

Spit (Smokeless)-Tobacco Use by Baseball Players Entering the Professional Ranks

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Objective: To describe the prevalence and characteristics of spit (smokeless)-tobacco (ST) use in rookie baseball players as they enter the professional ranks and to identify factors associated with use before entering professional baseball.

Design and Setting: This cross-sectional study was an anonymous questionnaire survey administered during the 1999 baseball season by professional baseball athletic trainers at 30 professional baseball clubs.

Subjects: The target group was all rookie professional baseball players entering professional baseball. Of 862 eligible players in the summer of 1999, 616 participated in the survey.

Measurements: The questionnaire assessed tobacco use, demographic variables relevant to rookie professional baseball players, and factors hypothesized to be associated with current

ST use (ie, other forms of tobacco use, social norms, environmental cues, and risky behavior intentions). Univariate associations with ST use were described by relative risks with 95% confidence intervals. For continuous variables, mean values of ST users and nonusers were compared.

Results: Overall, 67% of the players had tried ST and 31% were current users. Significant risk factors for ST use were being a current cigarette or cigar smoker, having a family member who used ST, and perceiving ST use by peers and role models.

Conclusions: Almost one third of rookie baseball players in the 1999 season were regular ST users on entering professional baseball. Interventions for prevention and cessation of the use of ST targeting young baseball players are needed.

Key Words: chewing tobacco, oral snuff

Athletes, particularly baseball players, are known to be heavy users of spit (smokeless) tobacco (ST). Investigators have reported that 33% to 40% of professional baseball players¹⁻³ and 45% to 55% of college baseball players^{4,5} (National Collegiate Athletic Association, unpublished data, 2001) use ST regularly.

The 2 main types of ST are oral snuff and chewing tobacco. Oral snuff is a finely ground or shredded form of tobacco commonly sold in a round tin can. Users put a "dip" (pinch) of snuff between their lower lip or cheek and gum (the labial and buccal areas, respectively, of the oral cavity), where it stays in place until removed. Chewing tobacco is more coarsely cut than snuff and is packaged in loose or plug form, most commonly in pouches. Users put a "chew" or "wad" of tobacco in the buccal area of the oral cavity and chew it until they remove it. In 1993, the US Surgeon General advocated using the term "spit tobacco" rather than "smokeless tobacco" (a term coined by the tobacco industry) to prevent the erroneous suggestion that smokeless means harmless.⁶

The negative health effects of ST include oral cancer,^{7,8} oral leukoplakia^{9,10} (a premalignant lesion),¹¹ gingival recession,¹² dental caries,¹³ hypertension,^{14,15} and nicotine addiction.¹⁶ The risk of oral cancer is 4 times greater in ST users than in nonusers.⁷ Nitrosamines, potent carcinogens known to cause cancer in more than 30 species of animals, have been measured in ST products at levels 100-fold greater than the legal limits for nitrosamines in foodstuffs.^{16,17} In addition, chronic exposure to nicotine delays wound healing and is associated

with cardiovascular disease, stomach ulcers, and sexual impotence.¹⁸

In 1991, because of the high risk of adverse health effects associated with ST use, Major League Baseball instituted a ban on tobacco use by Minor League players during practices, games, and team travel.^{19,20} Subsequently, the National Collegiate Athletic Association (NCAA) instituted a similar ban on the use of tobacco by college athletes.²¹ Because no data have been reported on ST use among rookie players entering professional baseball, we conducted a cross-sectional study of these players to assess, through a questionnaire, the prevalence of ST use and factors that influence use in this population. We hypothesized that current ST use would be associated with a player's perception of certain social norms and environmental factors identified in the questionnaire. These data are important to determine the need for tobacco-control interventions targeting this population and to identify factors helpful in planning such programs.

METHODS

Recruitment of Study Sample

To be eligible for participation, a player had to be a US citizen and signed with a professional baseball club either during the June 1999 amateur draft or as a free agent in June or July 1999. Head athletic trainers at all 30 professional baseball clubs were contacted in May 1999 by letter to explain the

study and to gain permission for eligible rookie members of their baseball teams to participate in the study.

Survey Administration

During the 1999 Rookie League season (June through August), the athletic trainer at each club obtained informed consent and administered the anonymous, written survey in accordance with written, standardized instructions received from study investigators. Eligible players who agreed to participate in the study completed the questionnaire either on an individual basis or at a team meeting.

