

Anthropometric Size Chart For Plus Size Women

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Abstract: The Perfect Size And Fit Are The Primary Problems Faced By Plus Size Women. The Purpose Of The Study Is To Create An Anthropometric Sizing System For Kameez/Kurti Specifically For Plus Size Women Of South India. The Paper Will Derive The Findings Of An Anthropometric Measurement Collected For Plus Size Women For Kurti. A Total Of 300 People With BMI < 25 And Aged Above 18 Year Were Measured. A Total Of Eleven Anthropometric Body Measurements Were Recorded. To Develop The Sizing System, Descriptive Statistics Was Applied Using SPSS. Key Measurements Were Derived Through PCA (Principal Component Analysis). The Existing Size Chart Was Compared With Derived Size Chart Using T - Test. A New Sizing System With Seven Garment Sizes Was Developed For Plus Size Women.

Keywords: Plus Size; Anthropometry; Sizing ; Size Chart; Factor Analysis; Principle Component Analysis

1. INTRODUCTION

Plus Size Clothing Segment Is Specifically For People Whose Bodies Are Larger Than The Average Person. Over 60% Of The Population Is Now Under The Category Of The Plus-Size In Which It Raises The Change In The Demography (Masson Et Al2015). The Brands That Exist For Plus Size Women In India Are Mango, Lov By Westside, Alto Moda, Lastinch And The Entire Plus Size Store. The Perfect Size And Fit Are The Two Major Issues Faced By Plus Size Women Wearing Kurti. The Other Problem That Many Women Face Is With Sizing Labels, Women's Apparel Are Not Informative Or Descriptive (Lauren Downing 2012). The Size Differs From Country To Country. Plus-Size Has Examined As A Niche Category, But Now-A-Days It's A Booming Industry (Karwa 2015).

Rita Et Al (2017) Stated That Anthropometry Measurements Is Required For Understanding The Bodily Variations Among Frame Shapes That Is Vital For Designing And Sizing Of Apparel. The Anthropometric Measurements On Self-Measurement Data Collected On Large Scale Survey Based On Weight And Stature Influenced The Standardization Of Measurements. The Anthropometric Study Explains The Body Shapes And Variability Among Plus Size People To Design For The Safe, Comfortable And Productive Environments (Masson Et Al2015). Elumba (2005) States That The Conceptual Map Enhance The Researcher To Carry Out The Process In Sequence, The Primary Step Questionnaire, Survey, Standard Dimension And Designing.

The Understanding Of The Physical And Psychological Issues Associated With Fit Is Necessary Because Clothing Fit Is A Major Issue In The Apparel Industry And Poor Fit Can Lead To Unsatisfied Customers. Fit Preferences Differ Across Age Groups (Alexander Et Al 2005). There Have Been Conflicting Reports On Whether Younger Or Older Plus Size

Women Are More Satisfied With Their Body Image And Fit Satisfaction. Kinley (2010) Reported That Younger Plus Size Women Are More Satisfied With Their Body Image Than Older Plus Size Women. Another Study Reported Older Plus Size Women Are Not Satisfied With The Fit Of Apparel Designed For Their Age Group (Alexander Et Al 2005).

Sizing Is Also Suffering From Market Segmentation, Typically Shape Of Demographic Data. Target Demographics Are An Easy Way To Organize Clients And For A Retailer To Goal Those Organizations (Levy And Weitz2012). The Key Dimension Bust And Hip Girth That Can Enhance The Fit And Style For Plus-Sized Relied On Filipino Body Dimension (Elumba 2005). The Anthropometric Measurements Are Dawn As Baseline For Prevalence And Segregated The Study On Obesity And Overweight In Adults. This Study Relay On The Age, Sex, BMI Of Anthropometry Parameters And Discusses The High Prevalence Of Obesity And Overweight (Richard Et Al2006). The Prevalence For Plus-Size Varies Based On The Age, The Segments For Women Fall Above 20+ And Older (Carroll Et Al 2004).

According To Carroll Et Al (2004), Trends In The Overweight For The Adult Has Been Increased In Decades, The BMI On The Overweight And Obesity Had Been Surveyed By The Target Group People And Standardized BMI Has Been Fixed For Obesity ($BMI > 30$), Overweight ($BMI < 25$). The Proportion And Pattern Size Differ Based On Shape And Body Dimension. The Minimum Dimension Of Bust Circumference Is 38 Inch For The Plus-Sized Women Has Been Fixed As The Standard (Elumba 2005).

