

ORIGINAL ARTICLE

Determinants of Higher Body Shape Concern Among Medical Students in Universiti Putra Malaysia

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ABSTRACT

Introduction: Body shape concern can lead to eating disorders such as anorexia nervosa and bulimia. Our study aims to determine the determinant sociodemographic characteristics and mass media influences factors of body shape concern among medical undergraduate students of Universiti Putra Malaysia (UPM). **Methods:** This was a cross-sectional study design done among the first year to final year of undergraduate medical UPM students in 2019. A questionnaire consisting of sociodemographic data, mass media influences and body shape concern was used. Body Shape Questionnaire (BSQ), a validated questionnaire with good concurrent validity to other tools assessing body shape concerns, was used to assess body shape concern among the medical students in this study. Analysis was done using Chi-square, Fisher exact test and multivariate logistic regression. **Results:** A total of 316 respondents out of 502 (62.9%) participated in this study. 57.5% students showed varying degrees of concern about their body shape ranging from mild to marked concern. Greater odds of body shape concerns were noted with Malay ethnicity, preclinical years, hours using social media per day and number of Instagram® following. **Conclusion:** Significant determinant factors of higher body shape concerns among UPM undergraduate students were Malay ethnicity, pre-clinical year students, longer hours of using social media and having higher numbers of following on Instagram®. It is important to determine the non-modifiable and modifiable factors of higher body shape concerns to recognise high risk individuals of developing body shape concerns.

Malaysian Journal of Medicine and Health Sciences (2023) 19(SUPP17):16-24. doi:10.47836/mjmh.19.s17.3

Keywords: Body image, body dissatisfaction, social media, internet uses, medical students

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INTRODUCTION

Body image perception is defined as the multidimensional structure that includes how we perceive, believe, act and behave towards our bodies and lies on a vast spectrum from healthy perceptions to unhealthy perceptions of the body (1). A person with negative body image has an unrealistic interpretation of their body size and shape (2). An incorrect body weight perception can lead to various complications. Underestimation of body weight may lead to obesity and obesity-related morbidity while overestimation may lead to unhealthy eating habits which may lead to eating disorder such as anorexia nervosa and bulimia (3). Individuals with higher concerns on body image can have a negative body image which can subsequently lead to body shape dissatisfaction/concerns (2) and a disturbance of body

image has long been recognized to be a diagnostic feature in the development of anorexia (4).

There is a lifetime prevalence of 1.0% and 0.6% for bulimia and anorexia respectively, and it is common for patients with eating disorder to have other mental illness most commonly being anxiety disorder (5). The age of onset for eating disorders such as anorexia nervosa and bulimia is 18 years old and the disorder can last throughout their lifetime (5). The risk of developing anorexia or bulimia even affect groups that are more learned such as medical students. A study by Rasman et al (2017) revealed that among medical undergraduates attending two private universities in Ipoh, Malaysia, 42.7% was noted to have possible eating disorder using SCOFF screening questionnaire (6).

In Malaysia, there is a misperception of body shape among Malaysian youths and young adults. Among Malaysian adolescents (17-19 years old), 35.3% misjudged their own body weight whereby those whom were underweight identified themselves as normal

weight and those whom were obese identified themselves as overweight (7). Body shape misperception can lead to body image dissatisfaction/concerns. Wong and Say (2013) noted that among tertiary students attending Universiti and Kolej Tunku Abdul Rahman, up to 91% had body image concerns (8). Using the Body Shape Questionnaire (BSQ), Kamaria, Vikram and Ayieshah (2016) noted that 32.4% male and 54.3% female students had some degree of body shape concerns (2).

Body shape concern is influenced by many factors such as sociodemographic characteristics and even mass media influences. Besides traditional mass media such as films, television and magazines being a factor in body shape concern (whereby exposure to thin-ideals in all forms media exposure was associated with body image dissatisfaction) (9), in this current age of internet and social media such as Facebook® and Instagram®, this two new modern forms of mass media has been reported to be a factor for body shape concerns (10,11). Previous local literatures have looked at prevalence of body shape concerns not only among the Malaysian adolescents (12) but also among students in higher learning institutions (7,8) and even among university undergraduate students including those from the medical and allied health programs (2,13). However it did not assess whether the duration of years in medical program nor the characteristics of modern mass media (internet and social media platforms) influences was a factor for body shape concerns. Identifying risk factors associated with body shape concern is important so as to be able to identify modifiable and non-modifiable risk factors so that necessary measures can be taken to reduce the incidence. Therefore, the aim of this study is to determine the level of body shape concerns among medical students of Universiti Putra Malaysia and to determine the association between sociodemographic and modern mass media influences factors with body shape concerns.

