

COSMETIC SURGERY CONSIDERATION AMONG MALE AND FEMALE UNIVERSITY STUDENTS IN FIVE ASEAN COUNTRIES

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Abstract

Although cosmetic surgeries are increasing in frequency, only few studies have investigated cosmetic surgery attitudes in Asia. The aim of the study was to investigate male and female university students' experiences and attitudes about cosmetic surgery in five ASEAN countries. A cross-sectional questionnaire survey and anthropometric measurement were conducted with undergraduate students that were recruited randomly from classes. The "Acceptance of Cosmetic Surgery Scale" (ACSS) was used to determine the prevalence of cosmetic surgery attitudes. The sample included 3319 university students, with a mean age of 20.5 years, SD=1.6, from Indonesia, Malaysia, Myanmar, Thailand and Vietnam. Results indicate that the overall mean score of ACSS Consider was 2.98, with the highest in Thailand (4.06), followed by Vietnam (3.05) and the lowest in Indonesia (2.30) and Malaysia (2.39). Among male students, 16.2% and among female students, 26.7% have "sometimes thought about having cosmetic surgery". In multivariate logistic regression analysis lower intrinsic religiosity, low personal mastery, pathological internet use and depressive symptoms were associated with cosmetic surgery consideration. In addition, among men, having perceived overweight, disordered eating attitudes, lack of social support, PTSD symptoms and having experienced childhood sexual abuse, and among women, being 18-19 years old, not being obese and binge drinking were associated with cosmetic surgery consideration.

Keywords: *Cosmetic surgery, attitudes, university students, ASEAN*

Introduction

“Within the past decade, Asian economies have grown exponentially, resulting in increased personal wealth and subsequent consumption of cosmetic procedures” (Kwak, 2010, p. 102). Facial cosmetic surgeries, including rhinoplasty and eyelid surgery, are among the most common cosmetic surgery procedures requested by Asian patients (Macer 2012; Wong 2009). This phenomenon may be attributed to a “growing social pressure for Asian women to align with ‘Western’ physical characteristics.” (Aquino & Steinkamp, 2016, p.431).

Few studies have investigated cosmetic surgery and cosmetic surgery attitudes in young people in Association of Southeast Asian Nations (ASEAN) (Intasoon, n.d.; Ng, Yeak, Phoon & Lo, 2014; Swami, 2010). In a study among university students in Singapore, 2.8% and in Bangladesh, 8.6% admitted to having undergone cosmetic procedures (Ng et al., 2010; Pengpid, Peltzer & Ahsan, 2015). Among female Saudi university students, 2.2% had received cosmetic surgery (Al-Saiari & Bakarman, 2015), while among American female undergraduate students 3% to 5% had undergone cosmetic surgery themselves (Delinsky, 2006; Sarwer et al., 2005). Previous studies among university students found that 16.2% of female Saudis (Al-Saiari & Bakarman, 2015) and 40% among female Americans (Sarwer et al., 2005) would consider having cosmetic surgery.

In a study among university students in Colombia a mean “Acceptance of Cosmetic Surgery Scale (ACSS) Consideration” was 4.17 (range 1-7) and in USA 3.19 (Carrion, Weinberger-Litman, Rabin & Fogel, 2011b). The mean ACSS subscales Social and Intrapersonal were in Colombia 3.46 and 3.89, respectively and in USA 2.32 and 4.02, respectively (Carrion et al., 2011b). Further, in a study among British female university students the ACSS Consideration was 4.86 for Caucasian, 3.75 for Asian and 3.64 for African Caribbean students (Swami, Campana & Coles, 2012a).