Parkinson Et Al (2009) Used Principal Component Analysis To Set Up The Relationships Between The Selected Anthropometric Variables From The Certain Database And Usual Body Dimensions. The Principal Component Transformation Is Then Inverted To Achieve An Entire Set Of Anticipated Anthropometric Variables For Character Inside The Target Population. The Alpha Sizing Is Used With Standards Established In Market, Then Compared With The Standard And Arrived To The Sizing Chart. The Major Areas Of Size Variation Fall In Bust, Waist And Hip. The Size Ranges From 0X, 1X To 6X With Standard Bust Circumference From 38 Inch To 63 Inch (Dunn 2016).The Sizes 14W Through 32Ware Frame Measurements, They Can Be Used As A Baseline In Designing Clothing For Female Figures On This Size Variety While Thinking About Such Factors As Fabric Type, Desired Ease For Frame Motion, Styling, And In Shape. Many Manufacturers Have Their Contemporary Length Label Based On ASTM D6960-04 Widespread Tables Of Body Measurements Or Plus Size Chart (Christe 2016).

Paired Comparison T-Test Has Been Used To Examine The Self-Measured And Existing Size Chat For Anthropometric Measurements. Masson Et Al (2015) Reports That The Self-Size Evaluation Determined Were Corresponding To Those Acquired Through The Researcher-Measured Approach With No Substantial Variations Between The Measures $P \leq 0.05$.

The Purpose Of This Research Is To Establish Whether Anthropometric Statistics Is Possible And Dependable By Data Collection Method For Plus Size Women. In India, The Sizing Chart Used For Plus Size Women Kurti Are Outmoded And Is Based Totally At The Sizing Chart Of Other Countries. Few Manufactures In India Avoid The Plus Size Category Due To The Fit Dissatisfaction. The Present Sizing System Utilized By Plus Size Kurti Producers Are Outdated Ones And It Is Imperative To Develop A New Sizing System Targeting Precise Population Plus Size Women Of South India. The Anthropometric Survey Was Conducted For Plus Size Women Of South India. The Survey Analyzed The Native, Age, Fit And Colour Preference Of The Women. A Total Of 300 Plus Size Women Of South India Aged Above 18 Years And $BMI < 25$ Were Measured. To Develop A Sizing Chart, Factor Evaluation And Cluster Analysis Were Used Through SPSS Statistical Software. The Developed Size Chart Is Compared With The Existing Brand Plus Size Kurti Size Chart.

2. MATERIALS AND METHODS

2.1. Conceptual Map

The Conceptual Map Showing The Process, Step By Step Method Of Anthropometric Survey, Analysis And Size Chart Development Is Shown In Figure 1.

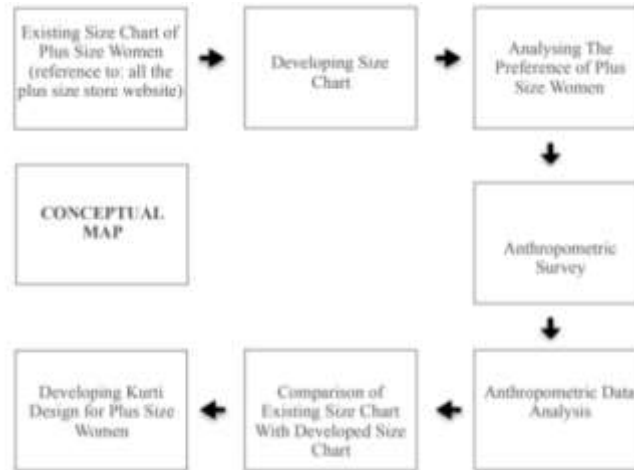


Fig. 1. Conceptual Map For Anthropometric Analysis

2.1.1. Existing Standard

The Existing Standard Size Chart Followed Is Referred From The “All The Plus Size Store” Brand Website. The Standard Size Chart Of “All The Plus Size” Store Is Shown In Table 1. The Sizing Standard Starts From Size 0 (XXL) To Size 7 (9XL). The Variation Of Plus Size Women Measurements Are Based On The Bust, Waist And Hip Measurement With Standard Sizes From XXL, 3XL, 4XL To 9XL.