Conceptual Framework of the Survey

The Theory of Reasoned Action²² and the Health Belief Model²³ provided the conceptual framework for questionnaire development. The Theory of Reasoned Action postulates that one's perception of general social norms regarding a particular behavior is an important determinant of intention to perform that behavior. In addition, the Health Belief Model maintains that before one adopts a new behavior, there needs to be a "cue to action" that triggers the new behavior. In applying these theories, we focused on identifying athletes' perceptions of social norms related to ST use and of "cues" in their environment that supported the adoption of this behavior.

Measurements

Items included in the survey assessed ST use, factors presumed to be associated with ST use (eg, other tobacco use, social-norm factors, environmental cues, and intention to engage in risky behavior), and demographic factors. Except for the survey item on risky behaviors, all items were obtained from questionnaires used in previous studies of baseball athletes^{1,3,4} or from national surveys of same-aged males in the general population.²⁴⁻²⁶ The following more specifically explains the categories and specific variables assessed on the survey.

Use of Spit Tobacco. Current ST use was defined as use within the past 30 days. We also assessed type and brand of ST used, age of initiation of use (defined as age of first experimentation), and age of first purchase of ST products.

Factors Associated with Spit-Tobacco Use. As measures of other tobacco use, we assessed current cigarette smoking and current cigar smoking. Current use was defined for both products as use within the past 30 days.

Social-norm factors relating to perceived ST use by peers and role models were assessed by asking each player if any of the following referents used ST: high school and college peers, a family member, and his Little League coach. In addition, we asked each player if his mother or father were aware of his tobacco use. For all of these items, the response was either "yes" or "no." We also asked each player to estimate his age of first awareness that professional baseball players used ST, the percentage of Major Leaguers who used ST, and the percentage of Major Leaguers who smoked cigarettes.

To identify environmental factors that might influence ST use, we presented a list of possible media (eg, magazines, billboards, television) and sports events (eg, baseball, football, hockey, NASCAR, rodeo) and asked players to indicate the ones that made them most aware of ST advertising. Other environmental factors assessed that might influence ST use re-

lated to awareness of the Minor League ban on ST use, history of a dental examination within the previous 2 years, and whether he was asked to show identification at the time of purchase if he had purchased ST before 18 years of age. History of a dental examination was included because previous authors^{27,28} have reported that an oral examination with feedback about ST-associated lesions in a player's mouth, advice to quit ST use, and brief counseling by dental professionals have been effective in promoting cessation of ST use.

As a general measure of risky behavior intention, we asked each player if he would use a legal supplement regardless of health risk if the supplement would ensure his reaching the Major Leagues. The 4 response options were "he would definitely *not* use it," "he would consider using it," "he would probably use it," and "he would definitely use it." Although not validated before our study, this hypothetical question was included in an attempt to quantify an attitude in which short-term success in athletics is perceived as being more important than long-term health consequences.

Demographic factors assessed included age, current position played, and history of playing Little League Baseball.

Data Analysis. Prevalence of tobacco use in the past 30 days was calculated for ST, cigarettes, and cigars. For generalization to a larger population, an exact binomial 95% confidence interval (CI) was calculated for each prevalence. The Epi Info software package (version 6, Centers for Disease Control, Atlanta, GA) was used for data management and analysis.²⁹

Variables hypothesized to be associated with current ST use were analyzed individually. The association between each dichotomous variable and ST use was described by a relative risk (RR), and the statistical significance was assessed by the 95% CI. If the lower boundary of the CI exceeded 1, then the RR was statistically significant. Significance for continuous variables (ie, age, perception of percentage of tobacco use in Major League Baseball) was assessed with a *t* test. For descriptive purposes, the mean values for ST users and nonusers were compared. The risk-taking behavior variable had 4 categories, and the chi-square test was calculated for statistical significance.

RESULTS

Study Sample

In all, 30 professional baseball clubs were contacted and agreed to participate in the study. Of the 862 athletes who were eligible to participate, 246 either refused or were absent on the day the questionnaire was administered, yielding a response rate of 71% (*n* = 616). Because this was an anonymous survey, we were unable to follow up with the nonresponders.

