Published in final edited form as:

Addict Behav. 2011 September ; 36(9): 937–940. doi:10.1016/j.addbeh.2011.04.004.

A Comparison of Mandated Versus Volunteer Adolescent Participants in Youth Tobacco Cessation Programs

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Abstract

A national evaluation of community-based youth cessation programs delivered in group format provided the opportunity to compare mandated and volunteer program participants on demographics, smoking patterns, other health behaviors and motivation to quit. A total of 857 youth participants completed surveys prior to the start of their treatment program. Mandated youth comprised 24% of the sample (n=202). Both bivariate and multivariate comparisons were conducted.

Mandated participants reported lower levels of stress, higher extrinsic motivation and lower intrinsic motivation to quit, and were more likely to be in the earlier (precontemplation) stage of readiness to quit. Mandated and volunteer smokers did not differ in their smoking patterns, school-related smoking behaviors, or binge drinking. Rates of smoking, school problems, and binge drinking were higher among cessation program participants than in general samples of youth.

Programs with mixed voluntary-mandatory participation may benefit from extra attention to motivational issues.

Keywords

Mandated youth smoking cessation

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Author Disclosure

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Contributors

Sue Curry, Robin Mermelstein, and Sherry Emery designed the study and wrote the protocol. Oksana Pugach conducted the statistical analysis. Linda Houser-Marko wrote the first draft of the manuscript, and all authors contributed to and have approved the final manuscript.

Conflict of Interest

All authors declare that they have no conflicts of interest.

1. Introduction

Many youth cessation programs combine treatment volunteers with youth who are mandated to smoking cessation treatment. (Curry et al., 2007). Mandated youth may differ from volunteer participants in a number of ways that may influence program delivery and outcomes. This paper compares youth who are mandated to smoking cessation programs with those who participate voluntarily.

We considered constructs related to demographics, smoking patterns, psychosocial and other health behaviors, and motivation to quit. We hypothesized that youth with the following characteristics would be more likely to be a mandatory than voluntary participant in a youth cessation program: higher daily smoking rate and level of nicotine dependence; more school suspensions and absences; higher rates of smoking on school property; greater use of alcohol; lower stress and fewer depressive symptoms; and lower motivation to quit as evidenced by stage of readiness to quit, lower intrinsic and higher extrinsic motivation.

2. Methods

This paper reports baseline data from a national evaluation of community-based youth smoking cessation programs. Curry et al (2010) provides a detailed description of the overall design and implementation of the study. The evaluation recruited a non-probability sample of 41 community-based group format programs that treated at least 15 youth per year and included evidence-based treatment components. Data collection included longitudinal surveys of youth participants at baseline, at the end of treatment, and at a 12 month follow-up.

2.1 Procedure

The project received full board review and approval by the University of Illinois at Chicago's Institutional Review Board, that granted a waiver of parental consent for participants under the age of 18. Written assent was obtained from youth under age 18; participants aged 18 and older provided written consent. Study staff administered the surveys.

2.2 Measures

Study measures drew both on existing national surveys, including the National Youth Tobacco Survey, the National Youth Smoking Cessation Survey and the Monitoring the Future Survey as well as validated published scales.

2.2.1 Mandatory versus voluntary participation—Whether participation was mandatory or voluntary was based on participants' responses to the question: "Are you participating in this stop-smoking program because you want to or because you are being forced to?" Mandatory participation was operationalized as participation that was either "forced" or "required".

2.2.2 Demographics—Participants were asked to indicate their gender, age, current enrollment in school, highest grade completed in school, and race and ethnicity.

2.2.3 Smoking behavior—Participants indicated the number of days in the past thirty days that they smoked, collapsed into three categories: up to five days in the past 30 days; from 6 to 19 days in the past 30 days; and 20 or more days in the past 30 days (CDCP, 2006b; Turner, Veldhuis & Mermelstein, 2005). Participants also indicated the number of cigarettes they smoked per day on each of the past 6 days, averaged to provide the amount

of cigarettes per day. A shortened version of Nicotine Dependence Syndrome Scale (NDSS; Shiffman, Waters, & Hickcox, 2004; Sterling et al, 2009) assessed *nicotine dependence*.

