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Perception of the most perfect female breast shape among Malays, Chinese, and Indians community

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ABSTRACT

Researchers have long tried to search for the 'perfect' aesthetic outcome of breast surgery. Although lots of anthropometric studies have been done, there is no consensus when dealing with harmony, abstract, and proportion that make up for its ideal shape. This study was convened *via* a survey to find the most perfect breast shape by assessing the upper pole contour and upper pole to lower pole ratio (UP:LP) preference among the Malays, Chinese, and Indians races. Hundred thirty-five individuals partook in this survey. Most of the participants generally preferred a more convex shape of upper pole contour with the Malay (50%) and Indian (35.7%) favored a more convex shape while the Chinese preferred it to be just slightly convex (42.8%). Single unmarried individuals (64.7%) significantly preferred a more convex upper pole contour ($p = 0.018$). The UP:LP ratio of 45:55 ($p = 0.002$) was the most significantly preferred proportion (37.8%) which largely comprised of the Chinese (51%), followed by Indian (21.6%) and Malay (19.6%). With these findings, using a controlled perception-preference method is a more preferred choice when describing an ideal breast shape as compare to an anthropometric measurement that might be less accurate. Therefore, breast and plastic surgeons alike need to look beyond the anthropometric numbers and should consider the other 'abstract' aesthetic shape which difficult to measure including the upper pole breast that has more convexity and the UP:LP ratio of 45:55 which showed to be the most aesthetically perfect form as agreed in the current works of literature.

Introduction

The female breast has been of central importance across countries and cultures since the earliest times. Its deficiency or modification in dimension and form has a substantial effect on a woman's perception and function in society and her well-being and self-esteem [1]. Researchers and artists have long tried to search for the 'perfect' aesthetic outcome of breast surgery especially on the description, evaluation, and aesthetic proportions which are important for surgery planning and for setting the objectives of the surgery [2,3]. Although the judgment of an individual's perception towards aesthetic value is greatly influenced by constant observations and how an individual relates to beauty, it remains unknown to what amount it is influenced by age, sex, race, and cultural background as of now, there is still no clear agreement as to what the main features of the ideal female breast are [2]. In the records, this 'ideal' shape depends on cultural and social influences [4] with the assumption that there are significant intercultural differences in perception of beauty in the breast [5,6]. Leaving the decision to the operating surgeons alone might leave disappointing results which lead to reoperation as the surgeon's perception might differ to what considers as natural, normal, and ideal either in size and form [7]. Therefore, patient satisfaction with her surgical result should be the pertinent criterion and highest priority.

While quantitative and validated measurements are useful, aesthetics are not solely determined by the metrics only [1]. This can be seen in various anthropometric studies whereby their objective measurements appeared inconsistent, varied, and may subject to some bias. The method also has some pragmatic issues [8]. For example, among others, worth historically such as in 1955 when Penn studied the breast landmarks on 20 female models aged 18 to 39 years according to his ideal breast concept. The 'Penn triangle' does not, however, define shape or form, or any other vital components that responsible for the attractiveness of the breasts. Truthfully, it is possible to have the Penn triangle but still have an unattractive breast [9]. In 1997, Westreich studied 50 women with ideal breasts of his choices of criteria and in 1999, Brown *et al* studied 60 women and stressed the criterion of the regular breast while in 2002, Vandeput and Nelissen took anthropometric measurements on 973 women with near-ideal breast characteristics [10–12]. Hence, to address this gap, this study is convened to provide an insight to be able to establish the characteristics of an ideal female breast from the perspective of women (and men) themselves to assist plastic surgeons alike and potential patients in deciding their surgical outcome.

