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***A Study on Awareness of Anorexia Nervosa among Malaysians on Management Perspectives***

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ABSTRACT

Anorexia nervosa is a type of emotional disorder that is characterized by the desire to lose weight excessively through refusing to eat nutritious food. Only a minority of anorexic patients receive mental health treatment while most cases remain undetected by healthcare professionals due to negative stigma surrounding the disease from the society and the lack of community awareness. The objectives of this study are to evaluate eating, weight, and exercise concerns among Malaysians and to analyze the correlation between these measurable variables. A survey was conducted among Malaysians using a simple random sampling method. The questionnaire consisted of questions on respondents' demographic, eating disorder, weight concerns, eating concerns, and exercise concerns. Descriptive statistics comparing the mean and correlation analyses were conducted to analyze the data. The results showed that there was no significant difference between the mean for training anxiety of both genders. However, there were significant differences in the mean for eating behaviors and how their anorexia begins. The results of the correlation test showed that there is a positive linear relationship between weight and eating problems. There is also a positive linear relationship between exercise and weight concerns. Besides, the results of the study also indicated a positive linear relationship between eating and exercise attention. Surprisingly, Malaysians portray high levels of awareness toward factors that lead to Anorexia nervosa. The study offers useful information to healthcare professionals and the community at large in the form of early symptoms of the eating disorder which is subsequently useful for the provision of proper treatment to this mental health issue.

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## 1 INTRODUCTION

Anorexia nervosa is an eating disorder that can be potentially life-threatening. It is a serious mental health condition in which obsessive behavior causes a person to focus on his body image excessively and becomes too eager to maintain low body weight. An anorexic will restrict the amount of food consumed as well as purge the food consumed, or exercise excessively.

The National Eating Disorders Collaboration (2017) classified two general types of Anorexia nervosa which are restricting anorexia and binge eating/purging anorexia. The basic characteristics for both types are mainly the same; people horrifically worrying about gaining body weight. Besides refusing to eat, anorexia patients exercise excessively and always have an overweight feeling.

Purging which is also known as Anorexia nervosa binge is a condition where an individual will purge him/herself after eating due to overwhelming guilty feelings. For restrictive Anorexia nervosa, sufferers normally obsessively count their food calories or limit meal portions. They strongly believe that losing weight is a positive achievement which helps increase personal self-confidence.

## 2 LITERATURE REVIEW

Anorexia nervosa can affect people of all ages, genders, sexual desires, races, and ethnicities (Llyod, Maria & Anne, 2019). Anorexia most commonly affects girls and women, and this disorder usually begins during the time of puberty (Eddy et al., 2017).

This disorder generally leads to loss of muscle strength and reduced bone strength, and disturbs the period cycle for girls (Stice, Presnell & Spangler, 2002). A person is categorized as anorexic when there exists an unusual fear of gaining weight even though their perspective Body Mass Index (BMI) is categorized as underweight. According to the National Association of Eating Disorders Association (2017), historians and psychologists have found evidence of people showing symptoms of anorexia since a long time ago.

Recently, there has been an increase in the number of children categorized as anorexia as reported by Rozzell, Moon, and Brown (2019). For children and young people, they might be low in weight and are smaller than other people their age-symptoms concurrent with slow development (Hinney et al., 2017).

Studies have found that overweight individuals are more likely to have anorexia, even though they are diagnosed with excessive prejudice against obesity and fatness (Barker & Cooke, 1992). The syndrome will affect relationships with the surrounding community and achievements in the school or workplace. However, often society does not notice the seriousness of emotional and physical changes happening to

anorexic patients (Sabel & Mehler, 2014). Andexer (2016) stated that according to a survey conducted by the Malaysian Psychiatric Association (MPA), for every 10 to 20 women with eating disorders, there will be one man with a similar problem. However, men tend to experience more of such disorders.

