Tobacco Use among Muslims in New York City and Surrounding Areas: Results of the Nafis Salaam Community Survey

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Abstract

Based in New York City, Nafis Salaam is an innovative smoking prevention and cessation program for Muslims developed by the Muslim Consultative Network (MCN) in partnership with the Islamic Medical Association of North America (IMANA). Funded by the American Legacy Foundation, Nafis Salaam launched in early 2009 and broke new ground in providing quantitative information about behaviors and attitudes among Muslims towards tobacco use. Results of a community survey among Muslims in New York City and surrounding areas (n=408) show the complexity of tobacco use, including cigarette and water pipe smoking (shisha/hookah), as well as chewing tobacco (pan/gutka). Findings include age and gender-related differences in tobacco use as well as high exposure to second-hand smoke. Beliefs about religious prohibitions are also associated with smoking behavior as nonsmokers are more likely to believe that smoking is disliked or forbidden in Islam. Participants' interests in mosque-based tobacco education suggest new avenues for partnerships between health-care providers and community religious institutions, as well as the possibility of including faith-based and culturally appropriate messaging in antismoking educational initiatives.

Key words: Tobacco use, smoking, health education, Muslim, water pipe.

Editor's note: Nafis Salaam is a partnership between the Muslim Consultative Network (MCN) and the Islamic Medical Association of North America (IMANA), funded by the American Legacy Foundation.

Introduction

Tobacco use rates, an important concern for Muslims globally, range between 1% and 57.5% across South Asian, Arab, and African countries with large Muslim populations and in European diaspora.[1-4] Religious beliefs and guidelines reportedly can enhance smoking cessation programs.[1,5] During Ramadan (the month of fasting), Muslims do not smoke during the daylight hours of the fast, and this can lead to quitting smoking.[6] A recent program in London targeting Muslim Bangladeshis with high rates of cigarette use and tobacco chewing successfully developed partnerships with mosques to reach Muslims through culturally specific messages[7] and took advantage of the momentum provided by religious prohibitions regarding smoking during the Ramadan fast.[8]

A few studies have examined tobacco use among Muslims within the United States but focused specifically on college students and Arab Muslim adolescents.[9-10] Nafis Salaam is a program based in New

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York City and the first to collect data about tobacco use among Muslims living in the United States. As a city with 36% of its residents being foreign-born[11] and a home to more than 600,000 Muslims,[12] New York City provides access to diverse Muslims from different ethnic backgrounds and speaking numerous languages, yet connected through their common religious affiliation. The goals of Nafis Salaam are to document the prevalence of tobacco use among Muslims and to educate Muslims about smoking prevention and cessation. Nafis Salaam operates on a premise that smoking cessation initiatives will have greater reach and impact using linguistically appropriate and culturally sensitive messages.

In early 2009, Nafis Salaam was created as a partnership between social service providers and advocates from the Muslim Consultative Network (MCN) and the Islamic Medical Association of North America (IMANA) with funding from the American Legacy Foundation and fiscal sponsorship from IMANA. MCN was responsible for program management. "Nafis Salaam," meaning "breath of peace" in Turkish, Arabic, Persian, and Urdu, reflects the program's faith-based underpinning that draws upon an Islamic principle of avoiding harm to the physical body and spirit. Both "*nafis*" and "*salaam*" are religiously significant terms that are based in the Qur'an, the sacred text for Muslims. The program's logic model emphasizes faith-based messaging and religious motivators that can help participants intend or accelerate quitting tobacco use.

Over a period of 10 months, Nafis Salaam disseminated existing English language brochures developed by the New York City smoking cessation campaign and the American Cancer Society. Program staff also developed faith-based messages using religious symbols, references to passages from the Qur'an, and religious injunctions for self-care that were used in workshops, videos featuring community artists and key religious spokespersons, web site postings, and printed materials. More than 15,000 flyers were distributed, and staff conducted a total of 10 workshops at mosques, social service agencies, community conferences, and Muslim schools. The program culminated in a Healthy Ramadan campaign in which materials were distributed at various *iftar* events (breaking of the fast). Religious leaders were educated about the program, and with their support, workshops were conducted at four diverse mosques.

Preliminary observations and interviews with key community stakeholders regarding tobacco use suggested that specific subgroups within the Muslim community – such as Turks, Arabs, and Bangladeshis – are more likely to smoke. Therefore, program messages were disseminated in Turkish, Arabic, Bengali, and English, via ethnic media. Postcards and flyers were translated into additional languages, including Russian, Urdu, Twi, Farsi, Bosnian, Albanian, and French. Details about the above educational activities are described in the end of year progress report.[13]

In addition to educational initiatives, Nafis Salaam designed and implemented a survey on tobacco use with a purposive sample of New York City-area Muslims of mixed ethnicities, ages, and genders. The survey sought to answer the following questions about its sample: 1) What percentage of New York City Muslims currently smoke or chew tobacco? 2) Do New York City Muslims know of and have preferences for commonly known cessation resources? 3) What are their beliefs about religious guidelines and health effects of tobacco use? 4) How are age, gender, ethnic background, and foreign birth related to behavior, knowledge, and religious interpretation?

