Research Article

ROLE OF PROTEINS IN DAILY DIET IN WEIGHT LOSS OF OBESE SUBJECTS HAVING BLOOD GROUP-O

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ARTICLE INFO	ABSTRACT
	The World Health Organization (WHO) describes overweight and obesity as one of today's most important public health problems, which is escalating as a global epidemic. Obesity is a complex disorder involving an excessive amount of body fat. Obesity is not just a cosmetic concern. It increases your risk of diseases and health problems, such as heart disease, diabetes and high blood pressure. Therefore a need was felt to carry out this study. The present study was done to reduce the weight of Obese subjects based on Blood group diets concept. The blood group diets are one of the diets that are very less explored. It was originated from two American Naturopaths, Dr James D'Adamo and his son Dr.Peter D'Adamo who believed that blood group type is the key to how one burns the calories, the type of foods an obese person should eat and the subject will benefit from certain types of exercises. They recommended that eating to suit your blood group will help to lose weight, help to fight disease and boosts the immune system. Keeping the above points in view, the present study was carried out on fifty obese subjects who were selected by purposive random sampling from the region of Gurgaon (NCR). All the selected subjects were Obese and had followed many weight loss techniques in their past. Based on the theory given by Dr Peter D'Adamo protein rich diet in combination with carbohydrates and fats was provided to the obese subjects. The mean protein intake of the selected subjects was increased from 50.96±3.0 to 150.3±16.8 per day. The reduction in mean weight and BMI was i.e. from 101.1±85.8 to 64.2 $\pm$ 6.72 and 35.5±6.0 to 26.1±5.5 respectively. The results achieved showed a positive link between high protein diet and weight loss in Obese subjects having blood group O.

INTRODUCTION

Obesity mean excessive accumulation of fat in the adipose tissue, located especially at the waist, hips & breast with increased body weight by 10% or more above the standard reference weight for a particular age, sex & height. Obesity is commonly found initially in the 25 to 50 year of age group & is more common in women. (Bansal, 2010). When the food intake of an individual is more than the Recommended Dietary Allowances, the extra energy in the body is converted into fats which is deposited in the adipose tissues (Mayo clinic, 2015). Obesity indirectly means short life span with all its associated illnesses.

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There are many assessment techniques for Obesity such as Waist-Hip ratio, Waist Circumference, Skin fold thickness and BMI. Body Mass Index (BMI) of a person is defined as his weight in kilograms divided by his height in meters square and when value of BMI exceeds more than 30 kg/m² a person is said to be obese (WHO, 1998). The other indicator the waist circumference is when it exceeds 40 and 35 inches in obese male females respectively depicts Obesity. Skin folds are greater than 8cms is obese (Kaushik, 1998). Various famous diets have been followed by people so far to reduce weight such as General Motors diet, Atkins diet, Ornish diet which are available over internet very easily. But the question is do they really help and have no harmful effects such as Hyperlipidemia and Binge eating. The mono and fad diets should not be recommended for weight loss. Therefore we experimented the Blood Group diets as mentioned above as well. The Blood group "O" is called as the hunter group.

They thrived on high protein diet based largely on meat, fish, poultry, certain fruits and vegetables, but limited in grains, legumes and dairy. Dr. D'Adamo believes these sticky blood cells can lead to medical conditions such as impaired digestion, kidney and liver problems, headache, diabetes, obesity, and many others. Following your blood type diet promises to help you stay healthy, live longer and achieve your ideal weight. If you eat foods incompatible with your blood type, the author contends your digestion will suffer and your metabolism will slow down.

Review of literature

Obesity has become a worldwide phenomenon cutting across regional and economic barriers. Prevalence of overweight and obesity was 19% and 6% among boys and 15% and 8% among girls respectively. Among the influencing factors sleeping time and fast food were found to be significant (George, et.al, 2012). In 2014, more than 1.9 billion adults, 18 years and older, were overweight. Of these over 600 million were obese. Overall, about 13% of the world's adult population (11% of men and 15% of women) were obese, 39% of adults aged 18 years and over (38% of men and 40% of women) were overweight. The worldwide prevalence of obesity more than doubled between 1980 and 2014. In 2013, forty two million children under the age of 5 were overweight or obese. Once considered a high-income country problem, Overweight and Obesity are now on the rise in low and middle-income countries, particularly in urban settings. More than a third of adults (34.9 percent) in United States were obese as of from 2011 to 2012. More than two-thirds of adults were Overweight or Obese (68.6 percent). India the third most obese country in the world. India is just behind US and China in this global hazard list of top 10 countries with highest number of obese people (Sharma, 2014). Obesity is strongly associated with other metabolic disorders including diabetes, hypertension, dyslipidemia, cardiovascular disease and even some cancers. The risk for these disorders appears to start from a body mass index (BMI) of about 26 Kg/m^2 (WHO, 2012). To put the blood type theory to the test, University of Toronto researchers analyzed the usual diets of 1,455 healthy young adults and calculated a score indicating how closely their diets matched one of the four blood type diets (A, B, AB or O). Blood tests were used to determine each participant's blood type as well as cardiovascular risk factors such as cholesterol, triglycerides and insulin. Body mass index (BMI), waist circumference and blood pressure were also measured.