## 3 METHODOLOGY

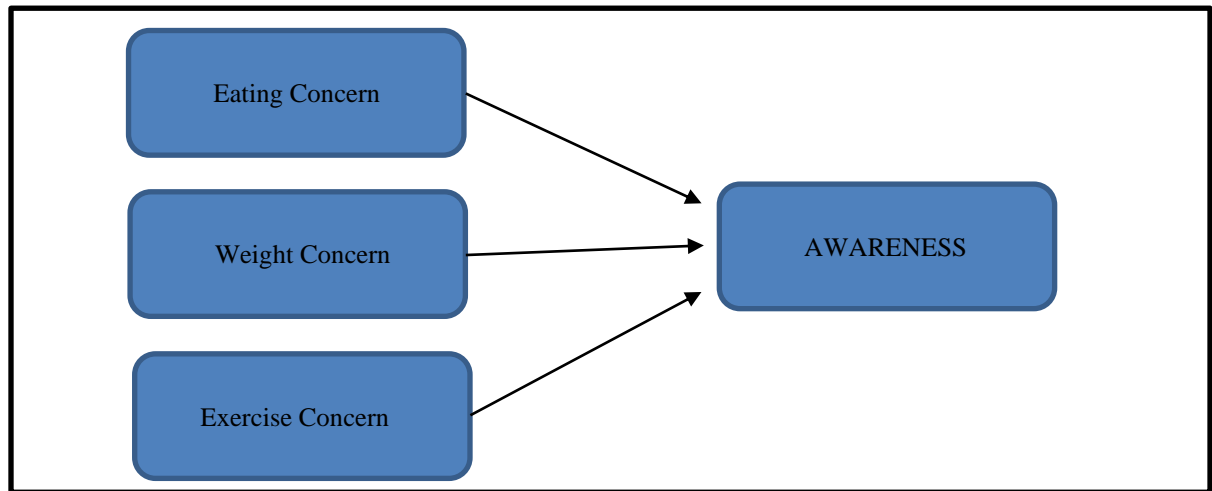
The purpose of this study is to evaluate Malaysians' eating, weight, and exercise concerns and to analyze the correlation between these measurable variables with awareness on Anorexia nervosa. This study also identified respondents' BMI values. The demographic, eating disorder, weight concern, eating concern, and exercise concern variables were observed.

Descriptive statistics were conducted to compare the mean differences in exercise concerns against employment status, and a correlation analysis was used to analyze the data to determine the relationship between excessive exercising to lose weight and gender, and to compare weight concerns between the different races. In Malaysia, the level of social awareness on anorexia is still low due to limited studies. Therefore this study will provide information that could help medical professionals or respective body to develop programs aimed at increasing awareness on the Anorexia nervosa disease among Malaysians.

This study used a simple random sampling method and a total of 222 respondents answered the questionnaire completely. The questionnaire consisted of five sections, namely Section A, Section B, Section C, Section D, and Section E, and contained 55 questions altogether.

Section A consisted of questions requesting for general information or demographic questions. The required pieces of information were gender, age, weight, height, race, marital status, place and area the respondents live in, academic qualification, employment status, working sector, role in an organization, how their anorexia nervosa began, and how long have they been living with anorexia.

Section B had 10 multiple-choice questions on eating disorders. A 5-point Likert scale was used to answer questions posed in Sections C, D, and E. Sections C and E used the rating scale of always (1), often (2), sometimes (3), rarely (4), and never (5). Meanwhile, Section D used the rating scale of strongly agree (1), agree (2), neutral (3), disagree (4), and strongly disagree (5). Questions in Section C were related to weight concerns while Section D was focused on eating concerns. Lastly, Section E described exercise concerns. The dependent variable used in this study is awareness on anorexia, whereas the independent variables are eating concerns, weight concerns, and exercise concerns (Figure 1).



**Figure 1**  
Research Framework of the Study

## 4 RESULT AND DISCUSSION

### Reliability Test

The reliability of an instrument measures the consistency of questions included. Reliability is the extent to which a scale or instrument consistently measures something that is measured. The Cronbach alpha is the most common measure of internal consistency, especially for attitude measures as used in this data. Table 1 shows the Cronbach alpha coefficients calculated for the three parts; 0.893, 0.912, and 0.895, showing that the items are reliable.

**Table 1**  
Reliability of Variables

Variables	Cronbach's Alpha
Section C – Weight concern	0.893
Section D – Eating concern	0.912
Section E – Exercise concern	0.895

### Demographic and Personal Characteristic of the Sample

This section discusses the frequency and percentage of demographic information as obtained from the respondents. Table 2 shows that from the 222 respondents, 90 males (40%) and 132 females (60%) answered the questionnaire completely. A majority of the respondents were single, namely 63 males (70%) and 104 females (78.79%).

Meanwhile, a total of 26 respondents (28.89%) are married men and the rest are married women (20.45%). Divorced couples had the lowest number of respondents involved in this survey.

