

**PJN**

ISSN 1680-5194

PAKISTAN JOURNAL OF  
**NUTRITION**

**ANSI***net*

308 Lasani Town, Sargodha Road, Faisalabad - Pakistan  
Mob: +92 300 3008585, Fax: +92 41 8815544  
E-mail: [editorpjn@gmail.com](mailto:editorpjn@gmail.com)

## Islamic Fasting: An Effective Strategy for Prevention and Control of Obesity

Alam Khan\* and M. Muzaffar Ali Khan Khattak

Department of Human Nutrition, NWFP, Agricultural University, Peshawar, Pakistan

**Abstract:** A balanced and energy-restricted diet, exercise and behavior modification are the usual approaches used for obesity. Islamic fasting, which has the components of energy restriction and behavior modification, could be a safe nutritional approach for the prevention and treatment of obesity. For this reason, the effect of Islamic Fasting, an abstention from Foods, fluids and sex from dawn to sunset, on food intake, body weight and blood chemistry was studied in ten healthy adult male human subjects. Foods and Fluids intake before and in the first and fourth week of Fasting were recorded. Body weight of the participants was noted before and at the last day of Fasting. Blood samples before, in the second and fourth week of Fasting and two weeks after Fasting were collected. The daily reduction in energy (Food intake) ranged from 200-1500 Kcal with an average value of  $857 \pm 410$  Kcal. During the four weeks of Fasting, loss in body weight ranged from 0.5-6.0 Kg with an average value of  $3.2 \pm 1.7$  Kg. There were no significant differences in glucose, total protein, triglyceride and total, HDL and LDL cholesterol in the blood samples collected before, during and after the Fasting. The data suggest that Islamic Fasting is nutritionally safe and could be used as an effective strategy for prevention and control of obesity

**Key Words:** Islamic Fasting, Safe Nutrition, Obesity

### Introduction

Obesity is becoming a major nutritional problem particularly in the western countries. It is generally agreed that obesity is associated with significant morbidity and reduced life expectancy. Thus, in turn, can be related to the development of various other medical conditions such as hypertension, hyperlipidemia and type II diabetes. It is fortunate that these problems are themselves often best treated by weight reduction. Obesity, in addition to heredity, emerges from overeating and sedentary life style. Low calorie diets, behavior modification and exercise are the usual approaches used for treatment of obesity (Bennion, 1979; Kreitzman, 1989; Young, 1973).

A balanced energy-restricted diet is the most reasonable method for weight reduction. Ideally, the diet should be nutritionally adequate except for energy. The number of calories must be decreased to the point where the body mass mobilize fat stores to meet daily energy needs. The energy restriction should be maintained at level where weight loss is 0.5-2 Lbs per week. In such type of regimen, there will be no increase in ketone bodies in blood and thus, the side effects will be minimum. The caloric value of body fat is approximately 3500 Kcal/Lb. Thus, if a person reduces daily caloric intake by 500 Kcal the weekly deficit will be 3500 Kcal or 1 Lb. of weight loss (Sande and Mahan, 1984).

Exercise is not popular among most obese individuals. But it should be included in the weight control programs as physical activity is an adjunct to diet therapy, owing to its effect on body weight, body composition, appetite and metabolic rate. Exercise decreases body fat and increases muscle mass, and since lean body mass is more dense than the fat it replaces, body weight may not change at the initial stages of exercise. It appears that a minimum of 2 months is needed to obtain any reduction of adipose tissue with training programs, provided they are strenuous enough. Physical exercise may decrease appetite and obese person may profit in two ways, increased energy output with decrease energy input (Sande and Mahan, 1984).

Islamic Fasting could be a safe nutritional approach for prevention and treatment of obesity. The Fast imposes a temporary ban on food intake resulting into a less energy intake. The change in schedule of eating in the month of Fasting is really a behavior modification. Also the religious activities of muslims are particularly increased in this month due to special incentive for various acts of worship. Also an extra daily lengthy night prayer of Taraweeh is imposed in this month. Practically speaking, the

fasting individuals in this month are at par with people who are doing moderate exercise (Kaandhlawi, 1928; Alfarooqi, 1984).

