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## A Pilot Study of Smoking Cessation within an Iranian Addiction Recovery Community

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### ABSTRACT

Tobacco dependence is ubiquitous among people seeking treatment for other substance use disorders, compromises recovery outcomes, and elevates long-term morbidity and mortality of people recovering from other addictions. The present study: 1) identifies the organizational and personal motivators for smoking cessation within a recovery community (Congress 60) in the Islamic Republic of Iran, 2) describes a novel method of smoking cessation that combines prolonged nicotine replacement therapy (NRT) with a broad spectrum of psychosocial supports to achieve sustained smoking cessation and improved health and quality of life (HQOL), and 3) presents preliminary follow-up data on the first 100 individuals who participated in this pilot effort. The high retention rate, low reported nicotine cravings during and following NRT, high one-year post-NRT abstinence rates, and reported improvements in HQOL of study participants warrant further evaluation and potential replication of the smoking cessation methods used within Congress 60.

**Keywords:** tobacco dependence, smoking cessation, nicotine replacement therapy, peer recovery support

## **Introduction**

Smoking (nicotine dependence) remains the leading cause of preventable disease and death worldwide in spite of international advances in tobacco control policies, public education, and research-informed methods of smoking cessation (Giovino et al., 2012). One-third to one-half of lifelong smokers will die of smoking-related illnesses (USDHHS, 2004). Smoking-related disease and death exact a particularly heavy toll on people with co-occurring drug dependencies.

People seeking treatment for addiction other than nicotine dependence report exceptionally high (80%+) rates of smoking (nearly four times the rate of reported in the general population; Ong, Zhou, & Sung, 2011), more severe patterns of nicotine dependence (Bien & Burge, 1990; Burling, 2003), and fewer smoking cessation attempts than smokers without co-occurring drug dependencies (Hays et al., 1999). As a result, people treated for alcohol or drug dependence are more likely to subsequently die from smoking-related diseases than from other drug-related causes (Hser, McCarthy, & Anglin, 1994; Hurt et al., 1996). Research to date confirms that concurrent addiction to nicotine and other drugs amplifies the health risks of each addiction and the total burden of associated diseases (Kalman, Kim, DiGirolam, Smelson, & Ziedonis, 2010).

Such findings have sparked growing interest in integrating smoking cessation resources within professionally-directed addiction treatment and in peer-led recovery mutual aid fellowships and other recovery community organizations (White, 2008, 2014). Such efforts have further accelerated in the wake of three critical research findings: 1) smoking cessation attempts in early recovery from other drug addictions do not increase cravings for those other drugs (Cooney, Cooney, Pilkey, Kranzler, & Onken, 2003), 2) continued smoking during and following treatment for alcohol and drug dependence is a risk factor for resumption of alcohol and other drug use (Sobell, Sobell, & Kozlowski, 1995), and 3) smoking cessation reduces the risk of relapse and increases the odds of sustained recovery from alcohol and other drug addictions (Bobo, McIlvain, Lando, Walker, & Leed-Kelley, 1998; Hughes, Keely, & Naud, 2004; Kalmon et al., 2001, 2010; Kohn, Tsoh, & Weisner, 2003; Lemon, Friedmann, & Stein, 2003; McCarthy, Collins, & Hser, 2002; Prochaska, Delucchi, & Hall, 2004; Satre, Kohn, & Weisner, 2007; Stuyt, 1997). Also influential have been findings that smoking cessation increases life expectancy; reduces risk of heart disease, heart attacks, strokes, and cancer; and leads to a more rapid process of brain recovery from other addictions (American Legacy Foundation, 2010; Kalman, et al., 2010).

Most smokers regret starting to smoke (90%), want to quit and have made a prior attempt to quit (70%), or are currently trying or planning to quit (40%) (Hughes, Marcy, & Naud, 2008; Bonnie, Stratton, & Wallace, 2007), but relapse rates are high following smoking cessation attempts (American Legacy Foundation, 2014). Successfully quitting smoking often involves cycles of abstinence, lapse, relapse, remorse, remotivation, and renewed abstinence attempts (Bonnie, et al., 2007). Those who attempt to quit smoking report an average of 8-11 quit attempts before succeeding, with most relapsing within the first eight days following their last cigarette (Hughes et al., 2004; USDHHS, 2001).