Factors associated with cosmetic surgery consideration include 1) sociodemographic factors such as being a woman (Swami, Hwang & Jung, 2012b) and lower socioeconomic status (Jackson & Chen, 2015; Javo & Sørлие, 2010); 2) body related factors, lower Body Mass Index (BMI) (Swami, 2009), higher BMI (Carrion, Rabin, Weinberger-Litman & Fogel, 2011a); less body appreciation (Swami, 2009), poor body image (Javo & Sørлие, 2010; von Soest, Kvaalem, Skolleborg & Roald, 2006), general body appreciation (Swami et al., 2012b), facial appearance concerns (Jackson & Chen, 2015), and internalization of thin ideals (Nerini, Matera & Stefanile, 2014); 3) social

variables such as religiousness, low self-esteem (Furnham & Levitas, 2012), lack of life satisfaction (Intasoon, n.d.), and personality factors, including low self-esteem (Swami, Chamorro-Premuzic, Bridges & Furnham, 2009), and 4) mental health issues such as body dysmorphic disorder symptoms (Haas, Champion & Secor, 2008; Javo & Sørli, 2010) and eating disorder attitudes (Carrion et al., 2011a; Pengpid et al., 2015).

The aim of the study was to investigate male and female university students' experiences and attitudes about cosmetic surgery in five ASEAN countries.

Methods

Sample and procedure

In a cross-sectional study randomly selected university students in five ASEAN countries responded to a questionnaire on various health behaviours and cosmetic surgery attitudes in 2015. Informed consent was taken from participating students. Participation rates were in three countries more than 90%, in Indonesia 69% and in Myanmar 73%. Ethics approvals were obtained from all participating study institutions.

Measures

Cosmetic surgery experience. Students were asked, If they ever had any cosmetic surgery (response options: yes or no), and which cosmetic surgery procedures they would consider undergoing in the future.

Attitudes towards cosmetic surgery were assessed with the 15-item "Acceptance of Cosmetic Surgery Scale" (ACSS; Henderson-King & Henderson-King, 2005), which has three different 5-item subscales. The Intrapersonal subscale ($\alpha=.90$) assesses psychological benefits, the Social subscale ($\alpha=.88$) interpersonal benefits, and the Consideration subscale ($\alpha=.82$) assesses the degree to which people would consider having cosmetic surgery in the future (e.g., "I have sometimes thought about having cosmetic surgery"). Response options ranged from 1 = strongly disagree to 7 = strongly agree, with higher scores indicating greater endorsement of cosmetic surgery. Subscale scores were calculated by taking the mean of items associated with each subscale (Henderson-King & Henderson-King, 2005).

Socio-demographic questions included age, gender and subjective socioeconomic background (Wardle & Steptoe, 1991).

Body related variables

Anthropometric measurements.

Students weighed and height was measured using standardised procedures (Lee & Nieman, 1993) in order to calculate the Body mass index (BMI), which was classified according to Asian criteria: normal weight (18.5 to <23.0), overweight (23.0 to <25.0) and 25+ as obese (Kanazawa et al., 2005).

Body weight perception was assessed with the question, “Do you consider yourself to be very overweight, slightly overweight, about right, slightly underweight or very underweight?” (Wardle & Steptoe, 1992). In the analysis “very” and “slightly” overweight and “very” and “slightly” underweight, respectively were collapsed.

The 26-item Eating Attitude Test-26 (EAT-26) was utilized to measure symptoms and features of eating disorders, with a total score of 20 or above indicating “at risk of disordered eating attitudes and behaviours” (Garner, Olmsted, Bohr & Garfinkel, 1982). (Cronbach alpha of 0.96)

Social variables

Intrinsic religiosity (or subjective religiosity) was measured with three items from the “Duke University Religion Index” (DUREL) (Koenig, Meador & Parkerson, 1997). (Cronbach alpha 0.96).

Social support. Three items of the “Social Support Questionnaire” were used to assess perceived social support (Brock, Sarason & Sarason, 1996). Cronbach alpha for this sample was 0.59.

Sense of control.

This was operationalized with three items measuring “personal mastery”. An example is, “I can do just about anything I really set my mind to” (Lachman & Weaver, 1998). (Cronbach alpha 0.72).

Life satisfaction was assessed with one question, “All things considered, how satisfied are you with your life as a whole?” (Response option ranged from 1=very satisfied to 5=very dissatisfied) (Wardle & Steptoe, 1991).

