

*Research Article*

## Investigating Hajj as Favourable Time for Smoking Cessation

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### Abstract

**Background:** Tobacco smoking is one of the major causes of preventable deaths worldwide. To quit smoking is a challenging task and is governed by multiple factors such as physiological, behavioural and psychological. Evidences advocate that religious involvement might aid in termination of smoking by providing additional strength to fight against stressors resulting in lower levels of cigarette smoking.

**Aim:** To evaluate the prevalence of smoking and relationship of Hajj with smoking behaviour of pilgrims.

**Method:** 500 questionnaires were distributed to the pilgrims in Mena area of Makkah. Questionnaires included items regarding demographics, smoking status, and physiological, behavioral and psychological factors. Data were analyzed appropriately.

**Result:** Majority of the smokers and ex-smokers were males, highly educated and belonged to Indonesia. During Hajj, the number of cigarettes smoked was drastically decreased in smokers ( $p < 0.001$ ). Nicotine dependence of the smokers was low-to-moderate during pilgrimage.

**Conclusion:** Hajj is a proper season to start cessation programs that include anti-smoking activities, health education, and enforcement of laws prohibiting smoking.

**Keywords:** smoking, hajj, tobacco, pilgrims, nicotine dependence, quitting

### 1. Introduction

Cigarette smoking is the leading cause of morbidity and mortality globally [1]. About 7 million deaths are accounted due to smoking but according to WHO, it will rise to 10 million by 2030 [2-4]. Approximately 1.1 billion tobacco users are present worldwide [5]. Smoking is one of the risk factors for many non-communicable diseases such as cancer, cardiovascular diseases and respiratory disorders [6,7]. It not only affects the smokers

but also the person who gets exposed to the smoke. By giving up smoking the risk of developing the disease is considerably reduced [8,9].

The main hurdle in quitting smoking is the addiction caused by nicotine, the key component of cigarettes [10,11]. Nicotine addiction is comparable to addiction caused by alcohol, heroin and cocaine [12,13]. Further, the withdrawal symptoms which may last from few hours to months render smoke cessation a challenging task [12]. Hence, relapse of smoking is very common event with the person who has renounced it [14].

A successful attempt to quit smoking relies strongly on self-motivation, self-efficacy, and the number of previous attempts to leave smoking [15]. Professional support in terms of public or private bodies is also made available for persons who want to quit smoking [16,17]. Nevertheless, the most effective approach is to keep on terminating tobacco usage without any external support or pharmaceutical assistance.

In the Islamic religion, Hajj is an annual pilgrimage to the holy site of Mecca. In Saudi Arabia, it is among the largest recurring holy gatherings that takes place in the country and brings together people from all corners of the world [14,18]. Every year, around three million people from over 180 nations attend Hajj [10,11]. The spirituality of Hajj season can be a strong motive for smokers to quit. Therefore, we aim to evaluate the success rate of quitting smoking and avoiding its relapse if the smokers embark on their quit attempt during the holy Hajj season.

## 2. Materials and Methods

### 2.1. Study design and setting

This quantitative cross-sectional study was carried out during the period from 20/08/2017 to 06/09/2018 (6/12/1438H to 14/12/1438H). The study was conducted in the Mena area during Hajj days, Makkah, Kingdom of Saudi Arabia (1438 H).

### 2.2. Study subjects

Male and female pilgrims staying in Mena are included in the study. All the pilgrims belonged to six top nationalities (Indonesia, India, Pakistan, Saudi, Egypt, and Iran). Organizers, hajj workers, bus drivers, health care workers; employers from any ministry, illiterate, non-pilgrims were excluded from the current study.

### 2.3. Estimation of sample size

The prevalence of smoking is different for each nation. As there is lack of smoking studies in Hajj, we assumed that the expected prevalence of smoking to be 50% (which is associated with the most conservative "highest" number of sample size). Assuming 95% confidence level, and 80% power it was estimated that the required sample size is 384.

The following equation was used for calculating the sample size (Table 1).

$$n = z_{21-\alpha/2}^2 * P * (1-P)$$

e<sup>2</sup>

Where n=number the required sample size

$Z_{21-\alpha/2} = (1.96)^2$  for 95% confidence (i.e.  $\alpha = 0.05$ ).

P=prevalence, assuming at 50%

e=maximum tolerable error for the prevalence estimate (e.g.  $\pm 0.05$ ).

$$n = (1.96)^2 \times 0.5 \times 0.5 = 384$$

(0.05)<sup>2</sup>

### 2.4. Sampling technique

Non-probability sampling technique was used. Quota sampling included six strata according to nationality; nationality was chosen based on top 6 nationality number of pilgrims in last five years (Table 2) show an average number of yearly pilgrims in each year which concede more than 50% of pilgrims every year. According to Saudi Statistics, in each strata, stratification by gender, Authority male: female ratio is 6:4.