Among the 616 subjects, the mean age was 21 years (range, 17 to 24 years). Among the responders, 51% (315) were pitchers, and 98% (587) had played Little League Baseball. Sixty-seven percent (408) had tried ST; 96% (561) were aware of the ban on the use of tobacco products in the Minor Leagues; and 89% (501) reported they had had a dental examination in the last 2 years. (Not all subjects answered each item.)

Prevalence of Spit-Tobacco Use. The overall prevalence of ST use within the past 30 days was 31% (*n* = 190), much higher than that reported for cigarette or cigar smoking (Table 1). Of these, 82% (133) reported using a snuff product and 18% (29), a chewing tobacco product. The reported snuff

Table 1. Prevalence of Current Tobacco Use* (n = 607)†

	Percentage	95% CI‡
Smokeless tobacco	31.3	27.6–35.2
Cigarettes	9.7	7.5–12.4
Cigars	3.6	2.4–5.7

*Use within past 30 days.

†Subjects with missing data not included.

‡CI indicates confidence interval.

Table 2. Prevalence of Current Spit (Smokeless)-Tobacco (ST) Use by Other Characteristics (n = 607)*

Characteristics	n (%)	Prevalence (%)	Relative Risk (95%CI)†
Age group			
<21 years	247 (41)	28	1.0
21–24 years	359 (59)	33	1.2 (0.9–1.5)
Position played			
Pitcher	311 (51)	33	1.2 (0.9–1.5)
Other players	296 (49)	29	1.0
Cigarette smoker‡			
Current use	57 (9)	65	2.4 (1.9–3.0)
No current use	548 (91)	28	1.0
Cigar smoker‡			
Current use	22 (4)	50	1.7 (1.1–2.6)
No current use	583 (96)	30	1.0
Witnessed ST use during high school experience‡			
Yes	481 (84)	34	1.6 (1.1–2.4)
No	89 (16)	21	1.0
Witnessed ST use during college experience‡			
Yes	399 (87)	35	2.0 (1.1–3.6)
No	58 (13)	18	1.0
Little League coach used ST‡			
Yes	130 (23)	43	1.5 (1.2–1.9)
No	437 (77)	29	1.0
Family member used ST‡			
Yes	134 (23)	60	2.6 (2.1–3.2)
No	460 (77)	23	1.0

*Use within past 30 days; n varies due to missing data.

†The category with relative risk = 1.0 is the reference category; CI indicates confidence interval.

‡Statistically significant risk factor for ST use, $P < .05$.

brands were Copenhagen (US Smokeless Tobacco Co, Greenwich, CT), 42% (56); Skoal (US Smokeless Tobacco Co), 41% (55); Kodiak (Conwood Corp, Memphis, TN), 12% (16); and other, 5% (6). The majority of responding chewing tobacco users, 71% (21), reported using Red Man (Pinkerton Tobacco Co, Owensboro, KY), and the remaining 29% (8) used Levi Garrett (Conwood Corp). The mean age for initiation of ST use was 16 years, and the mean age of first purchase of ST was 17 years.

Variables Associated With Spit-Tobacco Use

Other Tobacco Use and Demographics. The prevalence of ST use was significantly higher among smokers than among nonsmokers. Table 2 shows an RR of 2.4, with a significant CI of 1.9 to 3.0, indicating that the risk of ST use was more than double for current smokers as compared with nonsmokers (65% versus 28%). ST use, however, was not significantly associated with age group or position played (see Table 2).

Social-Norm Factors. The use of ST was significantly associated with use by family members (RR = 2.6, 95% CI = 2.1 to 3.2), Little League coaches (RR = 1.5, 95% CI = 1.2 to 1.9), and peers (high school: RR = 1.6, 95% CI = 1.1 to 2.4; college: RR = 2.0, 95% CI = 1.1 to 3.6) (see Table 2). In addition, 80% of ST users (152) reported that at least one of their parents was aware of their tobacco use, as compared with only 40% of cigarette smokers. Both ST users and nonusers estimated that ST was used by more than half of the Major League Baseball players. ST users, however, estimated that a greater proportion of Major League Baseball players used ST than nonusers estimated (56% versus 52%); although this difference was small, it was statistically significant ($t_1 = 2.56$, $P = .011$). There was no difference between ST users and nonusers with regard to the age at which they first became aware that professional baseball players used ST or their perception of cigarette smoking among Major League athletes (Table 3).