Mental health and abuse

Centres for Epidemiologic Studies Depression Scale (CES-D). Depressive symptoms were assessed with the 10-item version of the CES-D (Andresen, Malmgren, Carter & Patrick, 1994). Scoring is classified with 15 representing severe depressive symptoms (Andresen et al., 1994). (Cronbach alpha 0.74).

Post traumatic stress disorder (PTSD). Breslau’s 7-item screener was utilized to assess PTSD symptoms in the past month, with a score of 4 or more indicating a positive screen for PTSD (Kimerling et al., 2006). (Cronbach alpha 0.75).

Childhood sexual abuse

The 4 items for contact sexual abuse of the WHO (2015) “Adverse Childhood Experiences International Questionnaire (ACE-IQ)” was used. Students were asked, “These next questions are about certain things YOU may have experienced. When you were growing up, during the first 18 years of your life . . .?” Response options were, “Many times, A few times, Once, Never, Refused”. Any “Many times, A few times, Once” response on the sexual abuse questions were scored as having experienced sexual abuse (WHO, 2015).

Tobacco use was assessed with the question: “Do you currently use one or more of the following tobacco products (cigarettes, snuff, chewing tobacco, cigars, etc.)?” Response options were “yes” or “no” (WHO, 1998).

Past month binge drinking was assessed with one item of the “Alcohol Use Disorder Identification Test” (Babor, Higgins-Biddle, Saunders & Monteiro, 2001).

Pathological internet use was assessed with the 8-item “Young Diagnostic Questionnaire for Internet Addiction” (YDQ) (Siomos et al., 2012; Young, 1999), with ‘pathological users’ scoring ≥ 5 on a 0-8 scale (Durkee et al., 2012). (Cronbach alpha 0.70)

Data analysis

The data were analysed using IBM-SPSS for Windows, version 23 (Chicago, IL, USA). Descriptive statistics were used to calculate frequency of sample characteristics of the study population. Differences in proportions were tested by Independent-Samples Mann-Whitney U Tests. Multivariable logistic regression analysis was performed with cosmetic surgery consideration (Last quarter of the highest ACSS Consider scale) as the dependent variable. Socio-demographic characteristics, body related variables, social variables, mental health and addictive behaviour related variables were taken as independent variables. $P < 0.05$ was considered significant.

Results

Sample characteristics

The total sample included 3 319 undergraduate university students (mean age 20.5, SD=1.6; 63.0% female) from five ASEAN countries. The sample size ranged from 231 in Indonesia to 1023 in Malaysia. Overall, the mean score of ACSS Consider was 2.98, ACSS Social 2.84 and ACSS Intrapersonal 3.67, all of which were higher among female than male students. ACSS Consider was the highest in Thailand (4.06), followed by Vietnam (3.05) and the lowest in Indonesia (2.30) and Malaysia (2.39). Similarly, the ACSS Social was also the

highest in Thailand (3.82) and the lowest in Indonesia (1.96), while the ACSS Intrapersonal was the highest in Vietnam (4.38), followed by Thailand (4.23) and the lowest in Indonesia (2.32). Male students from Indonesia had higher ACSS Consider than female students, while female students from Vietnam had higher ACSS Consider than male students. Male students had higher ACSS Social than female students in Malaysia. Female students from Myanmar and Vietnam had higher ACSS Intrapersonal than male students (see Table 1).

Endorsement of ACSS

Among male students, 16.2% and among female students, 26.7% have sometimes thought about having cosmetic surgery. On four of five items female students more frequently than male students endorsed ACSS Consider. In terms of ACSS Social, female students more frequently than male students endorsed on two of five items, while there were no differences for three items. While on the ACSS Intrapersonal only one item "Cosmetic surgery can be a big benefit to people's self-image" was more frequently endorsed by women than men, and there were no differences for the rest of the four items (see Table 2)

Consideration of selected cosmetic surgery procedures in the future

Students were asked which cosmetic surgery procedure they would undergo in the future. From those who responded, 48.1% indicated rhinoplasty (or nose job), followed by eyelid or brow lift (12.1%), mouth or lips (8.1%), teeth (7.8%) and face lift (6.1%). Women selected more often than men rhinoplasty, mouth and lips, while men selected more often than women chin, cheek or jaw, face lift and body contouring (see Table 3).