The time related ban on energy intake, change in eating schedule and increased religious activities may have an effect on the body biochemical and physiological functions (Fedail *et al.*, 1982; Mustafa *et al.*, 1978; Sulimani, 1988; Hussain *et al.*, 1987; Gumaa *et al.*, 1978; Sakar, 1975). The project was aimed at to see if food intake in the month of Fasting was changed; was Fasting nutritionally safe and could a safe nutritional strategy for obesity prevention and control programs.

### Materials and Methods

The study was conducted in Ramadan the month of Fasting in the NWFP Agricultural University, Peshawar, Pakistan. Ten healthy Professors (age 21-59 years, mean  $44 \pm 9$ ) of the university volunteered for the study. The purpose, obligations and protocol of the study were explained to them. Daily food intake for 3 days before and 3 days in the first and fourth week of the Fasting were recorded by the participants in a questionnaire provided to them. Energy intake was calculated from food composition table (Zakaur-Rahman; Anis, 1988). The height and weight of the participants were taken one day before the Fasting and the weight was again taken at the last day of the Fasting, using the standard hospital scale. Blood samples before, in the second and fourth week of the Fasting were collected in clean centrifuge tubes. Blood samples before Fasting were collected after over night (10-12 h) fasting while during the month of Fasting, the blood samples were collected at mid day 10-12 h after Sahoor, the meal before dawn.

The blood samples were allowed to clot at room temperature for 15 minutes and then centrifuged at 5000 rpm for 10 minutes for separation of the serum. The serum were transferred to clean tubes and were analyzed for glucose, protein, triglyceride and total, HDL and LDL cholesterol using the standard procedures of Diagnostic Merck and Merck reagent kits (Darmstad, 1987). The serum glucose was determined by O-Toluidine method, using 3306 merckotest reagents. Serum total, HDL and LDL cholesterol were determined by Leiberman - Burchard photometric method, using 3312 merckotest, and 14210 and 14992 precipitating reagents respectively. Serum total protein was determined by Biuret method using 3327 mercko test reagent. Serum triglyceride was determined by calorimetric method using Human reagent

## Khan and Khattak : Islamic Fasting - An Effective Strategy for Prevention and Control of Obesity

Table 1: Effect of Islamic Fasting on Mean ( $\pm$ SD) Serum Glucose, Protein, Triglyceride and Total, HDL and LDL Cholesterol

Blood Parameters	Concentration		
	Before the Month of Fasting (N=10)	During the Month of Fasting (N=10)	<sup>1</sup> Mean(Normal Ranges)
Glucose (mmol/l)	4.56 $\pm$ 0.45	4.42 $\pm$ 0.39	5.3 (4.2-6.4)
Total Protein (mg/dl )	71.84 $\pm$ 6.98	70.50 $\pm$ 5.66	76.5 (66-87)
Triglyceride (mmol/l)	1.36 $\pm$ 0.31	1.35 $\pm$ 0.30	2.0 (1.71-2.29)
Total Cholesterol (mmol/l)	5.30 $\pm$ 0.78	5.26 $\pm$ 0.73	5.66 (5.17-6.18)
HDL Cholesterol (mmol/l)	1.86 $\pm$ 0.27	1.84 $\pm$ 0.25	1.29 (1.06-1.52)
LDL cholesterol (mmol/l)	2.07 $\pm$ 0.43	2.03 $\pm$ 0.44	2.9 (3.9-4.9)

<sup>1</sup>The normal ranges are taken from the " randox Manual Procedures" Randox Laboratories Ltd., Diamond Rd, Crumlin, Co., Antrim, United Kingdom, BT29 4QY

kit. The average values of the blood constituents collected before and after the month of Fasting were compared with the values of blood constituents collected during the month of Fasting, using the Student T Test.

### Results

The average daily energy intake before and during the month of Fasting was 2815 $\pm$ 339 and 1958 $\pm$ 384 Kcal respectively. The average daily reduction in energy intake was 857 $\pm$  410 Kcal. The average body weight before and at the last day of the Fasting were 80.8 $\pm$ 9.0 and 77.7 $\pm$ 8.1 Kg respectively. The average loss in weight due to Fasting was 3.2 $\pm$ 1.7 kg.