Environmental Factors. The environmental factors we measured were not significantly associated with ST use. Overall, however, when asked about where they perceived advertisements most enhanced their awareness of ST products, 62% of players indicated magazines; 53%, rodeos; and 49%, baseball and car-racing sporting events. (The groups were not mutually exclusive.) For those players who first purchased ST when they were less than 18 years of age, more than three fourths reported that they were not asked to show proof of age.

Risky Behavior Intentions. The use of ST was associated

Table 3. Perceptions Related to Spit (Smokeless)-Tobacco (ST) Use Among Users and Nonusers

	ST Users (n = 190)	ST Nonusers (n = 417)	P Value
Age first aware that professional baseball athletes used ST (mean years)	12	12	.79*
Mean estimate of ST use among Major League athletes (mean %)	56	52	.011†
Mean estimate of cigarette use among Major League athletes (mean %)	25	26	.55†
Intention to use legal supplement (%)			
Definitely not use	25	40	<.001†
Would consider using	40	42	
Probably would use	19	10	
Definitely would use	16	8	

*t test.

†Chi square.

with the desire to be successful in baseball regardless of health risks ($\chi^2_3 = 23.62$, $P < .001$, see Table 3). Twice as many ST users as nonusers said they would definitely use a legal supplement despite health risks if it would assure membership on a Major League team (16% [30] versus 8% [15]).

DISCUSSION

We found that the prevalence of ST use among entering rookie professional baseball players (31%) was similar to the 33% reported in 1999 for Minor League professional baseball players in general.¹ This finding suggests that most ST users in professional baseball start using ST before they join the professional ranks. Although the prevalence of ST use was much higher than the 11% reported nationally for 18- to 25-year-old men,²⁶ it was lower than that reported in 2001 for NCAA male baseball, wrestling, ice hockey, and lacrosse athletes (41%, 39%, 35%, and 32%, respectively) and higher than that reported in 2001 for other NCAA male sports (eg, football, 29%; golf, 27%; water polo, 25%; soccer, 21%; track and field, 13%; basketball, 12%) (National Collegiate Athletic Association, unpublished data, 2001).

In contrast, the prevalence of current cigarette smoking in our sample of athletes (9%) was much lower than the national prevalence rate for 18- to 25-year-old men (45%) but slightly higher than the 7% previously reported for Minor League professional baseball players.³⁰

Consistent with previous research,³¹ the association between the use of ST and cigarette smoking in our study sample was strong. Smokers were twice as likely to use ST as nonsmokers. This finding suggests an addictive pattern of behavior and the need for treatment to address the addictive process.

Because we found an association between the use of ST and the desire to be successful in baseball regardless of health risks, ST use-prevention programs provided for rookie and student baseball players should reinforce previously reported findings that ST use does not improve athletic performance.³²

Correcting misconceptions is consistent with the Social Influence Model,³³ which postulates that social and psychological processes influence health attitudes, values, beliefs, and behaviors in important ways. Edwards' framework for applying the Social Influence Model³⁴ identifies 9 types of social influence that can enhance health: education, persuasion, imitation, induced counterattitudinal action (a process that uses subtle coaxing or role playing to influence others to engage in actions contrary to their attitudes or habitual behaviors), conformity, compliance, conditioning, leadership, and obedience. Although it is beyond the scope of this article to describe in detail these social-influence processes (readers are referred to other resources³⁴⁻³⁷), the process of conformity will be explained to illustrate one application of the model that athletic trainers can use as an ST use-prevention strategy.

Conformity is a process through which the majority in a group express judgments to other group members to gain agreement by using the mechanisms of social comparison and the need for acceptance. Youth in general are very susceptible to this process and want to behave in conformity with peer-group norms. Rookie baseball players in this study perceived the prevalence of ST use among Major League Baseball players to be higher than it actually is. Specifically, ST users and nonusers in this study estimated, respectively, that 56% and 52% of Major League players used ST, when actually the most recent documented prevalence of ST use among Major League

players was 36%.¹ Because many rookie baseball players tend to overestimate the amount of ST use among professional baseball athletes, communicating to them that ST users are actually in the minority among professional baseball athletes may help them realize that they are already in conformity with the norm of their peers and, thus, prevent ST-use initiation. Such an approach is also consistent with the Theory of Reasoned Action,²² which maintains that perception of social norms is an important determinant of behavior.