MATERIALS AND METHODS

The purpose of this study was to see the association of dietary and physical pattern other factors of obesity and, as well as weight loss effects of Blood group "O" diet in obese adults. The methods and materials used for investigation are discussed under the following headings:

Locale of the study

The study was conducted on adults belonging to the city of Gurgaon (NCR).

Selection of the subjects

* Hundred and fifty young adults including between 25-35 years of age were selected from the Gurgaon by purposive

random sampling. The subjects having Blood group O were selected.

* Out of the selected Seventy five blood group O subjects, the height and weight was calculated to find out the BMI. The subjects having BMI> $29kg/m^2$ were selected. Fifty subjects having blood group O with BMI> $29kg/m^2$ were finally selected.
* The objective and experimental protocol of the study was explained to the subject, and their prior consent was taken.

Experimental plan

The study was constituted of phases and the classification of subjects was elaborated as under:

Phase 1: The phase one included fifty Obese adults (blood group O) for the study. For the purpose field studies and medical history as well as assessment were performed as under:

Collection of Data

* **Development of Questionnaire:** The general information, history of obesity and underweight, medical problem and clinical signs, dietary intake, physical activity pattern and anthropometric measurements of the subjects were taken by developing the questionnaire.
* **Field Studies:** These studies consists of collection of data regarding general information, physical activity pattern, health record, assessment of nutritional status by using dietary survey method and interview cum questionnaire method.
* **Medical History:** The data related to the past three months of the medical history of the samples was collected and analyzed by interview cum questionnaire method

Anthropometric Studies

The height, weight were measured for all obese and underweight subjects and before starting and at the end of the study for the control and experimental groups with standard methods.

Measurement of Height

A vertical measuring rod attached to a platform was used to measure the height of the subjects.

Measurement of Weight: The Weight of the subjects was measured by using an electronic balance with 100g of accuracy.The weighing scale was placed on a firm and flat ground. The subject was made to stand on the platform of the balance bare feet and with minimal clothing. The weight was recorded in kilograms, to nearest 100 grams.

Body mass index (BMI)

$$Body\ Mass\ index = \frac{Weight}{(Metres)^2}$$

Table. No. 3.1. BMI Classification

BMI	Nutritional grad	Classification
$\geq 18.5 - < 20.0$	Low Normal	
$\geq 20 - < 25.0$	Normal	
$\geq 25.0 - < 30.0$	Over Weight	WHO (1998)
$\geq 30 - 34.9$	Obesity I	
$\geq 35 - 39.9$	Obesity II	
≥ 40	Obesity III	

Dietary Counseling

After collecting the initial information regarding the subjects of who volunteered to be part of the study for weight loss through consumption of high protein low caloric diet were provided dietary counseling and behavioral guidance. The subjects were prescribed a diet of 1400 kilo calories with an aim of about 1-2 kg weight loss per week through a lesser caloric intake. The counseling was provided in the form of discussions (group and individual), charts, pamphlets, printed material and diet manual in the form of a booklet. The queries of all the subjects were entertained through meetings, telephones or E-mails for the study period of three months.

Statistical analysis of the data

The collected data were decoded, tabulated and statistically analyzed using standard techniques such as arithmetic mean and standard deviation.

RESULTS AND DISCUSSION

Table 1. Nutritional Assessment of Obese subjects having Blood group O before and after Dietary interventions

Assessment of Nutritional status		Obese Subjects (n=50)
Average Height	B	157.4±7.8
	A	157.4±7.8
Average Weight	B	101.1±8.58
	A	64.1±6.72
Average BMI	B	35.5±6.0
	A	26.1±5.5