Associations with cosmetic surgery consideration

In multivariate logistic regression analysis among men, having perceived overweight, disordered eating attitudes, medium intrinsic religiosity, lack of social support, low personal mastery, pathological internet use, depressive symptoms, PTSD symptoms and having experienced childhood sexual abuse were found to be associated with cosmetic surgery consideration. While, in multivariate logistic regression analysis among women, being 18-19 years old, not being obese, low intrinsic religiosity, low personal mastery, binge drinking, pathological internet use, and depression symptoms were found to be associated with cosmetic surgery consideration (see Table 4).

Discussion

This study investigated male and female university students' experiences and attitudes about cosmetic surgery in a large sample of university students in

ASEAN countries. Overall, 1.1% of the sample had already received cosmetic surgery, which is lower than found in previous studies among university students in Bangladesh (8.6%) (Peltzer et al., 2015), Singapore (2.8%) (Ng et al., 2010) and among female university students in Saudi Arabia (2.2%) (Al-Saiari & Bakarman, 2015) and USA (3% -5%) (Delinsky, 2006; Sarwer et al., 2005).

The study found an overall mean ACSS consideration of 2.98 (range 1-7) for both male and female students (male students 2.74 and female students 3.12), which is lower than in previous studies among female university students in Colombia (4.17), USA (3.29) (Carrion et al., 2011b) and Caucasian (4.86), Asian (3.75) and African Caribbean (3.64) British female students (Swami et al., 2012a). It is possible that the lower acceptance of cosmetic surgery in this ASEAN sample is attributed to the perception that cosmetic surgery is used for attaining Western standards of beauty (Swami et al. 2012a), lower availability and affordability of cosmetic procedures in their country and lower media exposure and influence than in Western countries (Sarwer, Magee, & Crerand, 2004). Compared to predominantly Buddhist countries (Myanmar, Thailand and Vietnam), the ACSS Consider was the lowest in predominantly Muslim countries (Indonesia and Malaysia) in this study. It is possible that the belief in Islamic religion increases the acceptance of the way a human being was created and reduces the desire for cosmetic surgery (Atiyeh, Kadry, Hayek & Moucharafieh, 2008). In consistence with previous research (Henderson-King & Henderson-King, 2005), this study also found greater acceptance of cosmetic surgery because of intrapersonal rather than social reasons. This may be explained by the preference of reporting internal rather than external reasons for cosmetic surgery consideration (Didie & Sarwer, 2003). Further, socio-cultural country differences may account for the different degrees of ACSS in the five study countries, which should be subject to further research.

Overall, cosmetic surgery consideration was higher among female than male university students, as also found in some previous studies (e.g., Swami et al., 2012). However, in our small Indonesian study sample cosmetic surgery consideration was higher among male than female university students. This study found that among male students, 16.2% and among female students, 26.7% have sometimes thought about having cosmetic surgery, which seems, among female students, higher than in a previous study in Saudi Arabia (16.2%) (Al-Saiari & Bakarman, 2015) and lower than in USA (40%)(Sarwer et al., 2005). The preponderance of cosmetic surgery generally in women may be explained by the greater sociocultural pressures that women are exposed to in following idealised images of physical perfection (Swami et al., 2009). Interesting would be a more

in-depth study in Indonesia to find out about the preponderance of cosmetic surgery consideration among men.

In the analysis of the planned or wished future cosmetic surgeries, male and female students seemed to have similar requests for specific cosmetic surgeries (Rhinoplasty and blepharoplasty or eyelid surgery), as most commonly found among Asian patients (Macer 2012; Wong 2009). In contrast to a study among American female college students that found that breast augmentation was the most commonly considered cosmetic procedure (Sarwer et al., 2005), this study found only a minority of female students considered breast augmentation.