MATERIALS AND METHODS

Study design

This was a cross-sectional study. It was conducted among medical undergraduates of UPM between April to August 2019. Universal sampling method was used and all undergraduate medical students from first year (year one) to final year (year five) were included in the study. There was a total of 502 students from the first to the final year. Exclusion criteria were international undergraduates and those that enrolled in non-medical degree courses such as biomedical science, science environmental and occupational health, science dietetic, science nutrition and community health and nursing. International students were excluded as we wanted a homogenous group of local undergraduate students. A questionnaire consisting of socio-demographic factors, mass media influences factors and validated body shape questionnaire (BSQ) was administered using Google

Form®. Informed consent was provided at the beginning of the questionnaire and proceeding to answering the questionnaire meant informed consent was given. The link to the questionnaire was passed to each year's student representative via Whatsapp® and it was then distributed it to their respective years via Whatsapp®. The students were given one week to complete the questionnaire, and a reminder message was passed to the year's student representative to remind their batch to complete the questionnaire. This study was approved by the Ethics Committee Universiti Putra Malaysia with a reference number of JKEUPM-2019-205.

Measures

A questionnaire was shared using Google Form®. The language used was only in English as the sampling population is from the medical degree course and having good proficiency in English is a prerequisite as the subjects are taught in English. The questionnaire was divided into three sections. Section A consisted of sociodemographic data which included gender, ethnicity, year of study, average household income, received scholarship and also house location (urban or rural). Section B consisted of mass media influences factors which consisted of hours of watching television per day, hours of using social media per day, hours of using internet per day, number of Facebook® friends, numbers of Instagram® following and numbers of Instagram® followers. The cut-off points for assessment of duration for hours spent watching television, social, internet use, number of Facebook friends and number of Instagram followers and followings were based on the study by Sai et al (2018) (10). In that study, it was noted that having higher numbers of Facebook friends, Instagram followers and increased time spent on social media was correlated with lower body image scales scores (10). Social media has been shown to negatively affect one's body image (14). Section C consisted of Body Shape Questionnaire (BSQ) which was used to assess the degree of body shape concerns among the undergraduate medical students.

The BSQ is a self-report measure of concerns on body shape developed by Cooper et al in 1987 (15). This questionnaire is freely available to use (16). BSQ consists of 34 questions asking responders their feeling about their appearances over the past four weeks. Responders answered based on a 6-point Likert scale consisting of "never", "rarely", "sometimes", "often" and "always". The degree of concern on body shape was categorised based on the cumulative sum (17). A score of 80 and below corresponded to "no concern with body shape", score of 81 to 110 corresponded to "slight concern with body shape", score of 111 to 140 corresponded "moderate concern with body shape" and score of 141 and more corresponded to "marked concern with body shape" (17). The BSQ shows good concurrent validity with Eating Attitude Test (EAT) and also Body Dissatisfaction subscale of Eating Disorder

Inventory (15). It also shows satisfactory discriminant validity between “concerned” and “unconcerned” group ($t = 19.6$, $df = 172$, $p < .000$) (15). A study by Kuan et al (2011) among Malaysian undergraduate students enrolled in Universiti Malaysia Sarawak (UNIMAS) showed Cronbach’s Alpha of 0.948 and 0.960, among a pilot sample of 20 and 600 study subjects respectively (17). No changes were made to the questionnaire.

Sample size calculation

The sample size calculated using the estimated difference between two proportion formula by Lawanga and Lemeshaw, 1990, was 362. Sample size was calculated using prevalence of slight body shape dissatisfaction between genders from a study by Kuan et al (2011) (17). P1 was the prevalence of body shape dissatisfaction among females and P2 was the prevalence of body shape dissatisfaction among males.