Table 1. Existing Size Chart

All Size	Standard	UK Size	Bust (In)	Waist (In)	Hip (In)
0	XXL	18	41	41	41
1	3XL	20	43	43	43
2	4XL	22	45	45	45
3	5XL	24	47	47	47
4	6XL	26	49	49	49
5	7XL	28	51	51	51
6	8XL	30	53	53	53
7	9XL	32	55	55	55

Source: All The Plus Size Store Website

2.1.2. Anthropometric Survey

A New Sizing System Has Been Developed For Plus Size Women Based On Their Preferences And Body Measurement. The Main Objective Of The Survey Focused On Identifying The Plus Size Women Preferences Towards Fit, Colour And Garment Style To Imply These Features In Designing The Garment. Anthropometric Survey Was Conducted For Plus Size Women Of South India In The Age Group Of 18 Above, With Body Mass Index (BMI) Greater Than 25. A Total Of 300 Plus Size Women Were Measured. The Samples Consist Of Plus Size Women From Different Location In South India. The Anthropometric Survey Map Is Shown In The Figure 2. The Samples Consist Of Women From Five Different States Namely Tamil Nadu (58%), Karnataka (18.5%), Kerala (12.5%), Andhra (6%) And Telangana (5%).

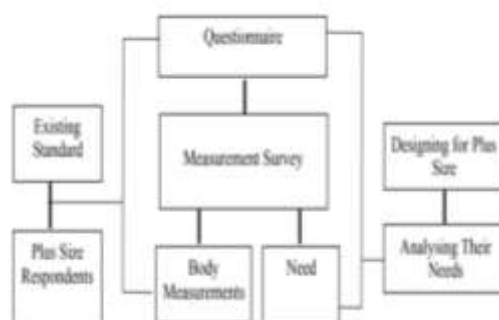


Fig. 2. Anthropometric Survey Map

2.1.3. Consumer Preference Analysis

300 Women With BMI Above 25 Participated In The Anthropometric Survey And Consumer Preferences Analysis Survey. The Consumer Preference Analysis Was Conducted Through A Questionnaire. The Questionnaire Consists Of 10 Questions. Question Number 1 Requested The Native Of Plus Size Women, 2nd Question Was To Check The BMI, Height And Weight Were Measured For Each Women. The 3rd Question Was To Understand Their Income Level. Question No 4 Focused On Type Of Fit They Preferred Such As Loose Fit, Tight Fit Or Semi Fit. The Fifth Question Was To Understand Their Colour Preference. The Colour Options Were Pale Colours, Bright Colours, Neutral Colours Or Any Colours. Question No 6 Requested Their Preference Towards Type Of Fabric. The Choice Given Were Natural Fabric, Synthetic Fabric, Blend And Not Specific. Question No 7 Focused On Understanding The Preference Towards The Type Of Wear Like Casual Wear, Party Wear And Formal Wear. Question No 8 Was To Analyze The Type Of Garment They Preferred Like Readymade Or Tailored Garment. Question No 9 And 10 Focused On Understanding Their Difficulties Faced In Selection Of Readymade Garments And Their Suggestions For Improving The Designing Of Plus Size Garment. To Check The BMI, Height And Weight Were Measured For All Women. Body Weight Is Measured Using Weighing Scale And Height Was Taken Using Height Chart. The BMI Chart Was Referred To Height And Weight To Understand The BMI Of Each Woman.

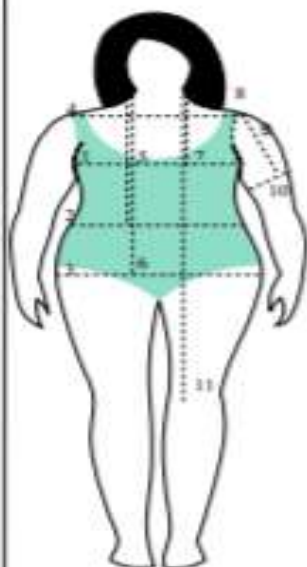
2.1.4. Measuring Body Dimension

Eleven Body Measurements Were Measured On Each Subject Including Height And Weight As Per The ISO 8559-1:2017 Body Dimensions. 300 Women Were Measured By Researcher For Developing Plus Size Chart, 5 To 6 Women Were Measured In A Day. The Subjects Were Given Orientation About The Research And Explained The Importance Of Sizing System. Subjects Were Requested To Wear A Fitting Brassiere. To Avoid The Experimental

Error, The Type Of Brassiere And Its Fitting Was Ensured On All Subjects Before Taking The Measurements. Eleven Anthropometric Measurements Were Collected Using Traditional Methods (Measuring Tape). Anthropometric Measurements Required For Developing Size Chart For Kurti Are Shown In Table 2.