The professional treatment of nicotine dependence currently integrates medical interventions such as nicotine replacement therapy (NRT); targeted medications such as

varenicline, bupropion, or cytisine; and various forms of behavioral and social support for smoking cessation. While these methods are being integrated into some addiction treatment programs, the field has yet to forge a systematic response to the issue of nicotine dependence and its consequences. Also of concern is the lack of response to this issue by addiction recovery mutual aid fellowships.

The present study explores the introduction of a smoking cessation track within Congress 60--a prominent recovery community within the Islamic Republic of Iran. The study: 1) identifies the organizational and personal motivators for smoking cessation within Congress 60, 2) describes a novel method of smoking cessation that combines prolonged NRT and a broad spectrum of psychosocial supports, and 3) presents preliminary follow-up data on smoking status and health and quality of life (HQOL) of the first 100 individuals who participated in this pilot effort.

## **Methodology**

*Setting* Congress 60 is a recovery community in the Islamic Republic of Iran founded by Mr. Hossein Dezhakam in 1998 to address problems of opioid and other drug addictions (Dezhakam, 2011b). Congress 60 has 19 branches in Tehran and 22 branches in other Iranian cities. It provides more than 6,800 educational workshops each year with an average of 150 participants per workshop. Congress 60 currently has more than 25,000 members in its branches (White, in press). The recovery program of Congress 60 consists of the DST method (an 11-month process of drug tapering using opium tincture, see White, in press) combined with intensive psychosocial support provided within a philosophy of recovery called the 14 Valleys (Dezhakam, 2011b) that is analogous to the Twelve Steps of Alcoholics Anonymous. Members are provided Guides (peer mentors/coaches) and are encouraged to become engaged in a broad spectrum of athletic, religious, artistic and cultural activities within Congress 60, and the larger community (Dezhakam, 2011a).

Historically, there was no systematic approach to address the high smoking rate of Congress 60 members (90%+ compared to the 11.3% daily smoking rate in Iran; Meysamie et al., 2010, 2012) other than informal encouragement to switch to lower tar or nicotine brands and reduce the number of cigarettes smoked per day. This changed in 2012 when Mr. Dezhakam experienced a near-death health crisis (heart attack requiring resuscitation). This event triggered a re-evaluation of the effect of nicotine addiction on HQOL in long-term recovery from other addictions. As a result, a voluntary program of smoking cessation was initiated within Congress 60. To date, more than 300 members of Congress have completed nicotine replacement (as of February 20, 2015).

*Subjects* The first 100 members who voluntarily enrolled in the smoking cessation program within the 19 Congress 60's Tehran branches, following appropriate informed consent procedures, were invited to participate in a pilot study evaluating the effectiveness of the methods being used to achieve smoking cessation. The subjects were primarily male (89%), middle-aged (40.1% mean; SD 10.9%), and married (75%) with children (63%). Fifty-one percent of subjects had completed high school and an additional 25% had attended or completed college or had an advanced degree. Seventy-seven percent of subjects were employed. Ninety-one percent of subjects had entered Congress 60 seeking recovery from opioid addiction (opium, opium sap, charred opium, heroin, methadone or other narcotics). Ninety-two percent had used the DST method of tapering with opium tincture that was recommended within Congress 60. All

of the subjects had been involved in Congress 60 for six months or more before participating in the smoking cessation pilot. Fifty-seven percent of subjects began smoking before the age of 18, and subjects averaged smoking 24.2 cigarettes per day prior to entering the study (compared to the average of 13.7 cigarettes per day for all smokers in Iran, Meysami, Ghaletaki, Zhand, & Abbasi, 2012). Fifty-three percent reported no past quit attempts, while others had attempted to quite using unaided withdrawal (38%), using bupropion without NRT (1%), or NRT without adjunctive medication (8%). The average longest period of prior smoking abstinence since establishment of nicotine addiction among the 100 subjects was 10 days. Of the 100 subjects, 12% had been diagnosed with prior cardiovascular problems, 11% with respiratory disease, 8% with a psychiatric illness, and 22% with other medical conditions.