Methods

Survey Design

Questions on the Nafis Salaam survey were derived from the New York City Department of Mental Health and Hygiene (DOHMH) Community Health Survey (CHS), based on the National Behavior Risk Factor Surveillance System (BRFSS).[14] Questions included current tobacco use, general health of the respondent, age at first smoking, cessation aids, cessation attempts in the past 12 months, and exposure to secondary smoke from family members, friends, and colleagues. The Stages of Change model provided the wording for a question on current smoking behavior.[15] Survey questions were tailored where appropriate. For example, the question concerning family members incorporated extended family, living in the United States or overseas. Religion-based resources for smoking cessation were described in the survey as quitting during Ramadan, imam's support, and a sermon (*khutba*) delivered during Friday prayers in Ramadan. Because water pipe smoking, or

shisha, was known to be practiced among several communities included in the study, such as Arabs and South Asians, the survey assessed rates of shisha use and perceptions of its harmfulness. In addition, the survey asked about chewing tobacco in the forms of pan (a tobacco leaf wrapped with a betel nut) and gutka (a mixture of tobacco, betel nut, fennel and spices), both of which were found to be used among South Asian communities.[2,16-17]

The survey was pretested with 21 key stakeholders in the community, such as social service providers, community advocates, and imams (clergy). Program staff also conducted in-depth interviews with each stakeholder to obtain feedback about survey development, program implementation, and message design. While no institutional board reviewed the survey, the survey was voluntary, anonymous, confidential, and no incentives were offered to complete it.

Data Collection and Target Population

During a nine-month period, diverse outreach workers collected surveys from a purposive sample of 408 New York City area Muslims of both genders between the ages of 18-40. However, respondents were not excluded by age; therefore, 27 high school students <18 years of age and 65 adults >40 years old also completed the survey.

Questionnaires were administered in more than 15 mosques, five Muslim student associations at colleges, large and small community meetings, Muslim sporting events, cultural celebrations, educational workshops, cafes in neighborhoods with known Muslim populations, and Muslim community street fairs. While 342 respondents completed a paper survey, another 56 answered the questions online. The survey did not solicit religious background, but outreach workers informed potential participants that the purpose of the survey was to measure smoking and tobacco use perceptions in the Muslim community. Online surveys were also administered through listservs that are meant for Muslim students and professionals. Ethnicity categories were created using self-identified ethnicity data in combination with place of birth, language, and location of data collection. For instance, if a respondent did not answer the question on ethnicity, but mentioned a place of birth as Pakistan, he or she would be coded as Pakistani; alternatively, if the respondent did not answer questions about ethnicity or place of birth but noted their language as Turkish and the data were collected at a Turkish community mosque, this individual was coded as Turkish. All Arabic speakers were combined into "Arab." African Americans were kept distinct from Africans, in order to check for differences between immigrant and indigenous groups. Other categories included Bangladeshi, Turkish, Pakistani, Caribbean/West Indian, white or European, Latino/Hispanic, and other Asian (which includes East Asians and Asian Indians).

Data collection during the first three months began with a lengthier survey that included questions about general health, stress, frequency of being around family, friends, and coworkers smoking, and why people initiated smoking. The first version was answered by 197 respondents. As a way to ease respondent burden, in the next few months (July to December), program staff shortened the survey and removed the aforementioned questions. Two hundred and eleven respondents answered the second round. To assist with program planning, the first round of the survey asked which cessation resources respondents would like to have. When the survey was shortened in the second round, this set of questions was substituted with questions about whether mosques should initiate smoking cessation activities, perceptions of shisha as a gateway to cigarette smoking, and perceived prevalence of tobacco use among youth. Sample sizes were adjusted when questions appeared in only one version of the survey; otherwise the proportions are based on a total sample of 408 participants. Data were analyzed using Statistical Package for the Social Sciences (SPSS) 11.5. Crosstabulations with chi-square tests of significance were used to determine the relationship between demographic predictors and behavior, knowledge, and belief outcomes. Logistic regression was used to determine whether family members' smoking, knowledge, or beliefs were significantly associated with behavior, after controlling for demographic characteristics.

The surveys used in both rounds are available with the online version (jima.imana.org/article/view/6053) of this paper as supplementary files.

Results

Sample Characteristics

The sample was 55% male and 45% female, com-

parable to the gender breakdown of Muslims polled in a national sample.[18] Age distribution of the sample comprised 6.6% under age 18; 31.4% between 18-25 years old; 22.8% between 26-30 years old; 18.5% between 31-40; 8.6% between 41-50 years old; and 7.4% over 51 years old. A majority of respondents (71%) lived in the five boroughs of New York City. Approximately 19% of respondents resided outside New York City, including New York area suburbs, New Jersey, and Connecticut; and 41 respondents (10%) did not provide a location of residence.

Respondents reported speaking 31 different languages in addition to English. Most of the sample spoke four main languages: Arabic (21.3%), Turkish (16.4%), Urdu (16.4%), and Bengali/Bangla (9.3%), which reflects Nafis Salaam's aim to specifically reach South Asian, Turkish, and Arab segments of the community. Nearly two-thirds of the sample reported being born outside the United States (68%), which is comparable to rates of foreign-born among the U.S, Muslim community nationally.[18] The ethnic breakdown of respondents is as follows: Caribbean (n=15), Arab (n=72), African American (n=29), Bangladeshi (n=41), Pakistani (n=39), white/European (n=24), other Asians (n=70), and Turkish (n=61).

Prevalence of Tobacco Use

Nearly 75% of respondents reported to have never smoked cigarettes, while 25% reported prior cigarette smoking. Of all respondents, 12.8% reported current cigarette smoking; 8.8% quit smoking more than six months ago, and 3.5% quit within the last six months.

Exposure to second-hand smoke from family members was reported by 213 of 387 (55%) respondents to this question. When asked where those family members live, out of 198 who answered, 53.5% said these family members live in the United States, 34.3% live outside the United States, and 12.1% live both in the United States and abroad. Nearly 60% reported being around friends who smoke occasionally or often, and approximately 46.5% of first-round respondents who answered the question (n=187) said they were occasionally or often around smokers at work.

