



Do fasting and life style eating habits in Ramadan affect headache?

Fasting and eating habits in Ramadan

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Abstract

Purpose – The aim of the study is to investigate whether fasting and lifestyle habits in Ramadan have any effect on headaches.

Design/methodology/approach – This cross-sectional study was carried out in the state of Qatar for a period from 13 October to 13 November 2004. A total of 1,200 fasting Muslims aged between 18 to 65 years were approached and 898 subjects participated. The International Headache Society [IHS] questionnaire and another questionnaire were used to collect the data.

Findings – Of the total 898 subjects, 54.2 per cent were males and 45.8 per cent females. The prevalence of the headache during the month of Ramadan was 76.6 per cent and after Ramadan was 73.7 per cent.

Originality/value – The study did not find any negative effects of fasting during Ramadan on headache frequencies.

Keywords Islam, Adults, Personal health, Headache, Lifestyles, Medical conditions

Paper type Research paper

Introduction

One of the five fundamental rituals of Islam, the religion professed by over one billion people, is fasting during the month of Ramadan. Muslims neither eat nor drink anything from dawn till sunset (Bener *et al.*, 2001; Al-Suwaidi *et al.*, 2004a; Al-Suwaidi *et al.*, 2004b). The time of observance differs each year because it follows the lunar calendar and the duration varies with the geographical site and the season. In summer months and northern latitudes, the fast can last up to 18 h or more. Muslims observing the fast must not only abstain from eating and drinking, but also from taking oral medications, smoking as well as intravenous fluids and nutrients (Bener *et al.*, 2001).

At the Ramadan fasting, Muslims eat at least two main meals, one before dawn (Sahur) and the other shortly after sunset (Iftar). This change of meal schedule is accompanied with changes in sleep pattern (shortening of time to sleep) (Bener *et al.*, 2001). This change in sleep pattern, hunger with possible hypoglycaemia, thirst and consequent dehydration and changes in smoking, coffee and tea drinking habits may result in headaches (Rasmussen, 1993; Silverman *et al.*, 1992). Previous works on perioperative headaches (Nikolajsen *et al.*, 1994) and headaches occurring on the



Jewish fasting day of Yom Kippur (Mosek and Korcyn, 1995) have confirmed the relationship between fasting and headache. A recent study (Awada and Jumah, 1999) reported that the frequency and characteristics of headache occurred during the first day of Ramadan, frequency of headache increased with the duration of fasting.

During Ramadan period headache is a common symptom in the general population, but its true prevalence is not revealed by consultation rates (Bener, 2006). Much less is known about the causes of headache in the population. In most Western countries, headache is one of the most common presenting symptoms in general practice and is an important cause of morbidity and probably also of loss of productivity (Stang and Osterhaus, 1993; Pryse-Philips *et al.*, 1992).

The aim of this study was to investigate whether fasting and lifestyle habits in Ramadan have any effect on headaches and to determine possible factors by using International Headache Society (IHS) diagnostic criteria (*Ad Hoc* Committee on the Classification of Headache, 1962; O'Brien *et al.*, 1989) in an adult population at the Primary Health Care (PHC) Clinics in the State of Qatar.

Subjects and methods

Study design

This cross-sectional PHC clinics-based study was conducted in the State of Qatar to estimate the prevalence of headache in an adult Muslim population who were fasting during the holy month of Ramadan. To participate in the study, subjects had to meet the following criteria: (1) a Muslim, fasting during the Ramadan month and living in the State of Qatar. (2) Adults in the age between 18 to 65 years. Subjects with serious medical illnesses and psychological problems were excluded. The diagnostic criteria for migraine defined by the IHS (*Ad Hoc* Committee on the Classification of Headache, 1962; Headache Classification Committee of the International Headache Society, 1988; O'Brien *et al.*, 1989) are now widely accepted and have been applied successfully to studies on the epidemiology of migraine in adults (Awada and Jumah, 1999; Bener, 2006; O'Brien *et al.*, 1994). This diagnostic criteria was used by questionnaire to assess the prevalence of headache in a representative random sample.