*Intervention* The pilot study involved evaluation of the self-perceived effects of a voluntary program of smoking cessation by selected members of Congress 60. The smoking cessation intervention involved three steps: 1) calculating each individual's daily baseline nicotine dosage achieved through smoking and then switching nicotine intake from smoking to an equivalent dosage of nicotine gum for a period of three months, 2) then progressively decreasing the daily dosage of nicotine gum over a subsequent period of at least 10 months, and then continuing the psychosocial supports extended through steps 1 and 2 for an indefinite period following nicotine abstinence. During the stabilization and tapering period, subjects were provided a trained "guide" who had achieved at least three months of abstinence following smoking cessation. All subjects were encouraged and expected to participate in weekly special "legion" meetings (group support meetings for members of Congress 60 committed to smoking cessation).

The approach to nicotine replacement and subsequent abstinence is modeled on the "DST method" used in the treatment of other drug addictions within Congress 60, with the "D" meaning the decrease coefficient of 0.8 (and which is the first initial of Dezhakam who is the designer of the DST method) at each increment of dose reduction, "S" meaning that each step of dosage reduction is maintained for at least 21 days, and "T" meaning the minimum time between initiation of nicotine replacement and complete nicotine abstinence is at least 10 months. For example, one who is using 20 milligrams of nicotine will be first tapered ( $20 \times 0.8 = 16$  milligrams) and then 21 days later tapered again at the 0.8 level. Of the multiple methods of nicotine replacement therapy (gum, transdermal patch, oral nicotine spray, nasal spray, inhaler and sublingual tablets/lozenges), nicotine gum was chosen as a method of NRT because of its over-the-counter availability, affordability, ease of dose regulation, ability to accommodate individual differences in nicotine metabolism, ability to rapidly address situation-induced cravings, its reported minimum of adverse effects, and past studies affirming the utility of NRT and the use of nicotine gum with persons undergoing addiction treatment (Ahmadi, Ashkani, Ahamadi, & Ahmadi, 2003; Carpenter et al., 2013; Cooney et al., 2009; Heydari, Masjedi, et al., 2014; Heydari, Talischi, et al., 2014; Raupach, Brown, Herbec, Brose, & West, 2013).

In the DST method of smoking cessation used in the pilot, there was no change in initial oral nicotine dose during the first three months of initial adjustment to oral nicotine ingestion. Tapering of oral nicotine started at the 3-month mark. For each subject, the baseline oral nicotine dose was calculated based on the number of cigarettes smoked per a day. The desired dosage was achieved by dividing each piece of 2 milligrams nicotine gum into fourths (with each part containing 0.5 milligrams) and consuming the total prescribed daily amount in increments at times chosen by each subject. With the DST method, the focus was not on immediate cessation of nicotine dependence, but on needed restoration and repair of metabolic and emotional

functioning—healing that through experience was thought to require an average of 10-11 months. Subjects who wanted to move at a faster pace toward nicotine abstinence were discouraged from premature cessation as experience with the DST method with other addictions had linked such premature efforts to an increase risk of relapse (White, 2012, in press).

Psychosocial support during nicotine replacement therapy consisted of four elements. The first element was assignment of a guide who met with each subject weekly to provide information on the DST method, establish the proper nicotine tapering schedule, check on weekly progress, discuss any problems that are arising and offer suggestions based on personal and collective experience. The second element was participation in the weekly “legion” mutual support meetings for those members of Congress 60 who have committed themselves to smoking cessation. These legions, facilitated by the trained guides, operate within each branch of Congress 60, with the number of members in each legion ranging from two to 20. Legion meetings were available to and used by all of the study participants. These weekly meetings consisted of mutual sharing and support, review of problems being encountered, and discussions of potential solutions. The legion meetings helped members cope with stressors without reverting to smoking or other drug use. The third dimension was an emphasis on the involvement of legion members in the larger athletic, artistic, cultural, and community service activities of Congress 60. These activities provided alternatives to smoking as well as social relationships in which the value of smoking cessation was extolled. The fourth element was a re-orientation of one’s understanding of addiction recovery as encompassing smoking cessation. This latter dimension of spirituality or worldview involved use of the principles within the 14 Valleys to cope with any physical or psychological discomforts of smoking cessation.

