 15 TC behavioral treatments, nine TC pharmacotherapies, and three tobacco-related knowledge scales (morbidity/mortality, modalities and effectiveness, pharmacology).

Results—First, 9 of the 15 behavioral treatments are reported as being available by more than half of counselors; 4 of the 15 behavioral treatments are used by counselors with more than half of adolescents. Of the 9 pharmacotherapies, availability of the nicotine patch is reported by almost 40%, bupropion by nearly 30%, and clonidine by about 21% of counselors. Pharmacotherapies are used by counselors with very few adolescents. Second, counselors' tobacco-related knowledge varies based on the knowledge scale examined. Third, we only find a significant positive relationship between counselors' implementation of TC behavioral treatments and TC modalities and effectiveness knowledge.

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Discussion—Findings suggest that more behavioral treatments should be made available in SUD treatment programs considering that they are the main treatment recommendation for adolescents. Counselors should be encouraged to routinely use a wide range of available behavioral treatments. Finally, counselors should be encouraged to expand their knowledge of TC modalities and effectiveness because of the relationship with behavioral treatments implementation.

Keywords

addiction treatment; addiction counselors; adolescent smoking cessation; substance abuse treatment; treatment adoption and implementation

Tobacco use is a public health concern that frequently starts during early adolescence and continues across the lifespan.¹ Approximately 2.6 million adolescents smoke cigarettes and 3.3 million use tobacco products. Further, about 3,800 adolescents start smoking each day,¹ 25% of high school seniors smoke cigarettes regularly,¹ and 40% of high school seniors have tried cigarettes.² Among adults, about 18% smoke³ and around 90% state that they started smoking by age 18.^{1,3}

Tobacco use often goes hand in hand with use and abuse of other substances.^{2,4,5} For example, 66% of adolescents in treatment for substance use disorders (SUDs) are also smokers.⁶ About half of adolescent smokers also engage in illicit drug use compared to about 6% of non-smokers.² Importantly, tobacco cessation (TC) is associated with increased abstinence from other substances, decreased substance use overall, and lowered risk for relapse.^{7,8} Realizing that adolescence is a vital developmental period for early intervention, treating tobacco use alongside other substances is an important goal in SUD treatment.⁹

Surprisingly little is known about counselors' implementation of evidence-based TC services (TCS) in SUD treatment programs that focus on adolescents. Yet, more than any other professionals in this treatment setting, SUD counselors are the frontline professionals who directly work with patients on a daily basis and are in charge of recommending and delivering a wide range of services.¹⁰ Thus, counselors should be knowledgeable and trained in various evidence-based treatments (EBTs)¹¹ including TC.¹² Nonetheless, SUD counselors tend to receive little training in treating tobacco dependence because TC is not a standard requirement in the counselor licensure and credentialing process.^{12–14}

Further, Rogers' diffusion of innovations theory suggests that counselors have to be aware of EBTs (e.g., availability of TC treatments in their program) as well as understand the importance of implementing EBTs (e.g., TC-related knowledge) for diffusion to occur.¹⁵ Thus, the present study examines SUD counselors' reports of the availability of TCS and the implementation of these TCS with their patients who smoke, and assesses the relationship between counselors' tobacco-related knowledge and their implementation of TCS.

Adolescent Tobacco Use and Treatment Recommendations

Tobacco and other substance use tends to start during adolescence often due to peer pressure, heightened sensation seeking behaviors, difficulty with impulse control, parental

smoking, and advertisements and media.^{1,9} Moreover, adolescents experience greater problems quitting smoking and a smaller percentage quit compared to adults.⁹ Fortunately, research suggests that most adolescents benefit from EBTs for TC.⁹

The clinical practice guideline published by the Public Health Service (PHS) notes that TC efforts for adolescents should focus primarily on behavioral treatments⁹ (e.g., counseling). For adolescents, counseling is associated with a 50% increase in long-term tobacco abstinence, although rates of abstinence are low overall.⁹ TC pharmacotherapy (e.g., nicotine replacement therapy/NRT) is generally not approved by the FDA for adolescents.⁹ Nonetheless, some clinicians do use pharmacotherapy “off-label” to help adolescents quit smoking.¹⁶ The recommended pharmacotherapies for adults include seven first-line treatments (nicotine gum, nicotine patch, nicotine inhaler, nicotine lozenge, nicotine nasal spray, bupropion, varenicline) and two second-line treatments (clonidine, nortriptyline).⁹

