Tobacco use in youth with mental illnesses

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Abstract Despite an abundance of literature documenting the prevalence and dangers of youth tobacco use, there is a relative dearth of literature in the area of effective cessation treatments for youth (Fiore et al. in Clinical tobacco guideline: treating tobacco use and dependence, 2008). Additionally, although it has been widely accepted that mental illness is highly correlated with tobacco use and dependence, little research has been done to support prevention and cessation efforts for youth with mental illnesses. This paper summarizes the literature on tobacco use and cessation in youth, with a focus on describing the existing knowledge base for youth with mental illnesses.

Keywords Tobacco · Mental illness · Adolescent · Prevention · Cessation

Much research has been conducted in the area of adolescent tobacco use, and the prevalence rates and adverse effects have been clearly documented (Kessler et al., 1997). Additionally, the association between mental illness and tobacco use has been widely acknowledged (Breslau et al., 1998; Khantzian, 1997; Parrott, 1999; Weinstein et al., 2008). What is missing in the extant literature, however, is an understanding of the scope of the problem of tobacco use in adolescents with mental illness, including prevalence rates and adverse effects that might be specific to this population. An additional major gap in the literature is a focus on prevention and cessation efforts for the adolescent population in general, and especially for the vulnerable population of adolescents with mental illnesses.

A literature review was conducted to: (1) Summarize the existing literature regarding the problem of adolescent tobacco use, (2) Explain the undeniable link between mental illness and tobacco use, (3) Describe the barriers to tobacco cessation for individuals with mental illnesses, and (4) Identify the current research on tobacco prevention and cessation for young people. When tobacco cessation literature for youth with mental illnesses was not available, the existing evidence base for tobacco cessation with youth in general was included. The review included the 2008 Tobacco Cessation Guidelines (Fiore et al., 2008) as well as literature published between 1982 and 2009. The search was conducted using Medline, PsychInfo, and the U.S. National Library of Medicine PubMed databases. Treatment studies, review articles, and correlational studies were included. All publications reviewed addressed children, adolescents, or transition aged youth (ages 18–24).

Prevalence

General youth population

The prevalence of tobacco use among youth in the United States is a major public health concern. In the
mid-1990s, youth tobacco use was called a “pediatric disease” by the Food and Drug Administration, referring to high prevalence rates as well as the deleterious health effects on this population (Kessler et al., 1997). According to the Centers for Disease Control and Prevention (CDC) 50.3% of high school students have ever tried tobacco, 28.4% of high school students report using some sort of tobacco product (23% report cigarette use, 8% report smokeless tobacco use, and 14% report cigar use), and 20% smoke cigarettes on a daily basis (Centers for Disease Control and Prevention [CDC], 2006, 2007). Moreover, a study by Johnston et al. (2006) found that 26% of 8th graders and half of all 12th graders in a national sample reported ever having smoked cigarettes. Other research has shown that of the 70.2% of adolescents who try smoking cigarettes, 35.8% will become daily smokers during high school (CDC, 1998). These statistics and others highlight the importance of prevention and cessation efforts targeted toward youth in general.

Youth with mental illnesses

There is a paucity of data on tobacco use prevalence among youth with mental illnesses, as compared to existing study of the general youth population. What research is available has documented that nicotine dependence is related to mood, anxiety, and disruptive behavior disorders in youth (Griesler et al., 2008), and that smoking appears highly prevalent among adolescents with diagnoses of mental illnesses especially Attention Deficit/Hyperactivity Disorder (ADHD), Oppositional Defiant Disorder, Conduct Disorder, Major Depressive Disorder, Social Phobia, and substance abuse disorders (Brown et al., 1996; Upadhyaya et al., 2002). A study conducted with 120 children and adolescent psychiatric inpatients ages 8–18 years old found that 39.4% were current smokers (Upadhyaya et al., 2003). A more recent study by MacPherson et al. (2007) included 183 adolescent psychiatric inpatients and found that 58.5% were regular smokers. In terms of the public mental health system, a study conducted by Morris et al. (2006) found that approximately 20% of adolescents being served by community mental health centers across the state of Colorado reported current tobacco use. The authors acknowledge that this is likely an underestimate of the prevalence rate, due to the self-report nature of the study instrumentation. The extant research on tobacco use by youth with mental illnesses suggests that this population is at increased risk for tobacco use, and more research is needed to understand the prevalence rates among youth across mental health diagnoses.