*Research Questions* The pilot study of smoking cessation within Congress 60 tested four research questions. One year following participation in tapering and group support, what percentage of study participants will report: 1) successful completion of the smoking cessation protocol, 2) having experienced minimal nicotine craving during and following the period of NRT, 3) sustained smoking cessation without relapse, and 4) significant improvements in HQOL.

*Instrumentation and Measurement* 100 subjects were interviewed at intake and at follow-up using a standardized intake form and follow-up interview protocol. The interviews were all conducted by Dr. Reza Daneshmand, a psychiatrist practicing in Tehran, who was recruited to assist with the research. Intake data collection spanned nicotine addiction history, history of other addictions, history of physical and mental illnesses, and motivations for wanting to quit smoking. Post-treatment data collection reporting status during and following the smoking cessation procedures spanned ratings of craving intensity, nicotine abstinence or use, HQOL measures, and degree of participation in support group activities. Data collected by Dr. Daneshmand were coded and electronically transmitted to research staff at Chestnut Health Systems in Bloomington, Illinois (USA) for analysis.

*Ethical Oversight* The study design and human subject protections were approved by the Chesnut Health Systems Institutional Review Board.

## **Findings**

Baseline and follow-up data were available for 93 of the 100 study participants. The average time between completion of nicotine replacement and follow-up was 9.7 months, with a range from 1 to 19 months.

*Motivation for Smoking Cessation* Study subjects ranked their motivations to stop smoking within the following four primary categories: concerns about physical/psychological health (82%), social and job issues (57%), family issues (38%), and economic issues (11%).

*Retention* There was an exceptionally high retention rate within the study, with 93 of 100 completing the process of smoking cessation and participating in follow-up interviews.

*Ratings on Level of Nicotine Craving* The average rating of nicotine craving during the months of NRT was 2.4 out of 10 with 0 representing lowest and 10 representing highest level of experienced craving. The reported range was from 1 to 8. The average rating of craving for smoking after completion of NRT was 1.2 out of 10 with a range of 0 to 3.

*Ratings of DST Method of Nicotine Replacement* Participants rated the DST nicotine replacement method on a scale from 0 (not effective) to 10 (extremely effective) with an average rating of 9.6 out of 10.

*Degree of Participation in and Helpfulness of Legion Meetings* The degree of self-reported sharing within the legion meetings spanned no sharing in meetings (5%), seldom sharing in meetings (26%), and frequent sharing in meetings (69%). The average rating of perceived helpfulness of legion participation was 8.7 out of 10 with 58% rating helpfulness at 10 out of 10.

*Intervention and Post-intervention Rates of Smoking Abstinence* Eighty-five percent of participants reported no smoking during the months of NRT using the DST method, 8% reported smoking 1 cigarette, and 8% reported smoking 2-7 cigarettes. After completion of DST nicotine replacement, only 1 participant reported smoking (1 cigarette); the rest reported no smoking (N=92).

*Health and Quality of Life (HQOL) Ratings following Smoking Cessation* Ninety-two of 100 study subjects reported HQOL ratings at the point of follow-up (See Table 1).

**Table 1: HQOL Rating at Smoking Cessation Follow-up (n=92)**

	No Change	Somehow Better	Better	Improving	Worse
Evaluation of physical health after smoking cessation	1.1%	2.2%	30.4%	65.2%	1.1%
Evaluation of sports and exercise after smoking cessation	1.1%	4.3%	35.9%	57.6%	1.1%

Evaluation of appearance after smoking cessation	3.3%	9.8%	48.9%	37.0%	1.1%
Evaluation of mental abilities after smoking cessation	15.6%	27.8%	40.0%	16.7%	0.0%
Evaluation of psychological status after smoking cessation	6.5%	20.7%	41.3%	31.5%	0.0%
Evaluation of family relationship after smoking cessation	3.3%	12.0%	37.0%	47.8%	0.0%
Evaluation of job abilities after smoking cessation	17.4%	17.4%	45.7%	19.6%	0.0%