TCS Availability, Implementation, and Tobacco-Related Knowledge

Research on the availability of TCS in adolescent-only SUD treatment programs is limited and counselors’ implementation and tobacco-related knowledge is lacking altogether. We are aware of only two published studies on TCS availability in SUD treatment programs. One study that used program manager reports to investigate the availability of four intake/assessment practices showed that less than half of programs offered these services.¹⁷ Another study using data from 12 interviews with staff members working in adolescent residential programs found that about 42% offered NRT and TC-related counseling.⁶

We could not locate any published studies examining counselors’ implementation of these EBTs in adolescent treatment programs. Yet, identifying both the availability and implementation of TCS is important for understanding adolescents’ access to treatments and areas that may benefit from interventions to promote TC in adolescents receiving treatment for other SUDs. Notably, EBT adoption does not automatically translate into implementation although adoption has to precede implementation.^{15,18}

The goals of the current study are threefold. First, we examine counselors’ reports of the availability of the most comprehensive list of recommended EBTs for TC⁹ including 15 behavioral treatments and nine pharmacotherapies in their SUD treatment programs that offer TCS and solely serve adolescents. Unlike other studies, we focus on counselor reports because they are the frontline people who have direct contact with patients, make treatment recommendations, deliver services, and their awareness of available treatment options is essential to their use of TCS.^{10,15,18}

Second, we investigate counselors’ reports of the extent of their implementation of these TCS with their adolescent patients who smoke. Third, we assess counselors’ tobacco-related knowledge (morbidity and mortality, TC modalities and effectiveness, and nicotine’s pharmacological effects) and the relationship with TC implementation because lack of clinician knowledge has been identified as a major barrier to the use of TCS.^{12,15,18,19}

METHODS

Study Design and Sample

Data were obtained in 2012 from counselors working in randomly sampled SUD treatment programs that participated in the Managing Effective Relationships in Treatment Services (MERITS III) project. MERITS III is a longitudinal study with the goal of assessing the effect that treatment program processes have on the adoption, implementation, and sustainability of TC services. All procedures were approved by the University of Georgia's Institutional Review Board and informed consent was obtained from all participants.

The sampling frame came from the 2010 Substance Abuse and Mental Health Services Administration (SAMHSA) National Directory. SAMHSA required treatment facilities to be licensed, certified, or otherwise approved for inclusion in the Directory by their State Substance Abuse Agencies. A total of 11,153 treatment programs were located across the U.S. and included Federal, State, local government, and private facilities. Treatment programs were selected from the Directory with a random number generator. A brief screening phone call first identified eligible (provide SUD counseling services in a community setting) treatment programs. Veterans Administration programs, Halfway Houses, DUI education, and programs that offered only methadone maintenance or detoxification, were not eligible for participation.

Next, research assistants called eligible treatment programs to obtain a sample of programs where the program administrator agreed to participate in the study. In 2012, of the 1,310 eligible treatment programs that were contacted, 1,026 program administrators completed a survey (78.32% basic response rate). If program administrators indicated that they offered TCS ($N = 513$), they were asked to provide a list of all counselors who worked in their program. Counselors were then contacted and invited to complete a survey. Of the 2,084 eligible counselors, 1,132 completed a survey (54.32% response rate) and were paid \$50.

In accordance with the goals of the current study, only counselors who worked in adolescent-only treatment programs were considered for inclusion ($N = 88$). Additionally, because we were interested in counselors' implementation of TCS, only those who answered that they had experienced at least 10 patients in their treatment program who smoked were included in the analyses. This resulted in a final sample of 63 counselors working in 22 unique SUD treatment programs (see Table 1 for sample characteristics). The number of counselors per treatment program ranged from 1–13, with a mean of 2.86 and a mode of 1.

Measures

Availability of TCS—Counselors reported whether or not (0 = *no* and 1 = *yes*) their treatment programs made available each of 15 types of TC behavioral treatments (see Table 2 for individual items) and each of nine types of TC pharmacotherapies (see Table 3 for individual items).⁹

Implementation of TCS—Counselors were asked with how many of their last 10 patients who smoked they used each of the 15 types of behavioral treatments (see Table 2 for individual items) and each of the nine types of pharmacotherapies (see Table 3 for

individual items). Responses ranged from 0–10. To investigate the relationship between implementation and tobacco-related knowledge, we created two scales by calculating the mean across the behavioral treatment items and the mean across the pharmacotherapy items.

