

Effect of Ramadan Fasting on Blood Glucose Levels among healthy adults living in Hazaribag, Jharkhand

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Abstract : Ramadan is the holiest month for the muslims in which they fast for the whole month. It is the Islamic month, in which Muslims refrain from eating, drinking, smoking, and indulging in anything that is in excess or ill-natured; from dawn until sunset.

Material and methods: 20 healthy adults were randomly selected from the lakhey rural locality for the study. Anthropometric measurements and biochemical tests were done for the same.

Results: The mean age of the study subjects was 32.2 ± 1.6 years. 50% of the study subjects were male and 50 % were female. The mean BMI of the subjects were slightly above normal ie 28.5. Blood glucose levels were significantly lower than the pre and post Ramadan values. Body weight significantly decreased during the Ramadan days.

Conclusion: it seems that ramdan fasting has a healthy effect on the body.

Introduction :

Ramadan (also written Ramazan , Ramadhan) , is the ninth month of the Islamic calendar. Ramadan fasting is one of the five pillars of islam and one of the most significant ibadat of islam. It is the Islamic month , in which Muslims refrain from eating, drinking, smoking, and indulging in anything that is in excess or ill-natured; from dawn until sunset. Fasting is meant to teach the Muslim patience, modesty and spirituality. Ramadan is a time for Muslims to fast for the sake of God and to offer more prayer than usual. During Ramadan, Muslims ask forgiveness for past sins, pray for guidance and help in refraining from everyday evils, and try to purify themselves through self-restraint and good deeds. As compared to the solar calendar, the dates of Ramadan vary, move forward about ten days each year depending on the moon. Ramadan was the month in which the first verses of the Qur'an were revealed to the Islamic Prophet Muhammad.

Fasting is also necessary to obtain the rewards of God. For these reasons many Muslims who are religiously exempted from fasting insist on fasting (in many instances against a medical advice)¹. In particular, the majority of the Muslims diabetic patients insist on fasting even those with poorly controlled diabetes or with serious complications¹. Thus, we can understand the importance of scientific and clinical studies on the impact of Ramadan fasting on this group of patients.

Ramadan fasting is known to affect many metabolic processes in the human body)^{2,4}. The physiological aspects of Ramadan are influenced by the combination of food and water deprivation, the periodic nature of fasting and the modification of physical activities during the daytime hours. For healthy Muslims the reported physiological and biochemical changes during Ramadan, although significant, do not reach pathological proportions^{1,4}.

Materials and Methods:

This study was conducted during the month of Ramazan 2013. The subjects of the study were 20 healthy adults age above 20 both male and female residing in Hazaribag. The subjects were from rural areas.

Blood samples were collected 1 day before Ramadan, 1,2,3,4th week of Ramadan and after 1 week of Ramadan. Colorometric method was applied to assess the glucose levels.

Results:

It took 2 months for the complete study. The mean age of the study subjects was 32.2 ± 1.6 years. 50% of the study subjects were male and 50 % were female. The blood test was done of all 6 days.

Demographic factors, anthropometric like height, weight BMI measures were also taken.

The mean BMI of the subjects were slightly above normal ie 28.5. Blood glucose levels were significantly lower than the pre and post Ramadan values. Body weight significantly decreased during the Ramadan days.

The statistical analysis was performed using SPSS (11) software standard version. Quantitative data were reported as mean \pm standard deviation and compared using the paired two-tailed student's Ttest. probability level of <0.05 was considered statistically significant.

Discussion :

BMI was significantly decreased. In males and females, waist circumference, as a reflection of abdominal adiposity, was decreased significantly. These results are in line with the reports of Azizi (1978), Tahruri (1989) and Poh *et al.* (1996), who observed a significant decrease in body weight during Ramadan fasting. The decrease in body weight was attributed to efficient utilisation of body fat during fasting (ElAti, Beji & Danguir,1995)⁵.

Ramadan is a sort of intermittent fasting in which fasting individuals are not supposed to eat or drink anything during day time for approximately 16 hours. Various changes take place in the body during these long hours of fasting which include physiological, anthropological, psychological and metabolic changes.

Our study showed that blood glucose levels were lower during the Ramadan period. In our study we found a significant reduction in the level of glucose at the end of Ramadan. This is different from the study conducted on healthy subjects in which there was an increase⁶. These changes may be due to the difference in the type of diet, physical activity, and the level of glycemic control before Ramadan⁷.

Table 1: Anthropometric and blood glucose levels of healthy adults:

| Measurements | 1 day pre Ramadan | First week of Ramadan | Second week of Ramadan | Third week of Ramadan | Fourth week of Ramadan | 1 week after Ramadan |
|-----------------|-------------------|-----------------------|------------------------|-----------------------|------------------------|----------------------|
| Body weight | 68.64±8.54 | 68.22±1.62 | 65.12±2.34 | 64.76±5.34 | 63.12±6.32 | 64.66±8.94 |
| Glucose (mg/dl) | 106.21±1.23 | 104.32±8.67 | 101.12±7.44 | 100.23±1.56 | 96.67±3.24 | 98.14±6.78 |

Foods that are beneficial during fasting:

Complex carbohydrates will help release energy slowly during the hours of fasting. They are found in grains and seeds such as barley, wheat, oats, semolina, beans, lentils and basmati rice; 1 Fibre-rich foods are also digested slowly. These include bran, cereals, whole wheat, grains and seeds, potatoes with the skin, vegetables such as green beans and almost all fruit including apricots, prunes and figs.

Foods to avoid:

Heavily processed, fast-burning foods containing refined carbohydrates in the form of sugar and white flour. Too much fatty food should also be avoided, such as cakes, biscuits, chocolates and sweets. The guide suggests drinks such as tea, coffee and cola could also be avoided because of their caffeine content.

Suhoor – the pre-dawn meal:

This should be a wholesome, moderate meal that is filling and provides enough energy for many hours. It is very important to include slowly-digested foods.

Iftar – the meal that breaks the day's fast:

This could include dates or fruit juices to provide a refreshing burst of energy.

Source: **Masroor et.al 2007**

Conclusion:

Ramadan fasting appears to have a significant effect on the body weight, and blood glucose levels of the patients. Hence, according to our study, Ramadan fasting is healthy non pharmacological means for improving diabetic risk factors . However, since many metabolic, biochemical, physiological, spiritual and psychological changes take place in body, we recommend large scale coordinated studies to throw more light on this topic.

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