Participants identified other forms of tobacco use in addition to cigarette smoking. About 2.9% of the overall sample (n=408) chew tobacco in the form of pan/gutka. In the first round of the survey, the question was asked about friends' use of pan/gutka. Out of the 182 who answered this question, 7.8% reported having friends who occasionally use pan/gukta. In addition, nearly a quarter of first- and second-round respondents reported using shisha/hookah (22.4%). Of the 197 first-round survey respondents who were asked about friends' use of shisha, 185 responded. Of these, nearly half (47.3%), reported being around friends who use shisha occasionally or most of the time (n=185). The remaining sections of the results focus on shisha and cigarette smoking.

Who Is Likely to Smoke Cigarettes and Shisha?

Predictors of tobacco use vary depending on whether the focus is cigarette smoking or shisha use. Cigarette smoking and shisha use vary by age among Nafis Salaam participants (Figure 1). Percentages shown in the figure are based on the number of valid responses within each age group. Individuals who did not answer the question about their smoking or their age were omitted from the analysis. For current and ever smoked: <18 years old (n=27); 18-25 years (n=128); 26-30 years (n=93); 31-40 years (n=76); 41-50 years (n=35); >51 years (n=30). For current shisha users, the total numbers of responses within each age group are as follows: <18 years old (n=21); 18-25 years (n=111); 26-30 years (n=80); 31-40 years (n=61); 41-50 years (n=16); >51 years (n=18). Adolescents under 18 years report the lowest rates of current cigarette smoking (n=1, 3.7%) or any prior cigarette smoking (n=2, 7.4%). The 31-40 age group reported the highest rate of current smoking (n=14, 19.2%) and prior cigarette smoking (n=31, 40.8%). Unlike older participants, shisha use is generally more common than current cigarette smoking for participants younger than 31. Differences by age are statistically significant for any prior smoking (chi-square=14.71, p=0.005) and for current shisha use (chi-square=13.72, p=0.008).

Men were much more likely to currently smoke cigarettes (15.3% of men versus 8.9% of women, chi-square=15.18, p=0.02) and had double the rate of prior cigarette smoking compared to women (35.5% versus 18%, chi-square=12.06, p= 0.001). On the other hand, women and men were equally likely to report shisha use, suggesting the presence of underlying social norms that may prohibit cigarette smoking

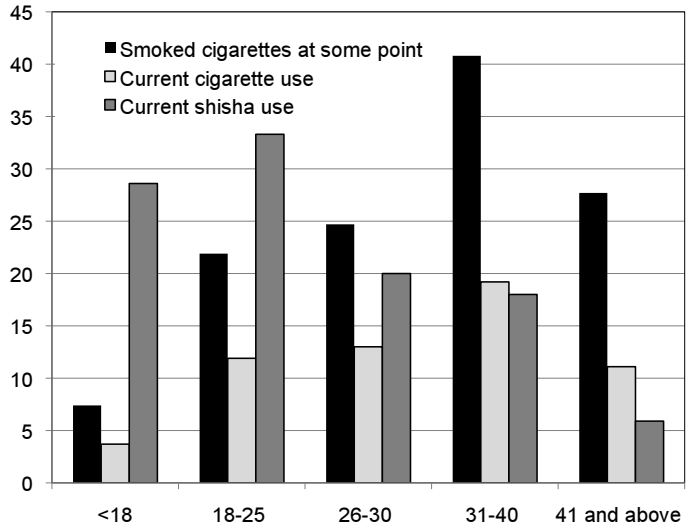

Figure 1. Percentage of cigarette smoking and shisha use within age categories.

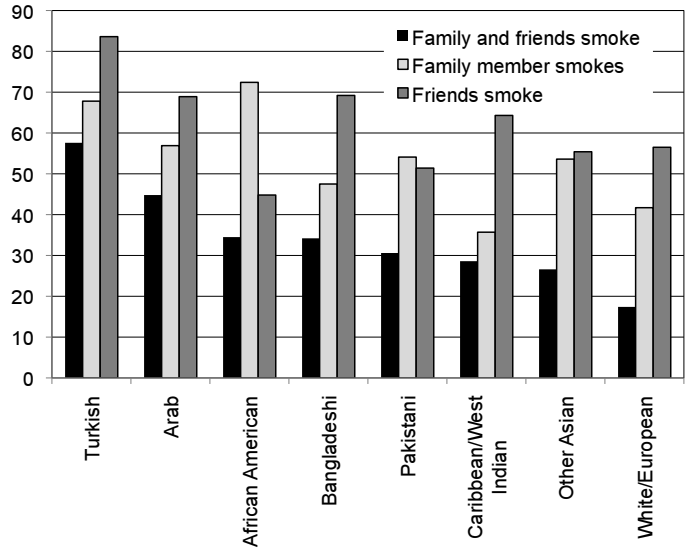

Figure 2. Percentage of both friends and family members by ethnicity who smoke (n=321).

but not shisha use by women.

As expected, those who had family members who smoke were more likely to smoke (15.5%) versus those who did not have a family member who smokes (8.6%) (chi-square=4.25, p= 0.04). Current cigarette smokers had more than double the rates of shisha use than nonsmokers (52.3% versus 18.2%, chi-square=24.98, p<0.001). Participants who never smoked were less likely to use a shisha (15%) compared to those who quit more than six months ago (24%), those who quit less than six months ago (54.5%), and those who currently smoke (52.3%) (chi-square=36.2, p < 0.001).

