A Study on Anthropometric Variables for Male Population in Mumbai City

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Received July 19, 2017 Accepted August 22, 2017

ABSTRACT *The objective of this research paper is to select the best anthropometric measurements to characterize a healthy population. For that, 852 healthy males living independently or in an institution (in both public and private homes) were enrolled for this population-based, cross-sectional study conducted from February 2015 to May 2016. Anthropometric measurements were considered by the investigator according to standard techniques of the WHO. Through statistical analysis we were able to identify the variables providing most information and that could also best discriminate between age; height, weight, waist, BMI and waist to height ratio. Statistical analysis was performed using SPSS and Excel software. The results described was showing high correlation observed for several of the direct variables prompted us to hypothesize that to describe the present population. The researcher has used univariate/bivariate/multivariate analysis to focus on the variables weight, height, waist, BMI and waist to height ratio.*

Key words: *Anthropometric variables, Weight, Height, Waist, BMI and Waist to Height Ratio.*

1.0 Introduction:

Anthropometry refers to the measurement of the human individual. An early tool of physical anthropology, it has been used for identification, for the purposes of understanding human physical variation, in palaeoanthropology and in various attempts to correlate physical with racial and psychological traits. Anthropometry involves the systematic measurement of the physical properties of the human body, primarily dimensional descriptors of body size and shape. Alphonse Bertillon (1853-1914) is considered to be the father of anthropometry because of his many contributions to the field, including what we know today as the “mug shot.” Today, anthropometry plays an important role in industrial design, clothing design, ergonomics and architecture where statistical data about the distribution of body dimensions in the population are used to optimize products. Changes in lifestyles, nutrition, and ethnic composition of populations lead to changes in the distribution of body dimensions (e.g. the rise in obesity), and require regular updating of anthropometric data collections.

2.0 Research Methodology

2.1 Objective of research

To study the Anthropometric variables for Male population.

2.2 Scope of research

The scope of study was restricted to only weight, height, waist, BMI and waist to height ratio as variables. Also, scope was restricted to male population of Mumbai city.

2.3 Method of data collection

Secondary data represents a very powerful tool for the researcher as entire research work is carried out on the basis of secondary data. It is nothing but the backbone of research work. Researcher has used this data which is available in the published form and analysed for further action.

2.4 Research design

Descriptive cross-sectional research design was undertaken for the purpose of objective stated in study.

2.5 Sampling

The total sample size considered was 852 across Mumbai city. This sample was readymade for researcher; thus, Researcher had made an attempt that the sample size was adequate, representative and estimator with sufficiently high precision.

2.6 Limitation of research

The research is restricted to only few Anthropometric variables namely Weight, Height, Waist, BMI and Waist to Height Ratio. Also, it was limited only to Mumbai city with limited sample size. Th secondary data considered for the research was assumed to be authentic in nature.

3.0 Data Analysis and Findings

Table 1

Male Age	Number of Obs.	Variables									
		Mean Height (Cms)		Mean Weight (Cms)		Mean WC (Cms)		BMI		Mean WHtR	
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
30-39	327	174.9	5.8	72.8	10.9	82.2	8.8	23.72	3.2	0.47	1.52
40-49	200	170.8	6.8	74.9	12.6	91.1	10.9	26.0	3.8	0.53	1.60
50 and above	121	170.3	6.9	79.1	13.5	88.5	12.4	26.8	3.0	0.51	1.79

Source: Secondary source

3.1 To find if Height is significant Anthropometric variable

To test for whether Height is significant Anthropometric variable or not, the researcher has used t-test

H0: Height is not a significant Anthropometric variable
H1: Height is a significant Anthropometric variable

Table 2.0

	N	Mean	Std. Deviation	Std. Error Mean
Height	3	1.7200E2	2.52389	1.45717

Source: SPSS

Table 3.0

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Height	118.037	2	.000	172.00000	165.7303	178.2697

Source: SPSS

From the table 2.0, p value is 0.000 which is less than 0.001
P=0.000<0.001
Reject H0 at 1% LOS
Thus, height is the significant Anthropometric variable.

3.2 To find if Waist is significant Anthropometric variable

To test for whether Waist is significant Anthropometric variable or not, the researcher has used t-test

H0: Waist is not a significant Anthropometric variable
H1: Waist is a significant Anthropometric variable

Table 4.0

	N	Mean	Std. Deviation	Std. Error Mean
Waist	3	87.2667	4.57639	2.64218

Source: SPSS

Table 5.0

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper

Table 5.0

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Waist	33.028	2	.001	87.26667	75.8983	98.6350

Source: SPSS

From the table 2.0, p value is 0.001 which is less than 0.05
P=0.001<0.05
Reject H0 at 5% LOS
Thus, Waist is the significant Anthropometric variable.

3.3To find if BMI is significant Anthropometric variable

To test for whether BMI is significant Anthropometric variable or not, the researcher has used t-test

Table 6.0

	N	Mean	Std. Deviation	Std. Error Mean
BMI	3	25.5067	1.59817	.92270

Source: SPSS

Table 7.0

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
BMI	27.643	2	.001	25.50667	21.5366	29.4767

Source: SPSS

From the table 2.0, p value is 0.001 which is less than 0.05
P=0.001<0.05
Reject H0 at 5% LOS
Thus, BMI is the significant Anthropometric variable.

