

A CUSTOMISED SIZE CHART FOR THE AFRICAN PEAR-SHAPED PLUS-SIZE SOUTH AFRICAN WOMEN

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Abstract

During the past decade, all the surveys of women's sizes and measurements show that a significant proportion of the population can be categorised as plus-size. This is not necessarily something new but rather re-confirms that there is a large market for the plus-size garment of all types. Younger women are becoming plus-size, particularly among "pear-shaped" South African women of African origin. These two factors, combined with the ever growing fashion awareness among the general public, make it necessary to develop a sizing chart for the pear-shaped body characteristics and to re-evaluate the existing sizing chart in relation to this particular body shape and size category. This study utilises a judgemental sample selection method and quantitative data collection methods. The units of analysis for the study are visually identified for the plus-size pear-shaped South African female of African origin, between the ages of 25 and 55. This study was carried out in the Tshwane Metropolitan region, covering Pretoria Central and Pretoria East. A total of 50 women in a 16-24 size range were selected for the study. Bust measurements of the pear-shaped women were used to estimate different size ranges of the participants. Selected body dimensions were taken using an anthropometric tape measure for the purposes of developing a customised size chart for this group. The outcome of the measurements indicate that the body measurements presented currently in size charts differ significantly from the customised size chart for the African pear-shaped woman, suggesting the need to develop a size chart that caters for this shape.

Keywords: *Chart development, pear-shaped, South African women*

Introduction

Clothes essentially provide body protection and covering, but there are other social and emotional aspects attached to them. For instance, clothes need to have a proper fit and at the same time be fashionable and aesthetically pleasing to the eye (Nkabule, 2010:1). Over the years, women's shapes and sizes have undergone changes, while the size chart used by the apparel industry remains the same (Nkabule, 2010:1). Notwithstanding the changes and differences of women's sizes and shapes, well-fitting garments remains an important requirement to consumer selection (Strydom and De Klerk, 2006:80-89). Unfortunately, most women with a plus-size figure, particularly those with a pear-shape get frustrated with clothing sizes sold in retail outlets (Zwane & Magagula, 2006:283). Mass produced garments are designed using a standard size chart that does not cater for shapes that are un-proportional.

Various factors contribute to consumer's clothing fit; these include: comfort, aesthetics, and personal choice (Pisut & Connell, 2006:368; Zwane & Magagula, 2006:283). The standard measurements approved by most standard bodies such as ASTM and ISO are only useful in the United Kingdom and the United States of America, but are not applicable to all population segments particularly in Southern Africa, where the African pear-shape is prevalent (Zwane & Magagula 2006:285). Sizing standards developers have overlooked the sizing and clothing needs of the African pear-shaped figure group with the impression that the group with a pear-shape fall within a small percentage of the population. Furthermore, national surveys have been carried

out in developed countries where size charts have been developed. Southern Africa and South Africa more particularly lacks an anthropometric database and a sizing system. The local industry has continually adapted foreign systems for use, although these have proved inadequate in addressing the fitment issues experienced by many South African women.

According to Mastamet-Mason (2008:1) lifestyle, cultural influences, age, body shape, and current fashion trends sway personal fitment preferences, and changes in these fundamentals may result in changes in personal fitment choices. Ashdown and Loker (2004:2-3) report that 50% of women in the USA cannot find garments that fit satisfactorily. An estimated 35% of garments purchased from catalogues in the USA are returned because of dissatisfaction with how they fit (Ashdown & Loker, 2004:2-3). To date, no research has been carried out in South Africa to establish garment markdowns, even though it can be assumed that clothing markdowns and returns in South African retail stores such as Edgars, Woolworths and Truworths can be associated with problems of ill-fitting garments. According to Strydom and De Klerk (2006:80-89), garment manufacturers attempt to supply well-fitting garments based on the current sizing system but problems of fit still persist. The mass produced garments are created by increasing and decreasing a model size garment that fits the sample sized model (Bye, et al., 2008:79). The market place is filled with people whose body shape and measurements do not necessarily follow any linear relationship (Bye, et al., 2008:79) as suggested in size charts that guide pattern grading practices. Current size charts and pattern grading practices do not accurately reflect body measurements across varied sizes and body shapes, suggesting that problems of fit are attributed by unrepresentative existing size charts and the assumption that all body shapes and measurements have some form of linear relationship between one size/shape and the next size.