Construct validity is supported for both scales because they included all of the currently recommended pharmacotherapies and all areas of behavioral treatments.⁹ Cronbach alphas for both scales further showed good reliability ($\alpha = .89$ for behavioral treatment implementation and $\alpha = .68$ for pharmacotherapy implementation).

Tobacco-related knowledge—Counselors also answered 11 factual questions regarding tobacco-related morbidity and mortality (e.g., “Cigarette smoking is the single most preventable source of premature morbidity and mortality.”), eight questions regarding TC modalities and effectiveness (e.g., “Nicotine gum can be used to help patients cut down the number of cigarettes they smoke.”), and seven questions about nicotine’s pharmacological effects (e.g., “Nicotine causes development of tolerance with repeated use.”).^{20,21} Response options were 0 = *false* and 1 = *true*. Each scale was created by summing the number of *true* responses across the corresponding number of items.

Counselor characteristics—Counselors answered questions regarding their race (0 = *racial minority*, 1 = *Caucasian*), gender (0 = *male*, 1 = *female*), licensure/certification in SUD counseling (0 = *not licensed/certified*, 1 = *licensed/certified*), smoking status (0 = *non-smoker*, 1 = *smoker*), and education level (0 = *less than a master’s degree*, 1 = *master’s degree or higher*). Additionally, counselors listed their age in years and tenure in their current position in years.

Treatment program characteristics—Program administrators provided information regarding their treatment programs’ affiliation with a hospital or other medical facility (0 = *no* and 1 = *yes*), non-profit status (0 = *no* and 1 = *yes*), and accreditation (0 = *no* and 1 = *yes*). They also reported whether their program provided inpatient care only (0 = *no* and 1 = *yes*), outpatient care only (0 = *no* and 1 = *yes*), or a mix of inpatient and outpatient care (0 = *no* and 1 = *yes*).

Control variable—Counselors also reported on the percentage of patients in their treatment program who smoke cigarettes. Responses ranged from 0% to 100%. This variable has previously been found to be related to the delivery of TCS.^{22,23}

Data Analysis

Descriptive statistics were used to describe the sample, examine counselors’ reported availability and implementation of TCS, and assess their tobacco-related knowledge. Correlation analyses were conducted to examine the relationship between adoption and implementation of each TCS. Mixed effects models for nested data (counselors nested within treatment programs) were conducted to examine relationships between the implementation of TCS and tobacco-related knowledge. Mixed effects models were selected because examination of the intraclass correlation coefficients (ICCs) indicated that 39.7% of the variance for the behavioral treatments implementation and 72.3% of the variance for the pharmacotherapy implementation was explained by within treatment program nesting. The

generally accepted rule is that ICCs greater than .10 indicate the need to account for the nested structure of the data.²⁴ Data were analyzed using SAS 9.3.²⁵

Results

Counselor and Treatment Program Descriptive Characteristics

Table 1 displays the counselor (N = 63) and treatment program (N = 22) descriptive characteristics. The majority of counselors reported that they were non-smokers, White, females, and licensed/certified. Almost half of them held at least a master's degree. Their average age was 40.31 years and average job tenure was 6.73 years. The vast majority of treatment programs were not affiliated with a hospital or other medical facility, most operated as non-profit entities, and half of them were accredited. The most common level of care was inpatient-only followed by a mix of inpatient and outpatient care and then outpatient-only care.

Availability of TC Behavioral Treatments

As shown in Table 2, behavioral treatments reported as being available by the majority (> 50%) of counselors included four of the five 5 A's (ask if patient currently smokes, advise patient to quit, assess patient willingness to quit, assist patient in quitting), providing self-help materials, offering individual counseling focused on social support, providing individual counseling focused on problem solving/skills training, offering group counseling for TC, and using motivational interviewing techniques. Behavioral treatments reported by roughly 30% – 50% of counselors as being available included arranging follow-up contact at admission, having additional community resource referrals, and providing combined counseling and medications. Behavioral treatments by 25% or fewer counselors encompassed having four or more individual counseling sessions available, providing telephone counseling/quitline support, and using contingent reinforcement.