Relationship between mental illness and smoking

There are several schools of thought regarding the connection between mental illness and tobacco use. One highly referenced model is the self-medication model, which purports that individuals with mental illnesses initiate and maintain their tobacco use for the alleviation or reduction of undesirable symptoms (Khantzian, 1997; Weinstein et al., 2008). Learning theory models of tobacco dependence put forward that the effects of smoking experienced as positive serve as reinforcers for smoking. For example, in adolescents with psychiatric illnesses, positive effects of smoking such as the experience of temporary mood-stabilization may be uniquely reinforcing. If the adolescent experiences reduced distress or mood lability, the likelihood of future smoking is increased through negative reinforcement. By contrast, withdrawal models of tobacco use assert that mood lability is a consequence of a reduction in smoking rather than a predictor. According to this model, an adolescent smoker would continue to smoke in order to consciously or subconsciously avoid the increased stress experienced during periods of nicotine depletion (Parrott, 1999). An additional possible explanation for the association between smoking and mental illness is that the same underlying factors, such as environmental, family, or genetic influences, predispose an individual to both smoking and mental health problems (Breslau et al., 1998).

Although the direction of causation is unclear, the association between mental illness and smoking is undeniable. Data from multiple studies utilizing different research designs have supported this (Brody, 2006; Dani & Harris, 2005; Weinstein et al., 2008). Youth with mental illnesses are vulnerable to the time-limited but positive effects that nicotine has on mood symptoms (Dani & Harris, 2005). Findings from brain imaging studies in adults within the general population have indicated that chronic nicotine exposure leads to increased dopamine concentration and monoamine oxidase inhibition in key areas of the brain, which serves to sensitize the individual to the mood-enhancing effects of nicotine (Brody, 2006). Though all smokers experience temporary positive effects on their mood due to nicotine exposure, individuals with mental illnesses likely experience this as relief from negative psychiatric symptoms (Dani & Harris, 2005). This increases their propensity to use nicotine and enhances the challenges associated with cessation. Although the current review did not yield any brain imaging studies on youth in particular, it may be extrapolated that the mood effects seen in youth smokers are potentially due to similar neurobiological changes found in adult tobacco users with mental illnesses.

Another recent study by Weinstein et al. (2008) utilized a longitudinal approach with 517 youth and found that
adolescents who increased smoking over time experienced a positively correlated improvement in affect regulation over time. The study’s sample included adolescents in the general population and utilized negative mood variability (e.g., clinical depression or problem behaviors) as an outcome variable. The adolescents who experienced the most significant improvements in affect regulation were those with the steepest smoking trajectory. This is not to say that those adolescents experienced improvements in mean mood levels; rather, they experienced a reduction in mood volatility suggesting that they may have continued to increase the amount they smoked due to the normalizing effects on their mood. These studies suggest that not only is smoking more prevalent in youth with mental illnesses than in the general population, but that there is a biochemical cause for this disparity.

In addition to the benefits of nicotine discussed above, youth with mental illnesses perceive nicotine as protective against the adverse effects of stressful stimuli. A recent study conducted among 217 young people (mean age 12.2 years) found that an experience of relaxation following the first dose of nicotine was the number one predictor of later smoking more prevalent in youth with mental illnesses than in the general population, but that there is a biochemical cause for this disparity.

It has been estimated that between 80 and 89% of daily adult smokers became daily tobacco users by the age of 18 years (American Health Association, 1995; CDC, 1994). For adolescent smokers with psychiatric disorders, the risk of tobacco dependence by adulthood is even higher than for those without psychiatric disorders (Myers & Brown, 2005). Although most adults progress to smoking from adolescence, the smoking patterns of young people differ substantially from those of adults. Research has shown that young people smoke at higher rates than older adults, but are less likely to be daily smokers or to smoke as many cigarettes. In the early stages of smoking onset, it is common for adolescents to alternate between periods of smoking and abstinence (Bancej et al., 2007; Weinstein et al., 2008). For instance, many adolescents are likely to smoke several cigarettes in 1 day and then abstain from smoking for several days.