We also found that ST use was associated with perceived use by family members and Little League coaches. These findings suggest that the involvement of significant others in ST-intervention programs could allow important role models to reinforce nonuse. Consistent with our findings and with the Theory of Reasoned Action, Gottlieb et al³⁸ reported that athletes who did not intend to use ST perceived significantly less acceptance of ST use by important figures in their lives than athletes who intended to use ST.

Effective in-service programs for baseball coaches and athletic trainers at all levels are needed to gain their support for policy-level interventions targeting athletes and to promote positive role modeling. Levenson-Gingiss³⁹ described a program that incorporates strategies to influence teachers' perceptions of their work roles, capabilities to implement an innovative health program, and commitment to the new program. Research is needed to examine the effect of such staff-development programs on coaches and athletic trainers and on subsequent use of ST by student-athletes.

In this study, 75% of ST users reported that their parents were aware of their ST use, whereas only 35% of smokers reported that their parents were aware of their smoking. This finding suggests that ST use may be more acceptable to parents and the public in general than smoking, possibly because of the misconception that ST is harmless. Public education programs on the dangers of ST use are needed to counter aggressive manufacturers' promotions of ST. Clearly, ST products are not safe. For example, data from one study⁷ indicated that ST users have a 4 times greater risk of developing oral cancer than nonusers, and the risk was as high as 50 times greater for cancer of the gum and cheek (where the tobacco was held), depending on the frequency and duration of use. In another study of US veterans,⁸ the use of chewing tobacco or snuff was significantly associated with death from cancers of the cheek (buccal mucosa) and throat. Frequent users were 3 times more likely to acquire cancer of the buccal area of the oral cavity than less frequent users and 4 times more likely to have throat cancer. Those who started using ST before the age of 14 years were 20 times more likely to develop throat cancer. Considering the scientific evidence, the US Surgeon General and the Congress have determined that ST products are a cause of serious disease and should carry warning labels and be treated accordingly.⁴⁰ With the alarmingly high use of ST among young males, especially athletes, widespread knowledge of information about the hazardous effects is important. The public should not be fooled into thinking that a tobacco product called "smokeless" is harmless.

Findings from our study also suggest that several environmental and social factors support ST use among baseball players before they enter the professional ranks. For example, 75% of players who purchased ST before they were 18 years old reported that they were not asked to show proof of age. Players in this study also reported that advertisements and promotions in magazines and at rodeo, baseball, and car-racing sports

events enhanced their awareness of ST products. These latter findings are consistent with the Federal Trade Commission's report that ST manufacturers spent a record \$150.4 million promoting their products in 1997, and much of this spending was on billboards, free hat offers, and sponsorship of sporting events.⁴¹ To counteract these influences, promotion of ST and candy look-a-like products at youth sports events should be prohibited and penalties for transgression enforced to protect youths who attend these events.

Most ST users in this study regularly used snuff products, suggesting a greater potential for nicotine addiction. Blood-nicotine levels in snuff users were higher than in chewing-tobacco users, as indicated by cotinine level.⁴² Cotinine, a metabolite of nicotine, has a longer half-life than nicotine in blood and saliva and, consequently, is used as a biochemical marker of tobacco use and level of nicotine addiction. The greater addiction potential for snuff as compared with chewing tobacco has been attributed to the fact that snuff is a more finely ground tobacco leaf and, thus, presents more surface area for nicotine to diffuse from the tobacco and into the bloodstream.⁴²

Moreover, specific snuff products themselves have different nicotine-dosing characteristics.⁴³ The amount of nicotine available for the body to use is a function not only of the quantity of nicotine in the product but also of its speed of delivery. Because nicotine is absorbed across the oral mucosa most rapidly in an alkaline environment, ST manufacturers control the rate of delivery of nicotine in their products (the bioavailability) through the addition of alkaline buffering agents.⁴³ In our study, 42% of current snuff users named Copenhagen as their usual brand. Because of its high alkaline pH (8.0), Copenhagen has a higher level of bioavailable nicotine than most other brands of snuff and chewing tobacco, even though the latter products may contain the same or higher concentrations of nicotine.⁴³

Athletes in the Minor Leagues or in colleges who use snuff, especially Copenhagen, may find it difficult to comply with the ban on ST use in their athletic environment without additional help to manage their nicotine-withdrawal symptoms (ie, craving, irritability, anger, restlessness, inability to concentrate, anxiety, insomnia, increased appetite, and depressed mood). It is important that those ST users who indicate they want to stop ST use altogether are assisted to obtain the knowledge and skills needed to prepare to quit, to cope with cravings and triggers to use, and to use pharmacologic agents to reduce nicotine-withdrawal symptoms if necessary.