2.2.3 Psychosocial factors and other health behaviors—Participants were asked about episodes of *binge drinking* (five or more drinks within a couple of hours) in the past 30 days. This was coded as binge drinking yes or no binge drinking (Eaton, et al., 2010). Participants rated four items of the *Perceived Stress Scale* (PSS-4, Cohen, Kamarck, & Mermelstein, 1983) on a scale of “never” (1) to “often” (4). A sum of the items created a score with higher scores indicating more stress. The eight item *depression scale* of the Patient Health Questionnaire (PHQ-9, Kroenke, Spitzer, & Williams, 2001) was utilized. A major depressive syndrome indicator (symptoms present yes or no) was created from a sum of the responses (ranging from 8 to 24), with 16 or more coded as depression symptoms present.

2.2.4 School-related behaviors—A measure of the number of *school absences* in the past 30 days was obtained, with five responses ranging from “none” to “11 or more days.” Participants reported how many days in the past 30 days that they had *smoked on school property*, choosing from seven response categories that ranged from “0 days” to “all 30 days.” Participants reported if they had *ever been suspended or expelled* from school, yes or no.

2.2.5 Smoking cessation—Participants stated how many times ever they had stopped smoking for a day or more in an effort to quit, using six options that ranged from “I have never tried” to “10 or more times,” recoded as *ever tried to quit smoking* (yes/no). To assess *stage of readiness to quit*, participants were asked: “Do you want to stop smoking cigarettes,” “Are you seriously considering quitting smoking in the next six months,” and “Are you planning to quit within the next 30 days?” These responses were categorized into four stages (precontemplation, contemplation, preparation, and action (Pallonen, Murray, Schmidt, Pirie, & Luepker, 1990). Overall *motivation to quit* was assessed with a 10-item scale (Turner & Mermelstein, 2004). *Type of motivation* to quit was assessed with the Reasons for Quitting Scale (Curry, et al, 1990; Curry, Grothaus, and McBride, 1997). Participants responded to 10 items (5 intrinsic and 5 extrinsic) on a scale of extremely true (1) to not at all true (5). Average scores were calculated separately for intrinsic and extrinsic motivation.

2.3 Data Analysis

The current study used baseline measures from participants as the unit of analysis in a multi-level model that accounted for students clustered in programs. We created two groups of participants based on self-reports of participation being mandated versus volunteer. Using SAS 9.2, descriptive statistics, we examined bivariate differences in constructs of interest between the two types of participants. Logistic regression modeled category membership, considering all of the relevant predictor variables in one model. We used a Generalized Estimating Equation approach for clustered binary data to account for students clustered in programs, using Proc Genmod in SAS.

3. Results

3.1 Participants

A total of 857 program participants provided baseline data for this analysis. The race/ethnicity of the youth was the following: 1.6% Asian, 1.6% American Indian/ Alaskan Native; 6.0% Black/African American; 13.2% Latino/Hispanic; 71.6% Non-Latino White; 6.0% noted two or more of the above. Mean age was 16.8, and ranged from 12 to 23 years old. Most (94.0%) of the youth were younger than 19 years old. Half of the participants

(50%) were female. A total of 202 (24%) of youth were classified as mandated participants and 655 (76%) youth as volunteers.

3.2 Missing Data

For the most part, there were no differences between volunteer and mandated participants on missing data. Mandated participants had more missing data for average number of cigarettes per day and perceived stress.

3.3 Bivariate comparisons of volunteer and mandated youth

Table 1 summarizes bivariate comparisons of volunteer and mandated participants on the study variables. With regard to demographics, fewer mandated participants were female and the mandated participants' average age was slightly younger than volunteers'. There were no differences in race or ethnicity. Mandated and volunteer participants did not differ with regard to smoking behavior, depression symptoms, school absences, smoking on school property or school suspensions, and number of prior quit attempts. Compared to volunteers, mandated participants reported significantly lower levels of perceived stress and intrinsic motivation, and significantly higher levels of extrinsic motivation. With regard to stage of change, a higher proportion of mandated participants were in the precontemplation stage and fewer of the mandated participants were in the contemplation and preparation stages.