The CDC (2004a, b) reports that 43% of people between the ages of 10 and 22 years who smoke as few as three cigarettes per day will become habitual smokers. It has additionally been estimated that adolescent smokers who consume a cumulative number of at least 100 cigarettes will continue to smoke for another 16–20 years (Pierce & Gilpin, 1996). Qualitative findings from a study conducted by Fritz et al. (2008) found adolescents who smoke frequently fail to consider their future health and thus continue to be unaware of the harmful effects of smoking and the addictive nature of nicotine, despite efforts to educate and warn children at a young age.

Tobacco related morbidity, mortality, and functional impact

The World Health Organization (WHO) estimates that approximately half of adolescent smokers worldwide will die of tobacco-related diseases in later life (WHO, 2006). Additionally, it has been established in the extant literature that people with mental illnesses die an average of 25 years earlier than the general population and that the bulk of that disparity can be attributed to tobacco-related illnesses (National Association of State Mental Health Program Directors [NASMHPD], 2006). Taken together, these data suggest that adolescents with mental illnesses are at significantly increased risk of premature death and disability if they use tobacco. A sample of health consequences for adolescents who smoke include respiratory problems and susceptibility to infections as well as later development of cardiovascular disease, lung cancer, and diabetes (Ginzel et al., 2007). Adolescents who smoke are also three times more likely than their non-smoking peers to abuse alcohol, eight times more likely to smoke marijuana, 22 times more likely to use cocaine, and at significantly increased risk for experiencing elevated stress, anxiety, and depression (CDC, 2004a, b). Additionally, there is emerging evidence in the literature that nicotine consumption may impair serotonin function and exacerbate depressive symptoms in persons with mental illnesses, although additional research is needed to understand this relationship (Malone et al., 2003).
The social and functional impact of tobacco use on young people is an important consideration along with the adverse health outcomes of smoking. Smoking among youth is associated with diminished academic ambitions, poorer school performance, and reduced involvement in health-promoting activities such as participation in sports (Tyas & Pederson, 1998). For individuals with mental illnesses, smoking can have a negative impact on their functioning in part because it alters the metabolism of psychiatric medications and reduces blood levels, and therefore effectiveness, of neuroleptics and antidepressants and benzodiazepines (Ziedonis et al., 1994). In the long term, tobacco use also adversely affects the user’s personal income. Research has shown that over their lifetime, people with mental illnesses who smoke will spend up to one-third of their income on tobacco (Morris et al., 2009).

Smoking and suicide

Adolescent smoking is associated with suicidal behavior. A study conducted in Finland showed an over fourfold risk for suicide attempts among smoking adolescents in an inpatient psychiatric facility compared with nonsmoking inpatients after adjusting for psychiatric diagnosis (Mäikikyrö et al., 2004). Another study by Riala et al. (2007) found that adolescents who smoke over 15 cigarettes per day are more than twice as likely to attempt suicide when compared with those who smoke >15 cigarettes per day. The risk of attempting suicide was over threefold for those adolescents who also smoke the first cigarette immediately after waking up. The increased risk of suicide attempts in each of the groups was independent of psychiatric diagnosis. The two variables of smoking >15 cigarettes per day and smoking the first cigarette immediately upon awakening are both strong indicators of nicotine dependence, suggesting that the level of nicotine dependence is an important factor in the relationship between smoking and suicidality for youth with mental illnesses. Though the presence and direction of causality in this association is unclear and represents a matter of controversy in the existing literature, the strength of the relationship is sufficient to warrant special consideration in the treatment of adolescents with mental illnesses who use tobacco.

