

## Effect of Ramadan fasting on body weight and serum cholesterol in middle aged healthy subjects: An observational trial

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### Abstract

**Introduction:** There are significant changes in the food habits, sleep and behaviour during Ramadan fasting which may significantly impact the body metabolism. This study evaluated effect of Ramadan fasting on body weight and serum cholesterol among normal healthy subjects.

**Materials and Methods:** Thirty normal and apparently healthy subjects in the age group of 35 to 65 years and determined to complete full month of fasting during Ramadan were enrolled in the study. The outcome measures: body weight & serum cholesterol were assessed in all the subjects before and after Ramadan month.

**Results:** The subjects (age:  $45.2 \pm 7.24$  years), underwent a significant decrease in body weight from  $60.1 \pm 9.4$  kg to  $58.5 \pm 9.2$  kg ( $p < 0.0001$ ). Serum cholesterol decreased significantly from  $175.7 \pm 24.2$  mg% to  $166 \pm 31$  mg% ( $p = 0.000327$ ).

**Conclusion:** Based on findings from our study sample, we conclude that Ramadan fasting by middle aged healthy individuals may lead to reduction in body weight and decrease in serum cholesterol.

**Keywords:** Ramadan fasting, Body weight, Serum cholesterol.

### Introduction

Ramadan month fasting from dawn to sunset is obligatory for all healthy adult Muslims. There is a general tendency among the fast observers to become more religious i.e. they perform their daily religious duties with more zest and regularity. The main aim of the fast is not just to abstain from the daily needs and pleasures of life, but to develop will power of the human being so that he is able to control his desires. The fasting period begins from just before "Fajr" (dawn) prayers when the Muslims take a meal called "Saher" and it ends with "Iftar" meal which is consumed immediately after sunset. Then, from sunset to sunrise, the person does not need to abstain from any natural, permitted desire & follows routine life.<sup>1,2</sup>

There is an additional recommended prayer during Ramadan i.e. Taraweeh which is collectively prayed by most of Muslims. This prayer lasts usually from half an hour to two hours or even more related to quantum of recitation of Quran during the prayer. This involves considerable physical activity. Thus, there are significant alterations in the feeding pattern, sleep cycles and behaviour of the people practising the Ramadan fasting. These lifestyle changes can have significant effects on the body metabolism. However, the directions of these changes have been reported

differently in various studies. Some studies reported weight loss during Ramadan,<sup>3,4</sup> while improvements in lipid levels as well as deterioration in lipid profile has been reported in earlier research studies.<sup>5-8</sup> This study evaluated effect of Ramadan fasting on body weight and serum cholesterol among normal healthy subjects.

### Materials and Methods

**Study Site:** Physiology Department at a tertiary care Medical College in Marathwada region of Maharashtra. Thirty normal healthy subjects (age group: 35 to 65 years) with no history of major disease or addictions were included. Informed consent was obtained. After an overnight 10 to 12 hours fasting and around 2 to 5 days prior to Ramadan and from the 3<sup>rd</sup> to 5<sup>th</sup> day after the end of Ramadan month, five ml blood sample was taken. CHOD-PAP method was used for serum cholesterol estimation.<sup>9</sup> Body weight measurements (nearest 0.1 kg) were done. Paired t test was used to compare the before and after observations in the same group.

### Results

The mean age of study subjects was found to be  $45.2 \pm 7.24$  years.

**Table 1: Ramadan fasting effect on body weight & serum cholesterol levels**

| Parameter                       | Before Ramadan   | After Ramadan  | Difference in means | p value   |
|---------------------------------|------------------|----------------|---------------------|-----------|
| Body weight (kilograms)         | $60.1 \pm 9.4$   | $58.5 \pm 9.2$ | - 1.6 units         | <0.0001*  |
| Serum cholesterol (milligram %) | $175.7 \pm 24.2$ | $166 \pm 31$   | - 9.7 units         | 0.000327* |

SD: Standard deviation \*indicates statistically significant

## Discussion

Unhealthy lifestyle characterized by unhealthy diet and low physical activity leads to metabolic disturbances like weight gain and altered lipid levels.<sup>1</sup> Balanced diet & regular physical exercise are key components in the maintenance of healthy body mass.<sup>10</sup> In this context, the obligatory fasting in Islam provides an interesting opportunity to reduce food intake and increase physical activity. Although diet varies a lot among individuals during Ramadan, the extensive extra congregational prayers seem to be universally adopted which along with individual prayers contributes to moderate activity levels. Without any doubt, Ramadan fasting is in not about body features but it is a spiritual phenomenon. So, the impact of Ramadan fasting exceeds beyond those that result from following a particular diet.<sup>11</sup>

In line with our results, a systematic literature review by Imtiaz Salim et al<sup>12</sup> have stated that weight in relation to height, blood levels of fats and arterial blood pressure showed significant improvement among normal healthy subjects after Ramadan fasting. Study by Haghdoost et al<sup>13</sup> which evaluated the interaction of activity levels and Ramadan fasting on lipid levels reported a decrease in body weight and serum cholesterol in fasting subjects. They stated that activity levels in isolation cannot explain the improved lipid levels. The dietary changes as well as altered sleep patterns during Ramadan fasting may have contributed to the results. In our earlier published study done in subjects with hypertension, fasting was found to significantly reduce body weight, systolic & diastolic arterial blood pressure whereas there was no significant change in serum cholesterol.<sup>14</sup> Mohsin N et al study results reflect significant lowering in coronary cardiac disease risk score (ten year) & other cardiovascular risk factors such as weight, BMI and waist circumference in subjects with a previous history of cardiovascular disease after an average of 26 days fasting during the month of Ramadan.<sup>15</sup>

## Conclusion

Based on findings from our study sample, we conclude that Ramadan fasting by middle aged healthy individuals may lead to decrease in body weight and serum cholesterol values.

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