Table 2. Anthropometric Measurement Points For Kurti

The main measurements for developing Kurti is described below:	
PARTICULARS	GUIDE
1- Bust circumference	to measure bust circumference, tape was kept across the fullest part of the bust.
2- Waist circumference	to measure waist circumference, tape was kept across the waist part.
3- Hip circumference	to measure hip circumference, tape was kept across the hip part.
4- Across shoulder	to measure across shoulder, tape was kept at the left point of the shoulder to the right part.
5- Hps to waist	to measure hps to waist, tape was kept at the highest point on shoulder to the waist.
6- Hps to hip	to measure hps to hip, tape was kept at the highest point on shoulder to the hip.
7- Hps to bust	to measure hps to bust, tape was kept at the highest point on shoulder to the bust.
8- Armscye	to measure the armscye, the tape was kept across the armpit.
9- Shoulder length	to measure shoulder length, tape was kept at the highest point on sleeve to the sleeve open.
10- Sleeve open	to measure sleeve open, tape was kept around the opening part of sleeve.
11- Full length	to measure full length, tape was kept at highest point on shoulder to the knee.



2.1.5. Anthropometric Data Analysis

The Anthropometric Data Collected From The Survey Were Analyzed. The Data Were Analyzed Statistically And The Body Measurements Were Correlated, Classified Using K-Mean Cluster To Describe The Body Shape And Size Of The Subjects. Therefore, To Develop A Sizing System, Factor Analysis And Cluster Analysis Methods Were Analyzed Using Statistical Package For The Social Science (SPSS) Software.

2.1.5.1. Factor Analysis

Factor Analysis Derives The Significant Factor From Observed Variable. Factor Analysis Is A Statistical Technique For Identifying The Extraversion For Large Number Of Observed Variable. This Factor Analysis Method Groups Similar Variables Together. With Factor

Analysis, One Can Create Few Elements From An Enormous Number Of Variables Which Is Effective For Clarifying The Observed Variance In The Larger Number Of Variables. The Concise Factor Could Be Used For Further Analysis.

2.1.5.2. Cluster Analysis

Cluster Analysis Is An Exploratory Analysis That Helps To Identify Structures Within The Data. In SPSS Software, K-Means Cluster Is A Method To Cluster Large Data Sets. Different Body Measurements Were Recognized Based On The Different Models With A Different Assumed Number Of Clusters.

2.1.6. Developing Of Size Chart

The Size Categorization For Plus Size Women Were Developed Based On Size Intervals. The Samples Were Grouped Based On The Ranges Of Body Dimension. To Determine The Range Of The Various Body Measurements, Minimum And Maximum Body Measurements Were Calculated. Size Intervals Were Chosen Based On The Range Of Body Measurements And The Total Number Of Sizes Obtained.

2.1.7. Designing Kurti For Plus Size Women

The Primary Criteria For Designing Kurti For Plus Size Women Were To Make The Women Look Slender In Shape. This Involves Working With Elements And Principle Of Design Like Line, Shape, Form And Colour. The Development Of Size Chart Was Followed By Developing Designs For Plus Size Women Based On Consumer Preferences Towards Designs, Colour And Fabric.

2.1.8. Comparison Of Existing Size Chart With Developed Size Chart

The Size Chart Developed For Kurti (Plus Size Women) Based On Anthropometric Measurements Was Compared With The Existing Size Chart. The Primary Aim Is To Understand The Reliability Of The Size Chart. Paired T-Test Was Used To Compare The Size Charts Using SPSS Software. The Comparison Test Was Used With Percentile 95% ($P \leq 0.05$). The Existing Anthropometric Datasets Were Differentiated With The Anthropometric Data Collected Using The Software (Peebles And Norris, 1998).

3. RESULTS AND DISCUSSION

3.1. Consumer Preference Analysis

300 Plus Size Women With The BMI < 25 And Age Above 18 Years Participated In The Anthropometric Survey And Filled The Questionnaire Of Consumer Preference Analysis. The Results Of The Preferences Of Plus Size Women With Details Such As BMI , Fit, Fabric Preference, Colour Preference, Income Level And Garment Type Are Shown In Table 3. The Native Of Subjects Were From Different Parts Of South India Like Bengaluru, Chennai, Coimbatore, Tirupur, Tiruchy, Erode, Ooty, Ramnad, Vellore, Namakkal, Rasipuram, Pollachi, Theni, Hyderabad, Salem, Madurai, Kotagiri, Dindigul, Krishnagiri, Tirupati, Kochi, Chittor And Palakkad.