For academic qualifications, 39.6% of the respondents are Bachelor degree holders, 25.7% of the respondents obtained

Foundation / Matriculation / STPM certification, 6.3% of respondents have a Master's degree, while 0.5% are Ph.D. holders. A majority of respondents are holding posts in junior management. These academic qualifications will show the respondents' level of awareness towards anorexia.

Table 2 also portrays data on the period that respondents have been living with anorexia. 91 respondents—41 males (45.6%) and 50 females (38%) have never experienced anorexia. Meanwhile, 131 respondents have experienced Anorexia nervosa, and they are comprised of 49 males (54.4%) and 82 females (62%). From the 131 respondents, 68 (51.9%) were anorexic for less than one year, 25 (19.1%) experienced between one to two years, and 38 (29%) suffered for more than two years.

**Table 2**  
Summary of Demographic

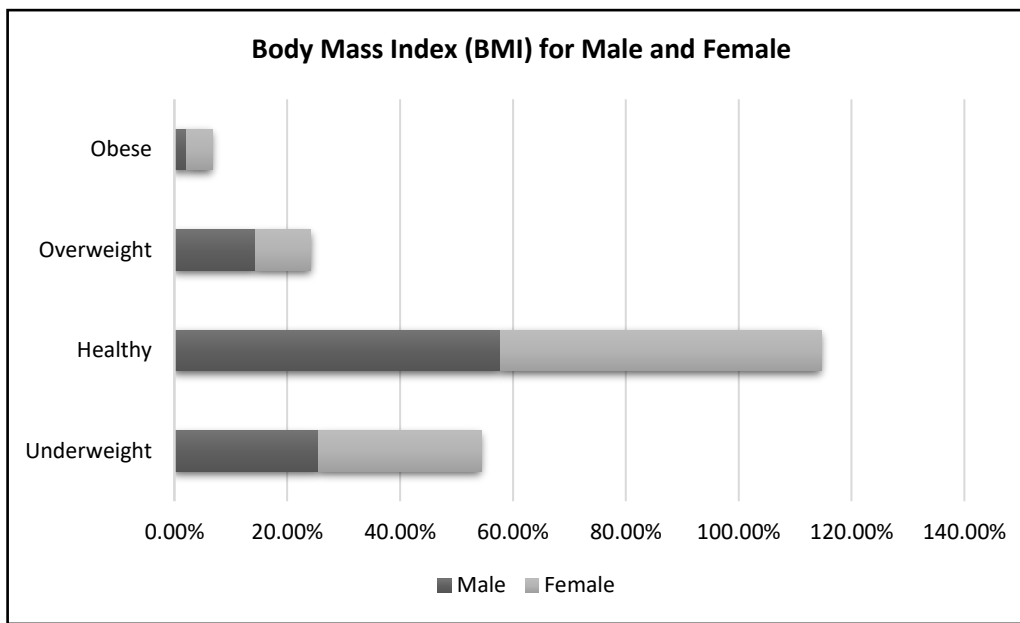
	<b>Gender</b>			
	<b>Male</b>		<b>Female</b>	
	<b>Count</b>	<b>%</b>	<b>Count</b>	<b>%</b>
<b>Total respondents</b>	90	40	132	60
<b>Marital Status</b>				
Single	63	70	104	78.79
Married	26	28.89	27	20.45
Divorced	1	1.11	1	0.76
<b>Academic Qualification</b>				
PMR / SPM	13	14.4	14	10.6
Foundation / Matriculation / (STPM)	23	25.6	34	25.8
Diploma	13	14.4	22	16.7
Bachelor Degree	34	37.8	54	40.9
Master	7	7.8	7	5.3
Ph.D.	0	0	1	0.8
<b>How Long They Have Been Living with Anorexia</b>				
Less than 1 year (68)(52%)	29	32.2	39	29.5
Between 1 to 2 years (25)(19.1%)	12	13.3	13	9.8
More than 2 years (38)(29%)	8	8.9	30	22.7
Never (91)(41%)	41	45.6	50	37.9

Table 3 depicts the respondents’ employment status and data on how their anorexia began. A majority of respondents are unemployed (60.4%). 48.5% of them suffer from anorexia due to environmental factors, 9.7% from family, 5.2% from genetics, and 36.6% are without any anorexia problems. Out of the 50 employed respondents, 47.7% of them became anorexic due to the environment, 6.8% from family, and 2.3% were inherited genetically. The highest percentage comes from the environment because most of the respondents’ personal attitudes were influenced by external factors such as colleagues and advertisements that promote the skinny culture or ‘ideal body’ through social media.