Exposure to Second-hand Smoke

Respondents who reported having family members who smoked and being around friends who smoked differed by gender and ethnicity. Women reported more exposure to second-hand smoke particularly from male family members: brothers (25%), fathers (23.9%), and uncles (22.7%) rather than their mothers (9.7%), cousins (8%) and aunts (7.4%). In contrast, men were more likely than women to report being around friends who smoke (72.4% versus 55.7%, chi-square = 11.35, p < 0.005).

While the prevalence of cigarette smoking or shisha use did not vary by ethnicity or foreign birth, there were some variations by ethnic group in exposure to second-hand smoke. African Americans and Turks reported the highest rates of family members who smoke (72.4% and 67.8%, respectively); Pakistanis and Arabs had similar proportions of family members who smoke (54% and 56%, respectively), and only 47.5% of Bangladeshi respondents reported family members smoking (chi-square=12.26, p=0.09) (Table 1). Turkish respondents reported the highest proportion of smoker friends (83.6%), while African Americans had the lowest rate of exposure to friends' smoking (44.8%) (chi-square=21.07, p<0.005). Arab and Turkish respondents had the highest exposure to second-hand smoke from family members and friends combined (chi-square=25.5, p=0.03) (Table 1 and Figure 2).

Knowledge of Harm of Smoking and Shisha Use

The Nafis Salaam survey assessed individual knowledge of U.S. rates of mortality due to cigarette smoking (>400,000 deaths annually). A majority of respondents were either unsure or underestimated mortality numbers due to smoking (40% and 22.6% respectively). Age and gender did not impact knowledge of mortality rates associated with smoking; however, this varied significantly by ethnicity (Table 2). Caribbean/West Indian respondents were most likely to know the correct number of smoking-related deaths (chi-square= 14.72, p=0.04). In addition, foreign-born participants were significantly less likely than U.S.-born participants to identify the correct rates of mortality due to smoking (31.1% versus 42.9%, chi-square=4.93, p=0.03).

About 72% of Nafis Salaam participants believed shisha use to be somewhat or very harmful, and

87.4% thought pan was somewhat or very harmful. A majority of members within ethnic groups believed shisha use was somewhat or very harmful (Table 2). Age, gender, and ethnicity did not impact the understanding of the harmfulness of shisha use. A question about whether shisha is a gateway to cigarette smoking was asked in the second round of the survey, and of the 121 people who answered the question, 61% thought it somewhat or definitely encouraged cigarette smoking. This trend did not differ by age, current cigarette smoking status, or ethnicity (Table 2). However, women were less likely than men to agree that shisha somewhat or definitely encourages cigarette smoking (53.1% versus 70.2%, chi-square=3.69, p=0.05).

Knowledge about and Belief in Religious Guidelines

When asked about Islam's prohibition of smoking, most respondents believed that smoking is either religiously forbidden (29.2%) or disliked (42.9%). Only 18.4% were unsure about the Islamic view of smoking, and about 5.1% said they thought it was "neither forbidden nor disliked," meaning that they did not think Islam had any strong opposition to smoking. Those who believe that Islam prohibits or dislikes smoking are much less likely to be current cigarette smokers (10.5% versus 19.8%, chi-square= 5.54, p=0.02).

The majority of respondents across all groups agree that Islam dislikes smoking. This is particularly true among Arabs, Pakistanis, and Bangladeshis. The differences between the ethnic groups in this regard were statistically significant (Table 3). Sample sizes are noted as appropriate, reflecting the number of people who answered the question within each ethnic group (Table 3).

Familiarity with Cessation Resources

Respondents indicated varying familiarity with clinical aids such as nicotine patches and antidepressants, interpersonal support such as through family, counseling and hotlines, and religiously based resources (Figure 3). Most respondents (64%) recognized the nicotine patch, but fewer than 20% were familiar with anti depressants. They were familiar with interpersonal support from family (41%), group counseling (30%), one-on-one counseling and the New York State Smokers' Quitline, a free service for New York State residents, offering brief counseling

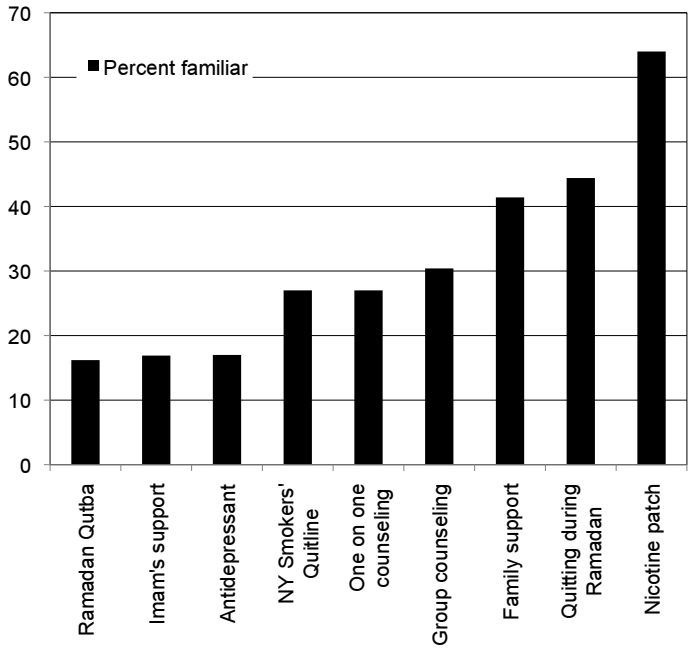

Figure 3. Percentage of familiarity with each cessation resource.