Questionnaire and interview

The questionnaire and criteria for headache and migraine defined and proposed by the IHS (Linet *et al.*, 1989; Crisp *et al.*, 1977) were translated into Arabic. A translated Arabic version of the IHS was revised by the General Practitioner (GP) (bilingual) and back-translated by a bilingual co-investigator (M.B.), unacquainted with the original English version. Both translators met and made necessary corrections, modifications and rewording after considering the minor differences and discrepancies which had occurred. The questionnaire was validated. Furthermore, the questionnaire was immediately followed by a comprehensive clinical interview by a GP. All patients attended PHC clinics for the interview had a standardized clinical interview. The survey instrument was then tested on 100 randomly selected subjects visiting PHC centers in order to check the interview reliability.

Data collection

A representative sample of 1,200 subjects from 12 PHC Clinics was included in this study which was conducted during the holy month of Ramadan from 13 October to 13 November 2004. All information were obtained from a face-to-face interview by physicians and qualified nurses using their mother language. The questionnaire was

derived from one used previously in United Arab Emirates and Hong Kong (Wong *et al.*, 1995).

A multi-stage stratified cluster sampling design was developed using the administrative divisions of the State of Qatar which had approximately equal numbers of inhabitants. In order to secure a representative sample of the study population, sampling was stratified with proportional allocation according to stratum size from urban (80 per cent) and semi-urban areas (20 per cent). The sample size was determined on *a priori* presumption that the prevalence rate of headache in the State of Qatar would be more or less similar with Western countries, although probably affected to some extent by hereditary, climate and socio-demographic and environmental factors peculiar to the State of Qatar. Allowing an error of 3 per cent and level of significance (Type-1 error) of 1 per cent, a sample size of 1,200 would be required. Accordingly, the subjects were selected among patients registered and attending 12 PHC centers (9 urban and 3 semi-urban) for various reasons. Then, one out of two subjects were selected by a systematic sampling scheme. Subjects were selected from each district in predetermined numbers proportional to the size of the divisions of Qatar. Qualified nurses and health educators were instructed to structurally interview and complete a questionnaire for randomly selected Muslim men and women, 18 to 65 years of age, attending PHC clinics. Although the interviewers were qualified nurses, they can bring out serious implications in a study of this nature. Hence, they were trained very well and tested them in completing questionnaires until all of them were competent and had developed good reliability among themselves before it was carried out among the studied subjects. A total of 1,200 subjects were approached randomly and 898 expressed their consent to participate in this study. The remaining 302 subjects were excluded from the study because they did not want to respond to the Questionnaire and those who were currently not healthy or had psychological problems.

The questions included demographic data such as age, sex, nationality and background information on smoking and coffee and tea drinking habits. The amount of daily caffeine consumption was calculated according to published figures (Nikolajsen *et al.*, 1994). The subjects were also asked if they suffered from headaches and if so, their features and if they had headaches while fasting in Ramadan. If the answer to the latter was positive, they were asked to describe the features of that headache, its time of occurrence, duration and how it was relieved.

Fasting subjects who experienced headache during Ramadan were compared with subjects after Ramadan to determine the associated factors of the Ramadan headache.

Student's *t*-test was used to ascertain the significance of differences between mean values of two continuous variables and the Mann-Whitney test was used for nonparametric test. Chi-square analysis was performed to test for differences in proportions of categorical variables between two or more groups. In 2×2 tables, the Fisher exact test was used instead of chi-square in particular when the sample size was small. Spearman's correlation coefficient was used to evaluate the strength of concordance between variables. The level $p < 0.05$ was considered as the cutoff value for significance.

Results

A total of 1,200 fasting Muslims were approached and 898 subjects responded to our questionnaire with a response rate of 74.8 per cent. Of the studied subjects, 54.2 per cent were males and 45.8 per cent females.

Table I shows the comparison of fasting subjects who experienced headache vs those who did not. Most of the fasting Muslims had headache during the month of Ramadan (76.6 per cent). Men (51 per cent) tended to have relatively more headache than women (49 per cent). Among the subjects who had headache, the frequency of headache was highest in the age group 18-25 years (28.3 per cent) and there was statistically significant differences among age groups.