Statistical analysis

Statistical Package for Social Science (SPSS) version 25 was used for statistical analysis. The socio-demographic factors and perception of body shape concern was analysed using descriptive analysis. For inferential analysis, bivariate analysis was done using Chi-square. Fisher exact test was used for analysis when the conditions did not meet the required assumptions. Significant level was set at $p < 0.05$. The dependent factor for inferential analysis was degree of body shape concerns, and the independent factors were sociodemographic data (gender, ethnicity, year of study, average household income, received scholarship and also house location) and mass media influences (hours of watching television per day, hours of using social media per day, hours of using internet per day, number of Facebook® friends, numbers of Instagram® following and numbers of Instagram® followers). Multivariate analysis between sociodemographic and mass media variables with degree of body shape concerns were analysed using backward binary logistic regression. The dependent variable of body shape concerns which consisted of no concern, mild concern, moderate concern and marked concern, were recategorized to no concern and concern (which consists of mild, moderate and marked concerns) for the multivariate logistic regression analysis.

RESULTS

Sociodemographic characteristics of respondents

The total number of respondents was 316 out of 502 students from year one to year five. The respondent rate was 62.9%. There were 89 (28.2%) males and 227 (71.8%) females. In terms of ethnicity, 183 (57.9%) of the respondents were Malays, 66 (20.9%) Chinese and 67 (21.2%) consists of Indian and other ethnicities. More than half of the respondents, 198 (62.7%) were from moderate and high income families and 240 (75.9%) were from urban area (Table I). Respondents from year three and year five had the lowest number of

Table I: Characteristics of the sociodemographic factors of the respondents (n=316)

Characteristics	Frequency (n)	Percentage (%)
Gender		
Male	89	28.2
Female	227	71.8
Race		
Malay	183	57.9
Chinese	66	20.9
Indian	62	19.6
Others	5	1.6
Year of study		
Year 1	70	22.2
Year 2	73	23.1
Year 3	50	15.8
Year 4	63	19.9
Year 5	60	19.0
Average household income categories		
High income	77	24.4
Moderate income	121	38.3
Low income	106	33.5
Missing data	12	3.8
Scholarship Receiver		
Yes	198	62.7
No	118	37.3
House Location		
Urban	240	75.9
Rural	76	24.1

respondents.

Characteristics of respondents by mass media influences

More than half 65.8% (208) of the respondents watched TV less than 2 hours and used social media around 1-5 hours per day ($n=176$, 55.7%). With regards to hours per day spent on using the internet, 42.1% (133) spent more than 5 hours. For the number of friends in the social media, 43.4% had more than 600 friends on Facebook®. With regards to Instagram®, 53.8% had 200-600 followings and 29.1% had more than 600 followers.

Body shape concern among UPM undergraduate medical students

Table II shows that among the respondents, 135 of them (42.7%) showed no concern about their body shape, whereas 57.3% ($n=181$) had some form of concerns with their body shape. A quarter of the respondents ($n=79$, 25.0%) had mild concern, 56 respondents (17.7%) had moderate concern and 46 respondents (14.6%) had

Table II: Characteristics of the respondents by mass media influences and their body shape concern (n=316)

Characteristics	Frequency (n)	Percentage (%)
Hours watching TV/day		
< 2 hours	208	65.8
2-5 hours	96	30.4
> 5 hours	12	3.8
Hours using social media/day		
< 1 hour	19	6.0
1-5 hours	219	69.3
> 5 hours	78	24.7
Hours using internet/day		
< 1 hour	7	2.2
1-5 hours	176	55.7
> 5 hours	133	42.1
Number of Facebook friends		
No Facebook	36	11.4
< 200	52	16.5
200-600	91	28.8
> 600	137	43.4
Number of Instagram following		
No Instagram	24	7.6
< 200	49	15.5
200-600	170	53.8
> 600	73	23.1
Number of Instagram followers		
No Instagram	24	7.6
< 200	49	15.5
200-600	151	47.8
> 600	92	29.1
Classification of Body Shape Questionnaire (BSQ)		
No concern	135	42.7
Mild concern	79	25.0
Moderate concern	56	17.7
Marked concern	46	14.6

marked concern about their body shape.

Association between sociodemographic data and mass media influences with body shape concern among UPM undergraduate medical students

Our findings showed significant association between hours of using social media per day ($p=0.024$), hours of using internet per day ($p=0.006$) and number of Instagram® following ($p=0.046$) with body shape concern among the respondent (Table III). For gender, female had higher frequencies in all category for body

shape concern, however it was not statistically significant. Other sociodemographic data (ethnicity, year of study, average household income, scholarship receiver and house location) had no significant association with body shape concern (Table IV).