and support materials (27% each). Among religiously based supports, fasting during Ramadan as a means to quit was familiar to 44% of the sample, but fewer indicated knowledge of imam's support or a Ramadan khutba/sermon as a cessation resource (17% each). Familiarity with smoking cessation resources was impacted by gender and ethnicity, but not age. Women were more familiar than men with the nicotine patch and individual and group counseling support, but less familiar with religious resources including imam's support and Ramadan sermon (Table 4). Arabs, Turks, and other Asians were least familiar with the Quitline (less than 20% for these groups compared to about half for the other ethnic groups) (Table 5). Bangladeshis were less familiar with the nicotine patch (59%) compared to 75% or more among other groups (Table 5). Caribbean and African Americans were most familiar with the patch and also significantly more familiar with group counseling than other groups (Table 5). It is unclear why these differences may arise. However, as shown in Table 6, foreign birth may contribute to this difference across ethnic groups. U.S.-born Muslims are more familiar with cessation options provided by health-care systems, but foreign birth did not impact familiarity with religious-based support, family support or group counseling (Table 6).

The second round of the survey asked partici-

Table 1. Percentage by ethnicity of family members and friends who smoke.

	Family Member Smokes	Friends Smoke	% Reporting Both Family and Friends
Caribbean/West Indian	35.7 (n=14)	64.3 (n=14)	28.6 (n=14)
African American	72.4 (n=29)	44.8 (n=29)	34.5 (n=29)
Arab	56.9 (n=65)	68.9 (n=61)	44.8 (n=58)
Bangladeshi	47.5 (n=40)	69.2 (n=39)	34.2 (n=38)
Pakistani	54.1 (n=37)	51.4 (n=37)	30.6 (n=36)
White/European	41.7 (n=24)	56.5 (n=23)	17.4 (n=23)
Other Asian	53.6 (n=69)	55.4 (n=65)	26.6 (n=64)
Turkish	67.8 (n=59)	83.6 (n=61)	57.6 (n=59)
Total	337	329	321
Chi-square, P-value	12.26, 0.09	21.07, 0.004	25.5, 0.03

Table 2. Knowledge of harm, by ethnicity (%).

	Cigarette Smoking Knowledge: 400,000+ Deaths/Year	Shisha Very or Somewhat Harmful	Leads to Cigarette Smoking
Caribbean/West Indian	64.3 (n=14)	100 (n=8)	100 (n=2)
Arab	39.1 (n=64)	90.9 (n=56)	56.5 (n=23)
African American	40.7 (n=27)	90.9 (n=22)	66.7 (n=9)
Bangladeshi	20.0 (n=40)	92.5 (n=40)	37.5 (n=16)
Pakistani	47.4 (n=38)	85.7 (n=35)	52.4 (n=21)
White/European	29.2 (n=30)	75.0 (n=24)	66.7 (n=6)
Other Asian	43.5 (n=69)	87.5 (n=64)	83.3 (n=24)
Turkish	29.5 (n=61)	84.2 (n=57)	80.0 (n=10)
Chi-square (P-value)	14.72 (0.04)	6.06 (0.53)	12.66 (0.08)

pants whether they would like to see mosque-based support groups. A remarkably high number affirmed their desire for more mosque-based support for "quitters" (89.2%). Other resources requested in the first round of the survey included information on quitting (36%), Islamic guidelines or fatwas about quitting (34.7%), and the dangers of shisha or pan use (29%) (Table 7).

Participants 26-30 years old and over 41 in significantly larger numbers than other age groups (54.8% and 58.3%, respectively, chi-square = 13.43, p = 0.009) requested information on quitting. These two groups also expressed preference for videos or internet sites and translated materials as compared to other age groups. Women expressed a stronger preference for mosque-based programs than men (95.8% of women and 82.4% of men, chi-square = 6.50, p = 0.01).

Interestingly, current smokers were less familiar with interpersonal cessation resources, compared to nonsmokers. They were less likely to have heard about using individual counseling from a health professional or counselor (16.7%) as compared to nonsmokers (34.1%) (chi-square=5.82, p=0.02). Current smokers were also significantly less likely than nonsmokers to recognize family member support as a cessation resource (29.2% versus 59.3%) (chi-square=8.14, p=0.004). They were also less likely to report having heard of group counseling (22.9% versus 37.3% of those who do not smoke) (chi-square=3.75, p=0.05). There was no association between smoking behavior and knowledge of religious based resources or clinical aids.

Yet, 20.8% of current smokers (n=48) intended to quit within 30 days, 52.1% intended to quit within six months; and 22% had no intention of quitting. Responses about intention to quit smoking were only included when respondents also self-reported current smoking. The patterns in the data suggest the need for clarifying the question or measuring both behavior and intention through different wording. More specifically, it may be that someone who initiated quitting several months ago is not yet in the maintenance phase, so they would answer intention questions as if they are a current smoker, even though they have checked off that they quit recently on another question.

Current smokers expressed a stronger preference for information about quitting than nonsmokers (53.8% versus 36.7%, chi-square=3.94, p=0.05). However, they preferred religious rulings on smoking at much lower rates than nonsmokers (15.4% versus 38%, chi-square=5.00, p=0.02).

Table 3. Beliefs about Islamic prohibition by ethnicity. Percent of respondents within each ethnic group.