Methods

This study was convened *via* a web-based interactive survey at Hospital Universiti Sains Malaysia (HUSM) in an attempt to find the most perfect upper pole contour and upper pole to lower pole ratio (UP:LP) desired for female breast among the Malays,
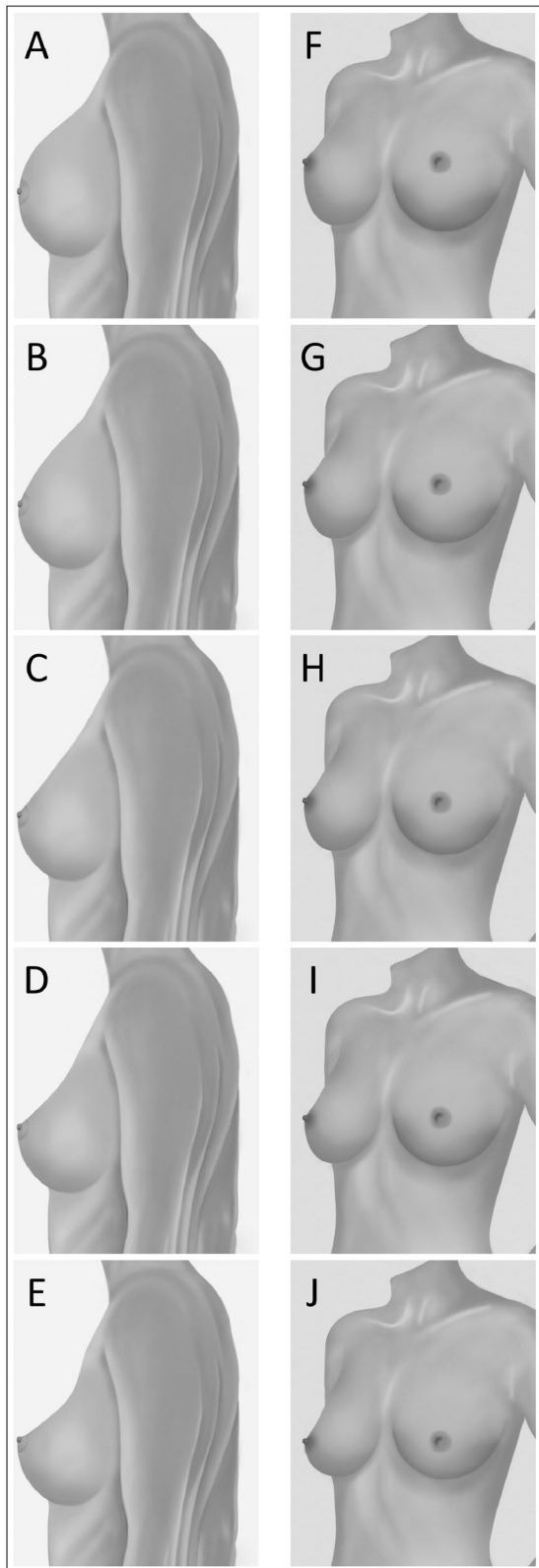
Figure 1. (A–E) Drawn image panel from lateral view showing vertically from the top, the shape of the upper pole as more convex, slightly convex, straight, slightly concave, and more concave in its contour; (F–J) Drawn image panel from the oblique view showing vertically from the top, 35:65, 45:55, 50:50, 55:45, and 65:35 ratios.

Chinese, and Indians races and attempt to correlate with their sociodemographic background. The participants were purposively recruited from individuals in HUSM which comprises various

ethnicities and sociodemographic background *via* a universal sampling method. Each individual was approached and explained regarding the study. Once agreed participants were given an iPad that had internet access and opened the dedicated website containing the questionnaire. Participants were then given their own time and space at their convenience to answer the questionnaire which took approximately not more than 5 min.

The breast images were drawn with Photoshop Studio CS4 with the final products of the graphics were converted to black and white to eliminate possible biases resulting from differences in skin tone and image quality. No images include any form of ptosis was created. The upper trunk was presented from the neckline to just below the inferior rib to not only eliminate any possible effect of waist circumference on attractiveness evaluation but also to prevent exaggeration effects, where explicitly altered breasts look unusual and disproportionate on the unchanged female figure.

The upper pole shape images were set to five panels which were more convex, slightly convex, straight, slightly concave, and more concave in contour (Figure 1(A–E)). The shift of the upper pole shape (the contour as view in lateral) was determined by measuring the perpendicular distance from the point of maximum concavity or convexity to a line drawn from the NAC to the upper base. The concave shift was assigned to 2 displacement values of slightly concave and more concave, whereas the convex shift was given 2 displacement values of slightly convex and more convex. Shapes that were neither both were assigned as straight. These images are drawn from the side view to correctly show the contour shape of the upper pole. For the UP:LP ratio, the items were set to 5 panels which were, the ratio of 35:65, 45:55, 50:50, 55:45, and 65:35 (Figure 1(F–J)). The images are drawn from the oblique view to adequately show the significant effect of UP:LP ratio in both breasts. Using Adobe Photoshop, the breasts were cropped out of the standard drawing and then modified before the breasts were blended back into the original drawing. Other body landmarks such as the torso shape are remained constant to prevent assessment bias. The images of each panel will be stacked on top of each other and displayed as a single image on the screen. During the answering session, on each screen, there will be buttons displayed at the side of the image for participants to click. These buttons function to alter interactively the value (shape) of interest of the breast image. The detailed labels of value (e.g. slightly convex, 50:50 ratio) were hidden from users to prevent bias of selection.

There is no specific scoring system used in the assessment. The participants are asked to select only one image that contains the most attractive look of all in each panel for both upper pole shape and UP:LP ratio. A descriptive analysis of all variables was done with mean and standard deviation (SD) was reported for the numerical variable, while frequency and its corresponding percentage (%) was reported for the categorical variable. Descriptive analysis was done to determine the preference of an aesthetically perfect upper pole shape and UP:LP. Fisher's exact test was applied to test each association between a sociodemographic factor and breast items. All statistical analysis was done by using STATA 15. The IRB protocol for this study was obtained by the Human Research Ethics Committee of Universiti Sains Malaysia number 19010101.