Several previous studies (Jackson & Chen, 2015; Javo & Sørli, 2010) found that indicators of lower socioeconomic status (SES) were associated with cosmetic surgery consideration, which was in this study only confirmed in bivariate analyses. It is possible that cosmetic surgery in students from lower SES is pursued to increase job and marriage prospects (Jackson & Chen, 2015, Wen, 2013). More than 27 percent of both male and female students in this study agreed with the statement “If it would benefit my career, I would think about having plastic surgery.”

Regarding body related factors, previous studies found mixed results in terms of BMI body weight (Carrion et al., 2011a; Swami, 2009), while in this study among women lower BMI (not being obese) and among men perceived overweight were associated with cosmetic surgery consideration. It is possible that among men an internalization of thin ideals (Nerini et al., 2014) and a higher body dissatisfaction with perceived overweight is linked with cosmetic surgery consideration.

In terms of social variables, this study found among women that intrinsic religiosity was protective from cosmetic surgery consideration, while in a previous study Furnham and Levitas (2012) found an association between religiousness and cosmetic surgery consideration. In agreement with previous studies (e.g., Swami et al., 2009), this study found that certain personality factors such as lack of sense of control (personal mastery) was associated with cosmetic surgery consideration. Contrary to a previous study among adult women in Thailand (Intasoon, n.d.), this study did not find an association between lack of life satisfaction and cosmetic surgery consideration.

In partial agreement with previous studies (Carrion et al., 2011; Haas et al., 2008; Javo & Sørli, 2010; Pengpid et al., 2015), this study found an association between poor mental health (eating disordered attitudes, depression symptoms,

PTSD symptoms and experience of child sexual abuse), addictive behaviour (binge drinking and pathological internet use) and cosmetic surgery consideration. This could mean that mental health assessment should be included when this young population requests for cosmetic surgery.

Study limitations

This study had several limitations. The study was cross-sectional, so causal conclusions cannot be drawn. The investigation was carried out with students from one or two universities in each country, and inclusion of other centres could have resulted in different results. University students are not representative of young adults in general, and cosmetic surgery attitudes and its risk factors may be different in other sectors of the population. Further, certain concepts in relation to cosmetic surgery are, for example, body appreciation (Swami, 2009; Swami et al., 2012), body image (Javo & Sørli, 2010; von Soest et al., 2006), or facial appearance concerns (Jackson & Chen, 2015) were not assessed in this study, and should be included in future studies.

Conclusion

The study found among a large sample of ASEAN university students a moderate decision to undergo cosmetic surgery, moderated by sociodemographic factors, body related and social variables as well as mental and addictive disorders. Further research may be needed to more specifically identify factors influencing to seek cosmetic surgery in this university student population.

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Table 1: Acceptance of cosmetic surgery among university students in six ASEAN countries according to gender