	Islam Forbids/Dislikes Cigarette Smoking
Caribbean/West Indian	57.1 (n=14)
Arab	84.6 (n=65)
African American	58.6 (n=29)
Bangladeshi	90.0 (n=40)
Pakistani	83.8 (n=37)
White/European	66.7 (n=24)
Other Asian	71.6 (n=67)
Turkish	76.7 (n=60)
Chi-square (P-value)	17.77 (.02)

Discussion

The Nafis Salaam survey found patterns in tobacco use, cessation-related knowledge, and beliefs that merit additional investigation and programmatic attention despite the limitations of self-reporting and possible recall bias regarding behavior. While the Nafis Salaam sampling was not random, and therefore not representative of the New York Muslim community, sample smoking rates were comparable to overall New York City rates as determined by the 2006 CHS conducted by the DOHMH. In that study, the overall smoking rate for all New Yorkers was 17.5%.[19] Using the 2006 and 2007 sample from the CHS, DOHMH also conducted special analysis for this project and determined that 17.3% of respondents who are from countries with a 75% or greater Muslim population were current smokers (CI=13.3, 22.2).[20] The Nafis Salaam estimate (12.8%) thus appears to be sound, since it is very close to the lower limit of the confidence interval in the DOHMH's randomly drawn sample (13.3%).

In addition, tobacco use among Muslim communities incorporates cigarette smoking, shisha use, and chewing pan/gutka. It is quite possible that in a globalized world, and in a diverse city such as New York, where Muslims of various ethnicities meet each other, alternative forms of tobacco, such as pan/gutka, historically associated with one cultural community, would also make their way into new cultural groups, just as cigarette smoking has crossed international borders and ethnic groups. Thus, in order to understand tobacco use, it is important that research and programs incorporate not only cigarette smoking, but shisha/hookah and pan. Future studies can ask participants about the order of initiation between various forms of tobacco in order to learn more about their gateway function.

The data also reveal some noteworthy age and gender differences in prevalence of tobacco use. Among individuals under the age of 40, there is a greater perception that younger people are taking up tobacco use more frequently, and the patterns of actual tobacco use by age confirm this perception. As noted, Figure 1 reveals a curvilinear relationship between age and cigarette smoking, which is highest in the 31-40 years age group. Shisha use is highest for 18-25 year old participants and then declines with increased age. The percentage of shisha users younger than 18 is similar to a study of Arab-American adolescents that reported that as many as 27% had smoked tobacco using a shisha, which increased from 23% at 14 years of age to 40% at 18 years of age.[21] Age differences among cigarette and shisha smokers suggest a need for age-specific smoking prevention and cessation activities.

As noted earlier, it is also striking that those who engage in cigarette smoking are more likely to use shisha, and that its use is equal among women and men. While it is unclear whether shisha leads to cigarette smoking or vice-versa, women are less likely

Table 4. Percent familiar with cessation resources, by gender.

	Men (n=170)	Women (n=177)	Chi-square (P-value)
Smokers' Quitline	28.2	34.5	1.56 (.21)
Nicotine patch	68.2	80.8	7.22 (.007)
Antidepressant	17.6	22.0	1.05 (.31)
One-on-one counseling	24.1	39.0	8.85 (.003)
Family support	45.9	50.8	0.86 (.35)
Group counseling	28.1	41.8	7.21 (.007)
Ramadan khutba	24.3	13.0	7.28 (.007)
Imam's support	25.3	14.1	6.87 (.009)
Quitting during Ramadan	55.3	48.6	1.56 (.21)

Table 5. Percent familiar with cessation resources, by ethnicity.

	Caribbean (n=14)	African American (n=28)	Arab (n=47)	Bangladeshi (n=37)	Pakistani (n=35)	White European (n=23)	Other Asian (n=65)	Turkish (n=61)
Smokers' Quitline*	57.1	53.6	17.0	40.5	31.4	34.8	18.0	18.0
Nicotine patch*	92.9	96.4	78.7	59.5	82.9	60.9	75.4	75.4
Antidepressant	14.3	28.6	19.1	18.9	20.0	26.1	18.0	18.0
One-on-one counseling	42.9	35.7	27.7	27.0	31.4	34.8	32.8	32.8
Family support	50.0	53.6	40.4	40.5	57.1	65.2	3.7	37.7
Group counseling* (n=48)	64.3	57.1	31.3	29.7	25.7	30.4	29.5	29.5
Ramadan khutba (n=64)	7.1	25.0	25.5	32.4	14.3	17.4	14.8	14.8
Imam's support	14.3	25.0	25.5	32.4	11.4	13.0	14.8	14.8
Quitting during Ramadan	28.6	50.0	59.6	54.1	65.7	56.5	52.5	52.5

Chi-square test, *P<.05

than men to believe that it is a gateway to cigarette smoking. While there may be underlying social norms that prohibit women from smoking cigarettes; it is possible that the social acceptability of shisha for women prevents them from agreeing with the statement that it leads to cigarette smoking, which has stronger cultural taboos.

In addition to self-reported tobacco use, second-hand smoke affects Muslims of all ages, across genders and ethnicities. In fact, the Nafis Salaam survey participants, especially within Turkish and Arab communities, reported high rates of exposure to second-hand smoke from family, friends, and work colleagues, especially within Turkish and Arab communities (Table 1). The adverse effects of second-hand smoke have been documented in numerous studies, and it is well-known that second-hand smoke carries with it risks of lung cancer, increases rates of respiratory illnesses such as pneumonia and bronchitis particularly in children, and exacerbates asthma.[22] In a recent article, 56.7% of nonsmokers living in New York City have elevated levels of the nicotine metabolite cotinine that is found in smokers.[23] In addition to risks associated with second-hand smoke, those with family members who smoke reported higher rates of cigarette smoking for themselves. Clearly, addressing second-hand smoke exposure among New York Muslims should be an important concern due to the health risks posed as well as the imitative nature of cigarette smoking. Medical providers should consider incorporating questions about second-hand smoke in routine questioning of patients in clinical settings.