### 2.5. Data collection tool

Data were collected using a predesigned, self-administered questionnaire which was modified from the questions used in previous studies about smoking [5]. These questionnaires were modified according to Hajj situation. The questionnaire consists of 4 sections:

- Section 1-demographic data
- Section 2-for the smoker
- Section 3- for ex-smoker
- Section 4- for Smoker & ex-Smoker

The English version of the questionnaire was translated into six languages (Indo, Urdu, Indonesian, Turkish, Persian and Arabic) by Authorized Translation Center. The questionnaires were distributed in paper format to pilgrims in the campus area for men and women and collected once completed.

### 2.6. Pilot study

A pilot study was done on 100 Turkish people in Turkish camp of Mena during Hajj days. Questionnaires were translated to Turkish language.

### 2.7. Reliability and validity

The pilot study was used to test the reliability of the questionnaire. Validity was assured by using validated questionnaire from the published study and reviewed by experts. Questionnaires in different languages were back-translated into English by the external bilingual reviewer for each language, and comparison was made to confirm its validity.

### 2.8. Ethical considerations

The study was ethically approved by the Administration Field epidemiology program of Research & Ethics committee before starting data collection in Hajj.

**Table 1:** Demographics of the study population.

Variable	% (N)
Gender	
Male	61.6 (286)
Female	38.4 (178)
Nationality	
Saudi	20.3 (94)
Indonesia	22.2 (103)
Pakistan	19.2 (89)
India	18.1 (84)
Egypt	11.2 (52)
Iran	9.1 (42)
Education	
Postgraduate	35.3 (164)
Bachelor	25.9 (120)
Diploma	13.4 (62)
Intermediate	6.9 (32)
Higher school	9.1 (42)
Primary	9.5 (44)
Marital Status	
Married	90.3 (419)
Single	5.2 (24)
Widow	2.8 (13)
Divorced	1.7 (8)
Smoking Status	
Never smoked	75.4 (350)
Ex-smoker	6.7 (31)
Smoker	17.9 (83)

**Table 2:** Attributes of Smokers during Hajj.

Characteristic	% (N)	X <sup>2</sup>	P value
Smoking a difficult task during Hajj			
Bit difficult	46.9 (39)		
Challenging	26.5 (22)	26.157	<0.001
Very Challenging	16.9 (14)		
Same as usual	9.6 (8)		
Smoke when ill during Hajj			
Yes	16.9 (14)	36.446	<0.001
No	83.1 (69)		
Hajj is stressful			
Bit stressful	30.1(25)	13.120	<0.001
Not stressful	69.9(58)		
Nicotine dependence			
Low	46.9 (39)		
Moderate	37.3 (31)	12.819	<0.01
High	15.6 (13)		
Tried to quit smoking before			
Yes	74.7 (62)	20.253	<0.001
No	25.3 (21)		
Quit tobacco usage			
Yes	27.7 (23)		
Unsure	50.6 (42)	11.59	<0.01
No	21.7 (18)		

### 2.9. Data analysis

All the data were statistically analyzed using SPSS version 21 software (Chicago, IL, USA). All categorical variables were presented as frequencies and percentages while continuous variables were presented as means and standard deviations. Chi-square was used to attain a p-value between categorical data dependent and independent to estimate the association. Wilcoxon signed rank test used to compare a number of cigarette before and after coming to Hajj. A P value  $\leq 0.05$  was considered statistically significant.

### 3. Results

A total of 500 questionnaires were distributed during the study period. A total of 464 (92.8%) questionnaires were included in the study as 46 questionnaires were incomplete.