The pear body shape is defined as a silhouette in which the hipline area and upper thigh region are much fuller than that of hourglass silhouette but the upper torso/bust area is smaller than the hourglass silhouette with narrow shoulders (Armstrong, 1995). Ellis (2008:210), Nkabule (2010:2), Zwane and Magagula, (2006:283-287) observe that pear-shaped bodies are more prevalent among Southern African women of African origin. In preliminary findings of an ongoing study, Makhanya reports that "59.26% of South African female students of African descent have a triangular (pear) body shape". About 60% of the population with pear body shape warrants marketing attention. Furthermore, Manuel (2000:46) confirms that pear-shaped participants are dissatisfied with their upper or lower bodies because of tight fit they encounter with garments around the hips and thigh areas, loose fit encountered at the waist, neck, and armholes (Manuel 2000:46). Pear-shaped women are forced to purchase a loosely fitting ready-to-wear garment, but have to incur the additional cost of adjusting the garment before being able to wear it. Alternatively, they are forced to buy different sizes of the same style and colour for the top and bottom garments, because there are no suits, or coordinates sized according to their shape (Zwane & Magagula, 2006:283-287).

Although literature exists about the pear-shape, it is imperative to note that African pear-shape differs significantly from the western pear-shape. The western pear body shape is characterised by hips which are 8cm larger than the bust (Simmons, Istook & Devarajan, 2004:1-15), while the African pear-shape is 30cm larger than the bust (Mastamet-Mason, 2012). The female body shape of black women in South Africa, according to Chatterjea (2004:185) can be connected to Saartjie Baartman, of 19th century (Figure 1), whose lower torso was disproportionately larger than her upper torso. In spite of exaggerated body features, one's body structure cannot change and cannot be forced to fit into ideals of other cultures, just because some cultures feel they are superior. It is important that fashion designers take cognisance of diverse shapes and provide clothing appropriate for their customers. No human being has control over their body shape, and no one should be compelled to hate her own body because it does not comply with the western figure. All body configurations have a right to be properly dressed in well-fitting clothing.

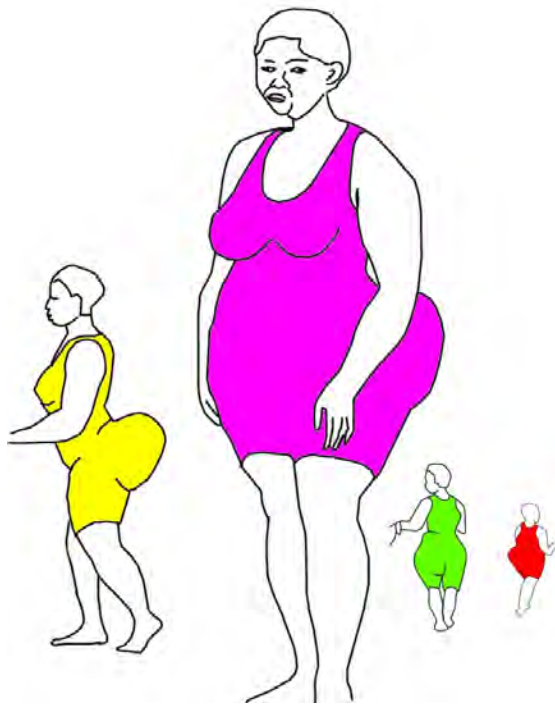


Figure 1: Saartjie Baartman, of 19th century (Adapted from: Pamela Scully and Clifton Crais (2008:304))

Literature Review

Plus-size women are appearing at a younger age, particularly among “pear-shaped” South African women of African origin (Nkabule, 2010:1; Zwane & Magagula, 2006:287). These two factors, combined with the ever growing fashion awareness of the general public, make it necessary to develop a customised size chart for the pear-shaped body characteristics and to re-evaluate the existing sizing chart in relation to this particular body shape and size category. Contemporary sizing systems are not only inadequate at providing African women with acceptable quality of fit but are also general and not specific to the pear-shaped plus-size women (Mastamet-Mason, 2008:204; Zwane & Magagula, 2006:287). This section discusses the root causes of fitment problems, which a body type or characteristics play a vital role in attaining well fitted clothing.