Determinants of body shape concern among UPM undergraduate medical students

Ethnicity was recategorized to Malays and non-Malays, whereas year of study was recategorized to preclinical and clinical. Based on the bivariate analysis, significant factors with $p < 0.25$ were selected for the multiple logistic regression analysis. Backward logistic regression was used to analyse the relationship between age ($p=0.035$), ethnicity ($p=0.060$), year of study ($p=0.038$), scholarship receiver ($p=0.203$), hours of using social media per day ($p=0.002$), number of Instagram® following ($p < 0.001$) and number of Instagram® followers ($p=0.001$) with body shape concern. Four factors were noted to be significant. Greater odds of body shape concerns were noted with Malay ethnicity (odds ratio=1.70, 95% confidence interval [CI]: 1.05 – 2.75), preclinical years (odds ratio=1.66, 95% CI: 1.04 – 2.67), hours using social media per day (odds ratio=1.67, 95% CI: 1.02 – 2.69) and number of Instagram® following (odds ratio=1.68, 95% CI: 1.24 – 2.27) (Table V).

DISCUSSION

The response rate among respondents in this study was only 62.9%. The possible explanation to this low response rate was that the number of third year and final year students that participated during the period of data collection was low as they were undergoing their final year examination. This could have caused the low response rate among them.

There were no significant association between the sociodemographic factors with body shape concern in bivariate analysis. However, in multiple logistic regression analysis, Malay ethnicity was noted to be 1.7 times more likely to have higher body shape concerns compared to other ethnicities. Study by Sai et al, noted similar findings in their study whereby undergraduate students and graduate students from three different tertiary learning centres consisting of Management and Science University (MSU), Tunku Abdul Rahman University College (TARC) and Universiti Kebangsaan Malaysia (UKM), the Malay ethnicity scored higher in the Body Shame subscale of the Objectified Body Consciousness Scale (OBCS) (10). Possible reason for this is the study location, whereby other than TARC (comprising of 93.2% Chinese ethnicity), Malay ethnicity comprises the majority in the other higher learning institutions (UPM, UKM and MSU).

With regards to year of study factor, prior local studies (2,10,12,13,17) did not analyse this factor, as majority accounted for gender in their analyses. Our study

Table III: Association between sociodemographic factors and body shape concern among UPM undergraduate medical students using bivariate analysis (n=316)

Sociodemographic Factors	BSQ Categories n (%)				Total n (%)	Chi square (χ^2)/ Fisher's Exact test#	(d.f.)	p value
	No concern	Mild concern	Moderate concern	Marked concern				
Age, Year, mean \pm SD	22 \pm 1.5	22 \pm 1.5	21.4 \pm 1.6	21.4 \pm 1.7				*0.013
Gender								
Male	37 (41.6)	22 (24.7)	15 (16.9)	15 (16.9)	89 (100.0)	0.544	3	0.921
Female	98 (43.2)	57 (25.1)	41 (18.1)	31 (13.7)	227 (100.0)			
Race								
Malay	70 (38.3)	54 (29.5)	30 (16.4)	29 (15.8)	183 (100.0)	10.218#	-	0.284
Chinese	30 (45.5)	16 (24.2)	13 (19.7)	7 (10.6)	66 (100.0)			
Indian	33 (53.2)	8 (12.9)	12 (19.4)	9 (14.5)	62 (100.0)			
Others	2 (40.0)	1 (20.0)	1 (20.0)	1 (20.0)	5 (100.0)			
Year of study								
Year 1	23 (32.9)	12 (17.1)	18 (25.7)	17 (24.3)	70 (100.0)	19.564	12	0.076
Year 2	29 (39.7)	19 (26.0)	15 (20.5)	10 (13.7)	73 (100.0)			
Year 3	22 (44.0)	12 (24.0)	10 (20.0)	6 (12.0)	50 (100.0)			
Year 4	32 (50.8)	20 (31.7)	6 (9.5)	5 (7.9)	63 (100.0)			
Year 5	29 (48.3)	16 (26.7)	7 (11.7)	8 (13.3)	60 (100.0)			
Average household income categories								
High income	31 (40.3)	19 (24.7)	13 (16.9)	14 (18.2)	77 (100.0)	1.791	6	0.940
Moderate income	50 (41.3)	32 (26.4)	23 (19.0)	16 (13.2)	121 (100.0)			
Low income	49 (46.2)	25 (23.6)	17 (16.0)	15 (14.2)	106 (100.0)			
Scholarship receiver								
Yes	90 (45.5)	52 (26.3)	27 (13.6)	29 (14.6)	198 (100.0)	6.261	3	0.100
No	45 (38.1)	27 (22.9)	29 (24.6)	17 (14.4)	118 (100.0)			
House location								
Urban	104 (43.3)	57 (23.8)	46 (19.2)	33 (13.8)	240 (100.0)	2.334	3	0.520
Rural	31 (40.8)	22 (28.9)	10 (13.2)	13 (17.1)	76 (100.0)			