Table 3. Results Of Consumer Preference Analysis

Sl. No.	Category	Options	Percentage (%) Of Consumers Preferred
1	BMI Range	25-30	49

		30-35	33.3
		Above 35	17.67
2	Income Level	Below Rs. 15000	4
		Above Rs.15000	69
		None	27
3	Type Of Fit	Loose	21.33
		Semi	73.67
		Tight	5
4	Type Of Colour	Pale Colours	29.33
		Bright Colours	19
		Neutral Colours	9
		All Colours	42.67
5	Type Of Fabric	Natural Fabrics	45.33
		Synthetic Fabrics	8.67
		Blends	13.33
		Not Specific	32.67
6	Type Of Wear	Casual Wear	84.33
		Party Wear	4
		Formal Wear	21.67
7	Type Of Garment	Ready To Wear	51
		Stitched Garment	49

From Table 3, It Is Observed That Higher Number Of Plus Size Women Were Found To Have BMI Range Between 25-30. The Income Level Of Targeted Plus Size Women Was Above 15,000. It Shows That 73 % Subjects Who Participated In The Survey Were Professional Women. Towards Fit And Colour Category, 73.67 % Of Plus Size Women Preferred Semi Fit And 42.67% Of Plus Size Women Preferred All Colours. In The Fabric Choice Category, 58.66 % Of Plus Size Women Preferred To Have 100 % Natural Fabrics. In The Category Of Wear, 84.33 % Of Plus Size Women Preferred Casual Wear Styles. 51% Of Plus Size Women Preferred Ready To Wear Styles Than Stitched Garments.

3.2. Plus Size Body Shape

The Plus Size Body Shape Is Categorized Into 4 Shapes Namely Hourglass, Pear, Apple And Rectangle. The People With Hourglass Shape Have Hip And Bust Girth Equal In Size. Pear Shape Figures Have Narrow Shoulders And Bust Girth Than Hip Girth. The Rectangle Shape Figures Have Bust, Waist And Hip Relatively The Same Measurements. The Apple Shape Figures Have Larger Shoulders And Bust. The Plus Size Women Participants Were Explained About The Different Figure Types And Were Asked To Explore Their Body Shape.

Table 4. Results Of Women's Body Shape

Body Shapes	Rectangle	Hourglass	Pear	Apple
Number Of People	105	13	135	47
Percentage Of People	35	4	45	16

Body Shape Misperception Is Commonplace Amongst Most Of The People And Is A Core Factor In Consuming Disorders And Associated Situations (Zaccagni Et Al 2014). Apple And Pear Body Shapes Are The Highest Normally Stated Frame Shapes Within The Plus Length Literature (Park Et Al 2013). However, The Plus Size Is Categorized As Rectangle, Hourglass, Apple, And Pear Shapes. Tokmakidis Et Al (2012) Suggests That The Weight, Stature And Hip Circumference Measurements Are Feasible That Members Are Biased Closer To Their Preferably Anticipated Form. The Body Dimensions For 300 Plus Size Women Is Been Analyzed Through The Body Shape Calculator. Table 4 Shows The Classification Of Body Shape Of Plus Size Women. The Result Shows That 45 % (N = 135) Plus Size Women Have Pear Body Shape, 35 % (N = 105) Are Rectangle Body Shape, Followed By Apple Shape With 16 % (N = 47) And The Least Is Hourglass Figure With 4 % (N = 16).

3.3. Factor Analysis

The Anthropometric Measurements Were Achieved Through Factor Analysis To Bring On The Key Dimensions Required For Plus Size Chart. Kaiser-Meyer-Olkin And Bartlett's Test Of Sphericity Tests The Hypothesis That Indicates The Segment Of Variance In The Variables That Might Be Caused By Underlying Factors And Variables That Are Unrelated. Principal Component Analysis (PCA) With Varimax Rotation Indicates The Key Body Dimension In The Analysis. The Results For KMO And PCA Factor For Plus Size Chart Are Shown In The Table 5.

Table 5. KMO And PCA Results For Plus Size Kurti

Garment	Sampling Adequacy (KMO)	Bartlett's Tests	Component Extracted (PCA)	Factor	Eigen Value	Scree Plot	Cumulative %
Plus Size Kurti	0.882	<0.01	2	Factor 1	50.769	2 Components	75.249
				Factor 2	16.699		

The Kaiser-Meyer-Olkin (KMO) And Bartlett's Test Analyze The Relationship Among The Factors And Evaluate The Strength Between The Variables. In General, KMO Value Should Be Greater Than 0.5 For Acceptable Factor Analysis Process, If The Values Are Less Than The 0.5 Then The Process Is Not Useful. In Bartlett's Test, The Value Should Be Less Than 0.05, That Shows The Values Are Satisfactory. Table 6 Results Predicts That Value Of KMO Is Greater Than 0.5 And Bartlett's Test Is Less Than 0.05. This Result Justify That The Factor Analysis Could Be Carried Out.