Implementation of TC Behavioral Treatments

Also listed in Table 2 are counselors' reports of the mean implementation of each TC behavioral treatment with their last 10 adolescent patients who smoked. The behavioral treatments that were used with more than half of their patients included three of the 5 A's (ask if patient currently smokes, advise patient to quit, assess patient willingness to quit) and using motivational interviewing techniques. Behavioral treatments that were used with 3–5 patients included assisting patient in quitting and arranging follow-up contact at admission, providing self-help materials, offering individual counseling focused on social support, providing individual counseling focused on problem solving/skills training, offering group counseling specifically for TC, and having additional community resource referrals. Behavioral treatments reported as being used with fewer than 3 patients included having four or more individual counseling sessions available, providing telephone counseling/quitline support, providing combined counseling and medication treatment, and using contingent reinforcement specific for not smoking.

Availability of TC Pharmacotherapy

Results in Table 3 show that the NRT reported as being most available was the *patch* (39.68%) followed by *gum* (12.70%), *lozenge* (8.06%), *inhaler* (4.84%), and *spray* (1.64%). The non-NRT pharmacotherapy reported by counselors to be most available in their treatment programs was *bupropion* (29.63%) and *clonidine* (21.43%), followed by *varenicline* (10.17%) and *nortriptyline* (3.70%).

Implementation of TC Pharmacotherapy

Table 3 also indicates counselors' reports of their implementation of TC pharmacotherapies with their last 10 adolescent patients who smoked. Implementation was low with counselors' noting that almost all pharmacotherapies were used with an average of less than 1 adolescent, with one exception. The nicotine patch was used with an average of 2.10 adolescents. Nicotine spray was used with none of their adolescent patients.

Relationship between Availability and Implementation of TCS

Correlation analyses consistently showed significant positive relationships between counselors' reports of the availability and implementation of TC behavioral treatments (see Table 2) and between the availability and implementation of TC pharmacotherapies (see Table 3). Correlations ranged from .46 to .88 for behavioral treatments and from .43 to .72 for pharmacotherapies.

Counselors' Tobacco-Related Knowledge and Implementation of TCS

Table 4 presents descriptive statistics of counselors' tobacco-related knowledge. Counselors' mean tobacco-related morbidity and mortality knowledge was 9.40 (range of 0–11), TC modalities and effectiveness knowledge was 4.95 (range of 0–8), and nicotine's pharmacological effects knowledge was 5.03 (range of 0–7). Additionally, counselors reported that an average of 81.65% of adolescents in their treatment programs smoked (control variable).

Results from the mixed effects models showed that only knowledge of TC modalities and effectiveness was significantly positively related with the implementation of TC behavioral treatments ($B = .52$). Regarding counselors' implementation of TC pharmacotherapies, there was no significant relationship with any of the tobacco-related knowledge variables.

Discussion

The three main goals of this study were to examine counselors' reports of the availability of TCS (behavioral, pharmacotherapy) in treatment programs that specifically offer TCS, implementation of these TCS with their adolescent patients who smoke, and the relationship between counselors' tobacco-related knowledge and implementation of TCS in adolescent-only SUD treatment programs.

Availability and Implementation of TCS

Counselor reports of available and implemented TC behavioral treatments vary widely by type of treatment. Findings on variability are similar to prior research in SUD treatment

programs that did not focus on adolescents.^{23,26,27} The most common TC behavioral treatments reported as being available and used include the 5 As, individual and group counseling, self-help materials, and motivational interviewing. These TC behavioral treatments may be most commonly reported because many of them are also available and used for the treatment of other SUDs.^{10,28} Thus, counselors may be more familiar with them as they are part of their established practices.

Likewise, the wide ranging reports of available behavioral treatments may reflect the often limited financial resources (e.g., insurance coverage, reimbursement) in SUD treatment,¹² which may make it less feasible to offer a broad range of TC behavioral treatments.

With proposed changes in insurance coverage associated with the Affordable Care Act (ACA),²⁹ it will be important for future studies to evaluate how this impacts the adoption and implementation of TCS.