Note: #Fisher's exact test

noted from the multiple logistic regression analysis, undergraduate students from preclinical years had higher odds of body shape concerns compared to clinical years. A possible explanation could be undergraduate students in the clinical years (year 3, 4 and 5) have better understanding of the healthy standards of a body and are less influenced by media.

Our findings noted that hours spent on watching television had no significant association with body shape concerns. Traditional forms of media such as television has been noted to be on the decline since 2011 in USA, whereas the digital media has been in an upgoing trend and, in 2018 digital media overtook the traditional media as the most common form of media in USA (18). In the developing countries, more people are beginning to own smartphones and along with it comes easier access to the internet (19) as compared to having access to television especially amongst the undergraduate medical students. This situation is similar as to what is happening in Malaysia. With more students having access to smartphones and laptops compared to television, coupled with easy accessibility of wireless internet in the campus, this could explain why more hours are being spent on the internet rather than television.

In our study, there was a significant association between hours of using internet per day and body shape concern among the medical students. The longer the hours spent on the use of internet, the more likely the concerns with body shape was noted. Our findings noted that 97.8% students spent more than one hour per day on the internet. This could be explained by the fact that the current modality of learning in this current age is through the use of internet, as most information and resources are easily accessible on the internet. The Malaysian Communication and Multimedia Commission (MCMC) noted that the average daily use of internet was 6.6 hours, and for the age group between 20-30 years old the duration of internet use was between 7.3 to 8 hours (20). This fits our demographic population as the undergraduate students' age group from the first year to fifth year was between 20 to 25 years old. Kaewpradub et al (2017) also reported similar findings concerning internet use and body shape concern whereby the use of internet was associated with body image dissatisfaction using the Body Esteem-Scale for Adolescent and Adults ($p = 0.017$, $r = -0.096$) (21). It was also reported by Kaewpradub et al (2017), that the use of internet was positively correlated with eating disorder and the use of laxatives, diuretics and weight loss drugs (21). This could be due to the purpose on the use of internet. Based

Table IV: Association between mass media influences and body shape concern among UPM undergraduate medical students using bivariate analysis (n=316)

Mass Media Influences	BSQ Categories n (%)				Total n (%)	x ² /Fisher's exact test#	(d.f.)	P value
	No concern	Mild concern	Moderate concern	Marked concern				
Hours watching TV/day								
< 2 hours	96 (46.2)	45 (21.6)	38 (18.3)	29 (13.9)	208 (100.0)	8.835#	-	0.3159
2-5 hours	32 (33.3)	30 (31.3)	18 (18.8)	16 (16.7)	96 (100.0)			
> 5 hours	7 (58.3)	4 (33.3)	0 (0.0)	1 (8.3)	12 (100.0)			
Hours using social media/day								
< 1 hour	10 (52.6)	3 (15.8)	2 (10.5)	4 (21.1)	19 (100.0)	14.032#	-	*0.024
1-5 hours	104 (47.5)	53 (24.2)	37 (16.9)	25 (11.4)	219 (100.0)			
> 5 hours	21 (26.9)	23 (29.5)	17 (21.8)	17 (21.8)	78 (100.0)			
Hours using internet/day								
< 1 hour	0 (0.0)	1 (14.3)	1 (14.3)	5 (71.4)	7 (100.0)	19.426#	-	*0.006
1-5 hours	84 (47.7)	45 (25.6)	26 (14.8)	21 (11.9)	176 (100.0)			
> 5 hours	50 (37.9)	33 (25.0)	29 (22.0)	20 (15.2)	132 (100.0)			
Number of Facebook friends								
No Facebook account	17 (47.2)	7 (19.4)	6 (16.7)	6 (16.7)	36 (100.0)	4.247	9	0.894
< 200	25 (48.1)	9 (17.3)	10 (19.2)	8 (15.4)	52 (100.0)			
200-600	38 (41.8)	24 (26.4)	18 (19.8)	11 (12.1)	91 (100.0)			
> 600	55 (40.1)	39 (28.5)	22 (16.1)	21 (15.3)	137 (100.0)			
Number of Instagram following								
No Instagram account	18 (75.0)	3 (12.5)	2 (8.3)	1 (4.2)	24 (100.0)	17.155	9	*0.046
< 200	24 (49.0)	11 (22.4)	6 (12.2)	8 (16.3)	49 (100.0)			
200-600	71 (41.8)	43 (25.3)	33 (19.4)	23 (13.5)	170 (100.0)			
> 600	22 (30.1)	22 (30.1)	15 (20.5)	14 (19.2)	73 (100.0)			
Number of Instagram followers								
No Instagram account	18 (75.0)	3 (12.5)	2 (8.3)	1 (4.2)	24 (100.0)	16.047	9	0.066
< 200	26 (53.1)	11 (22.4)	6 (12.2)	6 (12.2)	49 (100.0)			
200-600	58 (38.4)	39 (25.8)	31 (20.5)	23 (15.2)	151 (100.0)			
> 600	33 (36.3)	26 (28.6)	17 (18.7)	16 (16.5)	92 (100.0)			