| Country | Gender | Sample size (n) | ACSS- Consider | Statistic | ACSS- Social | Statistic | ACSS- Intrapersonal | Statistic |
|-----------|--------|-----------------|----------------|-----------|--------------|-----------|---------------------|-----------|
| | | | M (SD) | P-value | M (SD) | P-value | M (SD) | P-value |
| Indonesia | Male | 55 | 2.671 (1.1) | <0.001 | 1.95 (1.1) | 0.591 | 2.18 (1.4) | 0.072 |
| | Female | 176 | 2.19 (0.9) | | 1.96 (1.0) | | 2.37 (1.1) | |
| | Total | 231 | 2.30 (1.0) | | 1.96 (1.0) | | 2.32 (1.2) | |
| Malaysia | Male | 504 | 2.47 (1.2) | 0.061 | 2.23 (1.3) | 0.021 | 3.08 (1.6) | 0.808 |
| | Female | 519 | 2.32 (1.1) | | 2.01 (1.2) | | 3.09 (1.6) | |
| | Total | 1023 | 2.39 (1.2) | | 2.12 (1.3) | | 3.08 (1.6) | |
| Myanmar | Male | 191 | 2.59 (1.4) | 0.811 | 2.72 (1.4) | 0.439 | 3.25 (1.7) | 0.048 |
| | Female | 269 | 2.66 (1.5) | | 2.82 (1.4) | | 3.58 (1.6) | |
| | Total | 460 | 2.63 (1.5) | | 2.77 (1.4) | | 3.44 (1.6) | |
| Thailand | Male | 75 | 4.05 (1.2) | 0.754 | 3.78 (1.2) | 0.635 | 4.00 (1.4) | 0.075 |
| | Female | 716 | 4.06 (1.2) | | 3.83 (1.2) | | 5.25 (1.3) | |
| | Total | 791 | 4.06 (1.3) | | 3.82 (1.2) | | 4.23 (1.3) | |
| Vietnam | Male | 344 | 2.92 (1.2) | 0.004 | 3.06 (1.3) | 0.432 | 4.21 (1.4) | <0.001 |
| | Female | 359 | 3.18 (1.3) | | 3.11 (1.3) | | 4.54 (1.2) | |
| | Total | 703 | 3.05 (1.3) | | 3.08 (1.3) | | 4.38 (1.3) | |
| All | Male | 1228 | 2.74 (1.3) | <0.001 | 2.66 (1.4) | <0.001 | 3.49 (1.6) | <0.001 |
| | Female | 2091 | 3.12 (1.5) | | 2.95 (1.4) | | 3.78 (1.5) | |
| | Total | 3319 | 2.98 (1.4) | | 2.84 (1.4) | | 3.67 (1.6) | |

1Range 5-35

Table 2: Frequency of agreed responses to the ACSS scale by gender

| ACSS variables | Men | | Women | | Statistic P-value |
|--|-----|------|-------|------|----------------------|
| | N | % | N | % | |
| ACSS Consider | | | | | |
| 8. I have sometimes thought about having cosmetic surgery. | 200 | 16.2 | 562 | 26.7 | <0.001 |
| 7. If I knew there would be no negative side effects or pain, I would like to try cosmetic surgery. | 241 | 19.6 | 605 | 28.8 | <0.001 |
| 10. I would never have any kind of plastic surgery. (reverse scored) | 413 | 33.5 | 712 | 33.9 | 0.804 |
| 3. In the future, I could end up have some kind of cosmetic surgery. | 133 | 10.8 | 384 | 18.3 | <0.001 |
| 6. If I could have a surgical procedure done for free, I would consider trying cosmetic surgery. | 220 | 17.9 | 435 | 20.7 | 0.049 |
| ACSS Social | | | | | |
| 13. I would seriously consider having cosmetic surgery if I thought my partner would find me more attractive. | 173 | 14.0 | 318 | 15.1 | 0.400 |
| 9. I would seriously consider having cosmetic surgery if my partner thought it was a good idea. | 171 | 13.9 | 296 | 14.1 | 0.875 |
| 15. If a simple cosmetic surgery procedure would make me more attractive to others, I would think about trying it. | 257 | 20.9 | 527 | 25.1 | 0.005 |
| 11. I would think about having cosmetic surgery in order to keep looking young. | 179 | 14.5 | 425 | 20.2 | <0.001 |
| 12. If it would benefit my career, I would think about having plastic surgery. | 343 | 27.9 | 569 | 27.1 | 0.594 |
| ACSS Intrapersonal | | | | | |
| 4. People who are very unhappy with their physical appearance should consider cosmetic surgery as one option. | 457 | 37.1 | 802 | 38.1 | 0.558 |
| 5. If cosmetic surgery can make someone happier with the way they look, then they should try it. | 477 | 38.7 | 850 | 40.5 | 0.326 |
| 1. It makes sense to have minor cosmetic surgery rather than spending years feeling bad about | 449 | 36.5 | 754 | 35.9 | 0.726 |

the way you look.

| | | | | | |
|--|-----|------|-----|------|--------|
| 14. Cosmetic surgery can be a big benefit to people's self-image. | 445 | 36.1 | 902 | 43.0 | <0.001 |
| 2. Cosmetic surgery is a good thing because it can help people feel better about themselves. | 422 | 34.3 | 776 | 37.0 | 0.116 |