Table II presents the lifestyle habits of the studied subjects with headache during and after Ramadan. During Ramadan, most of the fasting Muslims who had headache were tea drinkers (86.9 per cent) and coffee drinkers (73.1 per cent). This proportion increased more after Ramadan in smokers (40.6 per cent), tea drinkers (94.9 per cent) and coffee drinkers (78.1 per cent) than during Ramadan. Their sleeping pattern was nearly 6 h a day which was shorter than the normal hours required during Ramadan (5.5±1.0). There is a significant relationship in lifestyle habits of the studied subjects between the two periods; fasting and non-fasting month.

Variables		Headache <i>n</i> = 688 <i>n</i> (%)	No headache <i>n</i> = 210 <i>n</i> (%)	<i>p</i> -value
Age group	<25	195(28.3)	73(34.8)	0.019
	25-34	193(28.1)	68(32.4)	
	35-44	129(18.8)	37(17.6)	
	≥45	171(24.9)	32(15.2)	
Gender	Male	351(51.0)	136(64.8)	<0.001
	Female	337(49.0)	74(35.2)	
Nationality	Qatari	330(48.0)	104(49.5)	NS
	Non Qatari	358(52.0)	106(50.5)	
Marital status	Single	176(25.6)	63(30.3)	NS
	Married	512(74.4)	147(70.0)	
Educational level	Illiterate	126(18.3)	37(17.6)	<0.001
	Elementary	170(24.7)	20(9.5)	
	Secondary	166(24.1)	56(26.7)	
	High school	140(20.3)	48(22.9)	
Monthly income	University	86(12.5)	49(23.3)	0.010
	<3,000	339(49.3)	84(40.0)	
	3,000-5,000	216(31.4)	63(30.0)	
	5,000-10,000	94(13.7)	45(21.4)	
Occupation	>10,000	39(5.7)	18(8.6)	<0.001
	Sedentary	392(57.0)	93(45.2)	
	Manual	156(22.7)	67(31.9)	
	Student	38(5.5)	23(11.0)	
	House wife	102(14.8)	21(10.0)	

Table I.
Comparison of fasting subjects who experienced headache vs those who did not during the month of Ramadan

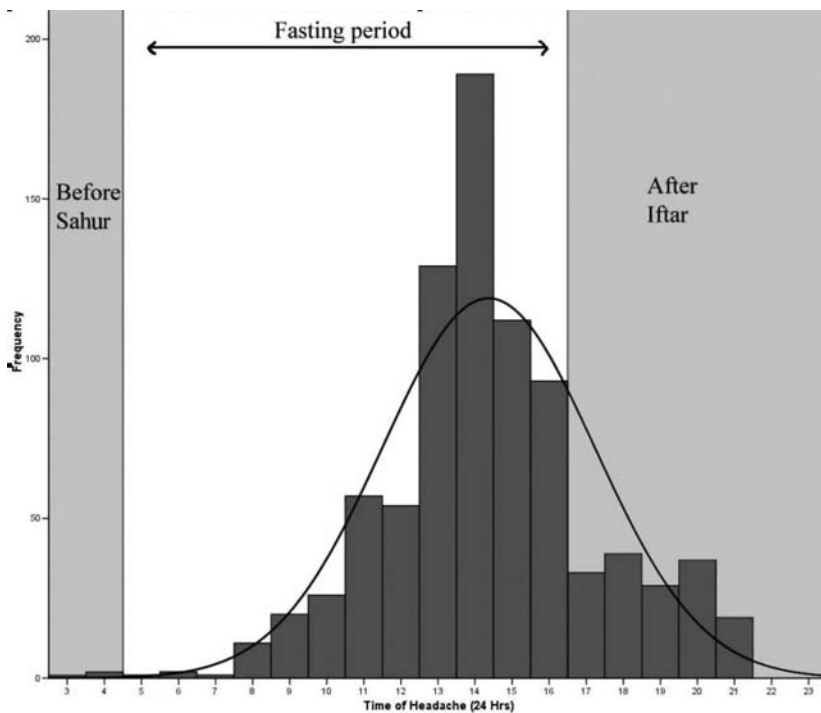
Variables		During Ramadan <i>n</i> = 688 <i>n</i> (%)	After Ramadan <i>n</i> = 662 <i>n</i> (%)	<i>p</i> -value
Lifestyle habits	Smoke/water pipe	255(37.1)	269(40.6)	0.026
	Drinking coffee	503(73.1)	517(78.1)	0.0386
	Drinking tea	598(86.9)	628(94.9)	<0.0001
	No. of meals during the day	2.2 ± 0.4	3.2 ± 0.5	<0.001
	Sleeping duration	5.5 ± 1.0	8.1 ± 0.5	<0.001