Results

A total number of 135 participants took the survey with a breakdown of 68 males and 67 females. The mean age was 34.7 years with SD = 12.00. Fifty-five participants (40.7%) age between 18 to 29 years, 59 participants (43.7%) age between 30 to 49 years, and

21 participants (15.6%) age 50 years and above. In this group, there was a similar proportion of the race for Malay, Chinese and Indian which were 42 participants in each race group (31.1%) while there were only 6.7% of the participants emanated from 'other' races. Most of the participants were single (52.6%) and had received tertiary education (55.6%) with 45.9% of them were in the B40 group of socioeconomic status. Table 1 shows the detail of the descriptive analysis of the socio-demographics of the study. Based on Table 2, the highest proportion of upper pole contour

and upper to lower pole ratio (UP:LP) preferred among the public community was more convex shape (37.8%) and 45:55 ratio (37.8%). Only 5.9% chose the concave shape of the upper pole and 5.2% opted for 55:45 and 65:35 of UP to LP ratio.

Table 3 shows the result of the Fisher exact test to determine the association between upper pole shape to each sociodemographic factor of the participants. The test found that only marital status had a significant association with upper pole shape ($p = 0.018$) whereby preference for a more convex shape was higher in single individuals (64.7%) compared to those who have married (35.3%) and widowed (0.0%) (Figure 2). Those who preferred slightly convex contour also were higher in single individuals (52.0%) compared to those who were married and widowed (46.0% and 2.0%, respectively). However, the tests show no significant association of other sociodemographic factors to upper pole shape ($p > 0.05$). Fisher exact test was applied to find the significant association between UP:LP ratio to each sociodemographic factor (Table 4). The result found that there was no significant association ($p > 0.05$) between each sociodemographic and UP:LP ratio, except for race ($p = 0.002$). The proportion of participants

Table 1. Descriptive analysis of sociodemographic of the public community ($n = 135$).

Variable	Frequency (%)
Age (years)[a]	34.67 (12.00)
Age group (years)	
18–29	55 (40.7)
30–49	59 (43.7)
$\geq$ 50	21 (15.6)
Gender	
Male	67 (49.6)
Female	68 (50.4)
Race	
Malay	42 (31.1)
Chinese	42 (31.1)
Indian	42 (31.1)
Others	9 (6.7)
Education level	
Primary/Secondary	49 (36.3)
Tertiary	75 (55.6)
Postgraduate level	11 (8.2)
Income (RM)	
<950 (poverty line)	36 (26.7)
951–3855 (B-40 group)	62 (45.9)
3856–8135 (M-40 group)	30 (22.2)
>8135 (T-20 group)	7 (5.2)
Marital status	
Single	71 (52.6)
Married	62 (45.9)
Widower	2 (1.5)

[a]Mean (SD).

Table 2. Descriptive analysis of perfect breast shape preferences among the public community ($n = 135$).

Breast items	Frequency (%)
Upper pole contour	
More convex	51 (37.8)
Slightly convex	50 (37.0)
Straight	26 (19.3)
Slightly concave	6 (4.4)
More Concave	2 (1.5)
UP:LP ratio	
35:65	47 (34.8)
45:55	51 (37.8)
50:50	30 (22.2)
55:45	5 (3.7)
65:35	2 (1.5)

Table 3. Association between upper pole breast shape to sociodemographic of the public community ($n = 135$).

	Upper pole contour, n (%)					
Sociodemographic factor	More convex ($n = 51$)	Slightly convex ($n = 50$)	Straight ($n = 26$)	Slightly concave ($n = 6$)	More concave ($n = 2$)	p Value[a]
Age group (years)						
18–29	25 (49.0)	20 (40.0)	10 (38.5)	0 (0.0)	0 (0.0)	0.251
30–49	20 (39.2)	23 (46.0)	11 (42.3)	4 (66.7)	1 (50.0)	
$\geq$ 50	6 (11.8)	7 (14.0)	5 (19.2)	2 (33.3)	1 (50.0)	
Gender						
Male	28 (54.0)	22 (44.0)	11 (42.3)	4 (66.7)	2 (100.0)	0.391
Female	23 (45.1)	28 (56.0)	15 (57.7)	2 (33.3)	0 (0.0)	
Race						
Malay	21 (41.2)	12 (24.0)	5 (19.2)	2 (33.3)	2 (100.0)	0.430
Chinese	13 (25.5)	18 (36.0)	8 (30.8)	3 (50.0)	0 (0.0)	
Indian	15 (29.4)	15 (30.0)	11 (42.3)	1 (16.7)	0 (0.0)	
Others	2 (3.9)	5 (10.0)	2 (7.7)	0 (0.0)	0 (0.0)	
Education level						
Primary/Secondary	23 (45.1)	17 (34.0)	4 (15.4)	4 (66.7)	1 (50.0)	0.057
Tertiary	26 (51.0)	29 (58.0)	18 (69.2)	1 (16.7)	1 (50.0)	
Postgraduate	2 (3.9)	4 (8.0)	4 (15.4)	1 (16.7)	0 (0.0)	
Income (RM)						
<950	19 (37.3)	9 (18.0)	6 (23.1)	1 (16.7)	1 (50.0)	0.396
951–3855	22 (43.1)	26 (52.0)	11 (42.3)	3 (50.0)	0 (0.0)	
3856–8135	8 (15.7)	13 (26.0)	7 (26.9)	1 (16.7)	1 (50.0)	
>8135	2 (3.9)	2 (4.0)	2 (7.7)	1 (16.7)	0 (0.0)	
Marital status						
Single	33 (64.7)	26 (52.0)	12 (46.2)	0 (0.0)	0 (0.0)	0.018
Married	18 (35.3)	23 (46.0)	13 (50.0)	6 (100.0)	2 (100.0)	
Widower	0 (0.0)	1 (2.0)	1 (3.9)	0 (0.0)	0 (0.0)	