In contrast to TC behavioral treatments, counselors generally report limited adoption and implementation of TC pharmacotherapy, which is similar to findings in treatment programs that did not focus on adolescents.^{26,30–33} This is understandable because the FDA does not currently approve TC pharmacotherapy with adolescents.⁹ The especially low implementation of pharmacotherapy may also suggest that because counselors are generally not allowed to prescribe pharmacotherapy they may not be comfortable using physician prescribed medications with adolescents.

It is interesting to point out here that although only used with a very small number of adolescents, nicotine gum, bupropion, and clonidine are the most widely available TC pharmacotherapies according to counselors. Whereas nicotine gum is strictly used for tobacco cessation, bupropion and clonidine are also used for other treatment purposes (e.g., controlling withdrawal, anti-depressant).^{9,34,35} The multiple uses for clonidine and bupropion may account for counselors' generally higher reports of availability.

Counselors' Tobacco-Related Knowledge and Implementation of TCS

Counselors' tobacco-related knowledge also varied depending on the type of knowledge examined, with the majority of counselors correctly answering tobacco-related morbidity and mortality questions followed by tobacco pharmacology and TC modalities and effectiveness. This is an important finding because counselors as the frontline professionals who have direct contact with patients should possess adequate TC-related knowledge to make recommendations to their patients and to implement TCS.^{10,15,18}

However, we find that only TC modalities and effectiveness knowledge is related to the implementation of only behavioral treatments. This is somewhat surprising because clinicians' knowledge in general has been found to be related to the delivery of TCS.^{12,17,26} These findings also suggest that efforts to improve counselors' implementation of TC services should mainly focus on improving knowledge regarding TC modalities and effectiveness. However, research with large random samples is needed to better understand this relationship before more concrete conclusions can be drawn.

Limitations and Conclusions

Findings of our study need to be evaluated with limitations in mind. The availability and implementation of TCS is based on counselor reports. Their perceptions may differ from the TCS offered and from the actual use of TCS with their patients. Moreover, recall regarding their last 10 patients was used to strike a balance between recall accuracy (i.e., triggering recall on specific patients recently treated) and recall bias (i.e., keeping the retrospective timeline short). Counselors may have had difficulties correctly remembering their last 10 patients who smoked.

Research using different sources (e.g., observational studies, archival records) and with varying number of patients with whom they implemented TCS is needed to better understand the types of TCS that are offered and routinely used by counselors. Future research would also benefit from an examination of a multitude of service providers (e.g., nurse, M.D., N.P.) to assess with whom counselors interact and how this interaction affects reports of the availability and delivery of TCS.

Additionally, only program administrators working in treatment programs that provided TCS were asked to provide a list of counselors. Furthermore, only counselors working in adolescent-only treatment programs were included in the current study, resulting in a small sample that may not be representative of other treatment programs. Future studies with larger and more diverse samples are needed to shed light on the generalizability of our findings.

Furthermore, we did not ask treatment programs about the age groups of adolescents that they serve. This limits our interpretation of findings and prohibits us to ascertain whether certain TCS are being used more with particular age groups. For example, pharmacotherapies that are not FDA approved for adolescents under age 18 can be used with older adolescents. Considering our finding of very low use of pharmacotherapies, age groups being served is an important area to examine in future research.

The SUD treatment field is in its infancy regarding our understanding of TCS in adolescent-only treatment programs, providing great opportunities for future studies. We still know little about factors that promote or hinder the delivery of TCS to adolescent patients. More research using theoretical frameworks is clearly needed to help understand various factors that are associated with the availability and implementation of TCS in adolescent-only SUD treatment programs.

Our study is the first to take an in-depth examination of counselors' reports of available TCS, implementation of these TCS with their adolescent patients who smoke, and the relationship between their tobacco-related knowledge and implementation. We find great variability in counselors' reports of the availability and implementation of TC behavioral treatments, depending on the type of treatment. Moreover, counselors report very limited adoption and implementation of TC pharmacotherapy. Considering that behavioral treatments are the preferred treatment recommended for adolescents,⁹ treatment programs should offer diverse behavioral treatments to meet patients' needs and preferences. Additionally, treatment programs as well as training and professional development programs

need to ensure that counselors are aware of available behavioral treatment options, possess TC-related knowledge, and are encouraged to use diverse TCS with adolescent patients.

