

# Randomized controlled trial on the effect of Al-Quran recitation vs counseling on smoking intensity among Muslim men who are trying to quit smoking

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Aida Maziha Z, Imran A, Azlina I, et al. Randomized controlled trial on the effect of Al-Quran recitation vs counseling on smoking intensity among Muslim men who are trying to quit smoking. *Malays Fam Physician*. 2018;13(2):19–25.

## Keywords:

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## Abstract

**Introduction:** Nicotine cravings and withdrawal symptoms are associated with higher rates of relapse. It has been shown that combining behavioral therapy and pharmacotherapy leads to a higher long-term abstinence rate in those who quit smoking. Al-Quran recitation has been proven to reduce anxiety among athletes before tournaments and pulse and heart rates among patients awaiting cardiac operations. As most of the patients who wish to stop smoking experience high-anxiety states, we postulate that Al-Quran recitation will also able to reduce craving among smokers attempting to quit smoking.

**Methods:** Fifty smokers from an outpatient clinic were randomly assigned to control and intervention groups. They were taught different ways of coping with smoking urges, i.e., counseling using the 12'M' method (control group) versus Al-Quran recitation (intervention group). They met for four consecutive weeks of counselling and to fill out a withdrawal scale. Carbon monoxide (CO) levels were tested at baseline and at week 4. At week 12, the number of cigarettes smoked was measured again. The decrease in the number of cigarettes considered to be clinically significant for the calculation of sample size was based on expert opinion

**Results:** The reduction in the number of cigarettes smoked was 7 cigarettes in the counselling group and 9 cigarettes in Al-Quran recitation group over 12 weeks duration. There was a statistically significant difference in the number of cigarettes smoked between the groups. There was also a statistically significant difference in the change in cravings between the groups at week 4 (p-value= 0.005). However, the difference in the changes in CO levels between the two groups was not statistically significant.

**Conclusion:** Al-Quran recitation produced a statistically significant reduction in the number of cigarettes smoked at week 12 and a significant change in cravings at week 4 among smokers attempting to quit. Difference in smoking abstinence rates was not measured in this study.

## Introduction

It is estimated that there are currently five million smokers in Malaysia. The prevalence of smoking among Malaysians aged 18 and over is 22.6%.<sup>1</sup> There are approximately 10,000 smoking-related deaths each year in Malaysia, and this total is estimated to increase to 30,000 per year by 2030 if the current smoking trends continue.<sup>2</sup> However, quitting smoking is not an easy task. The chance of success in a single, unaided attempt to quit smoking is approximately 1 in 100, and 98% of smokers relapse within a year.<sup>2</sup> The relapse rate is high due to the addictive nature of nicotine. Withdrawal symptoms occur when the nicotine level in the blood declines. Pharmacological

agents proven to improve the chances of successfully quitting smoking include nicotine replacement therapy, varenicline, bupropion, cysteine, and nortriptyline.<sup>3</sup> It has been shown that combining a pharmacological agent with behavioral therapy is more beneficial than the pharmacological therapy alone in helping those who are trying to quit smoking.<sup>3</sup>

At present, patients attending clinics for smoking cessation in health care facilities are given counseling on how to stop smoking. This includes setting up a date to quit and getting rid of cigarettes, ashtrays, and other items that induce smoking. Counselling on the 12'M' method is given to control smoking urges. 12'M' stands for 'Melengah-lengahkan'

(delay), 'Menarik nafas dalam-dalam' (take a deep breath), 'Minum air' (drink some water), 'Membuat sesuatu' (do something), 'Mengunyah sesuatu' (chew something), 'Mandi' (take a shower), 'Membasuh tangan' (wash your hands), 'Melakukan senaman regangan' (do stretching exercises), 'Membaca doa' (say a prayer), 'Menjauhkan diri' (avoid), and 'Meditasi' (meditation).<sup>2</sup> The 12'M' method, in conjunction with pharmacotherapy, has been shown to be beneficial. The cessation rate for this combination (6 month's abstinence) ranges from 31.8%<sup>4</sup> to 52.5%.<sup>5</sup> There is no available data for 12'M' used as a single therapy.