3.4 Multivariate model of participant characteristics

We included the following as control variables in the logistic regression model: age, gender, and average daily smoking rate. We included program setting to control for participant clustering in programs. We included binge drinking, stress and depression as psychosocial factors. The number of observations for the analysis was $n=772$, due to the complete cases requirement of logistic regression. Variables that caused this reduction were number of cigarettes per day, binge drinking, extrinsic and intrinsic motivation.

We modeled level of motivation, type of motivation, and stage of quitting, in order to understand these constructs in relation to each other and to note the strongest influence on category membership. Accounting for all the variables in the model (as seen in Table 2), mandated participants were: less likely to be female, less likely to be in a school-based cessation program, marginally less likely to report higher levels of stress, marginally less likely to be in the preparation stage of quitting, less likely to be in the contemplation stage of quitting, and more likely to have higher levels of extrinsic motivation to quit.

4. Discussion

This paper examined demographic, smoking, psychosocial characteristics, and motivation to quit for adolescents who were either volunteers or mandated participants in smoking cessation programs. As hypothesized, mandated participants reported significantly higher levels of extrinsic motivation to quit, were more likely to be in the earlier (precontemplation) stage of readiness to quit, and had expressed lower overall levels of motivation for cessation. Studies with adult smokers show consistently that those with higher levels of intrinsic motivation relative to extrinsic motivation are more likely to achieve cessation (Curry, Grothaus, & McBride, 1997; Sheldon, Williams & Joiner, 2003). From a policy perspective mandating youth to treatment could undermine any potential benefit, and indeed could have an iatrogenic effect if early failed treatment attempts discourage youth smokers from using evidence-based treatments when they become sufficiently motivated to attempt cessation.

Mandated youth smokers reported significantly lower levels of stress. Being stressed may be a positive impetus for smokers to seek treatment as a means of self-improvement or to get help for psychosocial issues in a non-therapeutic context. Because levels of stress were moderately high for both groups of participants, it may be beneficial for youth cessation interventions to address stress issues for all participants.

The results did not support hypothesized differences in smoking patterns, school-related smoking behaviors, or binge drinking. Notably, rates of smoking on school property, school problems, and binge drinking among mandated and volunteer youth cessation programs are higher than those observed in the general population of youth smokers (Eaton, et al, 2010).

Some limitations of this study should be noted. Due to eligibility requirements, the youth cessation programs in this study may not be representative of those that include mandated participants. In addition, there was missing data on some of the variables, and thus a reduction of the sample size for the final GEE model.

There are many similarities among youth cessation program participants that volunteer for or are mandated to treatment. They have relatively high rates of daily smoking and levels of nicotine addiction, higher than average levels of school problems and binge drinking. Thus, youth cessation programs that address addiction, school success, and generally healthful behaviors are appropriate. Programs with mixed voluntary-mandatory participation, which comprise the majority of programs that serve mandated youth will need to pay extra attention to motivational issues as mandated youth clearly enter treatment with substantially lower levels of readiness and motivation to quit smoking.

Acknowledgments

Role of Funding Sources

Funding for this study was provided by The Robert Wood Johnson Foundation (grant 04-6472). Support was also provided by the National Cancer Institute and the Centers for Disease Control and Prevention through the US Department of Health and Human Services, National Institutes of Health, National Cancer Institute (contract 233-02-0087). None of whom had any role in the study design, collection, analysis or interpretation of the data, writing the manuscript, or the decision to submit the paper for publication.

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Research Highlights

- > Compared mandated and volunteer program participants in community youth cessation programs.
- > A total of 857 youth participants completed surveys prior to the start of their treatment program.
- > Mandated participants had higher extrinsic motivation and lower overall motivation to quit.
- > No differences in smoking patterns, school-related smoking behaviors, or binge drinking.
- > Programs with mixed voluntary-mandatory should pay extra attention to motivational issues.