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References

1. U.S. Department of Health and Human Services [USDHHS]. [Accessed May 05, 2015] Preventing tobacco use among youth and young adults: A report of the Surgeon General. 2012. Available at: <http://www.surgeongeneral.gov/library/reports/preventing-youth-tobacco-use/exec-summary.pdf>
2. National Institute on Drug Abuse [NIDA]. [Accessed May 05, 2015] Principles of adolescent substance use disorder treatment: A research-based guide. 2014. Available at: http://www.drugabuse.gov/sites/default/files/podata_1_17_14.pdf
3. Centers for Disease Control & Prevention [CDC]. [Accessed May 05, 2015] Adult cigarette smoking in the United States: Current estimates. 2014. Available at: http://www.cdc.gov/tobacco/data_statistics/fact_sheets/adult_data/cig_smoking/
4. Bowman JA, Walsh RA. Smoking intervention within alcohol and other drug treatment services: A selective review with suggestions for practical management. *Drug Alcohol Rev.* 2003; 22:73–82. [PubMed: 12745361]
5. Myers MG, Doran NM, Brown SA. Is cigarette smoking related to alcohol use during the 8 years following treatment for adolescent alcohol and other drug abuse? *Alcohol Alcohol.* 2007; 42:226–33. [PubMed: 17526632]
6. Chun J, Guydish J, Chan YF. Smoking among adolescents in substance abuse treatment: A study of programs, policy and prevalence. *J Psychoactive Drugs.* 2007; 39:443–9. [PubMed: 18303701]
7. Baca CT, Yahne CE. Smoking cessation during substance abuse treatment: What you need to know. *J Subst Abuse Treat.* 2009; 36:205–19. [PubMed: 18715746]
8. Prochaska JJ, Delucchi K, Hall SM. A meta-analysis of smoking cessation interventions with individuals in substance abuse treatment or recovery. *J Couns Clin Psychol.* 2004; 72:1144–56.
9. Fiore, MC.; Jaen, CR.; Baker, TB., et al. [Accessed April 04, 2015] Treating tobacco use and dependence: 2008 Update. Available at: http://www.surgeongeneral.gov/tobacco/treating_tobacco_use08.pdf
10. Bureau of Labor Statistics, U.S. Department of Labor. [Accessed May 05, 2015] Occupational Outlook Handbook, 2010–11 Edition, Counselors. 2014. Available at: <http://www.bls.gov/ooh/community-and-social-service/substance-abuse-and-behavioral-disorder-counselors.htm>
11. Martino S. Strategies for training counselors in evidence-based treatments. *Addict Sci Clin Pract.* 2010; 5:30–9. [PubMed: 22002451]
12. Ziedonis DM, Guydish J, Williams J, et al. Barriers and solutions to addressing tobacco dependence in addiction treatment. *Alcohol Res Health.* 2006; 29:228–35. [PubMed: 17373414]
13. Kurita K, Guydish J. Substance abuse counselor certification in California: How is nicotine addiction addressed? *J Psychoactive Drugs.* 2007; 39:473–7. [PubMed: 18303704]
14. Williams JM, Ziedonis D. Addressing tobacco among individuals with a mental illness or addiction. *Addict Behav.* 2004; 29:1067–83. [PubMed: 15236808]
15. Rogers, EM. Diffusion of innovations. 5. New York: Free Press; 2003.
16. National Institute on Drug Abuse [NIDA]. [Accessed December 15, 2014] Principles of adolescent substance use disorder treatment: A research-based guide. 2014. Available at: www.drugabuse.gov/publications/principles-adolescent-substance-use-disorder-treatment-research-based-guide
17. Knudsen HK. Smoking cessation services in adolescent substance abuse treatment: Opportunities missed? *J Drug Issues.* 2009; 39:257–76. [PubMed: 21278827]