**Table 3**  
The Distribution of Respondent by Employment Status and How Their Anorexia Begins

<b>How Their Anorexia Begin</b>	<b>Employment Status</b>			
	<b>Employed</b>		<b>Unemployed</b>	
	<b>Count</b>	<b>%</b>	<b>Count</b>	<b>%</b>
Environment	42	47.7	65	48.5
Family	6	6.8	13	9.7
Genetic	2	2.3	7	5.2
Never	38	43.2	49	36.6
<b>Total</b>	88	100	134	100

Figure 2 displays the categories of body mass index (BMI) for the 222 respondents who participated in this study. A majority of respondents (57.8% of males and 56.8% of females) are considered healthy. Females have a higher healthy BMI as compared to males, indicating awareness on their daily food and calorie intake. It can be seen from the results that 25.6% of males and 28.8% of females are underweight. Meanwhile, 14.4% of males and 9.8% of females were categorized as overweight. Respondents within the obese category had the least percentages for both male and female categories.



**Figure 2**  
Body Mass Index (BMI) for Male and Female

### Hypothesis Testing

This part discusses inferences made from the data. Four hypotheses were tested in this study. In Hypothesis 1, an independent sample *t*-test was used to test the mean difference between exercise concerns and gender. Next, an Analysis of Variance (ANOVA) was conducted to analyze Hypotheses 2, 3 and 4 as stated in Table 5. These hypotheses were used to test the mean difference between respondents' awareness of anorexia and how their anorexia begins along with their race and education level. It has been determined that if the *p*-value is less than the significant level  $\alpha = 0.05$ , the null hypothesis,  $H_0$  is rejected.

#### Hypothesis 1

$H_0$ : There is no significant difference in the mean of exercise concern and gender.

$H_A$ : There is a significant difference in the mean of exercise concern and gender.

Before the independent sample *t*-test was carried out, the equality of variance (Levene's test) must be assumed. Table 4 indicates that equal variance was not assumed since the *p*-value = 0.013 is less than  $\alpha = 0.05$ .

Next, an independent sample *t*-test was used to test the equality of mean difference between exercise concerns and gender. Since the *p*-value = 0.416 is more than  $\alpha = 0.05$ , it can be concluded that there is no significant difference in the mean of exercise concerns and gender.

#### Hypothesis 2

$H_0$ : There is no significant difference in the mean of eating concern towards how their anorexia begins.

$H_A$ : There is a significant difference in the mean of eating concern towards how their anorexia begins.

According to results of the Analysis of Variance (ANOVA),  $H_0$  was rejected since the *p*-value = 0.000 is less than  $\alpha = 0.05$  ( $F^* = 24.158 > F_{3,218} = 2.60$ ). Therefore, there is a significant difference at 5% level significance for the mean of eating concerns. It can be seen that eating concerns have a different effect towards how respondents' anorexia began.

This indicates how respondents from four different backgrounds developed awareness towards eating concerns. It is reasonable to conclude that most of the respondents contracted their anorexia from environmental factors which can lead to eating concerns. There were also some respondents who never had anorexia, indicating low awareness on eating concerns.

**Table 4**  
Independent Sample *t*-test for the Mean Difference of Exercise Concern between Gender

		Equal Variance Assumed	Equal Variance Not Assumed
<b>Levene's Test for Equality of Variances</b>	F	6.333	
	Sig.	0.013	
	<i>t</i>	-0.786	-0.815
<b><i>t</i>-test for Equality of Means</b>	df	220	212.217
	Sig. (2-tailed)	0.433	0.416

The predetermined of 0.05 level, the decision rule is to reject the null hypothesis,  $H_0$  if the *p*-value is less than 0.05.

**Hypothesis 3**

$H_0$ : There is no significant difference in the mean of weight concern towards race.

$H_A$ : There is a significant difference in the mean of weight concern towards race.

The decision rule states that if the computed value of  $F^*$  is more than or equal to the critical value, the null hypothesis will be rejected. Based on results from the Analysis of Variance (ANOVA),  $H_0$  was not rejected since  $F^* = 0.171$  is less than  $F_{2,219} = 2.99$  the ( $p$ -value =  $0.843 > \alpha = 0.05$ ). Therefore, there is no significant difference at the 5% level of significance between the means for weight concerns and race. This indicates that respondents from the three different races studied do not have awareness towards weight concerns. Thus, it can be said that they do not bother about any increases in weight.