3.4To find if Weight to height is significant Anthropometric variable

To test for whether Weight to Height is significant Anthropometric variable or not, the researcher has used t-test.

Table 8.0

	N	Mean	Std. Deviation	Std. Error Mean
Wt_to_Ht_Ratio	3	.5033	.03055	.01764

Source: SPSS

Table 9.0

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Wt_to_Ht_Ratio	28.536	2	.001	.50333	.4274	.5792

Source: SPSS

From the table 2.0, p value is 0.001 which is less than 0.05
P=0.001<0.05
Reject H0 at 5% LOS
Thus, Weight to Height Ratio is the significant Anthropometric variable.

3.5 To find correlation between different Anthropometric variables
Correlation between Height and Weight

Ho: There is no relation between Height and Weight.
H1: There is a relation between Height and Weight.

Table 10 Correlations

		Height	Weight
Height	Pearson Correlation	1	-.817
	Sig. (2-tailed)		.391
	N	3	3
Weight	Pearson Correlation	-.817	1
	Sig. (2-tailed)	.391	
	N	3	3

Source: SPSS

From the above analysis, it is found that correlation between Height and Weight is significantly strong negative.

Correlation between Height and Waist

Ho: There is no relation between Height and Waist.

H1: There is a relation between Height and Waist.

Table 11 Correlations

		Height	Waist
Height	Pearson Correlation	1	-.926
	Sig. (2-tailed)		.247
	N	3	3
Waist	Pearson Correlation	-.926	1
	Sig. (2-tailed)	.247	
	N	3	3

Source: SPSS

From the above analysis, it is found that correlation between Height and Waist is significantly strong negative.

Correlation between Height and BMI

Ho: There is no relation between Height and BMI.

H1: There is a relation between Height and BMI.

Table 12 Correlations

		Height	BMI
Height	Pearson Correlation	1	-.988
	Sig. (2-tailed)		.098
	N	3	3
BMI	Pearson Correlation	-.988	1
	Sig. (2-tailed)	.098	
	N	3	3

Source: SPSS

From the above analysis, it is found that correlation between Height and BMI is significantly strong negative.

Correlation between BMI and Weight to Height Ratio

Ho: There is no relation BMI and Weight to Height Ratio.
H1: There is a relation BMI and Weight to Height Ratio.

Table 13 Correlations

		BMI	Wt_to_Ht_Ratio
BMI	Pearson Correlation	1	.833
	Sig. (2-tailed)		.373
	N	3	3
Wt_to_Ht_Ratio	Pearson Correlation	.833	1
	Sig. (2-tailed)	.373	
	N	3	3

Source: SPSS

From the above analysis, it is found that correlation between BMI and Weight to Height Ratio.is significantly strong positive.

Correlation between Weight and Waist

Ho: There is no relation Weight and Waist.

H1: There is a relation Weight and Waist.

Table 14 Correlations

		Weight	Waist
Weight	Pearson Correlation	1	.539
	Sig. (2-tailed)		.638
	N	3	3
Waist	Pearson Correlation	.539	1
	Sig. (2-tailed)	.638	
	N	3	3

Source: SPSS

From the above analysis, it is found that correlation between Weight and Waist is significantly week positive.

Correlation between Weight and Age

Ho: There is no relation Weight and Age.

H1: There is a relation Weight and Age.

Table 15 Correlations

		Weight	Age
Weight	Pearson Correlation	1	.982
	Sig. (2-tailed)		.121
	N	3	3
Age	Pearson Correlation	.982	1
	Sig. (2-tailed)	.121	
	N	3	3

Source: SPSS

From the above analysis, it is found that correlation between Weight and Age is significantly strong positive.

Correlation between Waist and BMI

Ho: There is no relation Waist and BMI.

H1: There is a relation Waist and BMI.

Table 16 Correlations

		Waist	BMI
Waist	Pearson Correlation	1	.857
	Sig. (2-tailed)		.344
	N	3	3
BMI	Pearson Correlation	.857	1
	Sig. (2-tailed)	.344	
	N	3	3

Source: SPSS

From the above analysis, it is found that correlation between Weight and Age is significantly strong positive.

4.0 Conclusion

This study investigated how age, BMI, height, body weight, etc. predict the performance of low back pain patients on an isokinetic trunk muscle test.The anthropometric measures were poor predictors, height being the only significant one. Body weight and age were of no relevance for the performance. Subjective pain and disability had negative effects on the performance of men, but not of women. Self-efficacy beliefs, i.e., the patient's belief in his or her capability to endure physical activities, was the most powerful predictor.For the purpose of validation, standardization, and interpretation of isokinetic performance in low back pain patients, these factors should be taken into account.

It was concluded that body fat distribution is more closely related to weight and metabolic derangements than total fat mass in the PCO syndrome. It is suggested that the relative paucity of femoral adipose tissue is due to a lack of specific effects of progesterone on adipocytes in this region.

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