Barriers to smoking cessation

Stigma and provider beliefs

Although individuals with mental illnesses are at increased risk for tobacco use, they have only recently started to become a focus for aggressive intervention or specific tobacco control policies and services (Schroeder & Morris, 2010). Lack of advocacy and stigma surrounding people with mental illnesses may at least partially account for this disparity (Williams & Ziedonis, 2004). Historically, mental healthcare provider beliefs about tobacco use in people with mental illnesses have created a barrier for many patients seeking intervention (Lucksted et al., 2000; NASMHPD, 2007). Many providers have practiced within systems that routinely used cigarettes as behavioral rewards, and access to “smoking privileges” or to cigarettes themselves is still sometimes used informally for good behavior. Many mental health patients have also received messages from their providers that using tobacco is a relatively minor problem and that smoking cigarettes is actually beneficial to their mental health due to the temporary symptom reduction that psychiatric patients experience during smoking. A study by Morris et al. (2009) found that most mental health providers receive little or no training on smoking cessation, and frequently have misconceptions such as the ideas that persons with mental illnesses need to smoke to control their psychiatric symptoms and that these individuals have no desire to quit.

Environmental barriers

Environmental barriers to youth smoking cessation include such factors as social norms, perceptions about smoking and weight control, peer influence, reduced parental monitoring, and parental smoking (den exter Blokland et al., 2007; DiFranza et al., 2007; Gruber & Zinman, 2000; Otten et al., 2007; Wang et al., 1998). The latter is an important environmental barrier because children of parents who smoke are more likely to become smokers and to have a difficult time with cessation (Otten et al., 2007). There is also a correlation between parental smoking and age of onset of youth smoking, whereby parent smoking increases the risk of early onset smoking by their children (Wang et al., 1998). This is particularly concerning for youth with mental illnesses, given the high prevalence of smoking among adults with mental health disorders and the genetic risk of mental illness (Morris et al., 2006; Smoller & Finn, 2003; Sullivan et al., 2000; Sullivan, 2005). Intervention programs targeting parents may assist in overcoming this barrier. Cessation counseling delivered in pediatric settings has been shown to be effective in increasing abstinence among parents who smoke, which serves to protect youth from the risk of smoking initiation as well as from the dangers of secondhand smoke (Fiore et al., 2008).

Marketing to youth

The tobacco industry has historically created advertisement campaigns that sought to attract young people specifically. A planning memorandum from the RJ Reynolds Corporation
in 1973 stated, “If our Company is to survive and prosper, over the long term, we must get our share of the youth market” (Mintz & Torry, 1998). Despite the prohibitions on advertising to youth enacted by the Master Settlement Agreement (MSA) in 1998, marketing to young people continues to be effective in attracting young smokers. A review of recent advertising campaigns since the year 2000 by the RJ Reynolds Corporation and Philip Morris yielded numerous print advertisements depicting young people smoking cigarettes. Companies who manufacture cigarette brands that are preferred by adolescents tend to market to this population specifically. Furthermore, cigarette advertising in magazines, particularly those with higher youth distribution continued to be effective in attracting young smokers. A review of recent advertising campaigns since the year 2000 by the RJ Reynolds Corporation and Philip Morris yielded numerous print advertisements depicting young people smoking cigarettes. Companies who manufacture cigarette brands that are preferred by adolescents tend to market to this population specifically. Furthermore, cigarette advertising in magazines, particularly those with higher youth distribution increased 57% since the MSA (Chung et al., 2002).

Research has shown what types of marketing strategies youth respond to, and the tobacco industry has developed marketing strategies to match those preferences. Barton et al. (1982) conducted a study in which high school students rated images of youth that were identical except for the presence or absence of a cigarette. Youth that were pictured with a cigarette received higher ratings as having desirable traits such as an interest in the opposite sex and being in a group than those pictured without a cigarette. A more recent study by Romer and Jamieson (2001) found that 14–22 year olds rated smokers in advertisements as popular, happy, and attractive. Those ratings were higher for the adolescents who had experienced greater exposure to cigarette advertisements. It is unknown whether youth with mental illnesses are more susceptible than the general population to the marketing strategies of the tobacco industry, and this question warrants a focus by researchers.

More recently, the tobacco industry has demonstrated interest in the stress reduction experienced by many youth who smoke. A December 1999 report assessing Marlboro advertising among young adult male smokers (YAMS) stated, “Commonly, YAMS are thought to crave excitement and novelty. But, based on their reaction to ‘relaxing’ imagery, they also seem to be looking for escape from daily stress” (National Cancer Institute, U.S. National Institutes of Health [NCI], 2008, p. 226). Although we know of no research that has specifically investigated this issue, advertisements promoting smoking as relaxing and stress-reducing are intuitively attractive to individuals with mental illnesses, who are even more apt than the general population to experience feelings of anxiety and increased stress.