[a]Expected count of less than 5 was $\geq$ 20%; Fisher exact test was applied.
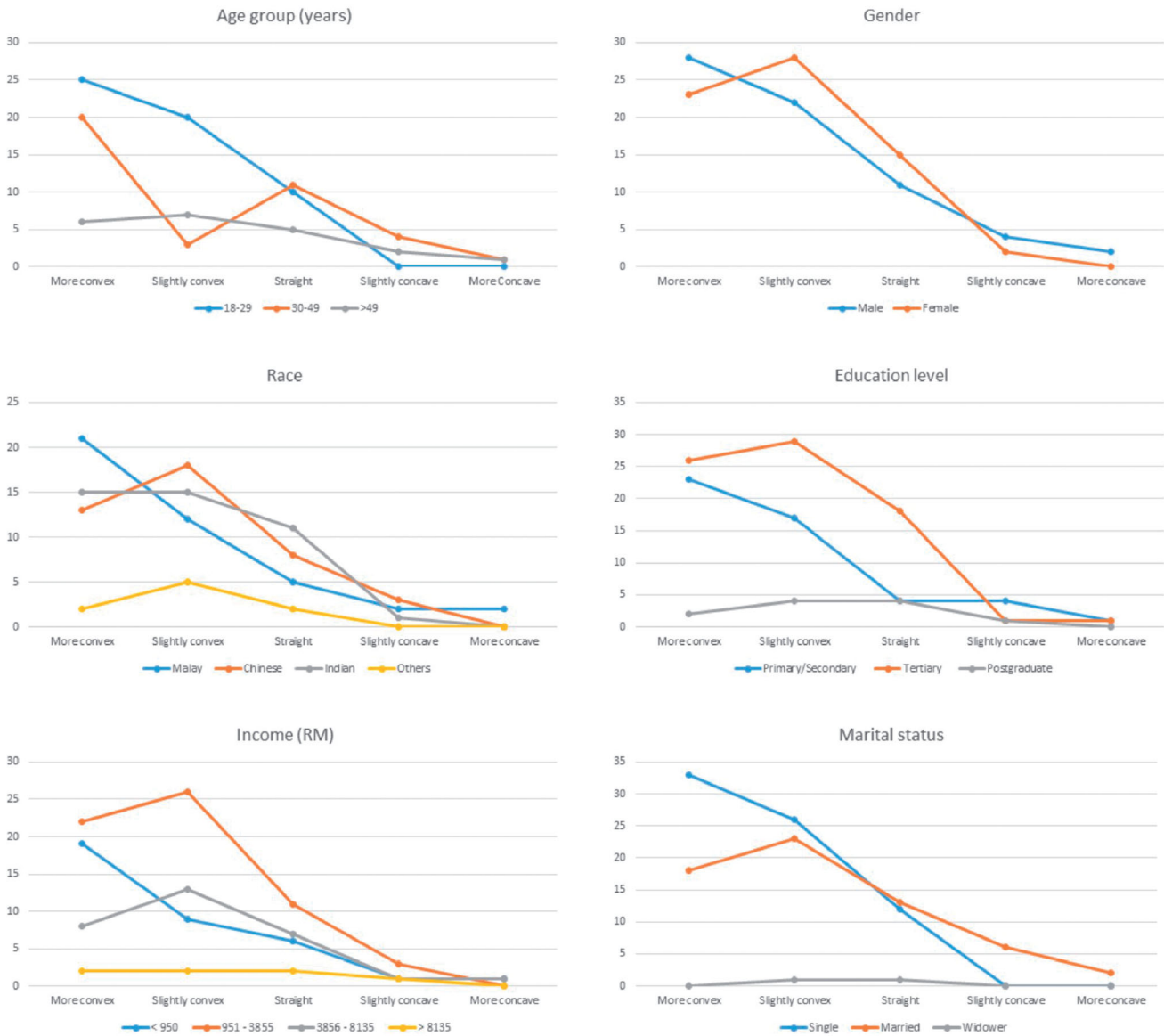
Figure 2. Association between upper pole breast shape to sociodemographic of the public community.

preferred ratio of 45:55 was higher in the Chinese (51%) compared to Indian (21.6%), and Malay (19.6%) (Figure 3).

