Home Science

INFLUENCE OF NUTRITION INTERVENTION ON ANTHROPOMETRIC MEASUREMENTS AMONG METABOLIC SYNDROME YOUNG ADULTS

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ABSTRACT Anthropometric measurements are group of physical tests or indices which predicts metabolic syndrome. Metabolic syndrome is an array of metabolic disorders like dyslipedimia, hypertension, insulin resistance. Overweight and obesity and high BMI values are the key points which attributes for prevalence of metabolic syndrome, especially on young adults in recent years. This study aims to find out the influence of nutrition intervention on anthropometric measurements among metabolic syndrome young adults (21-40 years). An ex post facto research was conducted at Apollo hospital, Bangalore. This study involved screening of 1200 subjects for metabolic syndrome using IDF guidelines out of which 150 subjects were found to be metabolic syndrome. Anthropometric measurements like height, weight, waist circumference and BMI were measured. Study was conducted in three phases, pre-test, intervention phase, post-test. During intervention, nutrition counselling, tailormade diet along with developed food product was provided for subjects. Pre-test and post test data was collected and analysed with paired 't' test. The study revealed a significant difference with 't' test value of 13.64 (p<0.05) in weight and in waist circumference with t =11.64*, p<0.05. Overall BMI value was found to have significant difference with 't' test value of 8.57 (p<0.05). Conclusion: Awareness on nutrition and dietary practices along with therapeutic diet and developed food product supplementation showed a significant difference in anthropometric measurements like weight, waist circumference and BMI. Balanced therapeutic diet and nutrition intervention would prevent and manage further complication of metabolic syndrome in view of public health perspective.

Introduction:

Metabolic syndrome also known as Syndrome X and comprises a group of disorders like insulin resistance, dyslipidaemia, hypertension and anthropometric measurement like weight, waist circumference and BMI. Krishnamoorthy et al., 2020, in their study revealed that there is an increase in prevalence of metabolic syndrome across the age groups from 13% (18–29 years) to 50% (50–59 years). The increasing tendency of metabolic syndrome in urban population among young adults is based on rapid change over in life style, dietary patterns and physical inactivity. The growing trend in metabolic syndrome attributes to develop high risk in diabetes mellitus and cardio vascular diseases in near future.

According to Dasgupta et al., (2020), the prevalence of metabolic syndrome was 44.6% (35.4% in males and 55.6% in females), and female gender, poor economic status, sedentary lifestyle, poor diet, and addiction of tobacco were found to be the risk factors of metabolic syndrome. In present scenario, obesity is being global burden in special with metabolic syndrome, signifies that increase weight, waist circumference and body mass index correlates with risk factors associated with metabolic syndrome. A study by De Lucia Rolfe et al., (2015) revealed that correlation between body fat and abdominal subcutaneous fat is stronger in women than men and inter correlation between visceral fat and abdominal subcutaneous fat was moderately higher in men.

Based on these observations the present study was aimed to find out influence of nutrition intervention on anthropometric measurements among metabolic syndrome young adults.

Objectives:

- To screen the anthropometric measurements for metabolic syndrome among subjects.
- To find out the influence of nutrition counselling, planned therapeutic diet with developed food supplementation intervention on anthropometric measurements among metabolic syndrome adults.

Methodology: Ex post facto research was conducted in Apollo hospital, Bangalore, Karnataka state. Random sampling technique was selected to screen 1200 subjects initially for metabolic syndrome. Out of the screened subjects 150 subjects were found to be metabolic syndrome. Anthropometric height, weight and waist circumference and body mass index screening was done for all subjects. The present study was divided in three phases (pre-test, intervention, post-test

phases). A standardised questionnaire was administered to subjects for pre-test. An intervention program was conducted with nutrition education, counselling and planned therapeutic diet along with developed food product supplementation to all 150 subjects. For post-test recheck on anthropometric measurements and re administration of questionnaire to subjects was done. The pre-test and post-test data was subjected to statistical analysis using paired 't' test accordingly inferences were drawn.

Results:

The socio-demographic results showed that majority of the subjects (45.3%) were aged between 35-40 years of age, 40.7 percent of the subjects were aged between 28-34 years and 14 percent of the subjects were aged between 21-27 years indicating that there is an increasing trend in prevalence of metabolic syndrome in younger generation. However, majority of the subjects were males (79.3%) and females (20.7%). 78 percent of the subjects were married and remaining 32.0 percent were unmarried. While 54.0 percent of the subject's education was up to graduation level where as 27.3 percent were educated till PUC level and 15.3 percent of subjects were post graduates. 50.7 percent of the subjects were government employees and 49.3 percent were private employees. Most of the subjects (70.7%) were from nuclear family and 29.3 percent were from joint family.

TABLE – 1 Classification of Respondents by Height N=150

No.	Height (cm)	Respondents	
		Number	Percent
1	151-160	25	16.6
2	161-170	91	60.7
3	171-180	34	22.7
	Total	150	100.0

The above table depicts about height measurement which reveals that majority (60.7%) of respondents found between 161-170 cms as compared to 22.7 percent of respondents were between 171-180 cms and 16.6 percent were height with 151-160 cms.

TABLE – 2 Over all Pre test and Post test Mean Weight, Waist Circumference and BMI N=150

No.	Measurements	Aspects	Scores		Paired 't' Test
			Mean	SD	
1	Weight (kg)	Pre test	76.93	9.4	13.64*
		Post test	75.26	9.3	

		Difference	1.67	1.5	
2	Waist Circumference (cm)	Pre test	92.91	4.7	11.64*
		Post test	91.58	4.7	
		Difference	1.33	1.4	
3	Body mass index	Pre test	27.61	2.9	8.57*
		Post test	26.91	2.9	
		Difference	0.70	1.0	

* Significant at 5% level, t(0.05,149df)=1.96

The above table shows a significant difference in pre-test and post-test with decreased mean value of 1.67 with paired 't' test value of 13.64 ($p<0.05$) in weight measurements. There is an evident change in waist circumference in pre-test and post-test with significant difference with decreased mean value of 1.33 with paired 't' test value of 11.64 ($p<0.05$). However, it is also observed there is significant change in the body mass index with decrease mean value of 0.70 with t=8.57* ($p<0.05$), revealing that decrease in weight and body mass index would affect metabolic syndrome criteria. Hence, it is proven that well balanced therapeutic diet along with developed product supplementation through nutrition education helps in maintaining and reducing metabolic syndrome. This proves that nutrition intervention influences with remarkable change in anthropometric measurements. There is an association between fat mass, fat-free mass, visceral fat and muscle mass which are all some elements of body composition analysis and metabolic syndrome as a major health issue by Pouragha et al., 2021. Hence, this study supports the above findings.

 A healthy lifestyle is critical to prevent or delay the onset of metabolic syndrome in susceptible individuals and to prevent cardiovascular disease and type 2 diabetes in those with existing metabolic syndrome (Pérez-Martínez et al., 2017). Hence, this study indicate on par findings of the study.

Summary: Major findings of the study was found to be increase in increase in anthropometric measurements like weight, waist circumference and body mass index indicating the risk of developing diabetes mellitus and cardiovascular diseases. There was a significant change in weight, waist circumference and body mass index in post nutrition intervention which shows that the influence of nutrition education and planned diet shows a remarkable change in anthropometric measurements.

Conclusion: The extensive nutrition education, counselling with dietary practices and developed food product supplementation brings an awareness among younger generation to follow a strict life style practices in order to prevent the prevalence of metabolic syndrome. The nutrition intervention would help in developing healthy younger generation to prevent and manage metabolic syndrome.

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