3.4. Principal Component Analysis Of Collected Anthropometric Data

The Anthropometric Facts Become Entered On SPSS Software Program The Use Of The PCA Varimax Rotation. The PCA Varimax Rotation Is Used To Investigate The Connection Amongst Elements The Use Of The Statistical Technique. The Varimax Rotation Makes It Simpler To Suit The Objects With Aspect And That Produces The Variable End Result Either Too Low Or High. The Varimax Rotation Of Aspect Loadings Of Frame Measurements For Plus Length Kurti Is Proven Within Side The Table 6. Factor Loadings More Than 0.7 Are Highlighted Within Side The Table. Communalities Represents The Overall Variances With The Authentic And Different Variance Withinside The Analysis.

Table 6. PCA Varimax Rotation For Factor Loading Of Body Dimension

Particulars	Factor 1	Factor 2	Communalities
Shoulder Length	0.532		0.466
Bust Girth	0.872		0.841
Waist Girth	0.746		0.754
Hip Girth	0.829		0.681
Hps To Bust		0.503	0.574
Hps To Waist		0.538	0.454
Hps To Hip		0.452	0.432
Full Length		0.827	0.801
Armscye	0.391		0.372
Sleeve Length		0.295	0.280
Sleeve Open	0.607		0.578
Eigen Value	3.046	1.002	
% Of Variance	50.769	16.699	
Cumulative %	50.769	36.124	

From Table 6, It Is Remarked That The Communalities Analyzed In The Result Represented Well. Factor 1 Represents The Horizontal Measurements And Factor 2 Represents The Vertical Measurements. The Variables Greater Than 0.7 Were Chosen As Key Body Dimensions. The Variables Were Bust Girth, Waist Girth, Hip Girth And Full Length. For The Preparation Of Size Chart, The Cluster Groups Are Sectioned In Factor 1 And Factor 2. The Eigenvalue Represents The Factor By Which The Compression Occurs. The Mean Value Of Eigenvalue Cannot Exceed The Number Of Items In The Analysis. The Factor 1

Eigenvalue Of Plus Size Women Contains 3.046 For Kurti. The Factor 2 Contains The Eigenvalue Of 1.002 For Vertical Measurements. Variance Is The Average Of The Squared Distances From Each Point To The Mean, Factor 1 Has 50.77 % Of Variance And Factor 2 Only Controls 16.7 % Of The Variance. Hence, The Anthropometric Measurements Were Largely Dependent On Girth Related Variables. The Key Dimensions Showing Higher Factor Loadings In Girth Related Variables Were Bust Girth And Hip Girth.

3.5. Clustering

From The Principal Component Analysis (PCA) Using Varimax Rotation With Horizontal And Vertical Measurements, The Key Dimensions That Varies In The Size Is Been Analyzed. The Key Dimensions Are Bust Girth And Hip Girth. Four Clusters Has Been Categorized Namely Small, Medium, Large And Extra Large In Plus Size. Clusters Obtained For The Plus Size Women Of Above 18 Years And BMI Greater Than 25 Are Shown In Table 7. Cluster 3 With Large Body Type Seems To Have Higher Number Of Subjects Followed By Cluster 1 With Small Body Type.

Table 7. Cluster Of Anthropometric Data

Parameter	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Bust Circumference	39	43	47	51
Range, Inch	37-42	42.1-46	46.1-49	49.1-52
Hip Circumference	39	44	47	51.5
Range, Inch	38-4	42-45	45.1-49	49.1-52
Number Of Subjects	90	71	110	29
Body Type	Small	Medium	Large	Extra Large

3.6. Development Of Sizing System

The Development Of Sizing System Is Based On Key Body Dimensions Namely Bust Girth And Hip Girth. These Two Measurements Were The Key Dimensions For Sizing Plus Size Women Of 18 Years And Above With BMI Greater Than 25.