#### 3.1. Demographics of the study population

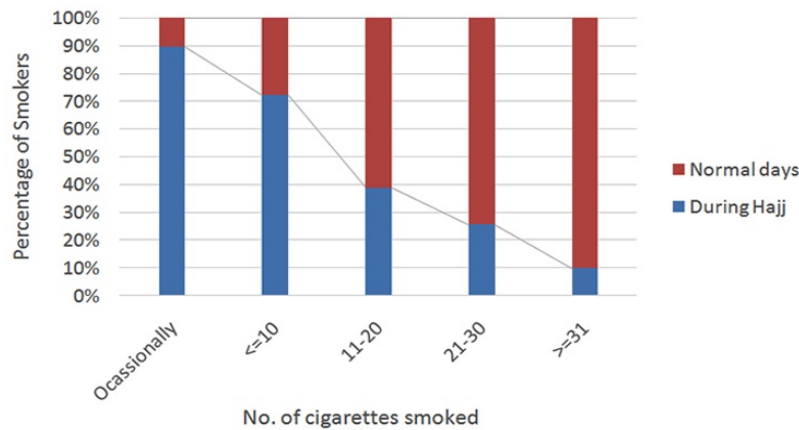
Of 464 Hajj pilgrims (Mean age:  $45.5 \pm 11.7$  years) 61.6% (n= 286) were males. The prevalence of smoking in the studied population was 17.9%. The characteristic of the study sample is shown in Table 1. Majority of the smokers (96.4%) and ex-smokers (90.3%) were male. The mean age of non-smokers, ex-smokers and smokers were comparable ( $45.5 \pm 12.2$ ,  $43.5 \pm 6.1$ ,  $46.6 \pm 10.8$  years respectively). The prevalence of smokers and ex-smokers respectively according to nation is Indonesia (27.2%, 8.7%), Pakistan (20.2%, 3.4%), Egypt (19.2, 17.3), Saudi (13.8%, 6.4%), Iran (11.9%, 4.8%), and India (10.7%, 2.4%). Most of the smokers and ex-smokers are married. A major proportion of the smokers and ex-smokers had received postgraduate level of education (39.8%, 58.1%).

#### 3.2. Characteristic feature of smokers during Hajj

During Hajj, the number of cigarettes smoked was drastically decreased in smokers (chi square= 37.748,  $p<0.001$ ). Most of the pilgrims smoked less than 10 cigarettes during Hajj while on normal days they smoked more than 10 cigarettes in a day (Figure 1). The characteristics of smokers during Hajj are shown in Table 2. Most of the smokers find smoking a difficult task during Hajj ( $p<0.001$ ). Majority of smokers (83.1%) didn't smoke when they are very ill during Hajj ( $p<0.001$ ). A greater proportion of pilgrims (69.9%) didn't find Hajj days a stressful situation ( $p<0.001$ ). Further, their nicotine dependence during Hajj days was also less ( $p<0.01$ ). About 74.7% of the smokers had tried to quit smoking before ( $p<0.001$ ). While 27.7% wanted to quit tobacco usage, 50.6% were unsure about it and 21.7% had no intention for quitting tobacco ( $p<0.01$ ).

#### 3.3. Factors associated with smoke quitting

The main motivation behind smoke quitting for smokers and ex-smokers are health reasons (56.1%), family (27.2%), religious (14.01%), and bad smell (1.75%) (Chi square=119.246,  $p<0.001$ ). Among the smokers who intended to quit smoking, 90.3% adopted Cold Turkey method while 9.7% used medical consultation as their method of choice for renouncing smoking (Chi square=42.141,  $p<0.001$ ). Similarly, ex-smokers also chose Cold Turkey method (71%) and medical consultation (25.8%) as their method of choice for abandoning smoking. The reasons to start smoking again are strong cravings to smoke (40.3%), coping with stress and pressure (27.4%) and social gathering (32.3%) (Chi square=47.930,  $p<0.001$ ).



**Figure 1:** Comparison of number of cigarettes smoked during Hajj: Pilgrims who smoked decreased their number of cigarettes considerably during Hajj days ( $p < 0.001$ ).

### 3.4. Hajj as a suitable time for smoke quitting

Majority of smokers (61.3%) and ex-smokers (69.9%) did not find Hajj days as stressful. Moreover, 99.1% did not notice any advertising for a cigarette in hajj days while 72.8% noticed prohibited signs “No Smoking” in Hajj area. The percentage of non-smoker around smoker and ex-smoker is 66.7%.

## 4. Discussion

The first fatwa (a non-binding Islamic legal pronouncement) that actively discouraged tobacco use was introduced in 1602 [19]. Subsequently, further fatwa on tobacco usage have been issued in response to increasing concerns related to the risk of smoking. Although the Qur’an does not explicitly forbid smoking, it does contain some behavioral guidance related to consumption behaviors: “You may eat, drink, but not waste” (el-A’raf 7/31), and “Don’t throw yourself into danger by your own hands...” (El-Bakara 2/195). Hajj is the annual gathering of pilgrims where they have to perform many rituals with utmost sincerity and dedication. In this study, hajj as a favorable time for renouncing smoking is evaluated.