Table II.
Lifestyle habits of studied subjects with headache during and after Ramadan

Figure 1 shows the frequency of subjects with headache according to the day's hours. The number of fasting individuals experiencing headaches increased with the duration of fasting in a linear fashion. The worst time for the fasting individuals to suffer from headaches was in the afternoon between 1300 hrs to 1600 hrs. The highest frequency of subjects who had headache was at 1400 hrs. Even we could see from the figure that headache was also experienced after the Iftar (breaking fast) period.

Discussion

Headaches are probably the most common human suffering. Analysis of our data showed that the frequency of Ramadan headache was not as we expected, and its frequency increased during fasting compared to the proportion of subjects with headache after Ramadan. It is a normal belief that the major causes of headache whilst fasting are caffeine and tobacco withdrawal, lack of sleep and hunger. When associated with "low blood pressure", the headache can be quite severe and can also cause nausea before Iftar (breaking fasting) (Ummah, 2004). Our data showed that the headache seemed to be more frequent in smokers, coffee and tea drinkers during the non-fasting month than during fasting. The climate and environment of every country have an influence on the prevalence of headache during Ramadan. This explains well that it is not the fasting but the lifestyle and environment of the country are the main associated factors of headache. It is probable that more of our subjects would have suffered from headache if fasting had been in the summer months when days are longer and



Notes: Sahur = Time when Muslim begins fast; Iftar = Time when Muslims break fast

Figure 1. The frequency of subjects with headache according to the time of headache while fasting in Ramadan

dehydration is more frequent. Caffeine has been shown to be an effective adjuvant treatment for both headache types (Stang and Osterhaus, 1993). This could be the reason that 86.9 per cent of our headache sufferers had the habit of drinking tea and 73.1 per cent drinking coffee during Ramadan and the proportion was more in non-fasting months; tea drinkers (94.9 per cent) and coffee drinkers (78.1 per cent). Surprisingly, tea consumption appeared to be a stronger support for headache than coffee.

Surprisingly, even Mosek and Korczyn (Mosek and Korczyn, 1995) did not find any association between caffeine intake and the Yom Kippur headache. They could not, however, suggest any other possible explanation. Our results are consistent with the study conducted in Saudi Arabia (Awada and Jumah, 1999) that 78 per cent of the studied cases had tension type headache. The increasing frequency of headache with duration of fasting has been previously reported with perioperative headache (Rasmussen, 1993) as well as with the headache occurring on the Jewish fasting day of Yom Kippur (Mosek and Korczyn, 1995). Men (51 per cent) tended to have relatively more headache compared to women (49 per cent). Also, there was a higher level of irritability from headache among the younger people 18-25 years (28.3 per cent). These results are consistent with the study done by the University of the Psychiatric Center (Kadri *et al.*, 2000) in Morocco on irritability during the month of Ramadan. This study documented that there was a higher level of irritability among the younger people during Ramadan, but the regression analysis showed no correlation between age and irritability.

During the fasting month, the total amount of sleep decreased in the night. This is consistent with other reported studies. In particular, subjects described a shift in their usual bedtime and a period of disrupted sleep related to awakening for the Sahur. It is found in our study too that fasting Muslims with headache had shorter sleep, nearly 6 h a day, than post-Ramadan period and the difference was highly significant too.

Many articles about fasting documented that "Fasting brings a wholesome physiological rest for the digestive tract and central nervous system and normalizes metabolism". Furthermore, headache and migraine are common among childhood and adult and may be influenced by social, familial environmental and psychological factors as described by Bener (Bener *et al.*, 2000)

Conclusion

The present study has revealed that it is not the fasting which increased the headache frequencies but the lifestyle habits and environmental factors are the associated factors of headache. This population-based study did not find any negative effects of fasting during Ramadan on headache frequencies.

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Further reading

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