Discussion

As a symbol of fertility, female breasts are one of the most significant features defining attractiveness. Additionally, an 'aesthetically ideal breast' that every single plastic surgeon pursues to achieve is more vital in determining attractiveness than mere hourglass physique proportions [2]. Although the judgment of an individual's perception towards aesthetic value is greatly influenced by endless observations and how an individual relates to beauty and flawlessness, it remains unknown to what amount it is influenced by age, sex, race, and cultural background [1].

The normal breast may contain greater volume in the lower pole than the upper pole, and the lateral profile of the upper pole may be linear or slightly concave, but in reality, normality is not the objective. For instance, patients prefer convexity and a breast shape that is fuller on the top [6]. It is agreed that beauty is a universal phenomenon that has a universal standard present throughout all civilizations and centuries, and that observed beauty is enhanced and optimal aesthetics are accomplished when accurate measurements are made and proportions, as well as attractive harmonious ratios, are appreciated [2] but defining perfect breast shape by anthropometric measurement as previously done by many researchers, has many pragmatic issues. While this method can hardly measure something abstract and vague like shape, harmony, and proportion, it is also having an element of bias as the qualities of that beauty are largely from the investigator's perspective. Besides, smaller and larger breasted females exhibit variances in anthropometry, with body mass and BMI representing great associations to breast volume [13]. Main parameters such as breast projection are hard to quantify due to the curvature of the chest wall and mobility of subcutaneous tissue. Therefore, an anthropometry study is currently not routinely conducted since it is impractical and costly exorbitant to perform [8]. Thus, we utilizing a controlled perception-preference method to accurately seek the most perfect breast shape *via* the subject's current perception in which may assess something abstract like shape, harmony, and proportions. We conducted the study *via*

Table 4. Association between UP:LP ratio to sociodemographic of the public community ($n = 135$).

	UP:LP, n (%)					
Sociodemographic factor	35:65 ($n = 47$)	45:55 ($n = 51$)	50:50 ($n = 30$)	55:45 ($n = 5$)	65:35 ($n = 2$)	p Value
Age group (years)						
18–29	18 (38.3)	24 (47.1)	11 (36.7)	1 (20.0)	1 (50.0)	0.846
30–49	21 (44.7)	20 (39.2)	15 (50.0)	2 (40.0)	1 (50.0)	
$\geq$ 50	8 (17.0)	7 (13.7)	4 (13.3)	2 (20.0)	0 (0.0)	
Gender						
Male	29 (61.7)	26 (51.0)	9 (30.0)	2 (40.0)	1 (50.0)	0.391
Female	18 (38.3)	25 (49.0)	21 (70.0)	3 (60.0)	1 (50.0)	
Race						
Malay	18 (38.3)	10 (19.6)	11 (36.7)	2 (40.0)	1 (50.0)	0.002
Chinese	5 (10.6)	26 (51.0)	8 (26.7)	3 (60.0)	0 (0.0)	
Indian	20 (42.6)	11 (21.6)	10 (33.3)	0 (0.0)	1 (50.0)	
Others	4 (8.5)	4 (7.8)	1 (3.3)	0 (0.0)	0 (0.0)	
Education level						
Primary/Secondary	20 (42.6)	17 (33.3)	8 (26.7)	4 (80.0)	0 (0.0)	0.059
Tertiary	26 (55.3)	29 (56.9)	18 (60.0)	0 (0.0)	2 (100.0)	
Postgraduate	1 (2.1)	5 (9.8)	4 (13.3)	1 (20.0)	0 (0.0)	
Income (RM)						
<950	13 (27.7)	15 (29.4)	5 (16.7)	2 (40.0)	1 (50.0)	0.695
951–3855	22 (46.8)	23 (45.1)	15 (50.0)	2 (40.0)	0 (0.0)	
3856–8135	10 (21.3)	11 (21.6)	8 (26.7)	0 (0.0)	1 (50.0)	
>8135	10 (4.3)	2 (3.9)	2 (6.7)	1 (20.0)	0 (0.0)	
Marital status						
Single	26 (55.3)	32 (62.8)	11 (36.7)	1 (20.0)	1 (50.0)	0.146
Married	21 (44.7)	18 (35.3)	18 (60.0)	4 (80.0)	1 (50.0)	
Widower	0 (0.0)	1 (2.0)	1 (3.3)	0 (0.0)	0 (0.0)	

[a]Expected count of less than 5 was $\geq$20%; Fisher exact test was applied.

electronic mediums for the mode of delivery as it renders the created graphics to be displayed sharply and user friendly. Moreover, the use of internet networking with online databases made the study convenient, reliable, high reach, and reproducible.