A recent survey found that Muslims who observe Islamic rule normally avoid smoking [20]. Similarly study of young Muslim Arab-Americans found that there was a positive association between Islamic beliefs and diminished smoking [21]. Contrarily, an Egyptian study found that smokers’ knowledge of, and exposure to, anti-smoking fatwas did not reduce their tobacco consumption [22]. Rather, some studies have found that the prevalence of smoking is higher in Islamic countries and, while Arab Muslims tend to condemn smoking, Saudi Arabia ranks 23<sup>rd</sup> in an international population that actively smokes [23-26]. In this study, the incidence of smoking among Muslim population was low (17.9%).

Even though religion is acting an important role in the lives of the majority of adult smokers during Hajj, far more smoking pilgrims see it as playing a central role in

their day-to-day lives. In this study, we found that only 27.7% of the smokers expressed an interest in quitting smoking. Our results are contradictory to the study conducted by Yong et al., which revealed that Malaysian people of Muslim and Buddhist faiths are more likely to express an interest in stopping smoking [27]. However, this same study also found that the religious smokers’ interested in smoking cessation where not consistently successful but, people of Malaysian Muslim and Buddhist faiths were more likely to be successful in their attempts to quit smoking than their less religious counterparts.

Sharma et al. explored the role of religion in smoking cessation and found that the majority of the participants reduced the extent to which they smoked during religious activity/days [28]. Of the sample population, 93% had been educated to post-graduate level, and 86% worked in the public sector. These findings are in accordance to our study. In the present study we found that most smokers were highly educated (postgraduate 39.8% and bachelor’s 22.9%), as too were ex-smokers (postgraduate 58.1%, bachelor’s 12.9%). Further the number of cigarettes smoked during pilgrimage by smokers was considerably less as compared to other days.

Religious people who regularly engage in spiritual activities are less likely to start smoking and develop a tobacco independency [29]. These people are found to possess greater healing capabilities and are healthier than their non-religious counterparts. A positive correlation between public religiosity and a reduction/cessation of smoking among adolescent smokers is reflected [28]. Similarly, a positive association also exists between praying and termination of smoking [29]. In sync with the above studies, the results of the current study indicate that health status plays a significant role in people’s decisions to quit smoking both among ex-smokers (42%) and current smokers (61%). Also the nicotine dependency was low among the smokers.

For many people, quitting represents a very challenging process. If smokers’ self-efficacy to initiate smoking

cessation can be enhanced by using religious motivations, it will have a key impact on the outcome of treatment. [30]. The results of our study revealed that Hajj does not cause stress either in smokers (70% of study samples) or in ex-smoker (61%), which supports the belief that worship helps to reduce smoking.

Teenage smokers are most likely to be exposed to tobacco advertisements and, perhaps due to this, the usual age at which people started smoking was nineteen [31]. Ghouri et al. argued that religious rulings need to be supported with advertising bans and positive marketing campaigns to support smoking cessation. Practices of this nature were observed in Saudi Arabia, especially during Hajj, when signs that displayed the words "No Smoking" were prominently displayed and religious scholars affirmed the message that smoking incurs financial waste and loss, which is prohibited under Sharia Law [32].

Research has consistently concluded that social factors can make nonsmoking friends to smoke while, equally, nonsmoking friends can also turn smoking friends into nonsmokers. However, the impact is asymmetrical. The tendency for people to replicate their friends' behaviors by starting smoking is stronger than the tendency for them to stop smoking because their friends do not smoke [33]. In a study by Haas et al., investigators used data from the National Study of Adolescent Health. Their sample consisted of two data sets, one with 757 students and the other with 1,673 students [33]. The data was collected at several times during the school year, providing researchers with an opportunity to observe how friendship networks evolve over time. They found that the peer effect is stronger for the initiation of smoking than it is on cessation. Our study also found that 83.90% of ex-smoking pilgrim's friends, families or workers were nonsmokers and 60.2% of smokers' friends, families, and workers around them were nonsmokers. These results are very encouraging as the smokers have a great impact on the onset of smoking; as such, the Hajj represents a great opportunity to quit smoking, especially in the presence of a good friend who has already kicked the habit.

In summary, Hajj is identified to be an appropriate time to begin termination of smoking. The main factors associated with Hajj which favors the quitting are negligible peer/social pressure, very low nicotine dependence due to feeling of general well-being and no advertisement for cigarettes rather signs prohibiting smoking are increasingly displayed. Hence smokers smoked remarkably less number of cigarettes during Hajj.

## 5. Conclusion

Hajj is a proper season to start cessation programs that include anti-smoking activities, health education, and enforcement of laws prohibiting smoking.

## 6. Declaration of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this paper.

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