Table 3: Proportion of students who would consider undergoing selected cosmetic surgery procedures in the future (N=655)

| Cosmetic surgery procedures ¹ | Female N (%) | Male N (%) | Total N (%) |
|--|-----------------|---------------|----------------|
| Facial Contouring: | | | |
| Rhinoplasty | 287 (53.4) | 28 (23.7) | 315 (48.1) |
| Mouth, lips | 48 (8.9) | 5 (4.2) | 53 (8.1) |
| Teeth | 41 (7.9) | 10 (8.5) | 51 (7.8) |
| Chin, cheek, jaw | 19 (3.5) | 16 (13.6) | 35 (5.3) |
| Facial Rejuvenation: | | | |
| Eyelid lift, brow lift | 65 (12.1) | 14 (11.9) | 79 (12.1) |
| Facelift | 16 (3.0) | 26 (22.0) | 40 (6.1) |
| Breast enhancement (augmentation) | 15 (2.8) | 0 (0.0) | 17 (2.6) |
| Body contouring (liposuction, tummy tuck) | 18 (3.4) | 9 (7.6) | 27 (4.1) |
| Skin rejuvenation (laser, resurfacing, botox®) | 5 (0.9) | 2 (1.7) | 7 (1.1) |
| Skin lightening | 23 (4.3) | 8 (6.8) | 31 (4.7) |

¹Responses were only available from Malaysia, Thailand and Vietnam

Table 4: Associations with cosmetic surgery consideration among male and female university students in ASEAN countries

| Variables (N, %) | Men | | Women | |
|---|-----------------------|---------------------------|-----------------------|---------------------------|
| | UOR (95% CI) | AOR (95% CI) ^a | UOR (95% CI) | AOR (95% CI) ^b |
| Socio-demographics | | | | |
| Age in years | | | | |
| 18 -19 (986, 29.7%) | 1 (Reference) | --- | 1 (Reference) | 1 (Reference) |
| 20 – 21 (1474, 44.4%) | 0.99 (0.70, 1.42) | | 0.88 (0.72, 1.09) | 0.91 (0.72, 1.16) |
| 22 -30 (859, 25.9%) | 0.95 (0.65, 1.39) | | 0.77 (0.60, 0.98)* | 0.62 (0.47, 0.82)** |
| Subjective economic status | | | | |
| Poor (2215, 66.7%) | 1 (Reference) | 1 (Reference) | 1 (Reference) | 1 (Reference) |
| Wealthy (1104, 33.3%) | 0.73 (0.54, 0.99)* | 0.75 (0.52, 1.07) | 0.49 (0.40, 0.60)*** | 0.79 (0.62, 1.01) |
| Body related variables | | | | |
| BMI body weight | | | | |
| Normal (1749, 55.9%) | 1 (Reference) | --- | 1 (Reference) | 1 (Reference) |
| Under (670, 21.4%) | 1.07 (0.71, 1.62) | | 0.91 (0.73, 1.13) | 0.91 (0.70, 1.18) |
| Overweight (316, 10.1%) | 0.95 (0.62, 1.45) | | 0.92 (0.65, 1.30) | 0.95 (0.64, 1.41) |
| Obese (392, 12.5%) | 0.81 (0.54, 1.21) | | 0.62 (0.43, 0.88)** | 0.65 (0.44, 0.97)* |
| Perceived body weight | | | | |
| Normal (1219, 36.7%) | 1 (Reference) | 1 (Reference) | 1 (Reference) | 1 (Reference) |
| Under (834, 25.1%) | 1.12 (0.79, 1.58) | 1.00 (0.67, 1.49) | 0.87 (0.67, 1.12) | 0.89 (0.66, 1.20) |
| Overweight (1265, 38.1%) | 1.67 (1.20, 2.31)** | 1.68 (1.17, 2.45)** | 1.24 (1.01, 1.53)* | 1.04 (0.82, 1.31) |
| Eating disordered attitudes (354, 11.3%) | 2.27 (1.56, 3.31)*** | 1.90 (1.23, 2.93)** | 0.94 (0.69, 1.27) | --- |
| Having had cosmetic surgery (37, 1.1%) ¹ | 14.66 (1.63, 131.70)* | 2 | 5.98 (2.67, 13.38)*** | 2 |
| Social variables | | | | |
| Intrinsic religiosity | | | | |
| Low (906, 27.6%) | 1 (Reference) | 1 (Reference) | 1 (Reference) | 1 (Reference) |
| Medium (1227, 37.4%) | 1.63 (1.16-2.28)** | 1.52 (1.03, 2.24)* | 0.79 (0.63, 0.98)* | 0.77 (0.61, 0.99)* |