A study among Muslims in Malaysia and Buddhists in Thailand suggests that a religious factor is independently associated with successful attempts to quit smoking in both countries; over 90% of participants reported that their religion guides their day-to-day behavior, in which smoking is discouraged. A logistic regression model suggests that the religious factor had a clear independent association with attempts to quit and translated into success for Malaysian Muslims.<sup>6</sup> A few studies have shown that Al-Quran recitation can reduce anxiety and improve vital signs. A study in Iran showed a significantly reduced level of anxiety among athletes who recited the Al-Quran before tournaments.<sup>7</sup> It also reduced anxiety in women awaiting a cesarean section<sup>8</sup> and significantly reduced the pulse and respiratory rates of patients before heart surgery.<sup>9</sup> Another study showed reduced anxiety, blood pressure, and pulse rates among patients awaiting abdominal surgery.<sup>10</sup> These studies provide evidence that Al-Quran recitation has relaxation effects and brings calmness to the reciter. Taking into account that practicality is an important factor in adherence, four short chapters in the Al-Quran were chosen for this study because they are memorized by almost all Muslims and easily recited and reproduced. Till now, there has been no available data on the effect of Al-Quran recitation on smoking cessation or withdrawal symptoms. Therefore, in this study, the researchers tested the effects of Al-Quran recitation and 12'M' counseling on smoking intensity among Muslim smokers. The study also collected withdrawal symptoms scores and carbon monoxide levels from the participants to test for any changes that occurred as the result of the interventions.

## Methods

A randomized controlled trial was conducted among 50 smokers between June 2013 and June 2014 at the Outpatient Clinic, Universiti Sains Malaysia (USM) Hospital, a tertiary teaching hospital in Malaysia. This study was approved by the Human Research Ethics Committee of USM on the 29th of November, 2012. Its FWA registration number is 00007718, and its IRB registration number is 00004494. Current smokers, i.e., those smokers smoking  $\geq 10$  cigarettes per day, more than 18 years old, Muslims able to recite the Al-Quran, and intending to quit smoking, were included. Familiarity with Al-Quran recitation was necessary as those unfamiliar with the recitation would find it difficult and be unable to comply with the protocol. Those who had difficulty attending interventions, were participating in other interventions, or using pharmacotherapy to quit smoking were excluded. The investigator ensured the eligibility of the participants. A computer-generated randomization list of participants was obtained. The investigator randomized the patients according to the list into either the counselling group or Al-Quran recitation group.

Potential participants were screened at visit 1 (V1). The smokers who fulfilled the inclusion criteria were given an explanation concerning the study, and those who agreed to participate gave their informed consent. The participants were then allocated into two groups based on the randomization list. The participants were also asked to set a date to quit. They were scheduled to make visit 2 (V2) one day prior to their quit date. A week before V2, all participants were called as a reminder of their quit date.

At V2, the participants were required to fill out a questionnaire which contained three parts: demographic information, smoking characteristics (including a Fagerstrom score), and a religiosity scale. The baseline religiosity score was obtained in order to see if a direct relationship could be found between the piousness of the participant and the likelihood of success in quitting smoking. The score was obtained through the use of a validated scale, the Muslim Religiosity-Personality Inventory.<sup>11</sup> The baseline number of cigarettes smoked was recorded, and each participant's carbon monoxide (CO) level was tested using a carbon monoxide analyzer, microCO monitor

model 36-MC02-STK. The validity of the tool was checked by the supplier a month prior to the start of the study. The same analyzer was used for all participants. Participants were taught techniques to quit smoking, which included setting a date to quit, getting rid of cigarettes and ashtrays, and telling family and friends about their attempt to quit. They were also coached on ways to cope with smoking urges. The counseling group was taught the 12'M' method, and the Al-Quran recitation group was taught to recite four chapters of the Quran while concentrating on the meaning of the verses. The four chapters used were: Al-Fatihah, An-Nas, Al-Falaq, and Al-Ikhlas. The same investigator delivered the content for each group, guided by PowerPoint slides. A question and answer session was held during each group meeting or visit. Participants were asked to practice the methods and record their practices in a diary.