Table 1

Distribution of demographics and main study variables by participation type in the cessation programs

	Full Sample (n= 857)	Mandated (n=202)	Volunteered (n=655)	p value
Program setting – school	678 (79%)	89 (44%)	589 (90)	<.01
<u>Race</u>	614 (72%)	150 (74%)	464 (71%)	.34
% white				
<u>Age</u>	16.8 (1.5)	16.4 (1.4)	16.9 (1.5)	<.01
Mean (<i>sd</i>)				
<u>Gender</u>	425 (49%)	73 (36%)	352 (54%)	<.01
% Female				
<u>Days smoked in past 30</u>				
Infrequent: 5 days or less in past 30	126 (15%)	31 (15%)	95 (15%)	
Occasional: 6 to 19 days in past 30	131 (15%)	26 (13%)	105 (16%)	
Frequent: > 20 days in past 30	600 (70%)	145 (72%)	455 (69%)	.54
<u>Cigarettes per day</u>	6.90 (6.5)	7.58 (8.0)	6.70 (5.9)	.10
Mean (<i>sd</i>)				
<u>Nicotine Dependence Symptom Scale</u>	2.75 (0.8)	2.74 (0.8)	2.76 (0.8)	.85
Mean (<i>sd</i>)				
<u>Binge drinking in past month</u>	477 (56%)	99 (49%)	378 (58%)	.03
% Yes				
<u>Perceived stress</u>	9.76 (2.6)	9.35 (2.8)	9.88 (2.6)	.02
Mean (<i>sd</i>)				
<u>Depression symptoms</u>	220 (25%)	42 (21%)	178 (27%)	.07
% with score > 16				
<u>Absent from school</u>	162 (19%)	41 (20%)	121 (19%)	.56
% absent > 6 days in past 30 days				
<u>Smoked on school property</u>	400 (47%)	92 (47%)	308 (47%)	.87
% Yes				
<u>Ever suspended</u>	589 (69%)	144 (71%)	445 (68%)	.36
% Yes				
<u>Ever tried to quit smoking</u>	701 (82%)	166 (82%)	535 (82%)	.87
% Yes				
<u>Stage of Quitting</u>				<.01
Pre-contemplation	212 (25%)	82 (41%)	130 (20%)	
Contemplation	282 (33%)	59 (29%)	223 (34%)	
Preparation	353 (41%)	60 (30%)	293 (45%)	
<u>Level of motivation to quit</u>	6.12 (2.7)	4.95 (3.1)	6.48 (2.5)	<.01
Mean (<i>sd</i>)				
<u>Extrinsic motivation</u>	2.23 (1.1)	2.51 (1.2)	2.16 (1.0)	<.01
Mean (<i>sd</i>)				
<u>Intrinsic motivation</u>	3.47 (1.0)	3.23 (1.1)	3.54 (1.0)	<.01
Mean (<i>sd</i>)				

Table 2

Adjusted Odds ratios and 95% confidence intervals for being a mandatory participant based on GEE

Predictor	Odds Ratio	95% CI	P value
<u>Setting</u> (school vs. other)	0.09	0.04, 0.19	<.01
<u>Age in years</u> (centered at 17)	0.89	0.77, 1.04	.17
<u>Gender</u> (female)	0.75	0.56, 1.01	.05
<u>Cigarettes per day</u>	1.03	0.99, 1.07	.10
<u>Binge drinking in past mo.</u>	1.03	0.70, 1.51	.86
<u>Stress</u>	0.94	0.87, 1.00	.07
<u>Depression</u>	0.89	0.57, 1.39	.60
<u>Stage of quitting</u>			
Pre-contemplation	--	--	--
Contemplation	0.61	0.36, 1.03	.06
Preparation	0.48	0.26, 0.88	.02
<u>Level of motivation</u>	0.73	0.42, 1.27	.27
<u>Extrinsic Motivation</u>	1.40	1.15, 1.71	<.01
<u>Intrinsic Motivation</u>	0.81	0.64, 1.04	.10

Note: n = 772