*Differences in Outcomes by Source of Primary Motivation for Smoking Cessation* Ratings for craving for smoking during and after nicotine replacement, the degree of sharing and effectiveness ratings of legion meetings, and post treatment abstinence rates were examined to see if they differed by the sources of motivation for smoking cessation (e.g., family issues, psychological or physiological issues, and job or social issues). T-test analysis did not reveal any significant differences ( $p < .05$ ) on any of these outcomes by whether or not the subject endorsed the particular motivator as a priority. We did see one trend on craving for smoking during nicotine gum taking in which those who said social and job issues were a priority reported higher craving ( $M = 2.7$ ) than those who did not ( $M = 2.1$ ;  $p = .081$ ). We also examined the post-treatment status of such factors as physical health, sports and exercise, appearance, mental abilities, psychological status, family relationships and job abilities to see if they differed by the source of motivation for smoking cessation. Only one chi-square test was significant. Fifty-six percent of those reporting family issues as a priority to quit smoking rated their appearance after smoking cessation as improving compared to only 26% of those who did not endorse family issues as a priority,  $\chi^2(4) = 12.53$ ,  $p < .01$ .

## Discussion

A study was conducted on a unique approach to smoking cessation piloted within Congress 60, a recovery community in the Islamic Republic of Iran. In-treatment and post-treatment outcomes were reported on 100 subjects enrolled in a smoking cessation pilot that combined a prolonged process of NRT with extensive psychosocial support.

The DST method of transitioned nicotine replacement to nicotine abstinence produced a 93% retention/completion rate among the 100 subjects. Several factors likely contributed to this exceptionally high retention rate. All subjects were already socially bonded members of Congress 60. Participants volunteered from a pool of thousands of Congress 60 members and were likely the most motivated to stop smoking. The emphasis on the value of smoking cessation

and the importance of the study as communicated by Mr. Hossein Dezhakam, the founder of Congress 60, likely served as an additional influence on the high retention rates among study participants. This retention rate does suggest that a recovery community in which tobacco dependence has become entrenched can implement changes that increase smoking cessation efforts.

Study participants reported minimal nicotine craving during and following use of the DST method of NRT. Craving ratings of 2.4 (in-treatment) and 1.2 (post-treatment) of a 1-10 craving intensity scale suggest that the DST method of NRT was able to suppress the intense cravings often associated with smoking relapse. The low reported cravings using the DST method are important in light of past research suggesting the strong link between craving intensity and smoking cessation outcomes (Wray, Gass, & Tiffany, 2013).

The authors did not anticipate the exceptionally high in-treatment (85%) and post-treatment (99%) abstinence rates. These rates are far higher than the one-year abstinence rates (less than 30%) reported in other smoking cessation studies (Cahill, Stevens, Perera, & Lancaster, 2013; Carpenter et al., 2013), including other studies in Iran (Heydari, Marashian, Ebn Ahmady, Masjedi, & Lando, 2012; Shahrokhi, et al., 2008). In fact, the rates were so high that little factor analysis was possible comparing those for whom this method was and was not effective.

This effectiveness in retaining smoking cessation participation, suppressing cravings and promoting in-treatment and post-treatment smoking abstinence is likely associated with four factors within the methods being piloted by Congress 60. First, the DST method combines NRT with behavioral techniques and social support for smoking cessation—a combination principle already established to have value in the smoking cessation research literature (Hartmann-Boyce, Stead, Cahill, & Lancaster, 2013; Stead & Lancaster, 2012a,b; Stead et al., 2012).

Second, the DST method of NRT provides a longer period of dose stabilization prior to tapering, and a much longer period of tapering than is usually found within the smoking cessation literature (Kotz, Brown, & West, 2014). Most studies of NRT sustain NRT for weeks, and only a few such studies have protocols that continue NRT for more than six months (Carpenter et al., 2013). The present study findings are consistent with earlier findings that cessation rates improve with a longer period of NRT (Siahpush et al., 2015), but the present study extends the duration of NRT far longer than in most previous studies and provides smaller increments of nicotine dose reduction.