The previous studies had found several key parameters that have been identified for a perfect breast such as upper pole contour and upper pole to lower pole ratio (UP:LP ratio) in which, any aberration from this formation is said to yield a less attractive shape of the breast [5]. Ideally, the shape of the natural upper pole of the breast, from the beginning of the upper chest wall to the point of maximum breast projection is slightly convex [6], but when women seek breast augmentation, a fuller (convex) shape is most desired [9] and this is cross-culturally regarded as more aesthetically pleasing than natural breasts [14]. Therefore, we seek the preference based on these two parameters (upper pole shape and UP:LP ratio) especially due to these are among the qualities that individuals look for such as in breast augmentation. Breast volume or size without a doubt one of the factors affecting attractiveness whereby large breast size has been considered the ideal of beauty socially in many cultures and has been linked with superior fertility [1]. Yet, the chief factor is not an absolute size, but rather a breast shape and body proportions [2]. Although several methods have been proposed to assess breast volume through the use of medical imaging technology, geometric measurement, water displacement techniques, and breast casts, however, besides its being time-consuming and more taxing to conduct, we did not include this method as there is no accepted technique due to a lack of clear information regarding the accuracy and comparability of each method [15].

From this study, in the aspect of perfect upper pole shape, the highest proportion was seen in the upper pole contour of 'more convex' shape (Figure 4(A)) which in agreement to currently available finding, but contrary to surgeon's perspective whereby they preferred a shape that is relatively 'straight' or even 'slightly concave' [16]. From the authors' point of view, this difference is largely due to the influence of mass media, social, contemporary culture, and fashion trends that changed over time [1,2,4,7]. The pressure to fill the upper pole seems to be patient-led and yet there appears to be no evidence that this is a desirable feature in the naked breast [17]. Therefore, when giving out the preference, women especially tend to perceive themselves clothed rather than thinking of the naked breast which is favored to choose fuller/convex upper pole. Conversely, plastic surgeons often picture the breast on their anatomical appearance of nude body to the assumption that the desired clothed appearance often does not equate to attractiveness in the naked breast and often to connect to the natural breast as close as possible. To put into more perspective, the upper-pole prominence that patients request is a feature that plastic surgeons have tried to avoid with the use of anatomical implants [18]. Although a breast reduction can improve the angle of the upper pole shape when the breast base is narrowed and projection improves, the upper breast border will not rise [16]. From the study, among this 'more convex' ideal of upper pole shape, the highest preference was from individual who is single, Malay, male, age between 18 to 29 years old, studied at tertiary level, and with an income of RM951 to RM3855 (Figure 2).

Mallucci and Branford, 2014 extensively studied the upper pole to lower the pole ratio (UP:LP) and concluded that this feature is the major factor to determine breast attractiveness. There are numerous instances from Ancient Greece to date; that the 45:55 ratio is thought to be the most attractive breast proportion [9,17]. For the perfect ratio of the upper pole to the lower pole, the Malay, Chinese, and Indian preferred UP:LP ratio of 45:55 (37.8%) (Figure 4(B)). The second most preferred ratio was at 35:65 (34.8%), largely from Indian ethnicity in which have the NAC position rather placed higher up. The 45:55 ratio is considered many as the most attractive feature on breast proportion and is widely accepted as a beauty standard [9,17] which, conformed to our study. Only 1.5% opted 65:35 ratio as the preferred breast given to it is more likely to represent ptotic breast shape. From the study, among this '45:55' ideal of UP:LP ratio, the highest preference was from individual who is single, Chinese, male, age between 18 to 29 years old, studied at tertiary level, and with an income of RM951 to RM3855 (Figure 3).