Despite the substantial rates of tobacco use in its various forms and high rates of secondary exposure, knowledge about mortality rates due to cigarette smoking is low and varies significantly by ethnicity and foreign birth. It may be worthwhile that additional education and outreach is needed for newer immigrants regarding tobacco use. Many respondents agreed that shisha use is somewhat or very harmful even though other research studies conducted found that Arab youth living abroad view smoking tobacco using a shisha is less addictive than cigarette smoking and are less familiar with health risks of shisha use.[21] A third of the participants of the Nafis Salaam survey requested information about the specific harms of shisha use, which can include lung and esophageal cancer, respiratory illnesses and infectious diseases from pipe sharing.[2]

Table 6. Percentage familiar with cessation resources, by place of birth.

Method	U.S. Born (n=116)	Foreign Born (n=222)	Chi-square (P-value)
Smokers' Quitline	41.4	25.7	8.77 (0.003)
Nicotine patch	90.5	68.0	20.9 (0.000)
Anti-depressant	26.7	16.7	4.79 (0.03)
One-on-one counseling	40.5	27.0	6.41 (0.01)
Family support	53.4	45.9	1.72 (0.19)
Group counseling	41.4	32.3	2.76 (0.10)
Ramadan khutba	18.1	19.9	0.16 (0.69)
Imam's support	19.0	20.0	0.08 (0.77)
Quitting during Ramadan	55.2	50.0	0.82 (0.37)

In addition, knowledge of smoking cessation resources available to the community, such as clinical aids and interpersonal counseling support appears less than desirable. A third of the participants were unfamiliar with the most well-known resource, the nicotine patch. Knowledge of conventional cessation resources varies across ethnic groups, foreign birth, and gender and even by cigarette smoking behavior. U.S.-born Muslims are much more familiar with resources made available through health-care programs, and this difference may arise from language barriers or lack of familiarity with the health-care system. A study of Arab

immigrants in New York found that language and lack of translated literature was a significant barrier in accessing health care.[24] Future studies based on multiple research methods could explore why differences in knowledge about cessation resources arise by gender and foreign birth, including the role of education and language barriers in accessing services.

The Nafis Salaam survey shows that religion and religious institutions may potentially enhance smoking cessation initiatives that target Muslim communities. Two-thirds of respondents believe that smoking is disliked or forbidden in Islam. Interestingly, this belief was more likely shared among Arabs, Bangladeshis, Pakistanis, other Asians, and Turks than with Caribbean/West Indian and African-American respondents. International events may have impacted awareness in the former ethnic groups as various countries in the Eastern Mediterranean region and South Asia have issued religious edicts against smoking or laws prohibiting smoking in public places.[25-6]

Does belief about Islamic injunctions actually correlate with behavior? We found that those who believe that Islam forbids or dislikes tobacco use were less likely to smoke than those who did not share this belief. In addition, a large percentage of the overall sample was familiar with quitting during Ramadan, but were less familiar with other religious-based support for quitting, such as counseling by imams and Ramadan sermons. This suggests the need to further develop and promote these strategies within mosques and through social services.

When asked about what types of cessation resources they would like to have, a large majority of respondents wanted to see more mosque-based programs. However, the survey revealed that nonsmokers were twice as likely as smokers to want Islamic rulings (*fatāwā*) on tobacco use. While nonsmokers could find a religious edict, an effective message to prevent smoking, a religious edict might not translate into an effective motivator to quit for smokers. In any case, the survey findings point to the utility of a religious framework in smoking cessation and also suggest that different types of religious guidance would be effective with different segments of the Muslim community. For example, Neirkens et al. 2005 suggest that imam support could be more effective for male cigarette smokers, because imams may be less accessible to females.[3] Mosque-based support initiatives will clearly have a challenge to communicate a nuanced faith-based message that educates community members about religious guidelines in regards to cigarette smoking.

Table 7. Types of cessation resources desired, by percent.

Mosques should develop programs such as support groups for quitters	89.2
Information on quitting smoking for you/someone	36.5
Islamic rulings (fatwas) on this subject	34.7
More information on dangers of hookah or pan	29.0
Videos or internet sites about this subject	25.6
Quit smoking information translated into other languages	23.3
Referrals to support groups or counseling to help quit	22.7

Note: row 1, n=139, second round of survey; Rows 2-7, n=176, first round.

The current study made an effort to draw a purposive sample, by including major ethnic groups among Muslims in New York City and varying age and gender of participants. It sought to vary the settings in which data was collected, including places of worship, cultural events, schools, and public meetings. Although the gender balance and foreign birth representation achieved in the survey is close to that of a Pew Research national probabilistic sample,[18] the ability to generalize the survey findings would improve by using probability sampling strategies, such as through random selection of mosques or participants.

Finally, results of the survey suggest that age and gender segmentation in addition to the continued targeted programs to reach certain ethnic and lin-

guistic communities are important for future smoking cessation initiatives with New York-area Muslims. In addition, those who are already smoking would benefit from education about one-on-one counseling from a health professional, group counseling, and the role of family support. Partnerships with hospitals or city agencies could help with access to and distribution of nicotine patches, which can be made available through mosques in tandem with workshops and during Ramadan campaigns. In addition to addressing tobacco use, community members would benefit from a program focused on second-hand smoke. Programs should take advantage of opportunities to generate more normative pressure to quit smoking through family members and friends.