**Tobacco cessation**

Motivation to quit

Research has documented that adolescents who smoke are interested in quitting, but that resources are needed to support their cessation attempts. A study by Moss et al. (1992) found that nearly three out of every four adolescent smokers have made at least one serious quit attempt and have failed to stop smoking. Other literature states that 82% of 11- to 19-year-olds who smoke, at any given time, are thinking about quitting, and that 77% of youth smokers have made a serious quit attempt in the past year. Additionally, research indicates that adults with mental illnesses desire to quit smoking at the same rate as the general population (Prochaska et al., 2004), therefore it may be reasonable to extrapolate that youth with mental illnesses are as interested in quitting as youth in the general population although specific research addressing this issue is warranted. Although research suggests that young tobacco users are interested in quitting, only about 4% of smokers aged 12–19 years successfully quit smoking each year and the rate of failed adolescent quit attempts exceeds that of adult smokers (Fiore et al., 2008). Another survey study by Solberg et al. (2007) found that young adults were as likely as adults over the age of 25 years to have a desire to quit smoking and were actually more likely to have attempted to quit smoking within the past year; however, for the young adults these quit attempts were more likely to be unaided (e.g. no use of nicotine replacement therapy, other medicines, or counseling). Adolescent tobacco cessation attempts are rarely planned, and adolescents tend to choose unassisted quit methods rather than seeking out cessation aids (Morris et al., 2011); however, young people who enroll in a tobacco cessation program are twice as likely to succeed in their quit attempt than those who attempt to quit unaided (Fiore et al., 2008).

The existing research suggests that the majority of adolescents need help in order to successfully quit smoking (Fiore et al., 2008). Evidence suggests that the likelihood that an adolescent smoker will achieve abstinence is greater if the cessation attempt occurs prior to the adolescent becoming nicotine dependent (Bancej et al., 2007). This study also showed that non-daily adolescent smokers also experience a high prevalence of relapse following a cessation attempt. Based on the available research, cessation interventions should be available to all adolescent smokers, including those with mental illnesses, as early as possible, regardless of their level of tobacco consumption.

**Psychosocial interventions**

Several types of intervention have shown promise with regard to smoking cessation for youth. Motivation enhancement strategies grounded in the transtheoretical (TTM) “Stages of Change” model, as well as behavioral therapy interventions have been the most thoroughly studied and have been shown to be the most effective intervention strategies thus far (Aveyard et al., 2001;
A meta-analysis conducted by Sussman et al. (2006) examined 48 smoking cessation studies and found significant treatment effects for those studies with motivation enhancement and cognitive-behavioral treatment foci, as well as for those with social-influence oriented treatment, which has been relatively less emphasized in the literature. Social-influence oriented treatment targets the social factors that serve to promote or maintain smoking.

Of the motivation enhancement strategies, TTM-based approaches have the largest evidence base. A randomized, controlled study by Hollis et al. (2005) tested the efficacy of a smoking intervention utilizing brief advice from a medical provider plus a TTM-based computer program, which assessed youth smokers’ readiness for change and provided individualized advice. The intervention also included a 5-min motivational interview and up to two 10-min telephone or in-person booster sessions. The rates of achieved abstinence in the smoking youth (28.4%) as well as maintained abstinence in the non-smoking youth (90.8%) were significantly higher in the intervention group than in the control group (13.8 and 87.9%, respectively). These abstinence rates were maintained at follow-up 2 years later. By contrast, another study which utilized a TTM-based computer program within a school setting did not yield significant results for 30-day point-prevalence abstinence (odds ratio of 1.52) at 2-year follow-up (Aveyard et al., 2001). The 2006 meta-analysis conducted by Sussman and colleagues included the above mentioned studies, as well as 13 other cessation studies that utilized motivation enhancement techniques, and found a large and statistically significant effect size for these studies.