Interestingly, among the highest preference of 45:55 ratio, it was significantly predominated by the Chinese (51%) compared to Indian (21.6%), and Malay (19.6%). There was no prior data studied on these certain ethnicities in regards to the ideal breast ratio. Previous data only indicated that 87% of ethnic descent from Asian origin preferred a 45:55 ratio which too broad and does not even close to representing due to the vast area of Asia geography comprises of the tremendous diversity in ethnics. Description of anthropometric proportion in ideal perfect beauty has been very stable through the centuries with universal standards present across all civilizations regardless of ethnicities [2]. Nevertheless, the authors believe such comparison was made possible to how certain ethnic was brought up and living within their cultural behavior and belief. This was found in a previous study as well whereby the investigators found a 2.5-fold difference in upper pole fullness preferences between modern cultures across the globe [1]. These distinctions can also be found in art culture for example when comparing sculptures of females from France and India [3]. Perhaps further study needs to be conducted to dissect further into this comparison and attempt to relate deeply into their unique cultural practice, behavior, religion, and demographic. Therefore, the authors agree with the current literature data and the findings in which a ratio of 45:55 is considered
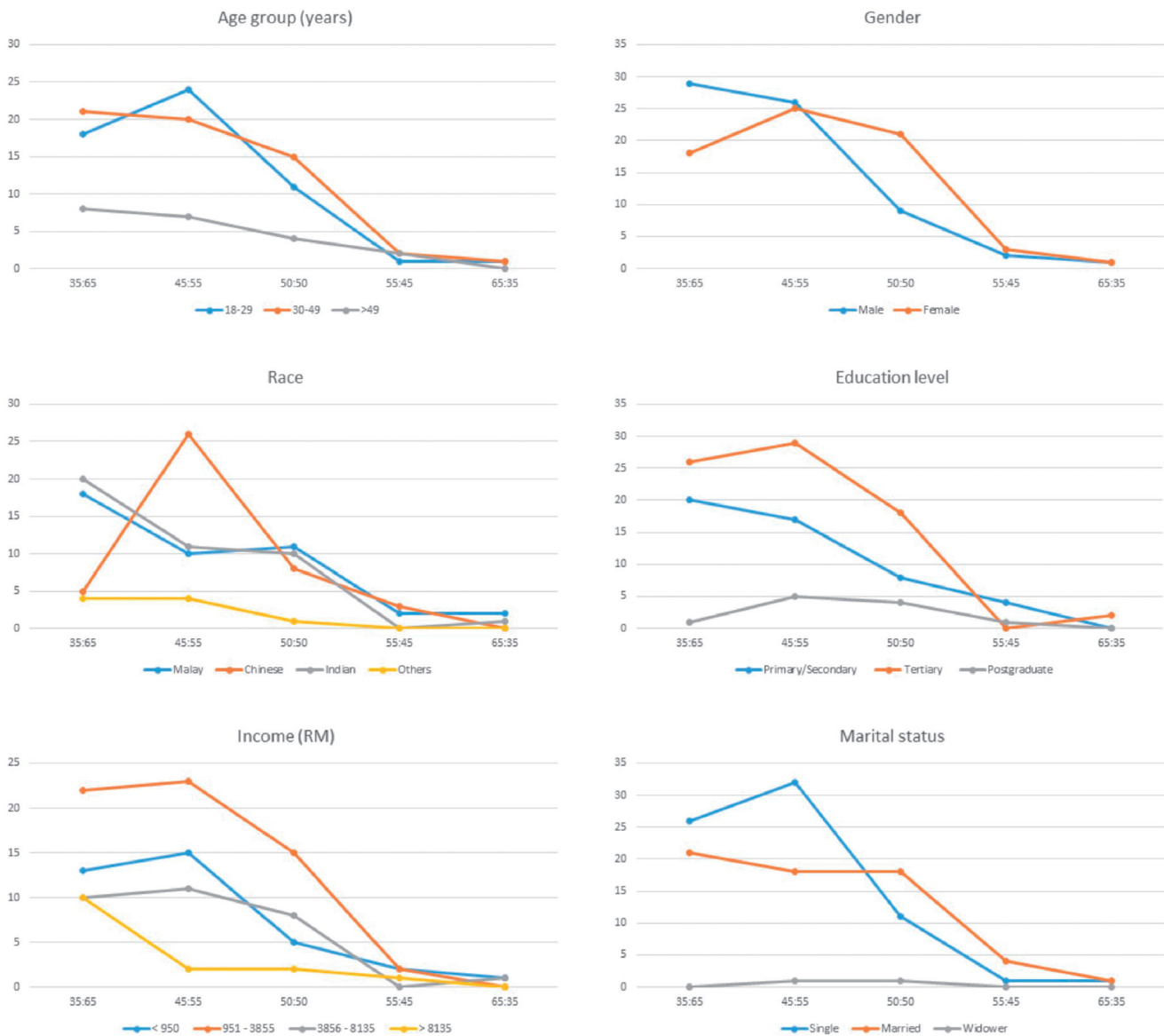
Figure 3. Association between UP:LP ratio to sociodemographic of the public community.

globally as an esthetically ideal ratio. This ratio represents a harmonic projection, a perky conical shape that puts NAC position upward as seen in the young female adult. A projection that is too high as in the 35:65 ratio awkwardly appears unnatural which often associates with fuller contour. Any ratio below 50:50 is not pleasing esthetically as it gives an impression of an aging and ptotic breast.

In general, in both items (upper pole shape and UP:LP ratio) when comparing among main ethnicities in Malaysia (Asian), the findings are comparably similar whereby it follows the current literature. Specifically, Malay, Chinese, and Indian that comprised of as among major races in Asean commonly, preferred a more convex upper pole shape and an upper pole to lower pole ratio of 45:55 to be the most perfect form of female breast aesthetically.