Body shapes

Women have a greater variation in body shape as compared to men. Their body shapes tend to be classified based on visual evaluation and the ratios between their key dimensions (Bougourd, 2007:120; Le Pechoux & Ghosh, 2002:4). Five prevalent body shapes comprising the hourglass (Figure 8), the pear (triangular), the barrel (inverted triangle), the apple (rounded) and the rectangular (straight) body shape, have been identified and discussed by many researchers (Connell *et al.*, 2006:88). These female body shapes are also common among South African women of all ethnicities; however, the pear-shape is the most prevalent type, yet clothing retailers in South Africa continue to sell apparel designed for the standard figure. As pointed out in the introduction, the South African pear-shape is a body shape much wider at the hip than at the upper torso (bust and shoulder) with an indented waist. This body shape appears extremely heavy in the hip area relative to waist and shoulder, with much fuller and rounded breasts, unlike the western pear-shape. Women with such an exaggerated hipline experience fitment problems when purchasing a pair of pants, skirts and even dresses which are based on standard measurements of a well-proportioned figure. The differences between

the ideal body shape, the western pear-shape and the South African pear-shape, point out the obvious implications of ill-fitting garments as illustrated in Figure 2.

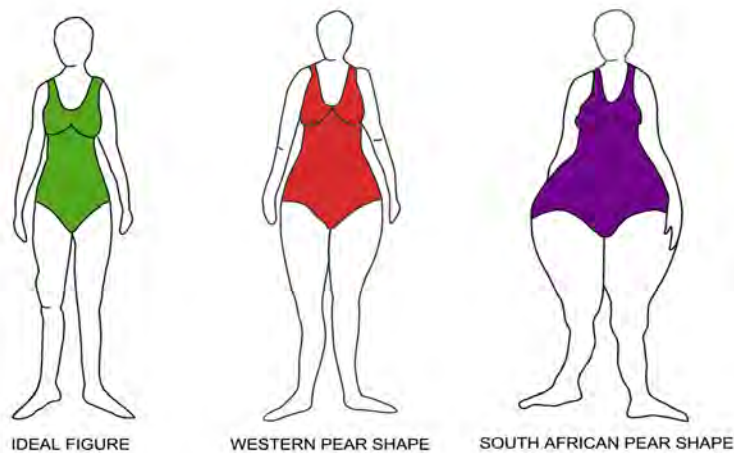


Figure 2: Illustration by Afolayan, 2012.

Size charts

A size chart is the “artificial division of a range of measurements” (Beazley, 1998:67). The number of sizes within this range is usually aimed at being both convenient for wholesale production and also satisfy the customer's requirements. The intention is to provide clothing that can fit a maximum number of people with the minimum number of sizes. It is therefore advantageous to both manufacturers and retailers to have size charts that are brief and reasonably economical in terms of sizes and simplicity in reading and use (Kunick 1984). This, however, is reasonable in a country where the majority of the population have minimal body deviation from the idealised body shape. It may be argued that such size charts would be easily adapted for rectangular and hourglass body shapes, since the waistline region of a basic pattern will only require enlarging or reduction for the rectangular the hourglass body shapes respectively. The other body parts in a pattern will remain unadjusted making it easier to adapt. In a country where the majority of the population have exaggerated hips and thighs and narrow shoulders, as is the case of South African women, the pattern adaptation would be complex and hence the need to understand the shape well in advance to facilitate a customised size chart specific to the unique shape displayed.