An additional study by Lipkus et al. (2004) used the TTM stages as a means of stratifying the study sample prior to investigating the effects of self-help materials with and without adjunctive telephone counseling in adolescent smoking cessation. The researchers found that telephone counseling did not significantly improve abstinence rates when added to a self-help intervention. Abstinence rates for the self-help materials only group were 11 and 19% at 4 and 8 months, respectively; abstinence rates for the self-help materials plus telephone-counseling group were 16 years and 21% at 4 and 8 months, respectively. Though none of the cessation rates were significant, participants in the preparation stage were significantly more likely than those in the precontemplation stage to have quit smoking at 4- and 8-month follow-up, suggesting a mediating effect of motivation on cessation. A study by McCuller et al. (2006) also explored motivation as a potential mediator of smoking cessation through an intervention based on the “energy-direction model” of motivation, which emphasizes the amount of energy an individual may put toward quitting as well as the individual’s goals related to cessation. The study found that adolescents who received the intervention expressed higher motivation to quit using tobacco, and that higher motivation was significantly related to higher quit rates.

A number of studies have examined motivational interviewing as a smoking cessation intervention for youth with mental illnesses. A preliminary study compared a one-time, 30-min motivational interviewing treatment with brief advice to stop smoking for adolescents in a hospital setting (Colby et al., 1998). Overall, two-thirds of the study sample reported making a serious quit attempt following the intervention and significant reductions in smoking rates were found. Differences between the treatment groups were not significant, although the small to medium effect size is illustrative of the potential efficacy of motivational interviewing. More than half of the study sample was found to be depressed, as assessed by the Center for Epidemiologic Studies Depression Scale. Interestingly, the depressed adolescents had better treatment effects across treatment groups than did the non-depressed adolescents, suggesting that motivational interviewing and brief advice may be more efficacious for adolescents with depression. Another study focused on youth with mental illnesses tested the effects of two 45-min motivational interviewing sessions versus brief advice (Brown et al., 2003). For these adolescents, the motivational interviewing intervention resulted in higher levels of intention to quit smoking and greater increases in feelings of self-efficacy with regard to quitting smoking than did the brief advice intervention. At the same time, no differences in quitting attempts or quitting successes were found and no overall significant effects on smoking cessation were found. Adolescents in the study who were diagnosed with anxiety disorders were found to have better treatment effects compared to other diagnoses. These participants were significantly more likely to have achieved abstinence and reduced rates of cigarette consumption. Taken together, the results of motivational interviewing studies suggest that it may be an especially useful cessation intervention for adolescents with disorders such as depression and anxiety.

Interventions that utilize cognitive behavioral techniques have also been shown to be effective. Cognitive behavioral techniques represent a merger of behavioral learning theory and cognitive psychology and may include such activities as keeping a diary of significant events and the associated feelings, thoughts and behaviors; testing cognitions, assumptions, evaluations and beliefs that might be unhelpful and unrealistic; and trying out new ways of behaving and reacting. Relaxation and distraction techniques are also common. A review by McDonald et al. (2003) found nine smoking cessation studies conducted...
with adolescents that found positive effects of cognitive behavioral therapies. The authors concluded that cognitive behavioral therapy is a promising intervention modality for smoking cessation in youth. The meta-analysis conducted by Sussman et al. (2006) included 17 studies focused on cognitive behavioral strategies for youth smoking cessation, and also found statistically significant effects for these interventions. Because cognitive behavioral therapy is an evidence-based practice for some mental health diagnoses such as depression (Whooley & Simon, 2000) and has been effective for smoking cessation among youth in the general population, it is a promising intervention for tobacco dependence among youth with mental illnesses, particularly depression and anxiety. Additional research is recommended to examine the effectiveness of cognitive behavioral techniques for smoking cessation with this population.

A school-based smoking cessation curriculum developed by the American Lung Association, Not on Tobacco (N-O-T), utilizes a cognitive behavioral approach and has demonstrated significant effects in reducing cigarette consumption and achievement of abstinence for teen smokers. The N-O-T program has been implemented in schools across 48 states and has resulted in statistically significant reductions in smoking across studies and smoking cessation for approximately one in six participants (CDC, 2009). Overall, structured settings such as schools or clinics have been found to be most effective in implementing cessation programs for youth with and without mental illnesses (Sussman, 2002; Sussman & Sun, 2009).