3.6.1. Determination Of Size Range And Interval

The Size Range Is Ranged From Lowest Values To Highest Value. Four Body Types Were Chosen Between The Range Of Values Namely Small, Medium, Large And Extra Large That Could Accommodate 100% Of The Sample Population. In Accordance To American Standard ASTM D6960-04 (2004), That Provides The Variations Of Sizes From Brand And Countries, 1inch To 3 Inch Or 2.5 Cm To 7.5 Cm Interval Is The Standard, 1 Inch To 2 Inch Or 2.5 Cm To 5 Cm Is Preferred For Body Dimensions Like Bust Girth, Waist Girth And Hip Girth. The Brands Usually Have 2 Inch Difference As The Standard. Table 8 Depicts The Total Sample Collected Of BMI < 25 And Age 18 Years And Above With 6 Size Rolls. The Range For Bust Girth In The Sample Size Is From 37 Inch To 51 Inch And Hip Girth Ranges From 38 Inch To 52 Inch. The Measurements Were Categorized Into Small, Medium, Large And Extra Large. The Bust Girth Size Interval Are 37 - 39 Inch, 39.1 To 41 Inch, 41.1 To

43 Inch, 43.1 To 45 Inch, 45.1 To 47 Inch, 47.1 To 49 And 49.1 To 51 Inch. The Hip Girth Is Sub Categorized Into Following Intervals 38 To 40 Inch, 40.1 To 42 Inch, 42.1 To 44 Inch, 44.1 To 46 Inch, 46.1 To 48 Inch, 48.1 To 50 Inch, 50.1 To 52 Inch.

Table 8. Size Distribution For Plus Size Kurti

Particulars	Size	Body Dimension	Key Body Dimension		Accommodation Rate	
			Bust Girth	Hip Girth	N	%
1	Small	0X	37 - 39	38 - 40	68	22.7
2		1X	39.1 - 41	40.1 - 42	31	10.3
3	Medium	2X	41.1 - 43	42.1 - 44	46	15.3
4		3X	43.1 - 45	44.1 - 46	16	5.3
5	Large	4X	45.1 - 47	46.1 - 48	93	31
6		5X	47.1 - 49	48.1 - 50	42	14.1
7	Extra Large	6X	49.1 - 51	50.1 - 52	4	1.3
				TOTAL	300	100

The Small Category Consists Of Two Body Dimension 0X And 1X, Size Range For Bust Girth Is 37 To 41 Inch And Hip Girth With 38 To 42 Inch. In Medium Category, The Body Dimension Of 2X And 3X With Bust Girth Size Ranges From 41.1 To 45 Inch And Hip Girth Size Ranges From 42.1 To 46 Inch. Large Category Has Two Sizes 4X And 5X With Bust Girth Ranging From 45.1 To 49 Inch And Hip Girth Ranging From 46.1 To 50 Inch. Extra Large Body Type Has The Least Number Of Subjects. The Total Accommodation Rate For The Whole Sample Size Is Found To Be 100%. A Maximum Of 93 Subjects Were In Large Size (4X) And 68 Subjects Were In Small Size Body Type With 0X Size.

3.6.2. Development Of Size Chart

The Sizing System Is Developed For Plus Size Kurti With Anthropometric Data Collected Using Traditional Methods. The Sizing System Produced For Plus Size Kurti For 300 Women With BMI Above 25 Is Summarized In Table 9. The New Size Chart Is Developed For Plus Size Women To Facilitate The Consumers The Right Size With Good Fit And Comfort.

Table9. Size Chart For Plus Size Kurti

Size Designation	0	1	2	3	4	5	6
Bust Girth Range , Inch	37 - 39	39.1 - 41	41.1 - 43	43.1 - 45	45.1 - 47	47.1 - 49	49.1 - 51
Hip Girth Range , Inch	38 - 40	40.1 - 42	42.1 - 44	44.1 - 46	46.1 - 48	48.1 - 50	50.1 - 52

Bust Girth, Inch	38	40	42	44	46	48	50
Hip Girth, Inch	39	41	43	45	47	49	51.5
Hps To Bust, Inch	10	10	10	10.5	11	11	11
Hps To Hip, Inch	21	21	21.5	21.5	22	22	22.5
Full Length, Inch	34	35	36	37	37	38	38
Accommodation %	22.7	10.3	15.3	5.3	31	14.1	1.3

The Developed Size Chart For Plus Size Kurti Size Ranges From 0X, 1X, 2X, 3X, 4X, 5X And 6X. There Are Seven New Sizes For Plus Size Women To Accommodate Those With Bust Girth Range Between 37 - 51 Inch And Hip Girth Ranging From 38 - 52 Inch.