Methodology

This study employs both quantitative and qualitative research approaches although; the quantitative method outweighs the qualitative method. Anthropometric data from 50 visually identified pear-shaped South African women of African descent in a 16-24 size range were selected for the research, from Pretoria. Bust measurements of the pear-shaped women were used to estimate the women's sizes. A total of 15 measurements were recorded for each subject. The measurements included 4 linear (nape to waist, shoulder to bust, shoulder to waist, and waist to hip) and 11 girth measurements (shoulder, across shoulder, chest, bust, back width, waist, upper hip, lower hip, upper arm and thigh). Statistical analysis of anthropometric data conducted were done using a spreadsheet (Microsoft Excel 2007©) where mean, median and mode for the measurements were calculated. Univariate analyses of the dataset were carried out with the purpose of developing a customised size chart for the African plus-size pear-shaped woman. Calculation of the mean was done in three stages: (1) multiplication of each measurement by the number of subjects of the same size, (2) the result of all multiplications are totalled, and (3) divided by the total number of subjects.

Results and Discussion

The results and discussions are given according to aims of this research. The aim of this study was to develop a size chart for the South African pear-shaped full figured women of African origin. Before different size ranges were developed, it was important to calculate the means, mode and median values to facilitate easy development of the size ranges of the participants, and to provide a clear understanding of the relationships existing between the measurements of the obtained size ranges. Table 1 presents analysed body measurements into size ranges.

Table 1: Size ranges for the 50 participants of this study

SIZE /KEY MEASUREMENT	Size	Size	Size	Size	Size
UPPER TOSO	16	18	20	22	24
CSC-Shoulder	12	14	13	13	13
CSC-Across Shoulder	37	40	41	43	43
CSC-Nape to Waist	41	42	43	43	42
CSC-Upper arm	36	34	37	40	39
CSC-Chest	40	42	44	45	43
CSC-back width	41	43	46	47	51
CSC-Bust	103	107	112	121	128
CSC-Under Bust	87	93	96	103	104
CSC-Waist	85	92	94	103	107
CSC-Shoulder to waist	44	47	46	48	48
CSC-Shoulder to bust	30	34	36	42	34
					
LOWER TOSO					
CSC-Hip	127	143	147	153	162
CSC-Waist to Hip	29	25	26	26	43
CSC-Hip bulge	131	146	149	152	168
CSC-Thigh	78	85	84	90	92

From **Table 1**, it is clear that most body measurements of the upper torso and across the different size ranges are different, with a range from 1cm to 9 cm. This may suggest that it is possible to standardize body measurements of the upper torso, if these numbers are reflected in a larger population. It is worth noting that hip and hip bulge measurements differ significantly from one size range to the next, with a range from 4 cm to 13 cm and 3cm to 15 cm respectively. However, some size ranges as in the case of sizes 18 and 20 shows a difference. These inconsistent differences may highlight the complexities of coming up with standardized size charts for such a body type. However, this being a pilot study and only utilising a few measurements and a manual method of taking body measurements, the results may prove otherwise if a larger population was studied with the use of modern technologies such as a three-dimensional body scanner.

In order to understand the underlying factors for fitment problems experienced by pear-shaped women, an attempt was made to compare the existing chart, assumed to be used in the industry, and the size chart developed for this study. Results are shown in Table 2. All the taken measurements in the developed (customised) size chart were compared with the measurements on the standard size chart.