Pharmacological interventions

Currently, there are no nicotine replacement therapies (NRT) or other medication interventions that are approved by the Food and Drug Administration (FDA) for use in children or adolescents (Fiore et al., 2008). Even so, off-label use is common. There are indications that cessation medications are effective for some youth, but the recommendations for use of pharmacological interventions with this population are mixed. The Surgeon General’s Public Health Service 2008 Clinical Guideline does not recommend use of NRT or bupropion for adolescents as there is little evidence to date that these medications are effective in promoting long-term smoking abstinence (Fiore et al., 2008). Conversely, the Institute for Clinical Systems Improvement (ICSI) Health Care Guideline for Patients and Families: Tobacco Prevention Cessation for Children (2005) recommends aggressive treatment intervention for smoking cessation in adolescents age 16 years or older, including NRT and/or other pharmacotherapy.

Nicotine replacement therapy (NRT) and other medication interventions (e.g. bupropion, varenicline) have not been sufficiently tested in adolescents. A recent double-blind study (Moolchan et al., 2005) tested the efficacy of NRT patches and gum for smoking cessation in adolescents. All participants in the study also received cognitive-behavioral therapy (CBT). The study found that the nicotine patch plus CBT was significantly more effective than placebo plus CBT in helping adolescents to quit smoking at the conclusion of the 3-month treatment phase; however, the study had insufficient statistical power to detect group differences at 6 months. Although the study sample was obtained through general community advertising, 75% of the sample had at least one current psychiatric diagnosis, providing further evidence of the high rate of tobacco use in youth with mental illnesses and the potential for NRT effectiveness in this population. A study by Killen et al. (2004) examined the efficacy of bupropion as an adjunct to the nicotine patch and failed to detect treatment effects; however, the majority of adolescents in both treatment groups reduced their tobacco consumption during the study. For youth with mental illnesses and substance abuse disorders, pharmacological aids may be beneficial to consider during a quit attempt because, just like adults with these disorders, these youth tend to be more nicotine dependent and thus may require multiple modes of intervention. Further research on the safety and effectiveness of pharmacological aids for cessation among youth with mental illnesses is recommended. Special consideration should be given to the potential issues associated with polypharmacy since many young people with psychiatric diagnoses may be receiving medication treatment to manage their mental illness.

National policy

The US government has identified tobacco use as one of the top priorities of the national prevention initiative (United States Department of Health and Human Services [HHS], 2000). The Healthy People 2010 objectives, as well as the recently released Healthy People 2020 objectives, rank tobacco use as among the top priorities for coordinated national public health (HHS, 2000, 2010). Among the Healthy People 2020 goals are reducing tobacco use by adolescents, reducing the initiation of tobacco use by children and adolescents, increasing tobacco-cessation attempts by adolescent smokers, and ensuring that every adolescent tobacco user has access to appropriate and effective tobacco cessation interventions. Tobacco use and mental health have been named by HHS (2000) as among the ten leading health indicators in the US, and because of the inter-related nature of these issues, reducing tobacco use by people with mental illnesses is a priority. In order to achieve the Healthy People 2020 objectives targeted toward young people as outlined by HHS, it is imperative
that tobacco cessation efforts are targeted toward youth, and specifically toward youth with mental illnesses.

Conclusion

The prevalence of tobacco use among youth in general and the disproportionately higher prevalence in youth with mental illnesses is cause for concern, as tobacco use involves deleterious current and future outcomes including increased morbidity and mortality. Multiple factors including social stigma, provider misconceptions, and tobacco industry advertising serve to exacerbate the problem of tobacco use by youth with mental illnesses. Research on effective intervention for youth tobacco use lags behind that of the adult population. Overall, there is little empirical evidence regarding effective treatment for tobacco use among youth in general and much less for those with mental illnesses. Interventions involving a “stages of change” approach based upon the transtheoretical model (TTM) as well as behavioral therapy interventions show promise as potentially effective techniques. Pharmacological interventions have not been adequately studied; however, nicotine replacement therapy (NRT) may be a useful modality in promoting smoking cessation especially within psychiatric populations. Tobacco use by young people, especially those with mental illnesses, is a major public health concern, the impact of which is serious and persistent and warrants attention across healthcare sectors.

References