18. Klein KJ, Sorra JS. The challenge of innovation implementation. *Acad Manag Rev.* 1996; 21:1055–80.
19. Corrigan PW, Steiner L, McCracken SG, et al. Strategies for disseminating evidence-based practices to staff who treat people with serious mental illness. *Psychiatr Serv.* 2001; 52:1598–1606. [PubMed: 11726749]
20. Roche AM, Eccleston P, Jordan D. Smoking-related knowledge and attitudes of senior Australian medical students. *Tob Control.* 1996; 5:271–9. [PubMed: 9130360]
21. Schkrohosky JG, Kalesan B, Alberg AJ. Tobacco awareness in three U.S. medical schools. *J Addict Dis.* 2007; 26:101–6. [PubMed: 18018813]
22. Friedmann PD, Jiang L, Richter KP. Cigarette smoking cessation services in outpatient substance abuse treatment programs in the United States. *J Subst Abuse Treat.* 2008; 34:165–72. [PubMed: 17509809]
23. Muilenburg JL, Laschober TC, Eby LT. Climate for innovation, 12-step orientation, & tobacco cessation treatment. *J Subst Abuse Treat.* 2014; 46:447–55. [PubMed: 24355811]
24. Kreft, I.; de Leeuw, J. *Introducing multilevel modeling.* Thousand Oaks, CA: Sage Publications; 1998.
25. SAS Institute Inc. *Base SAS® 9.3 Procedures Guide.* Cary, NC: SAS Institute Inc; 2011.
26. Knudsen HK, Studts CR, Studts JL. The implementation of smoking cessation counseling in substance abuse treatment. *J Behav Health Serv Res.* 2012; 39:28–41. [PubMed: 21647812]
27. Tajima B, Guydish J, Delucchi K, et al. Staff knowledge, attitudes, and practices regarding nicotine dependence differ by setting. *J Drug Issues.* 2009; 39:365–83. [PubMed: 20617124]
28. Substance Abuse and Mental Health Services Administration [SAMHSA]. [Accessed May 03, 2015] TAP 21: Addiction counseling competencies. The knowledge, skills, and attitudes of professional practice. 2008. Available at <http://store.samhsa.gov/product/TAP-21-Addiction-Counseling-Competencies/SMA14-4171>
29. American Lung Association. [Accessed December 12, 2014] Tobacco cessation and Affordable Care Act. 2014. Available at: <http://www.lung.org/stop-smoking/tobacco-control-advocacy/reports-resources/tobacco-cessation-affordable-care-act/>
30. Laschober TC, Muilenburg JL, Eby LT. Factors linked to substance use disorder counselors' (non)implementation likelihood of tobacco cessation 5 A's, counseling, and pharmacotherapy. *J Addict Behav Ther Rehabil.* In Press.
31. Knudsen HK, Studts JL. Availability of nicotine replacement therapy in substance use disorder treatment: Longitudinal patterns of adoption, sustainability, and discontinuation. *Drug Alcohol Depend.* 2011; 118:244–50. [PubMed: 21531090]
32. Muilenburg JL, Laschober TC, Eby LT. Organizational factors as predictors of tobacco cessation pharmacotherapy adoption in addiction treatment programs. *J Addict Med.* 2014; 8:59–65. [PubMed: 24365803]
33. Rothrauff TC, Eby LT. Counselors' knowledge of the adoption of tobacco cessation medications in substance abuse treatment programs. *Am J Addict.* 2011; 20:56–62. [PubMed: 21175921]
34. Kleber HD, Gold MS, Riordan CE. The use of clonidine in detoxification from opiates. *Bull Narc.* 1980; 32:1–10. [PubMed: 6907020]
35. Lerman C, Niaura R, Collins BN, et al. Effect of bupropion on depression symptoms in a smoking cessation clinical trial. *Psychol Addict Behav.* 2004; 18:362–6. [PubMed: 15631608]

Implications and Contribution

This study investigates counselors' reports of the availability and implementation of tobacco cessation behavioral treatments and pharmacotherapy in adolescent-only substance use disorder treatment programs, which showed great variability based on type of service. Tobacco-related knowledge also varied, with TC modalities and effectiveness knowledge being associated with behavioral treatment implementation.

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Table 1

Counselor (N = 63) and Treatment Program (N = 22) Descriptive Characteristics

	<i>f (%) or M (SD)</i>
Counselor Characteristics	
Non-smoker, yes	58 (92.06)
Caucasian, yes	46 (74.19)
Female, yes	42 (67.74)
Licensed/certified, yes	36 (57.14)
Master's degree or higher, yes	26 (42.62)
Age in years	40.31 (12.27)
Job tenure in years	6.73 (8.79)
Treatment Program Characteristics	
Not affiliated with hospital/medical facility, yes	20 (90.91)
Non-profit, yes	18 (81.82)
Accredited, yes	11 (50.00)
Level of care	
Inpatient only, yes	9 (40.91)
Outpatient only, yes	6 (27.27)
Mix of inpatient and outpatient, yes	7 (31.82)