Table 2: Customised size chart (for this study) versus the standard size chart by Aldrich, W. (2010))

Size/ Key Measurements	Size	Size	Size	Size	Size
UPPER TOSO	16	18	20	22	24
SSC-Shoulder	13	13	13	14	13
CSC-Shoulder	12	14	13	13	13
SSC-Across Shoulder	35	37	38	39	39
CSC-Across Shoulder	37	40	41	43	43
SSC-Nape to Waist	42	42	43	43	43
CSC-Nape to Waist	41	42	43	43	42
SSC-Upper arm	31	32	33	35	37
CSC-Upper arm	36	34	37	40	39
SSC-Chest	35	36	37	39	41
CSC-Chest	40	42	44	45	43
SSC-back width	36	37	39	40	41
CSC-back width	41	43	46	47	51
SSC-Bust	96	100	104	110	116
CSC-Bust	103	107	112	121	128
SSC-Under Bust	85	91	93	101	102
CSC-Under Bust	87	93	96	103	104
SSC-Waist	80	84	88	94	100
CSC-Waist	85	92	94	103	107
SSC-Shoulder to waist	42	45	44	46	54
CSC-Shoulder to waist	44	47	46	48	58
SSC-Shoulder to bust	27	31	32	39	21
CSC-Shoulder to bust	30	34	36	42	34
LOWER TOSO					
SSC-Hip	104	108	112	117	122
CSC-Hip	127	143	147	153	162
SSC-Waist to Hip	21	22	22	22	22
CSC-Waist to Hip	29	25	26	26	43
SSC-Hip bulge	107	110	114	119	125
CSC-Hip bulge	131	146	149	152	168
SSC-Thigh	76	83	82	87	88
CSC-Thigh	78	85	84	90	92

From **Table 2**, it is fascinating that there was only a 5-10cm difference between the customised chart and the standard chart related to the bust and waist measurements across the selected sizes. An enormous difference was observed in the hip measurements. Size chart for models with an African pear-shape figure had bigger hips measurements compared to the standard size chart. On the standard hip girth, an incremental change of around 25cm to 42cm was observed. The larger disparity on the hips between the standard and customised chart was indicative of the models used being bottom heavy and not conforming to the existing size chart. This points out the frustrations encountered by women with a pear-shape in a ready-wear retail store and the fact that they cannot find coordinates or a suit sized the same that fits their unique bodies.

Table 3: Average body measurements of bust, waist and hip for developed customised size chart and standard size chart

Size/Key Measurements	Size 16	Size 18	Size 20	Size 22	Size 24
SSC-Bust	96	100	104	110	116
CSC-Bust	103	107	112	121	128
SSC-Waist	80	84	88	94	100
CSC-Waist	85	92	94	103	107
SSC-Hip	104	108	112	117	122
CSC-Hip	127	143	147	153	162

The customised size charts for the African pear-shaped (Table 3) are only for guidance. Although this group of women are prevalent in 59.26% of women in South Africa, in the findings of Makhanya (2012), they should not, however, be considered as representative of the total population of South African women of African descent with pear-shaped body. This being a pilot study, the sample only represented a small selected group of women in Pretoria. It was found that a sample of 50 for this pilot study was rather small when the sample was divided into five sizes. Ideally, 100 in each size would be better; this would mean measuring a total of 500 women. Hopefully, the new body scanning system can in future overcome the problem of the time-consuming manual methods.

Conclusions

If the population in this study was representative, then the number of sizes developed within this range would likely provide convenience for the production of and provide satisfactory garments to the pear-shaped African customer as suggested by Beazley, (1998:67). In a larger population, it would be beneficial to both manufacturers and retailers to have size charts that are concise, and economical in the number of sizes, to resolve the problem of ill fitting garments. Although this is a pilot study, it would be possible to create customised patterns for the pear-shaped body without having to alter the standardised pattern. The researchers propose that a larger sample size be studied to confirm the findings of this study. Based on the inconsistent differences between one size and another, it is recommended that customised size charts specific to different body shapes be made available by retail groups that want to target such clientele. In order to resolve the problem of ill fit among the full figured pear-shaped South African women, suggested recommendations are presented.

Recommendations

Fashion designers and apparel manufacturers should utilise the developed customised size chart to formulate pattern blocks and subsequently design clothes for women with African pear-shaped figures. Foreign apparel manufacturers exporting to South Africa should be made aware of the new size chart and fitting problems encountered by this segment of the population, so as to take into account the diversity of figure types when manufacturing for the local market. This study may be replicated in future, but with the use of a much larger sample in order to generalise the findings.

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