3.7. Comparison Of Existing Size Chart With Developed Size Chart

The Primary Aim Is To Understand The Reliability Of Developed Size Chart For Plus Size Women Using SPSS Software, The Paired T- Test Is Used To Compare The Developed Size Chart With Existing Size Chart. Anthropometric Measures Of Bust Girth, Waist Girth And Hip Girth Of Developed Size Chart Is Compared With The Existing Apparel Brand Size Chart, The Data Were Entered Into SPSS Software For Statistical Analysis. The Paired Comparison T Test Has Been Used To Examine The Developed Size Chart And Current Size Chart For Each Anthropometric Dimension. The Comparison Test Used With Percentile 95% ($P \leq 0.05$), With No Significant Difference. The Result Of Comparison Of Existing Size Chart With Developed Size Chart Is Shown In Table 10.

Table 10. Comparison Of Existing Size Chart With Developed Size Chart

Pair	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval Of The Difference		T	Df	Sig. (2 - Tailed)
				Lower	Upper			
Brand Bust Girth Analyzed Bust Girth	6.00	1.77	0.63	4.52	7.48	9.57	7	0.00
Brand Bust Girth Analyzed Bust Girth	6.13	1.87	0.66	4.56	7.69	9.28	7	0.00
Brand Bust Girth Analyzed Bust Girth	13.19	1.69	0.60	11.78	14.60	22.08	7	0.00

The Difference Between Existing Size Chart And Developed Size Chart Was Significant At The $P \leq 0.001$ Level. T-Test Is Valuable To Analyze The Mean Scores Of Two Tests On Two Different Events With Two Gatherings When The Data Is Interval And Continuous In Nature (Pallant, 2016). The Data From The Existing Size Chart And Developed Size Chart Components Were Entered Into SPSS. Paired Comparison T -Test Were Used To Compare The Existing Size Chart And Developed Size Chart For Each Of The 3 Anthropometric Measurements. The Investigation Found That 3 Measurements Taken Through Existing Size Chart Were Tantamount To Those Developed Size Chart With Significant Contrasts Between The Measures ($P \leq 0.05$). The Anthropometric Measurements Contrasted Significantly Bust Girth ($P \leq 0.001$), Waist Girth ($P \leq 0.001$), And Hip Girth ($P \leq 0.001$).

No Investigations Were Recognized Which Analyze Existing Size Chart And Developed Size Chart, Yet It Is Absorbing That Bust Girth, Waist Girth And Hip Girth Are Measures That Are Large Known For Garments Sizes. The Benefits Of Self-Estimation As Far As Access To The Plus Size Population, Time And Assets Joined With The Lack Of Significant Difference Among Existing Size Chart And Developed Size Chart Leads To A Conclusion That Developed Size Chart Is Adequately Feasible And Acceptable As The Data Collection Method.

4. CONCLUSIONS

The Size Chart That Is Used In India For The Plus Size Belongs To Other International Locations. Thus, A New Sizing Chart Has Been Developed For Plus Size Kurti. Anthropometric Survey And Measurement Has Been Analyzed For Plus Size Women Of Age 18 Above With $BMI < 25$. 300 Plus Size Women Participated And Answered The Questionnaire. The Survey Was Carried Out To Analyze The Fit Preference, Colour Preference, Type Of Wear And Difficulties Faced By Plus Size Women In Using The Readymade Garments. The Result Shows That Plus Size Women Preferred (73.67 %) Semi Fit Style Kurti, 42.67% Preferred All Colours And 84.33% Preferred Casual Wear Styles. Eleven Anthropometric Measurements Were Measured On 300 Women And Factor Evaluation And Cluster Analysis Have Been Employed By Using SPSS Statistical Software. The Total Number Of Ideal Sizes Recommended For Plus Size Women Kurti Of Above 18 Years Is Seven, One Size (0X) Has Body Type Category With Bust Girth In The Range Of 37 - 39 Inch. Two Sizes (1X And 2X) In Medium Plus Size Body Type Category With Bust Girth Measuring 39.1 - 43 Inch. Two Sizes (3X And 4X) In Large Plus Size Body Type Category With Bust Girth Ranging From 43.1 - 47 Inch. Two Sizes (5X And 6X) In Extra Large Plus Size Body Type Category With Bust Girth In The Range Of 47.1 - 51 Inch. Most Of The Girls Were Within Sizes 0X (Small), 2X (Medium) And 5X (Large) Body Category. The Developed Size Chart For Plus Size People Are Compared With Existing Apparel Brand Size Chart Using SPSS Software. A New Sizing System Of Seven Garment Sizes For Plus Size Kurti Of South India Was Set Up. Similar Anthropometry Study Should Be Achieved To Cover The Different Style For Plus Size Women In India.

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