Authors realized that the perception of beauty is somewhat confounding subjectively and heavily influence by time, fashion, local or global trend, and mass media in which may alter these current standards when the time has come. Having said that, authors feel the quest to search objectively for these ideal characteristics in female breasts is paramount to suit the contemporary demand albeit knowing at some point later that these findings

might be revised in the future. Therefore, it is imperative to understand that the results of this study are thus just a snapshot in time and, as such, may be subject to modification, just like fashion, for example. The same presumption may describe intercultural perceptions. Since the media and implied standards of fashion and body habitus are different in every country, and thus inevitably influence beauty preferences, surgeons and public individuals need to look beyond the objective dimension and define beauty in its abstract form by assessing the upper pole contour and the UP:LP ratio as the main characteristic of the aesthetically perfect breast appearance according to the current local perspective.

Conclusion

Anthropometric measurement in describing a perfect female breast might be less accurate and have several pragmatic issues, hence, a controlled perception-preference method is a more preferred choice when dealing with the harmony, abstract, and the proportion of breast form in its entirety. The shape of the upper pole breast that has more convexity and the UP:LP ratio of 45:55
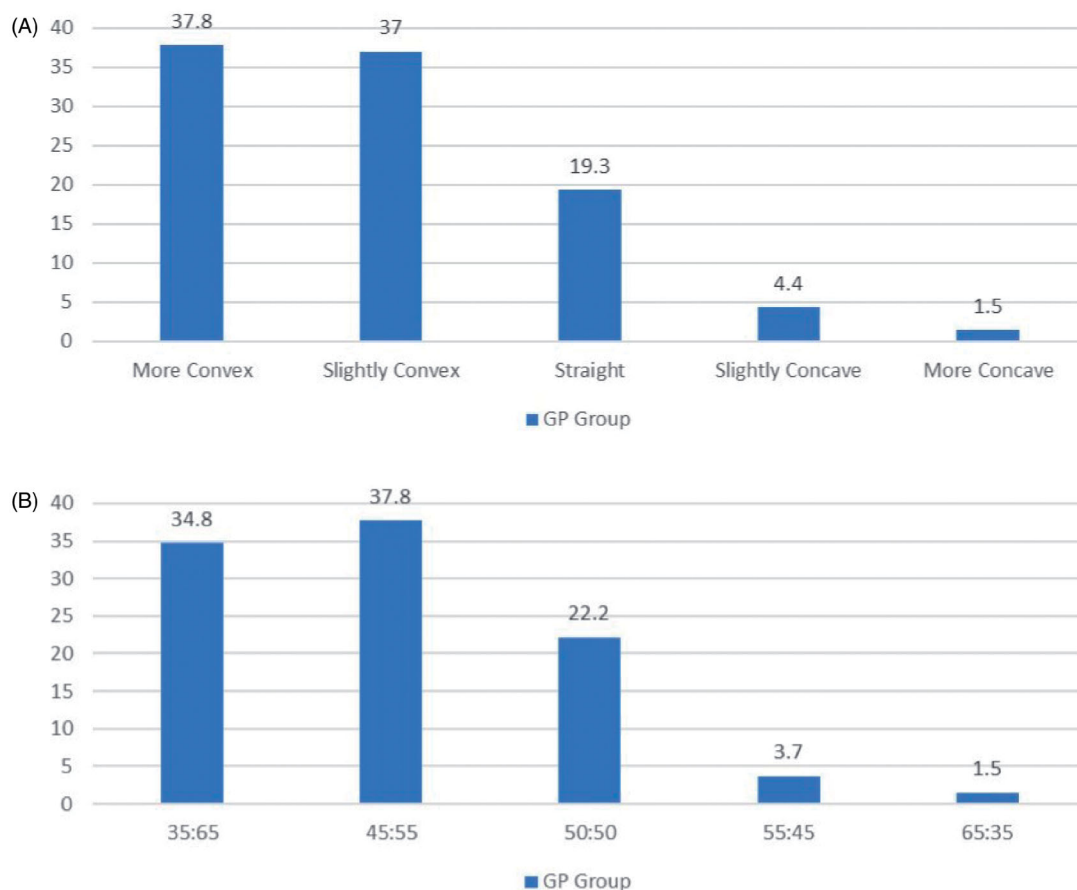
Figure 4. (A) Most preferred upper pole shape in percentage among the public community ($n = 135$); (B) most preferred perfect UP:LP ratio in percentage among the public community ($n = 135$).

is showed to be the most aesthetically perfect form and proportion as agreed in the current literature worldwide.

Author contributions

Hamzan M.I is the primary author and was involved with writing, editing and submitting this work. Wan Sulaiman W.A involved in the writing, editing, reviewing and approving the final version of the manuscript. Ismail N.N involved in the design, writing, analysis and verifying this work.

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