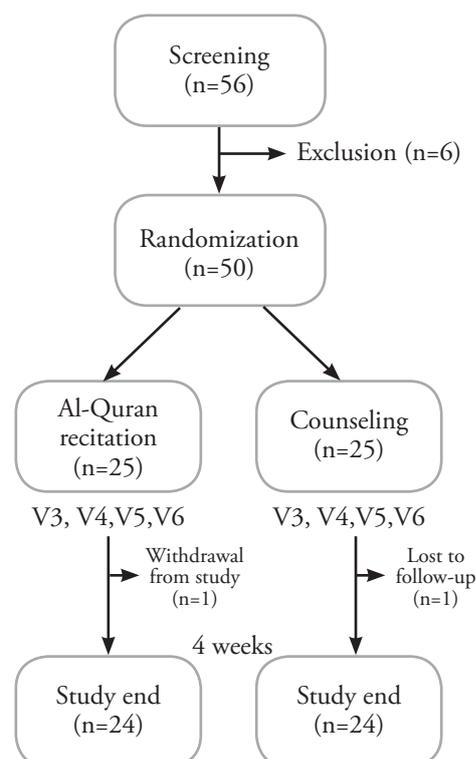
Participants were seen at visits 3 (week 1), 4 (week 2), 5 (week 3), and 6 (week 4). At each visit, counseling and Al-Quran recitation were emphasized, depending on the group participants were assigned to, and the Malay version of the Wisconsin Smoking Withdrawal Score (WSWS) (12) was filled out by the participants. At week 4, CO levels were assessed. At visit 7 (week 12), the number of cigarettes still being smoked per day was obtained via a phone call.

The primary outcome for this study was smoking intensity in term of the reduction in the number of cigarettes smoked per day at the end of study period, i.e., the difference in cigarettes smoked per day between week 1 and week 12. The secondary outcomes were the changes in withdrawal symptoms scores based on the WSWS and changes in CO levels from week 1 to week 4. The WSWS has 28 items, which are rated on a 5-point scale with 0 being totally disagree and 4 being totally agree. Low score signifies low withdrawal symptoms and high scores signifies high withdrawal symptoms. It contains seven domains, which are anger, anxiety, concentration, craving, hunger, sadness, and sleep. For analysis, the withdrawal symptoms score was calculated according to domain. The total score for each domain was then entered into the SPSS. The anger domain was covered by questions 13, 15 and 18; the anxiety domain by questions 3, 6, 8 and 10; the concentration domain by questions 4, 23 and 27; the craving domain by questions 9, 11, 20 and 26; the hunger domain

by questions 1, 14, 16, 21 and 28; the sadness domain by questions 7, 12, 19 and 24; and the sleep domain by questions 2, 5, 17, 22 and 25. Questions 1, 2, 4, 10, 17, 22, and 24 had reverse scoring. The higher the total scores signifies the higher symptoms experienced by the patient.

The sample size was calculated using the Power and Sample Size Calculation (PSSC) software. The first objective was to compare the change in withdrawal symptoms score among group at 4 weeks intervention. The standard deviation (SD) value for "craving for a cigarette now" was adapted from a study conducted by Shahab et al.<sup>14</sup> The second objective was to compare the change in carbon monoxide level among groups at 4 weeks intervention. The third objective was to compare the change in number of cigarette smoked among the intervention group compared to control group at 12 weeks intervention. The SDs for the CO level and number of cigarettes smoked were adapted from Lee et al.<sup>13</sup> The detectable mean was based on expert opinion. Based on the sample size calculations for each objective, the largest sample size required was 21 (for objective 3). After factoring in a 20% drop out rate, the sample size calculated was 25 per group.

**Figure 1.** Study overview and design



Data was analyzed using SPSS for Windows 21.0. Non-parametric tests were used due to skewed distributions on boxplots charting (not shown). Independent t-tests were used for comparison of baseline characteristics, differences in withdrawal scores from baseline, differences in CO levels from baseline, and a difference in the number of cigarettes smoked between groups. The paired t-test was used to analyze the differences in withdrawal scores from baseline to endpoint in the same group. Data are reported as medians + Interquartile Range (IqR) unless otherwise stated, and a p-value of less than 0.05 was used to indicate a significant difference.

### Results

A total of 56 potential participants were screened. Of these, 50 met the inclusion criteria and were randomized to the counseling group (n=25) and Al-Quran recitation group (n=25). One participant from Al-Quran

recitation group withdrew from the study at V4 since he could not comply with the Al-Quran recitation when he had smoking urges. In addition, one participant in the counseling group was lost to follow-up in V4-V6. Thus, 48 participants completed the study (response rate of 96%). Compliance with the counseling sessions and Al-Quran recitation sessions was 100%. All participants returned their diaries and achieved more than 70% compliance with the protocol (practicing 70% or more of the methods taught for coping with smoking urges as attested to in their diary).

#### Baseline characteristics

There were no statistically significant differences in baseline characteristics in terms of marital status, employment, income, education level, health status and religiosity between the two groups (results not shown). Baseline smoking characteristics are shown in **Table 1**.