n = total number of the subjects of all age groups
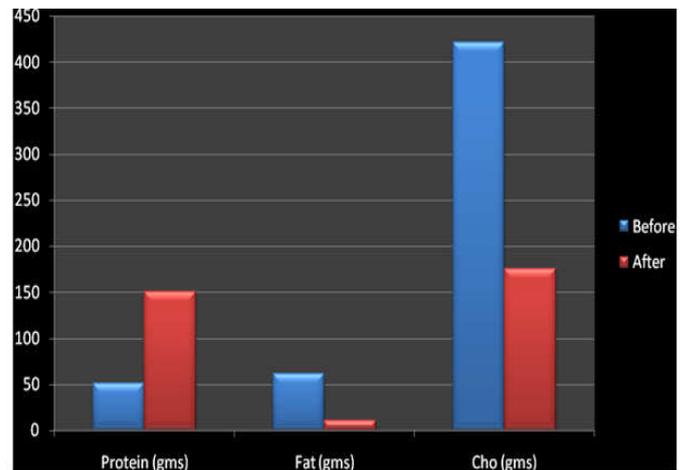B-Before , A- After
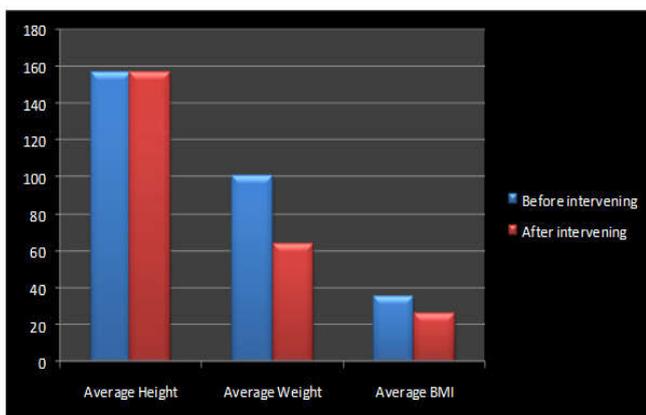
Fig. 4.1. Bar graph depicting Mean Weight and BMI of Obese subjects having Blood group O before and after Dietary Interventions

Table 4.2. Mean daily nutrient intake of Obese subjects having Blood group O before and after weight reducing intervention

Nutrients Intake		Obese Subjects (n=50)
Total Calories (kcal)	B	2444.64±772.21
	A	1400±322.32
Total Protein (gms)	B	50.96±3.0
	A	150.3±16.8
Total Fat (gms)	B	62±12.15
	A	11±1.7
Total Cho (gms)	B	420.7±33.13
	A	175±14.43

B=Before, A=After   n = Total number of subjects of all four age groups

Fig. 4.2. Bar graph depicting Mean Protein, Fat and Carbohydrates before and after Dietary Interventions

Height: The average height of obese subject varied from 151 – 182 cms. The mean value of height of subjects belonging to region of Gurgaon was 157.2±4.68.

Body Mass Index of the subjects: BMI is calculated by dividing the weight in kilograms by height in meter square. A BMI of 30 is considered for human subjects as obese. And a BMI is more than 24 considered for human subjects as overweight. The adopted from WHO 1995, WHO 2000, and WHO 2004.

Conclusion

Overweight and obesity is the fifth leading risk of death, resulting in around 2.8 million deaths of adults globally every year. In addition, 44% of the diabetes burden, 23% of the ischemic heart disease, and between 7% and 41% of certain cancer burdens are attributable to overweight or obesity. Obesity is strongly associated with other metabolic disorders including diabetes, hypertension, dyslipidaemia, cardiovascular disease and even some cancers. D'Adamo (2015) believed our blood group determines how our body deals with different nutrients. His theory based on the idea that each blood group has its own unique antigen marker and by following a diet designed specifically for your blood type, the body digest and absorbs food more efficiently. This results in weight loss. Dr. D'Adamo suggests that individuals with type O blood should eat a diet more similar to their ancient ancestors—that is a diet with more meats and fewer grains. In other words, type O should follow a high-protein, low-carbohydrate diet with lots of meat and fish . People with blood type O is simply a variation on many of the typical high-protein, low carb diet such as the Atkins diet. In this study, Obese fifty subjects having blood group O were taken on the basis of purposive sampling The Dietary assessment of the selected subjects was carried out by dietary recall method and food frequency questionnaire. There was excess consumption of foods containing fats and oils, full cream dairy products, refined cereals and pulses in obese subjects. But there were less consumption of fruits and vegetables as compare to other food groups in obese subjects. The nutrition education regarding high protein diet and exercise had a positive effect in blood group "O" Obese subjects. The mean intake of carbohydrate, fats and oils, was decreased while the mean intake of protein was increased.

On the basis of anthropometric measurements body mass index were calculated. The average BMI and Body Weight of Obese subjects before the intervention was 35.5 ± 6.0 and 101.1 ± 8.55 respectively. In the study further seven days dietary recall of the subjects were collected and calculated critically for age group 25-35 years for obese subjects having blood group "O" .The mean calories, protein, carbohydrate and fat were 2444.54 ± 565.3, 50.96 ± 13.76, 420.7 ± 67.5, and 62 ± 3.2 respectively. After the intervention of 1400 calories, mean high protein 150.36 ± 20.1, moderate carbohydrate 175 ± 18.3, and negligible fat 11 ± 3.6 to the obese subjects the mean BMI of obese subjects were found to be reduced to 26.1 ± 5.5 and the weight to 64.1 ± 1.1. In comparison to the RDA, the average weight decreased among obese subjects having blood group "O" were 10-15 kgs. However we recommend that further studies and more intervetional studies are needed on big samples of populations to prove the hypothesis as laid by Dr D Adamo for all blood groups.

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