Third, Congress 60 provides a highly intense and prolonged level of one-on-one guidance and mutual support that also capitalized on the therapeutic effects of helping as proposed by Riessman (1965) and confirmed in multiple studies of smoking cessation (Ford, Clifford, Gussy, & Gartner, 2013), and broader studies of addiction recovery (Pagano, Post, & Johnson, 2011; White, 2009). Earlier studies report increasing the odds of successful smoking cessation from 10-25% by adding behavioral/social support to NRT over short periods (e.g., weeks) of time (Stead & Lancaster, 2012a,b). The present study exponentially extended the duration of such support. The peer support component of the present study was designed to provide opportunities for mutual identification, visible role models for successful smoking cessation, increased self-efficacy, and opportunities for exposure to and mastery of new knowledge and coping skills. Every effort was made to channel the social contagion that once supported smoking among the members of Congress 60 to support smoking cessation.

Fourth, smoking cessation within Congress 60 occurs within the context of alternative activities and the reconstruction of one's worldview (framing smoking cessation within larger rubric of addiction recovery and spiritual renewal). This factor is analogous to the well-documented use of replacement activities, identity reconstruction, and the linking of addiction recovery to a larger meaning and purpose in life across religious, spiritual and secular frameworks of addiction recovery (Kurtz & White, 2015; Laudet, Morgen, & White, 2006; White, 1996). Future studies should attempt to disaggregate and measure the influence of these respective factors. Collectively, these factors confirm the principle that smoking cessation rates improve with the increased intensity and duration of physical, psychological, social, and spiritual support for smoking cessation (Stead & Lancaster, 2012a,b; Zwar et al., 2015).

Subjects completing smoking cessation using the DST method of NRT also reported significant improvements in health and quality of life. When ratings of "better" and "now improving" were combined, substantial improvements in HQOL were reported in such areas as physical health (95.6%), participation in sports and exercise (93.5%), appearance (85.9%), family relationships (84.8%), psychological health (72.8%), job performance (65.3%), and mental abilities (56.7%). Such reports are consistent with other studies of the effects of smoking cessation on lowering morbidity and mortality risks and enhancing overall HQOL (Goldenberg, Danovitch, & IsHak, 2014).

## **Limitations**

The reported outcomes in this pilot study should be interpreted with great caution due to the limitations that often accompany small pilots that precede larger, more methodologically rigorous studies. Congress 60 is a unique recovery community in Iran whose members may differ significantly from members of other secular, spiritual and religious recovery mutual aid societies in Iran and in other countries as well as from patients seeking professionally-directed addiction treatment. The first volunteers to test the DST method of smoking cessation were also unique in that they were likely among the most motivated to stop smoking and most interested in enhancing the reputation of Congress 60 and its leadership. Future studies will be required to see if the reported outcomes can be sustained in future generations of Congress 60 members availing themselves of these methods. Resources were not available in the pilot study to compare the results of participants with a matched control group of individuals using other methods of smoking cessation or other Congress 60 members who maintained their recovery from other drug dependencies but continued to smoke tobacco. The study also relied on self-report of smoking behavior without biochemical validation of smoking status via measurement of exhaled CO and self-reported changes in HQOL without independent verification of these changes. Future studies in Congress 60 and in other recovery community and professional treatment settings and with greater methodological rigor will help determine the degree to which the utility of the methods used within Congress 60 will be effective in other cultural and professional contexts.

## **Conclusions**

In spite of the noted limitations, the high retention rate, low reported nicotine cravings during and following NRT, the high one-year post-NRT abstinence rates, and the improvements in HQOL reported in this study all suggest the value in further testing of the smoking cessation methods used within Congress 60. Combining prolonged NRT, peer-based recovery support groups, inclusion of nicotine abstinence within the conceptual rubric of "addiction recovery," and

framing smoking cessation within the larger recovery-driven reconstruction of identity, relationships, and daily lifestyle may provide an effective framework of smoking cessation for individuals who are seeking or achieving recovery from multiple drug dependencies.

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