Nicotine-patch use in combination with behavioral counseling has been found to improve short-term quitting success in ST users and to reduce ST cravings and other withdrawal symptoms.⁴⁴ However, 2 mg of nicotine gum with and without counseling has not been found to be an effective treatment.⁴⁵ Further research assessing higher doses of nicotine gum is needed. Although Zyban (GlaxoSmithKline, Triangle Park, NC), a nonnicotine antidepressant, has been found to promote smoking cessation, its efficacy in ST users is unknown.⁴⁶ Zyban appears to target the neurochemistry of addiction by increasing dopamine levels in the brain to enhance feelings of well-being. Histories of head injury or seizure disorders are contraindications for use of Zyban.⁴⁷

The fact that use of snuff was much more common in this group of athletes than use of chewing tobacco also is of concern because the strongest data associating the use of ST with oral lesions,^{9,10} gingival recession,¹² and oral cancer⁷ were

obtained in snuff users. Although the more serious adverse health effects of ST use may be delayed for many years, the early onset of ST use among young athletes provides time to build nicotine addiction and time for long-term exposure to the high concentration of carcinogens in ST products.

Because athletic trainers address health issues with athletes daily, they are in an ideal position to advise ST users to stop their tobacco use and to assist those who wish help with the cessation process. For example, athletic trainers can provide self-help quitting guides, brief cessation counseling, instruction on pharmacologic agents, and ongoing support and motivation for the quitting process. A step-by-step, self-help quitting guide for ST users, tailored to baseball players and available from the National Cancer Institute,⁴⁸ is a valuable adjunct for athletic trainers to use in counseling users about ST. For athletes who need more intensive supportive and problem-solving treatment, athletic trainers can institute a system for confidential referral to expert ST-cessation counselors in the community identified through the American Cancer Society.

Most importantly, however, athletic trainers can facilitate the inclusion of an oral-cancer screening examination by a dental professional as part of the mandated health screenings of athletes. To date, the only effective ST-cessation programs among college athletes²⁷ and other adults²⁸ have involved oral examinations with feedback about ST-associated oral lesions and brief cessation counseling by dental professionals. Such examinations provide a "teaching moment" to prevent initiation of tobacco use among nonusers and to motivate tobacco-use cessation among ST users. More than 60% of ST-using college baseball and football players in California said that seeing harmful changes in their mouth or receiving advice to quit from a dentist would motivate them to stop ST use.⁴ Working with college athletes in California and with professional baseball players during spring training, we found that the videotapes "The Tragic Choice: The Bob Leslie Story" (Oral Health America, Chicago, IL) and "The Dangerous Game" (National Cancer Institute, Bethesda, MD) effectively communicated the adverse health consequences of using ST, were positively received by athletic trainers and athletes, and motivated many ST users to try to quit.²⁷ Others also have reported that discussion of the negative oral-health effects from ST use has a significant influence on ST users' desire to quit.⁴⁵

Changing the social norms that sanction and support ST use in all levels of baseball is essential. Use of peer leaders to endorse behavioral innovation to alter social norms has been effective in other research^{49,50} and should be considered in the development of ST-use interventions for athletes as well. The big challenge is to discover effective strategies to convince young athletes of their personal vulnerability to health risks associated with ST use and, at the same time, override what they see as the positive aspects, including the approval of their male peers.

In summary, our findings indicate that considerable experimentation with ST products occurs among rookie baseball players, many of them use ST regularly, and many enter professional baseball already addicted to nicotine. This is an unfortunate circumstance because use of ST by professional baseball players, who are constantly in front of the public, may help to perpetuate the cycle of initiation of ST use by youth who tend to emulate them. Most professional baseball athletes, however, do not use ST, and preventive programs should high-

light that fact. Because athletic trainers work on a day-to-day basis with athletes regarding health issues, their role as tobacco-cessation interventionists should be studied. Finally, our findings indicate that the sale of tobacco to minors, parental acceptance of ST use, ST use by family members, and perceptions of use by baseball-associated role models are factors that may support the use of ST among young baseball athletes. Interventions against the use of ST targeting this population should address these factors and the addiction process.

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