Table 2
Counselors' Reports of Availability and Implementation of Tobacco Cessation (TC) Behavioral Treatments

	Available <i>f</i> (%)	Implemented <i>M</i> (<i>SD</i>)	<i>r</i>
1. At admission, ask if patient currently smokes. (5 A's)	62 (98.41)	9.17 (2.53)	.46***
2. At admission, advise patient to quit smoking. (5 A's)	43 (71.67)	6.78 (4.20)	.67***
3. At admission, assess patient willingness to quit. (5 A's)	54 (90.00)	8.24 (3.40)	.63***
4. At admission, assist patient in quitting. (5 A's)	41 (66.13)	4.92 (4.48)	.62***
5. At admission, arrange smoking cessation follow-up contact. (5 A's)	20 (35.09)	3.71 (4.40)	.68***
6. Provide self-help materials specifically for TC.	40 (66.67)	4.83 (4.32)	.52***
7. Offer individual counseling on social support for TC.	32 (55.17)	3.94 (4.28)	.46***
8. Provide individual counseling on problem solving/skills training for TC.	34 (56.67)	4.22 (4.26)	.72***
9. Have four or more individual counseling sessions available for TC.	14 (25.45)	2.11 (3.72)	.67***
10. Offer group counseling specifically for TC.	29 (50.88)	4.06 (4.63)	.82***
11. Provide telephone counseling/quitline support specifically for TC.	7 (12.96)	0.79 (2.27)	.70***
12. Have additional community resource referrals specifically for TC.	24 (46.15)	3.90 (4.41)	.88***
13. Use "motivational interviewing" techniques to enhance TC motivation.	42 (72.41)	5.49 (4.38)	***.58
14. Provide combined counseling and medication treatment for TC.	22 (37.29)	2.76 (4.15)	.53***
15. Use contingent reinforcement specific for not smoking.	15 (23.81)	2.06 (3.75)	.73***

Note. Availability reflects number of yes responses to the question whether their treatment program offered each EBT. Implementation reflects with how many of their last 10 patients counselors used each EBT.

$p < .001$.

Table 3

Counselors' Reports of Availability and Implementation of Tobacco Cessation (TC) Pharmacotherapy

	Available <i>f</i> (%)	Implemented <i>M</i> (<i>SD</i>)	<i>r</i>
1. Nicotine patch (NRT)	25 (39.68)	2.10 (3.58)	.72***
2. Nicotine gum (NRT)	8 (12.70)	0.41 (1.69)	.62***
3. Nicotine lozenge (NRT)	5 (8.06)	0.16 (1.26)	.43***
4. Nicotine nasal spray (NRT)	1 (1.64)	0	--
5. Nicotine inhaler (NRT)	3 (4.84)	0.11 (0.88)	.57***
6. Bupropion	16 (29.63)	0.48 (1.19)	.52***
7. Clonidine	12 (21.43)	0.43 (1.41)	.58***
8. Varenicline	6 (10.17)	0.22 (1.07)	.64***
9. Nortriptyline	2 (3.70)	0.06 (0.50)	.70***

Note. Availability reflects number of yes responses to the question whether their treatment program offered each EBT. Implementation reflects with how many of their last 10 patients counselors used each EBT. NRT = Nicotine Replacement Therapy.

$p < .001$.

Descriptive Statistics and Mixed Effects Models Results: Relationship between Counselors' Implementation of Tobacco Cessation Services and Tobacco-Related Knowledge

Table 4

	<i>M (SD)</i>	Behavioral Treatments			Pharmacotherapy		
		B	SE	F	B	SE	F
Knowledge of tobacco-related morbidity/mortality ¹	9.40 (1.54)	.11	.16	0.45	-.05	.05	1.14
Knowledge of tobacco cessation modalities and effectiveness ²	4.95 (1.16)	.52*	.22	5.76	-.03	.07	.15
Knowledge of tobacco pharmacology ³	5.03 (1.16)	.17	.22	.59	.02	.07	.07
Percentage of patients who smoke cigarettes (control variable)	81.65 (21.55)	.02	.01	3.04	.00	.00	.34

Note.

¹ 0–11 scale,

² 0–8 scale,

³ 0–7 scale

p < .05.