Research Article

Effects of fasting during Ramadan month on depression, anxiety and stress and cognition

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Abstract

Objective: The present study was aimed to observe the effect of fasting during the Ramadan month on depression, anxiety and stress scores. **Materials and Methods**: Twenty healthy male Muslim students of Little Flower Institute of Medical sciences and Research, with previous fasting experience during Ramadan were selected for the present study by convenience sampling method. Depression, anxiety and stress scale (DASS 42) was used to assess depression, anxiety and stress. MMSE (Mini Mental State Examination) was used to assess cognition. **Results:** Depression, anxiety scores significantly decreased on 14th and 28th day when compared with baseline values. Stress scores were decreased significantly on 28th day. Cognition levels were significantly improved followed by fasting in 14th day and 28th day. **Conclusion:** In the present study, we have observed positive impact of fasting on depression, anxiety and stress scores and cognitive functions. We recommend further detailed studies including male and female participants and biochemical parameters to investigate other aspects of Ramadan fasting on human stress and cognition.

Key words: Ramadan, Fasting, Cognition, Depression.

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Introduction

Fasting is being practiced by many religions as a part of tradition. Fasting during Ramadan is the most important commands in the noble religion of Islam. During the month of Ramadan, Muslims abstain from food and fluid for 12-14 hours daily. They rise early for prayers, eat before sunrise, retire later and consume large meals after sunset to replenish energy and fluid levels. This leads to alterations in feeding habits, sleep duration, pattern and architecture [1, 2, 3, 4]. Fasting in the holy month of Ramadan has a positive effect on physical and mental health [4, 5, 6, 7, 8]. In contrast it was reported increased anxiety due to high level of irritability during this month [9,10]. The present study was aimed to observe the effect of fasting during the Ramadan month on depression, anxiety and stress scores.

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Materials and Methods

Twenty healthy male Muslim students of Little Flower Institute of Medical sciences and Research, with previous fasting experience during Ramadan were selected for the present study by convenience sampling method. Free, voluntary, written informed consent was obtained and the study conducted in 2014 after approval by the Institutional Ethics Committee.

Experimental Procedure: To minimize effect of extraneous variables, all the parameters were recorded at 10 am. Participants served as their own controls. All the participants were familiarized with all test procedures before Ramadan. All the parameters were collected on 0 day (before), 1st day, 7th day, 14th day, 21st day and 28th day of fasting during Ramadan.

Depression Anxiety Stress Scale (DASS): DASS is a 42 item questionnaire designed to assess depression, anxiety and stress levels [11].

Mini Mental state examination (MMSE): The Mini Mental State Examination (MMSE) is a standard tool to assess mental status. It has 11-questions to measure five areas of cognitive function: orientation, registration, attention and calculation, recall, and language. The maximum score is 30. A score of 23 or lower is indicative of cognitive impairment. The MMSE takes only 5-10 minutes to administer and is therefore practical to use repeatedly and routinely [12].

Data Analysis: Data was analyzed by SPSS 20.0. Tests applied are one way Anova and Bonferroni post hoc test.

Results

Demographic data was presented in table no 1. Depression, anxiety scores significantly decreased on 14^{th} ($P<0.05$) and 28^{th} day ($p<0.01$) when compared with baseline values. Stress scores were decreased significantly on 28^{th} day ($P<0.01$). Cognition levels was significantly improved followed by fasting on 14^{th} day and 28^{th} day ($P<0.01$).

Table No1: Demographic data of the participants. (Data presented are mean ± SD).

Age (years)	**18.7±1.08**
Height (cms)	159.5±5.01
Weight (Kg)	51.35±5.58
BMI (Kg/m^2)	20.343±1.75

Table No 2: Depression, anxiety and Stress and MMSE scores of participants. (Data presented are mean ± SD).

Parameter	**0 day**	**14^{th} day**	**28^{th} day**	**F value**
Depression	17.8±2.8	13.5±2.16	11.5±1.9	11.25
Anxiety	14.3±2.5	11.0±2.1	9.6±1.3	7.80
Stress	17.8±3.7	14.1±2.1	11.8±2.13	7.06
MMSE	24.1±1.16	26.6±1.03	29.0±0.8	32.52

Discussion

Ramadan was considered as a month of self-regulation and self-training. Ramadan fasting is different from other fasting as there is no malnutrition or inadequate calories intake. All permissible food can be taken in moderate quantities. The other difference is timing of the food. Ramadan fasting provides both physiological and psychological benefits. The person who does fasting will be peaceful, his blood glucose, blood pressure decreases and memory improves [13]. It was reported that depression and stress levels were significantly decreased followed by fasting in the holy month of Ramadan [13,14]. We agree with the previous studies as we have observed significant decrease in depression, anxiety and stress score by fasting in the month of Ramadan. It was reported that there was no significant fasting effect on visual learning and working memory [3]. Some studies reported that fasting adversely affects cognitive functions [15, 16]. Ramadan fast leads to reduced activity, less desire to study and lower concentration ability among a majority of the subjects [17]. It was reported that fasting doesn't affect the cognition levels [18]. In contrast some studies reported that performance on the spatial planning and working memory task and working memory capacity test increased significantly at week 4 of fasting [19]. Ramadan style fasting may affect performance of some mental and physical tasks in some, but perhaps not in all individuals [20]. We agree with this study as we have observed positive effects of fasting on cognitive function.

Limitations: The major limitation of our study was low sample size and we have not studied in female participants. We have not maintained a control group of non-Muslim participants.

Conclusion

In the present study, we have observed positive impact of fasting on depression, anxiety and stress scores and cognitive functions. We recommend further detailed studies including male and female participants and

biochemical parameters to investigate other aspects of Ramadan fasting on human stress and cognition.

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Permission from IRB: Yes

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