Note: *Significant level at p < 0.05, #Fisher's exact test

Table V: Multiple logistic regression to determine factors independently associated with having body shape concern among UPM undergraduate medical students (n=316)

Variables	B	S.E.	Wald	df	Adj. OR	95% C.I.for EXP(B)		Sig.	
						Lower	Upper		
Race:									
Malay		0.536	0.244	4.82	1	1.709	1.059	2.756	0.028
Non-Malay						1			
Year of study:									
Preclinical		0.513	0.241	4.537	1	1.669	1.042	2.675	0.033
Clinical						1			
Hours using social media per day		0.513	0.243	4.456	1	1.671	1.037	2.691	0.035
Age		0.089	0.164	0.297	1	1.093	0.793	1.508	0.586
Number of Instagram following		0.52	0.153	11.508	1	1.683	1.246	2.273	0.001
Number of Instagram followers		0.151	0.261	0.334	1	1.163	0.697	1.939	0.563
Scholarship receiver:									
No		0.193	0.254	0.575	1	1.213	0.737	1.996	0.448
Yes						1			

* p < 0.05

** p < 0.001

The dependent outcome is recategorized into 2 groups: "no concern" and "concern". Concern covers mild, moderate and marked concerns. Year of study also recategorized into pre-clinical (Year 1 and 2) and clinical (Year 3, 4 and 5). The clinical year of study is the reference group. Ethnicity is recategorized into malay and non-malay. Non-malay is the reference group.

Backward logistic regression was used and the model reasonably fits well (Hosmer Lemeshow test: chi-square =4.082; P =0.770); model assumptions were met; no significant interactions and multicollinearity problem; model explained between 8.9% (Cox and Snell R2) and 11.9% (Nagelkerke R2) of the variance for inappropriate medication dosage. The model correctly classified 64.6% of cases (95% CI: 60.2%–69.0%, P <0.05). *Statistical significance at P <0.05; OR—odds ratio; CI—confidence interval.

on our findings, 69.3% of undergraduate students spent 1-5 hours of social media and 24.7% spent more than 5 hours, which makes a total of 94% of students spending more than an hour on social media, and hours spent on social media is associated with higher body shape concerns which is elaborated in the next point.