**Table 5**  
Analysis of Variance (ANOVA)

		Sum of Squares	df	Mean Square	F	Sig.
<b>Hypothesis 2</b>	Between Groups	39.434	3	13.145	24.158	0.000
	Within Groups	118.619	218	0.544		
	<b>Total</b>	158.053	221			
<b>Hypothesis 3</b>	Between Groups	0.287	2	0.123	0.171	0.843
	Within Groups	157.807	219	0.721		
	<b>Total</b>	158.053	221			
<b>Hypothesis 4</b>	Between Groups	3.611	5	0.722	1.246	0.289
	Within Groups	125.242	216	0.580		
	<b>Total</b>	128.853	221			

**Hypothesis 4**

$H_0$ : There is no significant difference in the mean of exercise concern towards the academic qualification.

$H_A$ : There is a significant difference in the mean of exercise concern towards the academic qualification.

The ANOVA test result indicates an insignificant difference between the mean for exercise concerns and the six different academic qualifications since the *p*-value = 0.289 is greater than  $\alpha = 0.05$  ( $F^* = 1.246 > F_{5,216} = 2.21$ ). This shows that the level of awareness toward exercise concerns is generally equal regardless of the respondent's academic background.

**Correlation**

The correlations between eating concerns, exercise concerns,

and weight concerns are tabulated in Table 6. The results revealed that at 1% level of significance, there is a strong positive relationship between weight concerns and eating concerns with a correlation coefficient of  $r = 0.767$ . In other words, individuals who are aware of their weight are concurrently concerned of their eating habits.

There is a positive relationship between eating concerns and exercise concerns with a correlation coefficient of  $r = 0.574$  at 1% level of significance. It can be concluded that individuals who love to exercise are also concerned about the types and quantities of food consumed.

The results also demonstrated that there is a positive relationship between exercise concerns and weight concerns ( $r = 0.611$ ). It can be concluded that those who are concerned about their weight do practice a healthy lifestyle.

**Table 6**  
Correlation between Variables

	Eating concern	Exercise concern	Weight concern
Eating concern	1.000		
Exercise concern	0.574*	1.000	
Weight concern	0.767*	0.611*	1.000

\*Correlation is significant at the 0.01 level (2-tailed)

Based on the findings, most respondents are considered to be healthy. The results of this study are in line with findings of Nivashini, Priya, and Mohan (2015) where a majority of respondents in their study were found to be healthy and showed high awareness toward eating disorders. However, out of the 222 respondents involved in this study, 23 males and 38 females were categorized as underweight. Males and females share the same number of overweight respondents at 13 each. Only two male and six female respondents were found to be at a high risk of obesity. Thus, it can be said that most of the respondents practice a healthy lifestyle.

Next, there was no significant difference found between exercise concerns and gender. A significant difference was however found between the means of eating concerns and respondents' start of anorexia. An Analysis of Variance (ANOVA) was used to generate the significant value in order to identify whether there is a difference between how respondents' anorexia began. The result revealed that there was a significant difference at the 5% level of significance between the means for eating concern and how their anorexia began. Most of the respondents suffer from anorexia due to environmental factors. A few of the respondents suffer from genetic anorexia.

The results also revealed that there was no significant difference between the means for weight concerns and race; the same goes for the means of exercise concerns and respondents' highest academic qualification. These results indicate that respondents' awareness on weight and exercise concerns was not influenced by their race and academic qualification.

The correlation analysis conducted on the relationship between weight concerns and eating concerns exhibited a strong and positive relationship. In other words, respondents who are aware of their weight are also concerned about their eating habits. Another correlation test indicated that there is a positive correlation between eating concerns and exercise concerns. This relates to the positive correlation found between exercise concerns and weight concerns. Respondents who practice healthy lifestyles are also aware of their daily food intake and every single change in their body weight.

## CONCLUSIONS

Anorexia nervosa is a severe eating disorder that has been characterized as a mental illness. Environmental factors influence bad eating habits and subsequently, contribute to anorexia statistics. From the correlation results, it can be concluded that eating-exercise concerns, eating-weight concerns, and weight-exercise concerns show positive relationships. Race and academic qualifications do not

influence the individuals' awareness of their weight and exercise. In summary, all of the respondents are aware of the importance of exercise towards a healthy lifestyle.

A person suffering from any type of eating disorder should be helped through special medical attention. Anorexics should be treated by changing their eating patterns, increasing their self-esteem, developing a sound self-concept, and improving their problem-solving and decision-making skills. Support and involvement from family and friends should be ongoing and cover every stage of the patients' recovery process.

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