In the future, we aim to take advantage of Ramadan's focus on self-discipline by developing specific messages for smokers about seeking help from professionals and family members and expanding on an Islamic principle of avoiding harm to the body and spirit to include avoiding harm to others such as by second-hand smoke.

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References

1. Ghouri N, Atcha M, Sheikh A. Influence of Islam on smoking among Muslims, BMJ. 2006 Feb 2; 332: 291-4.
2. Knishkowy B., Amitai Y. Water-pipe (narghile) smoking: an emerging health risk behavior. Pediatrics. July 2005;116(1):e113-9.
3. Nierkens V, Stronks K, van Oel CJ, et al. Beliefs of Turkish and Moroccan immigrants in the Netherlands about smoking cessation: implications for prevention. Health Educ Res. 2005;20:622-34.
4. Bush J, White M, Kai J, et al. Understanding influences on smoking in Bangladeshi and Pakistani adults: community based, qualitative study. BMJ. 2003 May 3;326:962-8.
5. Islam, N, Al-Khateeb M. Challenges and opportunities for tobacco control in the Islamic countries — a case-study from Bangladesh. East Mediterranean Health J. 1995;1(2):230-4.
6. White M, Bush J, Kai J, et al. Quitting smoking and experience of smoking cessation interventions among UK Bangladeshi and Pakistani adults: the views of community members and health professionals. J Epidemiol Community Health. 2006 May; 60(5):405-11.
7. Goddard J, Rahman M. Developing a tobacco cessation programme for the Bangladeshi community: an innovative approach. Presented at UK National Smoking Cessation Conference, London. June 22-23, 2009. Available from http://www.uknscc.org/2009_UKNSCC/speakers/jill_goddard_2.html
8. Desai F, Dudhwala Y. Smoking cessation with Muslim men. Presentation at UK National Smoking Cessation Conference. Gateshead, UK. June 26-27, 2006. Available from http://www.uknscc.org/2006_UKNSCC/presentations/farah_desai.html
9. Kulwicki A, Rice VH. Arab American adolescent perceptions and experiences with smoking. Public Health Nurs. May 2003;20(3):177–83.
10. Islam SM, Johnson CA. Correlates of smoking behavior among Muslim Arab-American adolescents. Ethn Health. Nov 2003;8(4):319-37.
11. NYC Planning. The newest New Yorkers: immigrant New York in the New millenium, A report of the New York City Department of City Planning Population Division. 2004. Available from http://www.nyc.gov/html/dcp/pdf/census/nny_briefing_booklet.pdf
12. Beshkin, Abigail. SIPA Conference Discusses New York City's growing Muslim population. 2001. Available from http://www.columbia.edu/cu/news/01/05/muslim.html
13. Carroll, A. End of Year Report, submitted to Legacy Foundation, Nov. 24, 2009.
14. Department of Health and Mental Hygiene. 2007 community health survey questionnaire, Wave 2 Final. 2007. Available from http://www.nyc.gov/html/doh/downloads/pdf/episrv/chs2007survey.pdf
15. DiClemente CC, Prochaska JO, Fairhurst S, et al. The process of smoking cessation: an analysis of precontemplation, contemplation and contemplation/action. J Consult Clin Psychol. 1991 April; 59: 295-304. Question Available from http://www.uri.edu/research/cprc/Measures/Smoking11.htm
16. World Health Organization. TobReg - Advisory note Waterpipe tobacco smoking: health effects,

research needs and recommended actions by regulators.. 2005. Available from http://www.who.int/tobacco/global_interaction/tobreg/waterpipe/en/index.html
17. Changrani J, Gany FM, Cruz G, et al. Paan and gutka use in the United States: a pilot study in Bangladeshi and Indian-Gujarati immigrants in New York City. J Immigr Refug Stud. 2006;4(1):99-109.
18. Pew Research Center. Muslim Americans: middle class and mostly mainstream. 2007. Available from http://pewresearch.org/assets/pdf/muslim-americans.pdf
19. Department of Health and Mental Hygiene. Who's Still Smoking? Cigarette Use Among Adults in New York City, 2007. Available from http://www.nyc.gov/html/doh/downloads/pdf/survey/survey-2007smoking.pdf
20. Department of Health and Mental Hygiene. Smoking Among New Yorkers from predominantly Muslim countries. Data compiled by John Jasek, by special request, June 29, 2009.
21. Noonan D, Kulbok PA. New tobacco trends: waterpipe (hookah) smoking and implications for healthcare providers. J Am Acad Nurse Pract. May 2009;21(5):258-60.
22. Environmental Protection Agency. Setting the Record Straight: Second Hand Smoke is a Preventable Health Risk. 1994. Available from http://www.epa.gov/smokefree/pubs/strsfs.html
23. Rabin R.C. New Yorkers often exposed to cigarette smoke, study finds. New York Times. April 8, 2009. Available from http://www.nytimes.com/2009/04/09/health/policy/09smoke.html
24. Shah SM, Ayash C, Pharaon NA, et al. Arab American Immigrants in New York: health care and cancer knowledge, attitudes, and beliefs. J Immigr Minor Health. October 2008t;10(5):429-36.
25. Gavlak D. Smoke alarm from Afghanistan to Morocco. Bull World Health Organ. February 2008;86(2):89-90.
26. Reuters. Factbox: Smoking bans around the world. Reuters, July 16, 2009. Available from http://www.reuters.com/article/idUSLE574990.