**Table 1:** Smoking characteristics of participants at baseline

Variables	Al-Quran recitation Median (IqR)	Control group Median (IqR)	p-value
<i>Smoking characteristics</i>			
Number of cigarettes per day	14.5 (6)	12.5 (8)	0.238 <sup>a</sup>
Smoking duration (years)	22.5(21)	26.5 (15)	0.439 <sup>a</sup>
Fagerstrom score	4.00 (5)	4.00 (4)	0.761 <sup>a</sup>
Carbon monoxide level	10.0 (5)	8.5 (6)	0.407 <sup>a</sup>
<i>History of attempts to quit</i>			
Yes	22 (91.7) n (%)	21 (87.5) n (%)	1.000 <sup>b</sup>
No	2 (8.3) n (%)	3 (12.5) n (%)	
<i>Religiosity score</i>	124 (24)	120 (26)	0.391 <sup>a</sup>

Median (IQR) for numerical variable, n (%) for categorical variable,

<sup>a</sup> Mann-Whitney Test

<sup>b</sup> Fisher's Exact Test

#### *Change in the number of cigarettes per day at week 12 and carbon monoxide levels at week 4.*

There was a statistically significant difference in the reduction in the number of cigarettes smoked at 12 weeks between the two groups, as shown in **Table 2**. There was no statistically significant difference in the change in CO levels between the groups.

**Table 2:** Change in the number of cigarettes smoked at 12 weeks and CO levels measured at week 4

Variable	Group		Z-stat	p-value
	Al-Quran recitation Median (IqR)	Counseling Median (IqR)		
Number of cigarettes	- 9 (5.75)	- 7 (4)	-2.746	<b>0.006<sup>*a</sup></b>
CO level	- 5 (4)	- 3 (3)	-1.001	0.317 <sup>a</sup>

<sup>a</sup> Mann-Whitney Test

*Group effect: withdrawal symptoms score between counselling and Al-Quran recitation groups*

There was a statistically significant difference in the change in craving between the counselling and Al-Quran recitation groups at week 4, as shown in **Table 3**. Changes in other domains were not statistically significant.

**Table 3:** Changes in withdrawal symptoms scores by domain at week 4

Domain	Group		Z-stat	p-value
	Al-Quran recitation Median (IqR)	Counseling Median (IqR)		
Anger	5(3)	5 (3)	-0.358	0.720
Anxiety	6 (1)	6 (5)	-1.276	0.202
<b>Craving</b>	6 (2)	7 (1)	-2.823	<b>0.005*</b>
Concentration	7 (3)	8 (2)	-1.100	0.271
Hunger	7 (2)	7 (1)	-0.053	0.958
Sadness/ depressed	5 (3)	5 (3)	-0.272	0.786
Sleep	5 (2)	5 (3)	-0.333	0.739

<sup>a</sup> Mann-Whitney Test

*Time effect: withdrawal symptoms scores within groups*

Within group analysis showed that there were statistically significant changes in anger, anxiety, and cravings at week 4 in the Al-Quran recitation group. However, in the counseling group, a significant change was seen only in the anxiety domain. Results are depicted in **Table 4**.

**Table 4:** Changes in withdrawal symptoms scores within group at week 4

Parameters	Al-Quran recitation group				Control Group			
	Week1	Median (IqR) Week4	Change (CI)	p-value <sup>a</sup>	Week1	Median (IqR) Week4	Change (CI)	p-value <sup>a</sup>
Anger	5(2)	5(3)	-3.345	<b>0.001*</b>	5 (4)	5 (3)	-0.868	0.385
Anxiety	7 (3)	6 (1)	-2.384	<b>0.017*</b>	8 (3)	6 (5)	-2.481	<b>0.013*</b>
<b>Craving</b>	8 (2)	6 (2)	-3.234	<b>0.001*</b>	7 (1)	7 (1)	-0.723	0.469
Concentration	7 (2)	7 (3)	-0.846	0.398	10 (4)	8 (2)	-1.244	0.214
Hunger	8 (3)	7 (2)	-1.042	0.297	8 (2)	7 (1)	-1.425	0.154
Sadness/ depressed	6 (1)	5 (3)	-1.496	0.135	5(3)	5(3)	-0.744	0.457
Sleep	5 (3)	5 (2)	-1.329	0.184	5 (2)	5 (3)	-0.086	0.931

<sup>a</sup> Wilcoxon Signed Ranks Test

## Discussion

Abstaining from smoking for more than three months is a predictor of success in quitting. It is suggested that self-reported cessation for more than three months should be considered an intermediate criterion for success in the evaluation of community interventions.<sup>14</sup> Therefore, we called participants to determine the number of cigarettes smoked at 12 weeks. Our results showed a statistically significant difference in the number of cigarettes smoked at week 12 in the Al-Quran recitation group compared to the counseling group. An

alternative outcome measure is the abstinence rate, which measures the proportion of patients who totally quit smoking. However, this rate is usually computed at least 6 months after the end of the intervention. It was not possible to follow these participants for this length of time as the researcher had a time restriction.