Serum glucose, protein, triglyceride and total HDL and LDL cholesterol are presented in Table 1. The blood constituents decreased during the month of Fasting, however, this decrease was not significantly different from the constituents of blood collected before the month of Fasting.

### Discussion

Islamic Fasting is a religious obligation for all adult healthy Muslims. Children are exempted from Fasting. Sick individuals can delay the Fasting until they are healthy. Pregnant and lactating women, if their health or child is in danger, can postpone the Fasting to a time when they are out of that physiological state. Option to fast or delay to some other time is also given to those who are traveling in the month of Fasting. Menstruating women are not allowed to fast during their menstruating period. However, they have to make for these days when they are not menstruating. As Islamic Fasting is an ordain of Almighty Allah, Muslims observe the Fasting with full etiquette, precaution and devotion in Ramadan, the ninth month of Islamic Calendar which is based on lunar year. In this month they are abstained from foods, fluids and sexual activities from dawn to sunset, and they are required to pray every night a lengthy Taraweeh prayer for the whole month of Ramadan. Actually in Islamic Fasting, there is a shift in the eating schedule from day to night. There is a meal before dawn called Sahoor and a meal after the sunset called Iftaar. In this month the Muslims are almost restricted to the above two meals. Because they can eat after Iftaar up to Sahoor but practically they do not have time to eat after Iftaar as they have to pray the usual Maghrib and Isha prayers and also the lengthy Taraweeh prayer. Also they have to sleep too before getting up for Sahoor.

The ban on eating and drinking at day time and limited time for eating at night ensure a reduced food intake. Also the increased reward of worship in this month (11th) make the Muslims more engaged in recitation of Holy Quran, non-obligatory (Nafil) prayers and other religious activities. Also the extra every night lengthy Taraweeh prayer is a sufficient exertion on the fasting individuals in this month. These activities are almost at par with moderate

exercise level.

In addition to the obligatory Fasting in the month of Ramadan, there are non-obligatory (Nafil) fasting too. These non-obligatory (Nafil) fasting can be observed any day throughout the year except on the first day of Shawal, on the 10th, 11th, 12th and 13th of Zulhaja, (the 10th and 12th month of Islamic Calendar respectively). Fasting on these 5 days are prohibited in Islam. It has been reported that the Prophet of Islam, Muhammad (Sallallahu Alaihe Wasallam) has observed non-obligatory (Nafil) fasting on every Monday and Thursday of the week, 3 days in each month on 13th, 14th, and 15th of the lunar month, on the 9th and 10th or the 10th and 11th of Muharram , on the 15th of Shaban , 6 days in Shawal after Eid-ul-Fitr and on the 9th day of Zulhija (The 1st, 8th, 10th and 12th months of Islamic Calendar respectively). The non-obligatory Fasting sums up to some 15 days per month (Hussaini and Sakr, 1981). Many devoted followers of Islam observed these non-obligatory (Nafil) fast. The non-obligatory (Nafil) fasting adds almost up to 5 months in a year and this regime will prevent and control obesity.

In nutritional terminology, Islamic Fasting has the components of caloric cut in intake, behavior modification in terms of eating pattern and exercise in terms of increased religious activities. These components are the necessary steps to be used in any obesity prevention and control program. The obligatory Fasting along with the non-obligatory ones will save the individual from obesity and obesity related problems like cardiovascular, hypertension and diabetes mellitus. The author believes that Islamic Fasting is not for obesity prevention and control, but obesity prevention and control through Islamic Fasting is an additional benefit of the Islamic Fasting.

As observed in the present study, the daily energy intake was dropped from 2816  $\pm$  339 to 1958  $\pm$  384 Kcal which means that the average daily intake of energy was reduced by 857  $\pm$  410 Kcal in the month of Fasting. This reduction in energy intake was expected as, in Fasting, the eating schedule is changed and the individuals have to adapt with the changed schedule. Also they have very limited time to eat. The adaptive mechanism of the body for preservation of water during Fasting may have an effect on food intake. Usually Fasting individuals are thirsty, and they drink a lot of fluids at the Iftaar time, leaving little room in their stomach for regular food. The cut of 857  $\pm$  410 Kcal was a significant reduction in caloric intake that was enough to produce lipolysis, and hence a significant weight loss was observed in the participants. The average weight loss during the month of Fasting was 3.2  $\pm$  1.7 kg. This reduction in weight is in the recommended range of weight loss i.e. 0.5-1.0 kg/week. (Sulemani, 1988) and Fedial *et al.*, 1982) have reported a total reduction of 1.0  $\pm$  0 .66 kg in the body weight during Ramadan. Their findings are in the support of our results.