| | | | | |
|---|----------------------|----------------------|----------------------|----------------------|
| High (1150, 35.0%) | 0.89 (0.61-1.29) | 0.86 (0.56, 1.34) | 0.22 (0.17, 0.29)*** | 0.25 (0.18, 0.34)*** |
| Social support (scale) (M=8.6, 1.6 SD) | 0.85 (0.78, 0.92)*** | 0.90 (0.81, 0.99)* | 0.92 (0.86-0.96)** | 0.96 (0.90, 1.03) |
| Personal mastery | | | | |
| Low (879, 26.5%) | 1 (Reference) | 1 (Reference) | 1 (Reference) | 1 (Reference) |
| Medium (1529, 46.1%) | 0.68 (0.49, 0.94)* | 0.73 (0.50, 1.05) | 0.58 (0.47, 0.72)*** | 0.69 (0.54, 0.88)** |
| High (906, 27.3%) | 0.46 (0.32, 0.67)*** | 0.46 (0.30, 0.72)*** | 0.43 (0.33, 0.55)*** | 0.70 (0.52, 0.94)* |
| Life satisfaction | | | | |
| Low (694, 20.9%) | 1 (Reference) | 1 (Reference) | 1 (Reference) | --- |
| Moderate (1926, 58.1%) | 0.97 (0.66, 1.43) | 0.74 (0.47, 1.16) | 1.00 (0.74, 1.34) | |
| High (695, 21.0%) | 1.56 (1.02, 2.39)* | 0.84 (0.49, 1.43) | 0.91 (0.64, 1.29) | |
| Addictive behaviour | | | | |
| Current tobacco use (76, 2.3%) | 0.73 (0.37, 1.46) | --- | 2.26 (0.87-5.80) | --- |
| Binge drinking (80, 2.4%) | 5.03 (2.10-12.06)*** | 3.26 (0.77, 13.83) | 2.59 (1.53-4.36)*** | 1.83 (1.03, 3.26)* |
| Pathological internet use (1163, 35.5%) | 2.28 (1.73, 3.01)*** | 1.75 (1.27-2.41)*** | 2.65 (2.19, 3.21)*** | 2.32 (1.88, 2.86)*** |
| Mental health and abuse | | | | |
| Depression symptoms (severe) (352, 10.6%) | 2.81 (1.88, 4.20)*** | 1.63 (1.02-2.60)* | 2.04 (1.55, 2.67)*** | 1.48 (1.08, 2.02)* |
| PTSD symptoms (≥4) (798, 24.4%) | 2.39 (1.79, 3.21)*** | 1.83 (1.29-2.59)*** | 1.67 (1.31, 2.06)*** | 1.17 (0.92, 1.49) |
| Child sexual abuse (726, 21.9%) | 1.94 (1.43, 2.64)*** | 1.58 (1.11-2.25)* | 1.57 (1.27, 1.94)*** | 1.02 (0.80, 1.29) |

***P<.001; **P<.01; *P<.05; aHosmer & Lemeshow Chi-square =10.64, P=0.223; Nagelkerke R2 : 0.16; bHosmer & Lemeshow Chi-square =5.45, P=0.708; Nagelkerke R2 : 0.21; UOR=Unadjusted Odds Ratio; AOR=Adjusted Odds Ratio; CI=Confidence Interval; 132 in women and 5 in men; 2Excluded from final model due to too few cases