When chronic tobacco consumers abstain from tobacco, they develop withdrawal symptoms. Tobacco withdrawal symptoms include cravings, hunger, anger, anxiety, depression, difficulty concentrating, impatience, insomnia, and restlessness. These symptoms peak within

the first week and last for two to four weeks.<sup>15</sup> Therefore, in this study, a withdrawal score was taken at four weeks post intervention. Our results showed a statistically significant difference in only the change in craving scores at week 4 in the Al-Quran recitation group in comparison to the counseling group; differences in the changes in other withdrawal symptoms were not statistically significant.

In this study, participants were instructed to recite four short Al-Quran chapters, namely Al-Fatihah, An-Naas, Al-Falaq, and Al-Ikhlās. These chapters comprise a few long verses each that required the participants to take a deep breath in order to recite the verse completely. When reciting these verses, they were unintentionally practicing deep breathing. Our results are consistent with using yogic breathing exercises<sup>16</sup> and controlled deep breathing.<sup>17</sup> A study by Shahab<sup>16</sup> investigated the effect of breathing exercises on cravings and withdrawal symptoms and revealed a statistically significant reduction in smoking urges but not for any other withdrawal symptoms. Reciting Quranic phrases has been proven to reduce anxiety among athletes and women awaiting caesarean sections and also reduces the pulse rate among patients awaiting open heart and abdominal surgery. These physiological changes could reduce the cravings among those who recite the Al-Quran.

CO levels were examined at baseline and four weeks' post intervention. There was no significant difference in the changes noted between the two groups. This non-significant difference can be explained by a few factors. First, a number of patients exhibited poor exhalation technique. At baseline, there were already readings of less than 10ppm, which did not correlate with their smoking status. In particular, this occurred among patients who had asthma and/or heart disease, explaining their poor efforts to exhale completely, which causes lower CO levels to be

recorded. Another factor was high variability in smoking technique. Some of the smokers inhaled the cigarette smoke more deeply than others. The participants who inhaled 'lightly' had lower carbon monoxide levels, according to the CO analyzer. Another possible reason was that patients had reduced cigarette smoking a day before the orientation day, as the researcher informed them of the date ahead of time. This would result in lower CO readings. Therefore, when compared to levels at week 4, there was no significant change.

From this study, it was discovered that Al-Quran recitation led to a significant difference in the change in the number of cigarettes smoked at 12 weeks compared to counseling with the 12'M' method. This finding suggests that the Al-Quran recitation approach is a potential method with which to improve smoking cessation efforts. This is due, in particular, to its ability to reduce cravings, as a higher degree of craving is associated with relapse. Because Al-Quran recitation is shown to reduce stress, it can reduce cravings, and this is reflected in the lower number of cigarettes smoked. This study was limited by the small sample size. It may not be able to represent all Muslim men who are trying to quit smoking. The same investigator delivered the content to both groups to reduce systematic bias. Ideally, the counseling and Al-Quran recitation groups would have different counselors. It is also important to note that self-reported measures of withdrawal symptoms are more vulnerable to differential misclassification bias, which can make interpreting the results difficult.

#### Acknowledgements

We would like to acknowledge the cooperation of all the participants and staff involved in this project. We would also like to acknowledge the questionnaire's authors—Steven Eric Krauss and Ahmed Awaisu—for giving us permission to use the questionnaire.

#### How does this paper make a difference to general practice?

- Al-Quran recitation had been shown to reduce anxiety among athletes before tournaments and pulse and heart rates among patients awaiting cardiac operations.
- There is no prior study which has assessed the influence of Al-Quran recitation on reducing nicotine withdrawal symptoms and smoking intensity.
- Our study revealed that Al-Quran recitation exerted a moderate effect on smoking intensity.
- Our study also revealed a significant difference in the change in cravings in the Al-Quran recitation group compared to the counseling group. This study did not demonstrate a difference in smoking abstinence rates which was not measured.

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