Islamic Fasting is becoming the popular approach in Muslims

## Khan and Khattak: Islamic Fasting - An Effective Strategy for Prevention and Control of Obesity

society for weight control as on one side it is a religious activity that will be rewarded in the Hereafter and on the other side a preventive measure against the health hazards particularly obesity.

The nutritional safety of Islamic fasting was evaluated by blood analysis for glucose, protein and lipid profile. The results are presented in Table 1. The participants remained healthy throughout the Fasting month and did not complain for constipation and other disorders. Though the levels of serum glucose, protein, triglyceride and total, HDL and LDL cholesterol dropped during Fasting but these values were not significantly different from those values obtained from blood samples collected before Fasting. This was expected, as Islamic Fasting is not a total starvation but a change in eating schedule. Mustafa *et al.* (1978) have reported that fasting individuals maintain good control of fluid and electrolysis. Fedail *et al.* (1982) have reported that Islamic Fasting has no profound effect on blood chemistry. The data suggest that due to its nutritional safety, Islamic Fasting is an effective approach to prevent and control overweight problem.

### References

- Alfarooqi, I. R., 1984. Major world religions - Islam. pp: 27-30. Argus Communications, IL 60648, USA.
- Bennion, M., 1979. Clinical nutrition, pp: 93, Harper and Row Publisher, New York.
- Darmstad, I., 1987. Diagnostic Merck. Directions for use: In Clinical Chemistry. E Merck Frankfurter Str. 250, D-6100
- Fedail, S. S., D. Murphy, S. Y. Salih, C. H. Bolton and R. F. Harvey, 1982. Changes in certain blood constituents during ramadan. Am. J. Clin. Nutr., 36: 350-353.
- Gumma, K. A., K. Y. Mustafa, N. A. Mahmoud and A. M. A. Gader, 1978. The effects of fasting in ramadan on serum uric acid and lipid concentration. Br. J. Nutr., 40: 573-589.
- Hussain, R., M.T. Duncan, S. H. Cheah and S. L. Chang, 1987. Effects of fasting in ramadan on tropical Asiatic moslems. Br. J. Nutr., 58: 41-48.
- Hussaini, M. M. and A. H. Sakr, 1981. Food and nutrition manual. pp. 18-22, 345, East View Street, Lombard, Illinois 60148, USA.
- Kaandhlawi, M. Z., 1928. Virtues of Ramadhan. In Teachings of Islam, pp.7-17. Library of Islam, Des. Plaines. IL 60017, USA (English Translation,1986).
- Kreitzman, S. N., 1989. Lean body mass, exercise and VLCD. Inter. J. Obes., 13: 17-25.
- Mustafa, K.Y., N. A. Mahmoud, K. A. Gumma and A. M. A. Gader, 1978. The effect of ramadan on fluid and electrolyte balance. Br. J. Nutr., 40: 583-589.
- Sakar, A., 1975. Fasting in Islam. J. Am. Diet. Assoc., 67: 17-21.
- Sande, K. J., and L. K. Mahan, 1984. Nutritional care for weight management. In Food , Nutrition and diet therapy. eds. M.V. Krause, and L. K. Mahan, 7th Ed. pp: 529-536, W.B.Saunders Co. Philadelphia.
- Sulemani, R. A., 1988. The effects of ramadan fasting on thyroid functions in healthy male subjects. Nutr. Res., 8: 549-552.
- Young , C.M., 1973. Dietary treatment of obesity In Obesity in perspective, part 2. ed. G.A. Bray Publication No. (NIH) pp: 75-708.
- Zaka-ur-Rahman, and R. A. Anis, 1988. Hemari gheza, II & III. National Institute of Health, Islamabad, Pakistan.