Duration (hours) of exposure to social media was significantly associated with higher body shape concern in our study, whereby the longer the exposure hours were to social media, the more likely were the individuals to have concerns with their body shape. This was similar to a study by Sampasa-Kanyinga, Chaput and Hamilton (2016), whereby among female Canadian adolescents aged between 11 to 19 years old, spending more than two hours a day on social network sites had increased body dissatisfaction (odds ratio=2.02, 95% CI: 1.30 – 3.16) and perceived themselves as overweight (relative risk ratio=2.20, 95% CI: 1.34 – 3.60) as compared to those that did not use or were infrequent users of social network sites (22). Sai et al (2018) and Kaewpradub et al (2017) also reported similar findings whereby exposure to social media and social networking services was significantly associated with negative perception of body image (10,21). Tiggemann and Slater (2013) also noted similar results whereby time spent on the internet and social networking sites (MySpace® and Facebook®) had higher body image concerns in Internalization of Ideals score, Body Surveillance score and Drive for Thinness score (23). Possible reason behind the association of increased body shape concern with increased time spent on social media, is that sharing photos are widely done in social media and the students, especially females, might feel inferior and have negative mood when comparing their body shape with celebrities and peers. In a research by Fardouly, Diedrichs et al (2015), they noted that young women whom were exposed to online fashion magazine for even a brief 10 minutes duration, showed increased body weight and shape dissatisfaction compared to control counterparts whom was exposed to neutral appearance website (24). However in today's age, social media is the more relevant form of media and according to MCMC, Facebook® is the most popular form of social networking services in Malaysia in 2018 and Instagram® is the second most popular (20). These social networking services are popular application that enables its users to share and view photos and when exposed to celebrity and peer photos in Instagram®, undergraduate female students can develop significant body dissatisfaction (11). Therefore, with majority of undergraduate students spending more than an hour a day on social media site, which exposes them to photos of celebrities and even other peers, it can lead them to compare their body shape and subsequently cause them to be concerned about their body shapes.

Our study also found that the number of Instagram® following increases the odds of body shape concerns among undergraduate UPM medical students. The higher

the number of Instagram® following, the more likely the students were to have concerns about their body shape. Sai et al (2018) also noted having Instagram® following of more than 600, was a negative factor on the Body Shame subscale among undergraduates and graduates from three local universities (10). Other factors such as number of Instagram® followers and number of Facebook® friends did not show any significant association with body shape concerns in our study. Following in Instagram® enables the app to show posts from the people you follow (25) and this could be family members, close friends, distant peers or even celebrities. Fardouly and Vartanian (2015) noted in their study that females rated their body image negatively when comparing to female celebrities, close friends, distant peers and female family members, and the indirect effect of comparing to distant peers was stronger than comparison to female celebrities (26). Appearance comparison has been noted to be the mediating factor between the use of Facebook® and body image concerns (26) and with Instagram® containing mainly images, the likelihood of comparing appearances is high. Since “following” on Instagram® refers to the account holder's choice of whom the account holder wishes to follow, it could represent the account holder trying to conform to what is considered normal standards of the social group that they are following. Conformity is defined by the American Psychological Association as “the adjustment of one's opinions, judgments, or actions so that they become more consistent with (a) the opinions, judgments, or actions of other people or (b) the normative standards of a social group or situation” (27), and conformity has been shown to have positive correlation with body image concerns (28). When their own body shape does not conform to the standards they see, it can lead to them being dissatisfied and having concerns with their own body. However, this association between Instagram® following and conformity was not evaluated in our study and therefore could be assessed in future studies to determine the relationship.

There are some limitations with this study. Sampling population was confined to only one university and did not include students from other field of study therefore limiting the generalizability of the findings. In view of adequate sample size, it give us a good picture on the factors associated with body shape concern, but this findings cannot be generalized to similar age group or even to other universities. Another limitation is the cross-sectional design of the study. This design is not able to determine the causal relationships between body shape concern and its significant variables.

For future recommendation, we suggest that factors such as conformity, social connectedness and social comparison theory be analysed too. Those with higher social comparison tendency (29) and conformity (28) have been shown to have lower body images. Social connectedness has been shown to be negatively

associated with body image and conformity (28). It would be interesting to look at the association between “following” and “followers” with these factors. Also in future studies, we suggest to look into the viewing content and determine whether the content viewed were of thin ideal images, celebrities, peers or others and how this play a role in body shape concerns.

CONCLUSION

In summary, factors such as Malay ethnicity, being in preclinical years and mass media influences such as longer hours of using social media and having higher numbers of following on Instagram®, had significantly increased odds of having higher body shape concerns. In this current time it is inevitable that one will be exposed to the internet and social media, therefore increasing one’s risk of developing body shape concern and ultimately this can lead to the development of eating disorders. Identifying factors pertaining to the use of internet and social media is important to determine modifiable risk factors so as to reduce the risk, and to identify non-modifiable risk factors so as to identify susceptible individuals of developing body shape concerns.

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